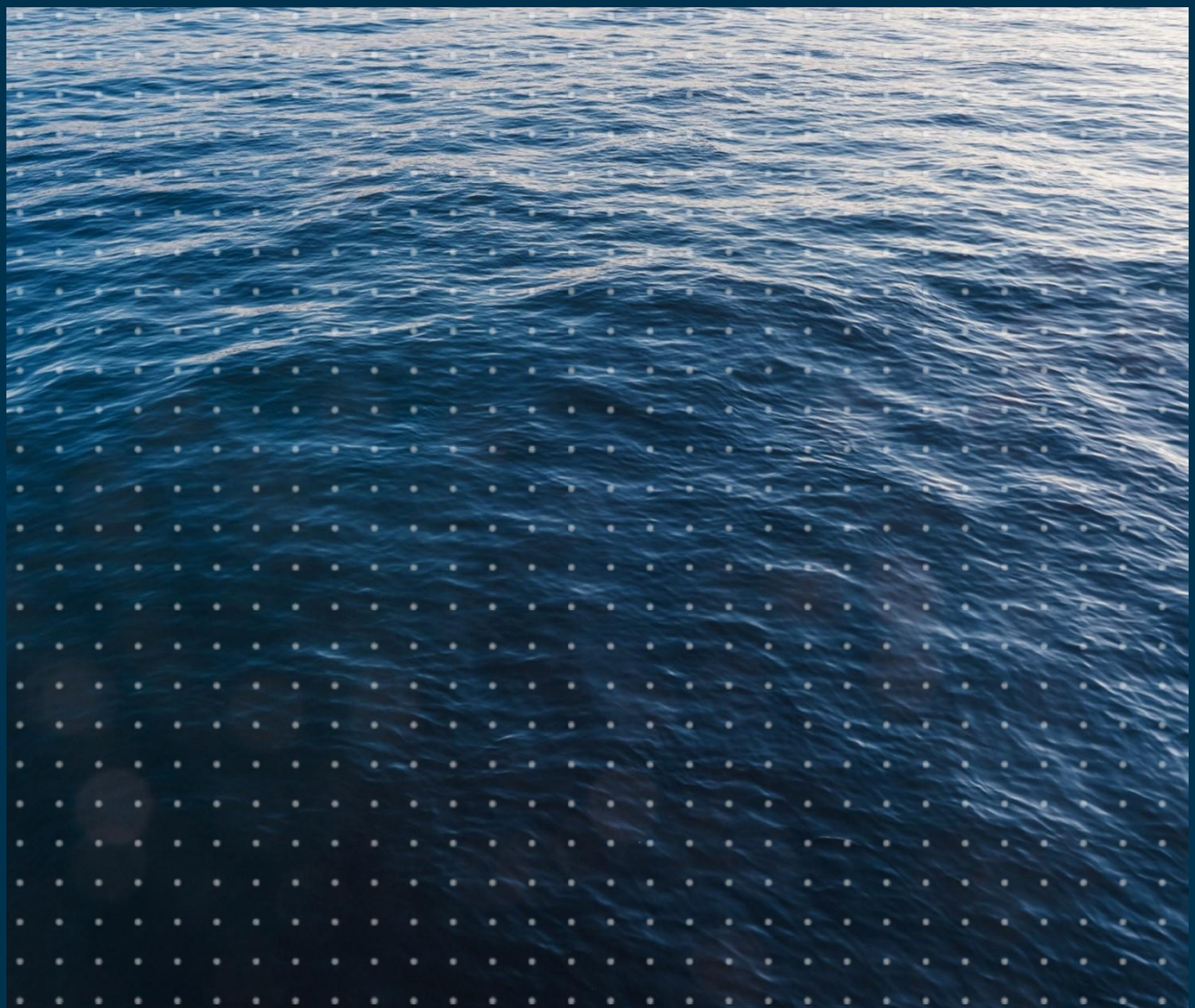
Environment Protection Authority

NSW EPA Guide for Large Emitters

Guidance on the greenhouse gas assessment and mitigation plan to be prepared for large emitting projects within environment impact assessments

DRAFT FOR CONSULTATION



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ISBN 978 1 922963 58 1
EPA 2024P4492
May 2024

Contents

1. Introduction

The NSW Environment Protection Authority (EPA) *Climate Change Policy* and *Climate Change Action Plan 2023–26* (NSW EPA, 2023a) (NSW EPA, 2023b) outlines our comprehensive regulatory approach and set of actions to address the causes and consequences of climate change in NSW. These actions support and build on the NSW Government's climate change legislation, policies and initiatives, including the *Climate Change (Net Zero Future) Act 2023* and *Net Zero Plan Stage 1: 2020–2030* (Department of Planning, Industry and Environment, DPIE, 2020). Together this framework will help industry to decarbonise and build greater preparedness and resilience to climate change risks.

Under the Climate Change Action Plan 2023–26, the NSW Government is committed to ensuring that climate change considerations are adequately addressed by proponents of regulated activities, and that development approvals contain appropriate conditions (Action 5c).

To address this action, the EPA has collaborated with other agencies to develop greenhouse gas (GHG) assessment and mitigation requirements to be addressed in the environmental impact assessment (EIA) and approvals process by proponents of projects. This includes projects involving new developments or modifications to existing activities requiring a development consent or planning approval.

Two sets of GHG assessment and mitigation requirements and associated Guides for addressing these requirements have been developed:

- *Greenhouse Gas Assessment Guide for Large Emitters* (this Guide), which addresses the requirements for new projects likely to have 'large' emissions and proposed modifications of existing facilities likely to significantly increase their GHG emissions
- *General Greenhouse Gas Assessment Guide* (currently being prepared by the EPA), which sets out general requirements for projects not projected to result in large emissions.

Criteria applied to determine projects' eligibility under the Large Emitter and General climate change assessment requirements are addressed in Section 3 of this Guide.

1.1. Objective

This guide sets out the GHG assessment and mitigation requirements to be addressed in the environmental impact assessment and approvals process by proponents of projects which are likely to have large emissions (defined below).

The guide assists proponents to prepare a GHG assessment and a Greenhouse Gas Mitigation Plan (GHG Mitigation Plan) that address the EPA's requirements.

The guide also supports the EPA and the consent authority as they review the adequacy of GHG assessments for proponent's EIA for new proposals or proposed significant modifications to existing facilities.

This guide is intended to inform GHG aspects of the development, and consideration and assessment of a proposal. It is not intended to prescribe either the outcome of the consent authority's consideration of project proposals (nor limit or fetter its statutory functions) under the *Environmental Planning and Assessment Act 1979* or the EPA's advice into related planning processes. Each project proposal will be considered on its own merits.

1.2. Policy context

1.2.1. NSW emission reduction objectives

The build-up of 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* (United Nations , n.d.) and the *Paris Agreement* (United Nations, n.d.). 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 *NSW Climate Change (Net Zero Future) Act 2023* 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 (Section 8), emissions reduction targets (Box 1), and an objective for NSW to be more resilient to a changing climate. It also establishes 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* (NSW DPIE, 2020a) 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.

Box 1. NSW emission reduction objectives

The *NSW Climate Change (Net Zero Future) Act 2023* legislates the following targets for reducing net greenhouse gas 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.

This Act also provides for the introduction of regulations to prescribe interim targets for 2040 and 2045.

1.2.2. The EPA's role

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.

Section 9 of the POEA Act specifically extends these objectives to protecting the environment and human health from climate change.

Section 45 of the *Protection of the Environment Operations Act 1997* (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, this section requires the EPA to consider:

- the objectives of the EPA (described above)
- the pollution caused, or likely to be caused, and the likely environmental impact
- practical measures for preventing, controlling, abating, or mitigating pollution

- practical measures for protecting the environment from harm because of that pollution.

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. This includes protection of the environment from climate change.

The EPA regulates many activities that have the potential to significantly impact the environment and so require an environment protection licence (licence) from the EPA to operate.

The EPA's *Climate Change Policy* (NSW EPA, 2023a) and *Climate Change Action Plan 2023–26* (NSW EPA, 2023b) address the EPA's duty under the POEO Act in relation to the regulatory approach and actions to address climate change. While this guide relates specifically to proposals progressing through the approvals process, the EPA is also working to progressively require and support licensees to prepare, implement and report on climate change mitigation and adaptation plans.

Under the EPA's Licensing Conditions Policy (currently being drafted by the EPA) licensees are expected to make fair and reasonable contributions to NSW achieving its achieving its economy-wide greenhouse gas emission reduction targets as enshrined within the *Climate Change (Net Zero Future) Act 2023* and its supporting regulations (Box 1).

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.

Table 1 Sectors contributing to NSW emissions and description of activities the EPA's licensing framework (NSW EPA, 2023a)

	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).

	Sector*	Description	Activities in this sector that the EPA directly regulates
	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 waste activities are licensed by the EPA (e.g. landfills, sewage treatment plants).
	Agriculture	Includes emissions of methane 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 and the Safeguard Mechanism, established by the *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 disseminating 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. There are two types of thresholds under section 1.3 of the NGER Act that determine which companies have an obligation under the NGER Act to report: the facility threshold and the corporate group thresholds. The current facility threshold, referred to in this guide, is:

- 25,000 tonnes per year or more of GHG emissions, as carbon dioxide equivalent (CO_2-e), including both scope 1 and scope 2 emissions (refer to Section 1.3 for scope definitions), and,
- production of 100 terajoules per year or more of energy, or
- consumption of 100 terajoules per year or more of energy.

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 GHG emissions (CO_2-e) 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 Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). It relates primarily to projects likely to produce 100,000 tonnes or more of GHG emissions each financial year.

The Safeguard Mechanism provides a minimum standard for the highest-emitting facilities. However, that does not preclude the need for the EPA and the consent authority to:

- properly understand the potential GHG impacts of proposed new or significantly modified developments within NSW, and
- ensure all proponents are adequately avoiding, minimising and managing their emissions over all stages of the development.

Further information on the NGER scheme and the Safeguard Mechanism is available on the Clean Energy Regulator's website.

1.3. Greenhouse gases and scopes

This guide relates to GHG addressed under the NGER Act and includes the following gases and categories of gases: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulphur hexafluoride (SF_6), 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* (DCCEEW, 2023a) for facility reporting purposes.

- 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 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.

Reference to a facility in the above definitions means a facility as defined under the NGER Act for the purpose of National Greenhouse and Energy Reporting.

1.4. Overview

This guide outlines how to identify projects considered to have large GHG emissions, and how the proponents of such projects must assess their emissions and develop a **GHG Mitigation Plan**. It will become one component of their **Climate Change Mitigation and Adaptation Plan**, if/when consent is granted and the facility is issued a licence by the EPA that is substantially consistent with that consent.

The guide specifically addresses:

- types of GHG and scopes of emissions to be considered
- how the EPA identifies proposed projects likely to have large emissions

- how and when the EPA's requirements apply in the EIA process
- estimating emissions for the project
- how measures to avoid or reduce emissions must be identified and assessed
- developing emissions goals for the project
- how Safeguard Mechanism obligations are to be addressed, if applicable
- how obligations for electricity firming infrastructure under part 12 of the Electricity Infrastructure Investment Regulation 2022 must be demonstrated
- how strategies to offset emissions must be developed
- measures to monitor and report on emissions and mitigation performance
- the expected content of GHG assessments within environmental impact assessments
- the expected content of GHG Mitigation Plans
- periodic reporting requirements, and
- the time frames for reviewing this guide.

2. Identifying large emitters

This section outlines the criteria the EPA will use when assessing whether a project may be subject to the climate change assessment requirements (CCARs) for large emitters that are set out in this guide.

The EPA will usually use the approach outlined in this guide, to ensure that projects are considered in an effective, consistent and equitable manner. However, it reserves the right to apply all or a subset of CCARs for large emitters to specific projects, as each proposal will be considered on its own merits.

2.1. Identifying projects with large emissions

The CCARs for large emitters apply to:

- projects involving new facilities that would be regulated by the EPA (if consent is provided) that are likely to have large emissions
- projects involving proposed modifications at existing facilities that are likely to have large emissions
- projects involving modifications to development consents where the modification will result in large emissions.

When a project involves a modification to an existing facility, defining a GHG assessment boundary is the first step to understanding whether or not the climate change requirements for large emitters apply. This assessment boundary defines which emission sources and activities are included in the assessment and which are excluded. If a modification will increase or decrease emissions from existing operations, the affected sources related to these existing operations must be included in the GHG assessment boundary for the project. This will allow the overall impact of the project on GHG emissions to be assessed.

The EPA may consider a project to have large emissions if the project meets three criteria. The criteria are:

1) The project requires development assessments and approvals 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 (CO_2-e) in any financial year during the operational life of the project (based on planned operational throughput and as designed).

When a project involves a modification to an existing operation, the 25,000 tonne CO_2-e threshold applies specifically to the activities falling within the GHG assessment boundary and not necessarily to the whole operation.

The decision tree in **Figure 1** may be used to assess whether the CCARs for large emitters may be applied to a proposed project for which development consent is sought. The requirements for large emitters do not apply to projects for scheduled activities under Schedule 1 of the POEO Act involving only construction activities, such as railway infrastructure construction.

To allow them to be compared with NGER facility thresholds, project emission estimates must include energy savings measures and emission mitigations planned for in the project design. However, carbon offsets do not count towards the threshold criteria for identifying large emissions projects. Section 2.4 covers other factors that should be considered when assessing emissions to determine whether the large emitter CCARs apply.

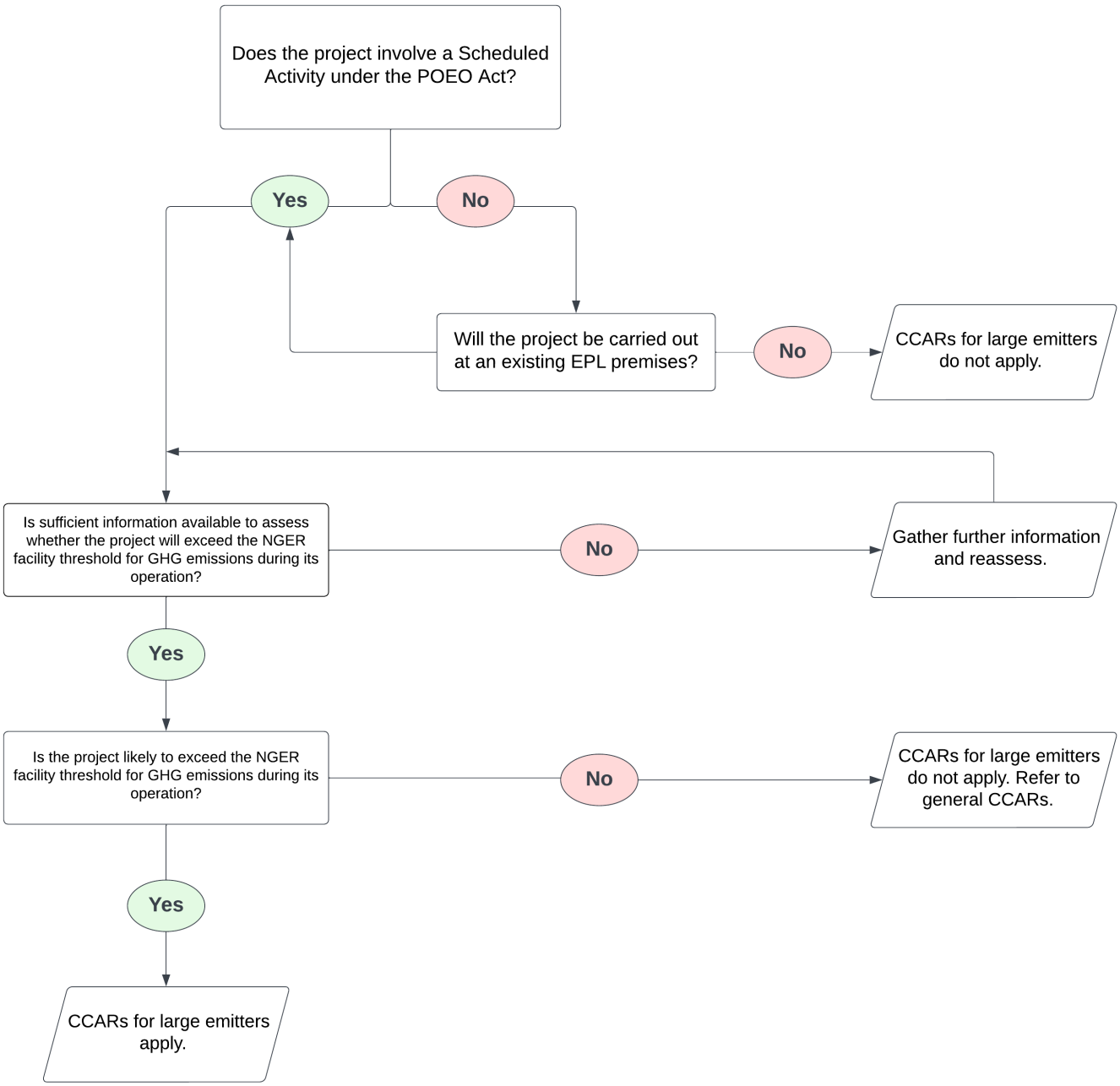

Figure 1 Decision tree to guide whether the Large Emitter or General CCARs are likely to be applied to a proposed project for which development consent is being sought

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 EPA will consider this guide when preparing climate change assessment requirements, and will provide advice to the planning authority on the adequacy of the proponent's environmental impact assessment and the proponent's project proposals under the *Environmental Planning and Assessment Act 1979*. However, each project proposal will be considered on its own merits.

The EPA expects proponents to consider this guide when preparing development consent modification reports for state significant developments or state significant infrastructure projects, particularly in cases where the modification results in additional emissions of 25,000 tonnes CO_2-e or more of scope 1 and 2 emissions in any financial year during the operational life.

2.3. Eligibility for General CCARs

The General CCARs apply to both projects that involve new facilities and proposed modifications to existing facilities. They apply to projects that:

- either include a scheduled activity under Schedule 1 of the POEO Act, or are to be carried out at a premises which has an existing environment protection license; and
- will have GHG scope 1 and scope 2 emissions below the level of the NGER Act facility threshold (<25,000 tonnes of CO_2-e) in all financial years during the operational life of the project. This is regardless of whether the project will have construction phase GHG scope 1 and scope 2 emissions that exceed the NGER Act facility reporting threshold.

For projects eligible for consideration under the General CCARs, see the *General Greenhouse Gas Assessment Guide*, which sets out general requirements for such projects (currently being developed by the EPA).

2.4. Considerations when assessing emissions

When assessing whether a project's emissions may exceed the NGER facility threshold for GHG emissions, proponents must:

- consider the NGER Act and associated regulations as they relate to the facility threshold
- determine an appropriate GHG assessment boundary for the project
- ensure that emission estimates being assessed include planned mitigations in 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
- consider the Clean Energy Regulator's Supplementary Guide: Operational Control (CER, 2023c), which helps corporations identify the corporation that has operational control over a facility or facilities under the NGER Act.

NGER facility definitions can include activities that span multiple locations and states, such as in the case of electricity, gas, water, sewerage and telecommunications activities. Only project emissions within NSW are considered when assessing whether to apply the CCARs.

Obligations under the NGER Act apply to controlling corporations only. However, the requirements outlined in this guide apply to all projects that exceed the NGERS threshold, whether they are considered controlling corporations or not. For example, many local councils that operate landfills do not have reporting obligations under NGERS because they do not meet the definition of a controlling corporation. However, the CCARs may apply to such projects if their emissions are projected to exceed 25,000 t CO_2-e in a year.

The GHG assessment boundary for the project defines which emission sources and activities are included in the assessment and which are excluded. As explained in the previous section, for projects involving modifications, the assessment boundary must be defined to account for the impact of the project on emissions elsewhere in the facility.

When comparing to NGER facility thresholds, project emission estimates must include energy savings measures and emission mitigations planned for in the project design but exclude any provision for the use of carbon offsets.

Scope 1 and scope 2 GHG emissions for the proposed project can be estimated using either the Clean Energy Regulator's Emissions and Energy Threshold Calculator or the latest National

Greenhouse Accounts factors and NGER methods. The CER's threshold calculator was designed to help assess if a controlling corporation is likely to have obligations to register and report under the NGER Act.

The EPA reserves the right to apply all or any CCARs for large emitters to any proposal, regardless of any information provided by project proponents about whether the project will trigger facility thresholds in the NGER Act.

Further information is available on the Commonwealth Clean Energy Regulator's website, and includes:

- Emissions and Energy Threshold Calculator and user guide (CER, 2023a)
- Key steps in reporting your obligations (CER, 2023b)
- Supplementary Guideline: Operational Control (CER, 2023c)
- Reporting energy production and consumption guideline (CER, 2023d).

2.5. What happens if a project is considered to have large emissions?

If the EPA considers a project to have large emissions, the proponent will be required to do all of the following:

- meet the GHG assessment requirements as outlined in Sections 3 and 4
- prepare a GHG Mitigation Plan as addressed in Section 3 and 5
- prepare a Climate Change Mitigation and Adaptation Plan.

The EPA will progressively require industry to prepare and implement Climate Change Mitigation and Adaptation Plans. The preparation of these plans is not covered in this guide, and will be addressed in a separate guide being developed by the EPA. Box 2 (below) gives information about how GHG Mitigation Plans relate to the Climate Change Mitigation and Adaptation Plans.

Box 2. How does a GHG Mitigation Plan relate to a Climate Change Mitigation and Adaptation Plan?

The EPA will progressively require all of its licensees to develop **Climate Change Mitigation and Adaptation Plans (CCMAPs),** to demonstrate how they will minimise their GHG emissions and exposure to climate risk (Action 5b in the EPA's *Climate Change Action Plan 2023–26*). We are likely to implement the CCMAP requirement in a staged way, starting with licensees with the largest GHG emissions and/or whose premises and activities pose greater risks to the environment if the impacts of climate change are not adequately considered.

We are also committed to partnering with the Department of Planning, Housing and Infrastructure (DPHI) and other agencies to ensure that climate change is being adequately addressed by proponents of activities we will regulate, and that approvals contain appropriate conditions (Action 5c). The CCARs and this guide support the implementation of this action, by requiring proponents to meet GHG assessment requirements and prepare GHG Mitigation Plans.

What is the difference between the two types of plans?

GHG Mitigation Plans developed in the planning approvals process will serve a slightly different purpose from CCMAPs developed by existing licensees. The CCMAP for the licence will address existing operations at the facility and any approved operations, focusing on the operational stages and the ongoing performance of the activity (i.e. minimising emissions through different stages of the facility's life and exposure to climate risk). GHG Mitigation Plans, developed in the planning approvals process, will cover how low- or zero-emission

considerations have been designed into the development proposal to achieve the best outcomes (for example, by changing to low- or zero-emission alternatives to diesel equipment).

GHG Mitigation Plans will also let proponents show that they have considered contingency measures, should additional GHG mitigation measures be required once operations begin. These extra measures might be needed, for example, if monitoring shows that a licensed premises is producing more GHG emissions than predicted in its environmental impact assessment or allowed for in its consent and licence. We will use the approach we apply in other areas of regulation to make sure that measures to mitigate impacts are fit for purpose, practical and cost-effective.

A licensee's CCMAP also differs from a GHG Mitigation Plan in two other ways. First, it includes measures for adapting to climate change, which a GHG Mitigation Plan does not. Second, a CCMAP is designed to be reviewed and updated over time, whereas a GHG Mitigation Plan is developed for the planning approvals process.

How will a project GHG Mitigation Plan become an ongoing CCMAP for a licence?

A GHG Mitigation Plan for a project proposal can be used as the basis for the first iteration of a licensee's CCMAP. We will explain how that can be done in guidance we are developing to help licensees prepare their CCMAPs.

The table below summarises the processes, parties affected, relevant authorities and available guidance for GHG Mitigations Plans and CCMAPs.

Plan type	Process	Parties affected	Authority and timing of submissions	Relevant guidance
GHG assessments and mitigation plans	Prepared within the EIA and approvals process	Proponents of projects that trigger the eligibility requirements outlined in this guide	**Development consent authority (Planning)** The GHG Assessment and GHG Mitigation Plan are submitted as part of the EIA and approvals process for individual projects	*Greenhouse Gas Assessment Guide for Large Emitters* (this guide) *General Greenhouse Gas Assessment Guide* for projects not projected to result in large emissions (being developed by EPA)
Climate Change Mitigation and Adaptation Plan (CCMAP)	Submitted to meet CCMAP requirements	Existing Environmental Protection Licensees	**EPA** Licensees to be notified of the timing for submission	EPA is preparing guidance to help licensees prepare their CCMAPs.

3. Overview of requirements

It is in the public interest that GHG emissions arising from significant developments in NSW, and measures to avoid and mitigate those emissions, are documented and disclosed.

The GHG assessment acts as a public disclosure of the expected emissions, emission reduction measures, emission goals and monitoring planned for the proposed project.

This section addresses the EPA's expectations in relation to emissions reduction objectives for projects, and provides an overview of the steps for undertaking a GHG assessment and developing a GHG Mitigation Plan for projects expected to generate large emissions.

3.1. Emissions reduction objectives for projects

All projects create emissions that contribute to climate change and additional emissions increase the abatement task for all new and existing participants in the NSW economy.

The EPA expects proponents to apply the mitigation hierarchy shown in Figure 2 to first avoid then reduce emissions as much as possible, including through measures to substitute lower-emission energy sources and materials for higher-emission ones, before finally offsetting residual emissions to meet emission goals. Proponents must demonstrate how they have considered and applied this mitigation hierarchy.

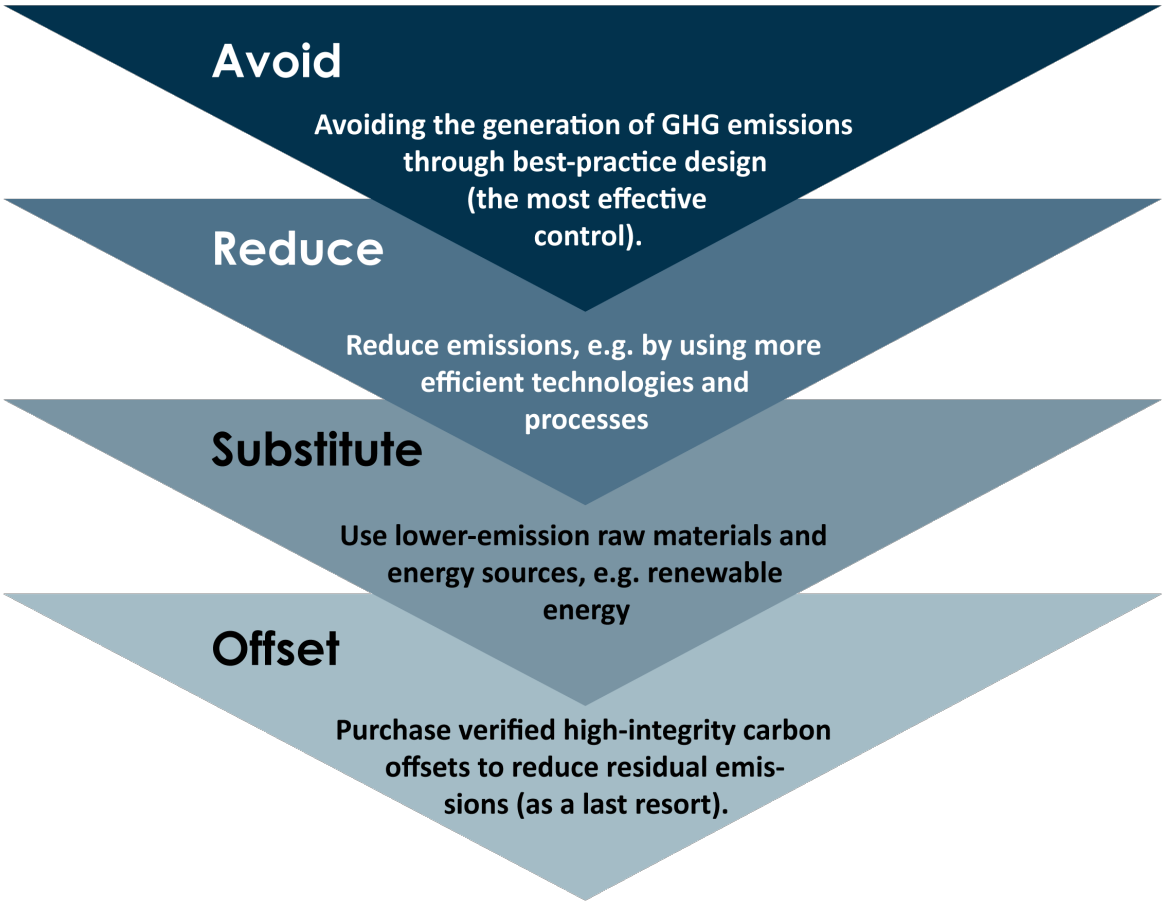

Figure 2 Hierarchy of emissions mitigation actions for the project

Proponents of large emission projects are expected to set interim and long-term scope 1 GHG emissions goals to make a meaningful contribution to NSW's emissions reduction objectives. Scope 2 emission goals are also required. Scope 3 emission goals are encouraged but not required (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).

3.2. Steps to be applied for all large emitter projects

Figure 3 is an overview of the steps to go through to prepare a GHG assessment and to develop a GHG Mitigation Plan to meet the requirements of this guide.

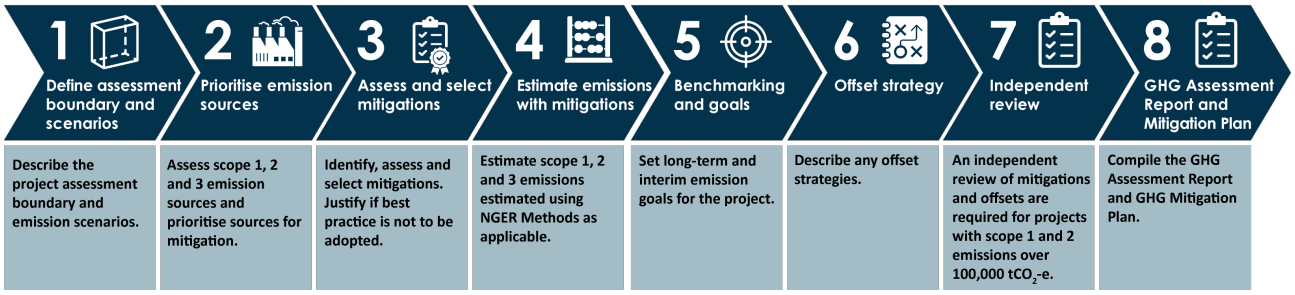

Figure 3: Steps for undertaking a GHG assessment and preparing a GHG Mitigation Plan

Step 1

In step1, you should describe the GHG assessment boundary established for the project, and name and describe the scenarios included in the assessment. The assessment boundary must clearly specify the emission-related activities included and excluded from the assessment. If a modification will likely increase or decrease emissions from existing operations, the affected sources related to these existing operations must be included in 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. Further scenarios to be included for project modifications are set out in Box 3.

Step 2

Steps 2 to 6 are set out linearly for clarity but are expected to involve an iterative process to tailor mitigation measures, finalise emissions estimates and refine emissions reduction goals for the project. While completing steps 2–6 and 8, proponents are expected to address all relevant guiding principles in section 8 of the *Climate Change (Net Zero Future) Act 2023*. The proponent must document how the principles (where relevant) have been met, and if they have not been met, why not.

The setting of emissions goals for the project may both inform and be informed by the assessment of mitigation measures which are commercially and technically ready for adoption or are likely to be ready during the project 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.

Estimating scope 3 emissions will support emissions reduction strategies such as process changes that will lead to the use of materials with lower embodied carbon emissions.

Step 3

Here you must show how the mitigation hierarchy will be applied. Top priority is to avoid emissions. The next highest priority is to reduce them, for instance by using renewable energy sources (Figure 2).

Step 4

In this step you must give emission estimates for the proposed project as designed, taking into account any planned and committed emissions avoidance and mitigation measures to be implemented.

Step 5

In step 5 you will set out the long-term and interim emission goals for the project, taking into account anticipated regulatory obligations for the project, mitigations likely to become available during the project life, and how project emissions compare to NSW emissions.

Step 6

Step 6 involves clearly setting out any carbon offset strategies to be implemented for the project. Carbon offsets must be used only for residual emissions that cannot be avoided or reduced to meet emission goals. Offsets must be based on clear, enforceable, and accountable methods, with offsets that conserve, preserve, protect, enhance, and manage the NSW environment to be prioritised.

Step 7

Projects with scope 1 and 2 emissions exceeding 100,000 t CO_2-e per year at any time over the operational life of the project require mitigation assessments to be verified by an independent expert review. 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.

The GHG Assessment Report must be well documented to reflect the data, assumptions, methods, and findings from steps 1–7 and be delivered using the template provided (Appendix C). This report must be accompanied by a Greenhouse Gas Mitigation Plan using the template provided (Appendix D).

The GHG Mitigation Plan provides a summary of the emissions without detailing how they were calculated. It also states the mitigation measures to be implemented without providing the details of the analysis undertaken to assess, select and justify the measures.

Section 4 describes the steps of the GHG assessment in more detail, while Section 5 outlines the content of the GHG Mitigation Plan.

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:

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

Box 3 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 3. Scenarios to be included for projects involving 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:

- a 'business-as-usual' scenario addressing sources and projected emissions that are expected to occur without the proposed 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 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.

Providing these scenarios will allow the emissions for the modification to be considered within the context of total facility emissions. They will also show which 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 implemented for modifications. It also encourages proponents to commit to other improvements to reduce emissions from existing operations, to minimise overall emissions. This approach is illustrated by the case study in **Box 4**.

4. Greenhouse gas assessment

Steps to be undertaken in the GHG assessment are further explained in the subsections below.

4.1. Step 1: Describe the assessment boundary and scenarios

The first step is to clearly describe the GHG assessment boundary for the project, and the emission scenarios to be developed and presented.

The GHG assessment boundary must account for greenhouse gas emissions associated with all relevant 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).

Projects involving new operations and modifications to existing operations should develop emission projections that address all sources within the assessment boundary. For proposed modifications, this 'project only' scenario must include both:

- new sources of emissions associated with proposed activities within the modification
- emission sources associated with existing activities to be altered by the modification.

In this manner the net GHG emissions impact of the proposed modification may be clearly assessed and communicated within the 'project only' scenario.

Where a project involves a modification to existing activities, the GHG assessment must include the following additional scenarios as explained in Box 3:

- a 'business-as-usual' scenario addressing sources and projected emissions expected to occur without the project, including any existing or planned emissions reductions,
- a 'modified-business' scenario addressing sources and emissions associated with existing operations and including the implementation of the proposed project.

Any scenarios included in the assessment for projects involving new operations and modifications must be named and described. It must be clear which scenarios are being put forward for project assessment and approval. For example, you may develop and 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.

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 should take priority when assessing mitigations. To identify the high-priority sources, you may initially estimate emissions excluding mitigations. When doing this, use the emission estimation methods required for step 4.

The assessment must include all relevant GHG types addressed under the NGER Act, which include:

- carbon dioxide (CO_2)
- methane (CH_4)
- nitrous oxide (N_2O)

- sulphur hexafluoride (SF_6)
- hydrofluorocarbons (HFCs)
- perfluorocarbons (PFCs).

The assessment must address scope 1, 2 and 3 emissions as described in Section 1.3 and illustrated in Figure 4.

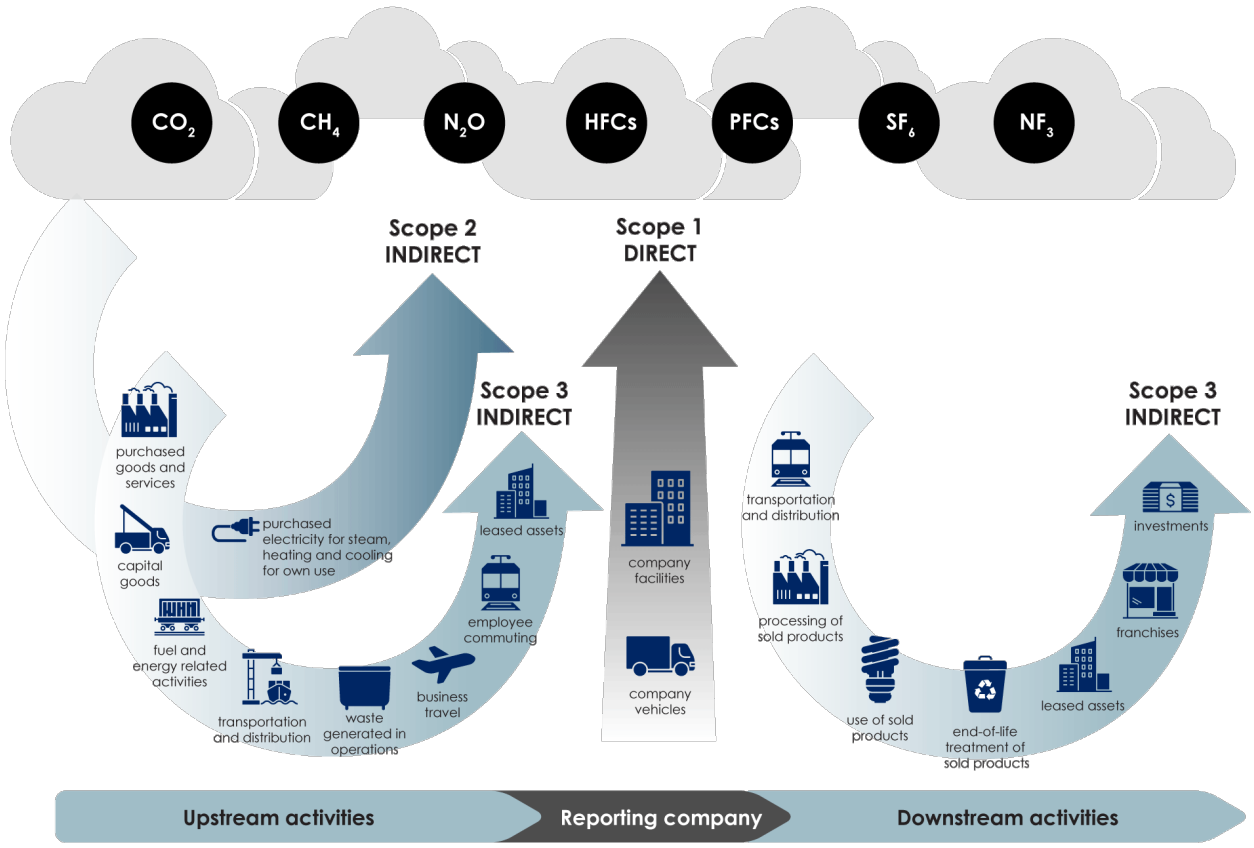

Figure 4. Scope 1, 2 and 3 emissions (World Resources Institute & World Business Council for Sustainable Development, 2013)

Scope 1 (direct) GHG emissions are released directly into the atmosphere by sources under the proponent's operational control. 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 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. 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 Figure 4 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 (World Resources Institute & World Business Council for Sustainable Development, 2013)

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 (CDP, 2023). 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 take into account all mitigation measures that currently exist and that 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 may 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.

4.3.1. Identify mitigation measures

As noted in Section 3.1, the EPA expects proponents to apply the mitigation hierarchy to first avoid and then reduce emissions as much as possible, before finally offsetting residual emissions to meet emission reduction objectives (Figure 2).

The EPA will consider whether the project includes appropriate best-practice design, technology and abatement measures to avoid and reduce GHG emissions (see **Box 4**). Proponents are required to demonstrate within the GHG Assessment that best-practice measures are to be implemented or provide evidence-based justification for why alternative measures are proposed.

Proponents may also apply a technology-agnostic approach to demonstrate how the emissions intensity of their activity compares to international best-practice benchmarks, by applying the

approach outlined in the Australian Government's *Safeguard Mechanism Guidelines for setting international best practice benchmarks* (see **Box 5**).

Avoiding emissions through best-practice design may involve:

- comparing absolute emissions and emissions-intensity performance metrics with comparable activities
- minimising emissions and intensity at design stage
- attaining a particular level of emissions-intensity performance through adopting more efficient, renewable, and/or low-emissions technologies (**Box 4**).

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 more cost-effective. It may also be appropriate to plan to introduce best-practice measures when assets reach their end of life.

Box 4. 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 (European Commission, 2023) (NSW EPA, 2022).

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
- 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 best practice for the sector that is likely to be ready to be adopted at some time during the project life
- reviewing evidence to confirm that proposed best practices are capable of achieving the stated emissions reductions
- identifying local conditions and current circumstances 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 facilities, both domestically and internationally, including facilities with the lowest emissions intensities for relevant activities.

Reducing emissions may 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; and reusing or repurposing waste energies and materials and co-products and by-products
- adopting best-practice 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 financial 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 socio-economic benefits, particularly for areas of relative social disadvantage.

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 facilities could provide lower-emission energy than 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 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 waste 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 offsets are described in section 4.6.

Box 5. 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 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* provides a technology-agnostic approach for establishing international best-practice benchmark emissions intensities for specific production activities while adjusting for Australian conditions. Established best-practice emission intensities are being included in the *National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015* for production activities addressed under the Safeguard Mechanism.

Box 6. Emerging requirement for sustainable construction within the public sector
NSW public authorities will also be required to consider the Protection of the Environment Policy (PEP) for sustainable construction for all new public infrastructure projects. This PEP, now in preparation, will promote low-carbon design and construction, and greater use of remanufactured waste in NSW public infrastructure projects. When this policy comes into effect, public authorities will be required to consider its provisions for all new public infrastructure proposals, including state significant infrastructure.

4.3.2. Assessing the feasibility and effectiveness of mitigation measures

In selecting mitigation measures you must consider mitigation hierarchy requirements and best-practice considerations (Section 4.3.1) and project emission goals (Section 4.5), as well as technical, logistical and financial factors.

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 project 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 also address the cost of emissions in the mitigation assessment (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 at some time during the project 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 may 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?
- 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 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 best practice?
- Is there independent or peer-reviewed evidence of the effectiveness of measures?
- How will the effectiveness of measures 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 targeted abatement?

The assessment must indicate the relative contributions of mitigation measures to achieving the mitigation objectives and targeted emission reductions 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 and contingency actions that are to be implemented to achieve the level of performance claimed
- describe uncertainties in the timing and feasibility of emerging technologies being relied upon to support progress towards emissions reduction goals.

4.3.3. Accounting for the cost of emissions

The overall mitigation assessment must also address the cost of emissions. 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 (CDP, 2021). Such companies use internal carbon pricing 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 the TPG23-08 NSW Government Guide to Cost–Benefit Analysis (NSW Treasury, 2022).

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 3).

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)

  as applicable.
- You must use the latest National Greenhouse Account (NGA) factors and NGER methods for estimating emissions.
- 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* (CER, 2022) has more information on the NGER methods, and **Box 7** gives more information on emission estimation methods.

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

Assessments for projects involving modifications must estimate scope 1 and 2 emissions for the following scenarios:

- a ‘business-as-usual’ scenario addressing sources and projected emissions expected to occur without the project, including any existing or planned emissions reductions
- a ‘modified-business’ scenario addressing sources and emissions associated with existing operations and including the implementation of the proposed project
- a ‘project only’ scenario addressing only the sources and emissions included within the GHG assessment boundary of the project.

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 (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
- total scope 2 emissions
- 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 and best practice emissions intensities where applicable. Where production activities are not available under the Safeguard Mechanism, 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.

The GHG assessment must clearly state the 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.

4.4.2. Quantify scope 3 emissions

Scope 3 emissions by relevant category and in total for all categories must be estimated on an annual basis (per financial year), 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 (World Resources Institute, 2013) (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 11 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.

Box 7. Further information and assistance when quantifying GHG emissions

- National Greenhouse and Energy Reporting (NGER) scheme (CER, 2022)
- NGERs Technical Guidelines 2017–18 (CER, 2017)
- NGERs Measurement Determination (CER, 2023e)
- NGER Reporting Uncertainty Guideline (CER, 2023f)
- National Greenhouse Accounts (NGA) factors (DCCEEW, 2022)
- National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 (Australian Government, 2023)
- Intergovernmental Panel on Climate Change (IPCC) (IPCC, 2023)
- Greenhouse Gas Protocol Standards (World Resources Institute, n.d.)
- ISO 14064–1:2018 (ISO, 2018)

4.5. Step 5: Emission benchmarking and goal setting

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

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

The assessment should include, where relevant:

- any expected baseline determinations, including trade-exposed adjustments to decline rates
- how estimated scope 1 emissions intensity per unit production (see Section 4.4.1) compares to 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
- any sectoral baseline, and how proposed emissions will impact on the sectoral baseline
- expected use of flexible compliance arrangements, including Safeguard Mechanism Credits and borrowing arrangements.

Further information about the Safeguard Mechanism is available on the Clean Energy Regulator's website (CER, 2023g).

The Safeguard Mechanism provides minimum requirements for the highest-emitting facilities, but that does not preclude the need for NSW to properly understand the potential GHG impacts of proposed new or significantly modified developments and ensure all proponents are adequately avoiding, minimising and managing their emissions over all stages of the development.

4.5.2. 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, including, where relevant:

a. how the project's proposed emission goals align with obligations under the Regulation, including the requirement for net zero emissions from 2036
b. how the project's offset obligations under the Regulation will be reduced, as the NSW grid emissions intensity reduces over time.

4.5.3. Comparing project emissions against NSW emission projections

Projected annual and whole life scope 1 emissions for the project must be compared against 'Current Policy' and 'Base case' projections for NSW. In the case of modifications of existing activities, 'project only' scenario emissions should be compared against the State emissions projections.

The NSW Current Policy and Base case projections can be accessed via the NSW Net Zero Emissions Dashboard (NSW Government, 2023) (**Box 8**). Comparisons must be done considering total NSW emissions projections and emissions projections for the relevant IPCC sectors and subsectors. The GHG Assessment should include a comparison table documenting the latest State emissions projections and project emission projections, on an annual and cumulative basis, with values given in tonnes of CO_2-e and expressed in percentages.

Box 8. NSW Net Zero Emissions Dashboard

The NSW Net Zero Emissions Dashboard provides public data on past, future, and local-scale emissions in base case and current policy scenarios. **Figure 5** show past emissions and emissions projections to 2050 for sectors of the economy under current policy.

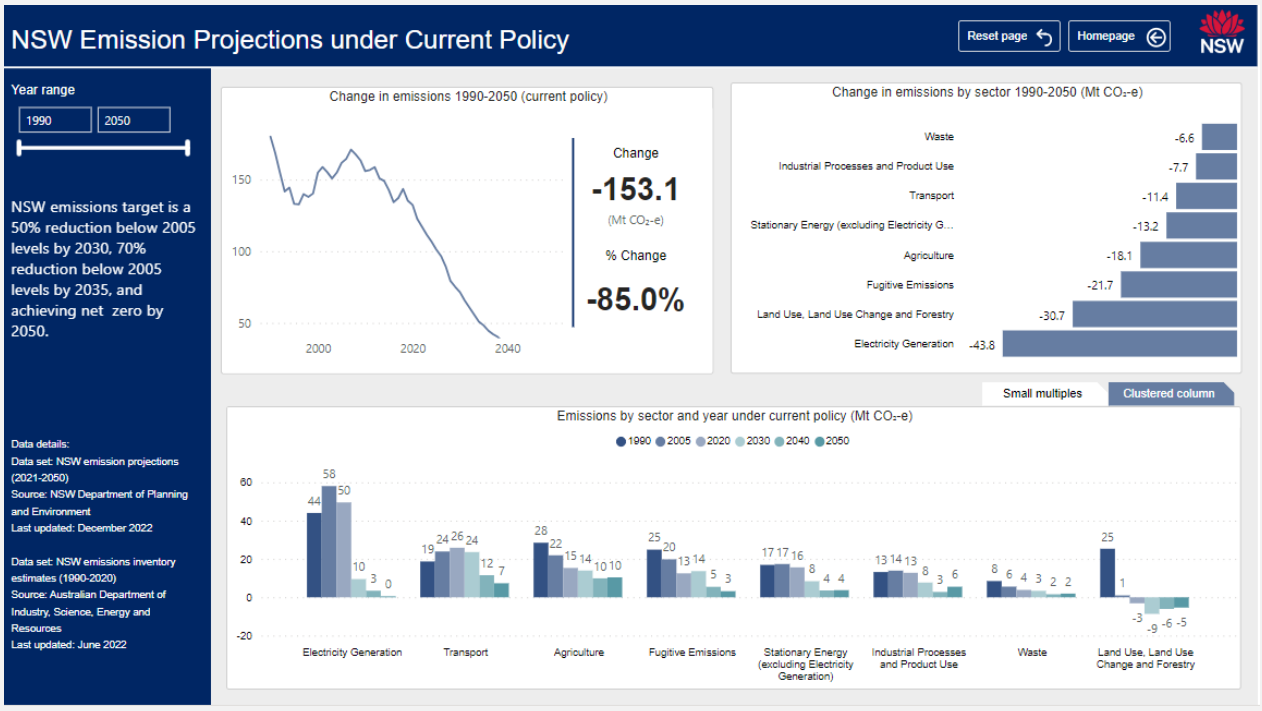

Figure 5 Example extract from NSW Net Zero Emissions Dashboard.

4.5.4. Setting emission goals for the project

As noted in section 3.1, under EPA's Licensing Conditions Policy (currently being drafted by the EPA) licensees are expected to make fair and reasonable contributions to NSW achieving its economy-wide greenhouse gas emission reduction targets (Box 1).

As stated in section 3.2, while completing steps 2–6 and 8, proponents are also expected to:

- address all relevant guiding principles in section 8 of the *Climate Change (Net Zero Future) Act 2023*, and
- document how the principles (where relevant) have been met and if they have not been met, why not.

Under this guidance, proponents are required to set an overarching long-term scope 1 GHG emission goal for the project's residual emissions that represents a meaningful contribution to the emissions reduction objectives of the State. Interim scope 1 emission goals that establish a trajectory to achieving the overarching scope 1 goal, must also be specified for the project. Interim goals are to be specified at 5-yearly or shorter-term intervals. Scope 1 goals must be specified in absolute terms, e.g. tonnes CO_2-e for a given year, with emission intensity goals specified where appropriate.

Proponents are also required to specify goals for scope 2 emissions. Specifying Scope 3 emission goals are encouraged but not required.

'A meaningful contribution' refers to the expectation that the project's scope 1 emissions would reduce at a comparable rate to the relevant industry-sector emissions trajectory, or if this does not exist, to the overall NSW net zero emissions trajectory (**Box 9**). Proponents should compare the average annual percentage change in project emissions to 2030 and 2035 relative to the average annual percentage change in the relevant industry-sector or overall NSW net zero emissions trajectory over these time frames, and note any project-related emissions projected for 2050.

Box 9. Developing GHG emission reduction targets for key licensed industry sectors

While the NSW Government has set overarching emission reduction objectives for the State, it is neither intended nor feasible for all sectors of the NSW economy to reduce their emissions at the same rate. Sector decarbonisation pathways are being investigated under NSW Government initiatives.

Under our Action Plan, we are committed to developing a series of feasible, evidence-based emission reduction targets and related pathways for key industry sectors that we license (or parts of those sectors), that will help contribute to the broader NSW net zero targets (see Action 16). In addition to sector-specific targets, we might also consider targets for an emission source, such as stationary energy (excluding electricity generation), that is relevant to many sectors.

We are committed to developing these sector targets in partnership with relevant Government agencies and in consultation with dedicated industry-sector advisory groups, to ensure they are based on what is reasonable and feasible for the sector.

For updates on this work, please see our Action Plan Implementation webpage.

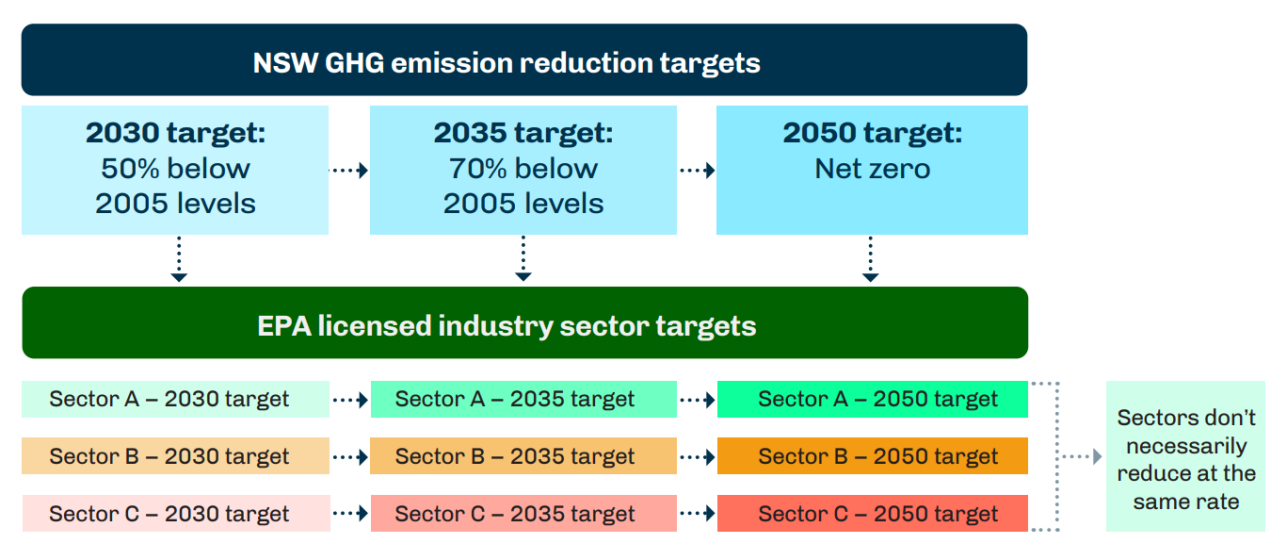

Figure 6 Relationship between overarching NSW emission reduction targets and EPA sector targets

If the project emissions trajectory, accounting for emission goals, does not align with the relevant industry-sector emissions trajectory (or if this does not exist, to the overall NSW net zero emissions trajectory), the proponent must provide a comprehensive explanation as to why the alternative trajectory is appropriate, including if relying on offsets to meet the trajectory goal.

Further advice and guidance on setting emission targets and goals are available as follows:

- Corporate Emissions Reduction Transparency (CERT) guidance (CER, 2023h)
- Science Based Targets Initiative (Science Based Targets, n.d.)
- Climate Council Emissions Reduction Targets (Climate Council, 2021)
- The global GHG Protocol (World Resources Institute, n.d.).

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 offset emissions to achieve specified emission goals (e.g. the proponent's own goals or any NSW Government specified requirements). Carbon offsets must be used only for residual emissions that cannot be avoided or reduced, with the purpose of achieving the specified emission goals.

Domestic offsets under the Safeguard Mechanism, as well as voluntary offsets purchased for residual emissions, may contribute to a proponent's overall commitments in their GHG Mitigation Plan. Offsets do not count towards the threshold criteria for identifying projects with large emissions.

Where carbon offsets are implemented, they must meet offset integrity principles with due regard to the integrity standards and principals set out in the *Commonwealth Carbon Credits (Carbon Farming Initiative) Act 2011* (Australian Government, 2011) and the Climate Active Carbon Neutral Standard for Organisations (Climate Active, 2022).

The EPA requires proponents to prioritise the use of carbon offsets from NSW-based offset projects, with consideration given to whether carbon offsets conserve, preserve, protect, enhance, and manage the NSW environment. If required, offset projects in other Australian locations may be used. International carbon offsets will not be accepted.

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

to a cancellation account the number of eligible offset units required to compensate for remaining emissions to meet emission reduction targets.

4.7. Step 7: Independent expert reviews

For projects with scope 1 and 2 emissions exceeding 100,000 t CO_2-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 to be used by such projects, the independent expert review must consider whether suitable offsets are likely to be available at the time of the proposed acquisition and cancellation of such offsets (see Section 4.6).

Evidence will need to be provided that the review has been conducted by an independent and suitably qualified reviewer.

Guidance to be considered when selecting and engaging independent expert reviewers is set out in Box 10.

Box 10. Guidance for selecting and engaging independent expert reviewers

The proponent must exercise due diligence prior to engaging an independent 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
- does not have actual or perceived conflicts of interest
- has appropriate qualifications and experience to undertake the review having regard to the nature and complexity of the review.

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

The expert review of the offset strategy will require quantifications and experience relevant to offset evaluation and procurement and carbon offset markets.

An independent 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 expert reviewer should be transparent and documented. Evidence to be provided that the review has been conducted by an independent and suitably qualified reviewer may include a current resume, capability statement, declaration of independence or conflict of interest declaration, and certified copies of the expert's relevant qualifications.

4.8. Step 8: GHG Assessment Report and GHG Mitigation Plan

The GHG Assessment Report must be well documented to reflect the information requirements, data, assumptions, methods and findings from steps 1–7. Proponents of projects involving modifications to existing facilities must provide information on:

- current and future GHG emissions from existing operations
- any GHG emissions reduction obligations for existing operations
- any other measures that will be implemented for existing operations to reduce emissions to reduce the net GHG emissions from existing operations including the modification.

The structure and content of the GHG Assessment Report is set out in Appendix C.

This report must be accompanied by a GHG Mitigation Plan developed using the template provided in Appendix D. Further details on the contents of this plan are provided in Section 4.

For projects with scope 1 and 2 emissions exceeding 100,000 tonnes CO_2-e per year at any time over the operational life of the project, the GHG Assessment Report and GHG Mitigation Plan must be accompanied by an independent expert review of:

- best-practice mitigation measure assessment and measures to be adopted, and
- any proposed offsets as to whether they meet requirements and are likely to be available at the time of the proposed acquisition and cancellation of offsets.

Evidence must be provided that the review has been conducted by an independent and suitably qualified reviewer (Box 10).

5. Greenhouse Gas Mitigation Plan

A GHG Mitigation Plan must be prepared using the template provided (Appendix D) reflecting the analysis and findings of the GHG assessment. The GHG Mitigation Plan must address:

- scope 1, scope 2 and scope 3 GHG emission estimates over the life of the project as assessed according to the guidance in Section 3
- emissions goals, demonstrating a commitment to continuous improvement to ensure reductions over the life of the project
- expected obligations for Safeguard facilities under the NGER Act, if applicable
- expected obligations for electricity firming infrastructure under the Electricity Infrastructure Investment Regulation 2021, if applicable
- proposed measures to avoid, reduce, or substitute emissions, demonstrating consideration of best available design, technology, and management measures
- proposed strategies to offset emissions, after applying the mitigation hierarchy to first avoid then reduce emissions as much as possible before offsetting
- proposed monitoring and reporting of emissions performance, to demonstrate progress towards meeting goals
- suitable timetable for review of the GHG Mitigation Plan.

Further information on monitoring, reporting and review to be provided in the GHG Mitigation Plan is provided below.

5.1. Performance monitoring and reporting

Proponents should outline how they will monitor their emissions performance at suitable intervals and annually report against the requirements of their GHG Mitigation Plan. This should include:

- a description of the measures that would be implemented to monitor and periodically report on the GHG emissions performance relative to the project's emissions goals
- details of monitoring and reporting on the implementation and effectiveness of emission mitigation measures and progress being made towards goals
- a description of related GHG reporting obligations, such as under the NGER scheme, and whether any additional information on GHG emissions is proposed to be made publicly available (if so, indicate the format, frequency, and form of such reporting).

5.2. Review of GHG Mitigation Plan

The GHG Mitigation Plan must include a timetable for frequent reviews of the plan that considers the availability of enhanced GHG monitoring and mitigation options, the project's lifespan and the identified interim and overarching goals. Review period frequencies to be specified should not exceed three years.

The proponent should demonstrate a commitment to continuous improvement in emissions abatement, monitoring and reporting.

6. Guide review

This guide is intended to be reviewed in five years. The EPA acknowledges that climate science and policy are developing, and a review may need to be undertaken sooner to ensure that the guide remains up to date.

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 the project addressing, as appropriate, construction (including demolition, land clearing and excavation), operation, decommissioning, closure, and post-closure (including remediation and rehabilitation), as applicable.

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 available techniques (BAT): BAT refers to the most effective and advanced methods, techniques, and processes endorsed by the European Union to minimise environmental impact and enhance sustainability within various industries.

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 exclusing 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 budget: The carbon budget is the estimated amount of carbon dioxide equivalent emissions the world can emit while limiting global temperature rise to 2°C above pre-industrial levels.

Carbon dioxide equivalent (CO_2-e): The standard unit for measuring greenhouse gas emissions. Different greenhouse gases have different global warming potential; CO_2-e brings them all into a single, comparable unit.

Carbon 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 one tonne of CO_2 equivalent. There are various types and qualities of offsets, depending on the methodologies used to create them. Some offsets have additional social or environmental benefits.

Clean Energy Finance Corporation (CEFC): The CEFC is an Australian government-owned financial institution that invests in and supports clean and renewable energy projects to facilitate the transition to a more sustainable energy landscape

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

Climate risk: When a climate-related hazard creates the potential for negative consequences due to the exposure and vulnerability of human or ecological systems. These consequences can include impact on lives, livelihoods, health and wellbeing, economic, sociocultural assets and investments, infrastructure, services (including ecosystem services), ecosystems and species (IPCC, 2021).

Climate Change Mitigation and Adaptation Plans (CCMAPs): Under the NSW Environment Protection Authority EPA *Climate Change Policy and Climate Change Action Plan 2023–26*, EPA

will progressively require licensees to develop Climate Change Mitigation and Adaptation Plans, to demonstrate how they will minimise their GHG emissions and exposure to climate risk.

Commonwealth *Carbon Credits (Carbon Farming Initiative) Act 2011*: The Commonwealth *Carbon Credits (Carbon Farming Initiative) Act 2011* is Australian legislation that established 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 measureable 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_2-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 (EIS): An EIS is a detailed report that evaluates the potential environmental effects of a proposed project or action, aiding in informed decision-making and regulatory approval processes.

***Environment Protection and Biodiversity Conservation Act, 1999* (EPBC Act):** The EPBC Act is an Australian federal law that governs the protection of the environment and conservation of biodiversity. It establishes a framework for assessing and managing the environmental impact of activities such as development, mining, and land use. The EPBC Act aims to conserve and protect the nation's unique and diverse ecosystems, species, and cultural heritage while considering economic and social factors. It plays a crucial role in safeguarding Australia's environment and biodiversity.

Environment protection licence (licence): An environment protection licence is a government-issued permit that allows a business or organisation to operate while meeting specific environmental regulations 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.

Greenhouse Gas Mitigation Plan (GHG Plan): A GHG Mitigation Plan is a document that summarises the emissions estimates, emission goals, expected obligations, proposed measures, offset strategies, monitoring and review for the new development or modification. It follows the template in Appendix D 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 targets, 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.

Kyoto Protocol: An international treaty adopted in 1997 and entered into force in February 2005, establishing the objective of the UNFCC to reduce the onset of global warming by reducing the six greenhouse gases (see below).

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 hierachy: 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 to a development consent: A proposed change or alteration to an existing development consent or planning approval requiring a modification report to be submitted. This can involve adjustments to the design, scope, conditions, or other aspects of an approved development project.

Modification to an existing facility or activity: A proposed change to an existing facility or activity necessitating development consent or planning approval.

National Greenhouse and Energy Reporting (NGER): NGER is Australian regulatory framework that mandates large businesses and facilities to report their greenhouse gas emissions, energy consumption, and production details to monitor and manage environmental impacts.

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.

NSW Net Zero Emissions Dashboard: The NSW Net Zero Emissions Dashboard is an interactive web application the supports spatial mapping and trend analysis of greenhouse gas emissions data. The data and the dashboard will be updated each year with the best available information.

Offset: Carbon offsets are investments or actions that counterbalance greenhouse gas emissions by supporting projects or practices that reduce or capture an equivalent amount of carbon dioxide or other greenhouse gases from the atmosphere.

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.

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

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

Protection of the Environment Policy (PEP): The PEP is a set of rules and guidelines designed to protect and preserve the natural environment by regulating activities that may harm it.

Protection of the Environment Administration Act 1991 **(POEA Act):** The POEA Act 1991 is an Australian legislation that provides a framework for regulating and managing environmental protection and pollution control efforts.

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 goal

Science-based targets (SBTs): Targets are considered ‘science based’ if they are consistent with the level of decarbonisation required to achieve the goals set in the Paris Agreement. SBTs provide a pathway for an organisation to future-proof growth by specifying how much and how quickly they need to reduce their greenhouse gas emissions.

Scopes 1, 2 and 3: The concept of scopes categorises emissions sources for the purposes of carbon accounting and reporting to improve transparency and avoid the double-counting of emissions. Three scopes are defined in carbon accounting:

- **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 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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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

Sector	Subsector
Industrial processes and product use	Chemical industry Metal industry Mineral industry Non-energy products from fuel and solvent use Other product manufacture and use 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 4 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 is listed below (CDP, 2023).

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	Category 1: Purchased goods and services Category 10: Processing of sold products Category 11: Use of sold products
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	**Building developers:** 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 **Construction contractors:** 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

Industry	Relevant scope 3 category
Food and beverages	Category 1: Purchased goods and services Category 9: Downstream transportation and distribution Category 4: Upstream transportation and distribution
Metals and Mining	**Mining:** Category 10: Processing of sold products **Processing Metals:** Category 1: Purchased goods and services
Oil and gas	Category 11: Use of sold products Category 1: Purchased goods and services
Paper and forestry	**Forestry:** 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 **Processors:** Category 1: Purchased goods and services Category 9: Downstream transportation and distribution Category 4: Upstream transportation and distribution
Real estate	**Building developers:** 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 **Building owners:** 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		• Provide a brief description of the project (including the name, proponent, location, project life, project stages etc.).
		• Describe the assessment boundary, emissions sources included and the key emissions sources.
		• Describe the results from the GHG emissions assessment including:
		  ○ scope 1, 2 and 3 emissions estimates in tonnes CO_2-e per year (average annual for both maximum capacity and planned operational throughput)
		  ○ key mitigation measures
		  ○ emission goals.
		• Describe project's Safeguard Mechanism or NGER reporting obligations if applicable.

2. Introduction		• Describe the project and specify whether it is a new development or modification. • Specify the triggers for the project being classified as a large emitter, referencing the decision tree in Section 2.1 of this guide. • Identify the IPCC sectors and subsectors of the project emissions. • Describe the relevant stages of the project and include the period in years for each stage.
3. Legislative and policy context		• Provide an overview of the legislative and policy context as it related to GHG emissions assessment, mitigation and reporting. • This should include the *Climate Change (Net Zero Future) Act 2023, Net Zero Plan Stage 1: 2020–2030, Protection of the Environment Administration Act 1991, Protection of the Environment Operations Act 1997* and other relevant policies.
4. Guiding principles		• Provide an overview about how all relevant guiding principles in section 8 of the *Climate Change (Net Zero Future) Act 2023* have been addressed when undertaking the GHG assessment. This section must document how the principles (where relevant) have been met, and if they have not been met, why not.

4. GHG emissions assessment	4.1 Assessment boundary	• Describe the GHG assessment boundary clearly indicating sources to be included and excluded
	4.2 Emissions scenarios	• Describe the 'project only' scenario for new developments and projects involving modifications, and the 'business-as-usual' and 'modified-business' scenarios for modification projects

	4.3 Emissions sources (and emissions from any existing operations)	• List GHG emissions sources within the project assessment boundary
		• Address the scope 1, 2 and 3 emissions sources (consider using a figure to illustrate the emissions sources within the boundary)
		• Prioritise sources for mitigation, referencing initial emission estimates excluding mitigations to inform prioritisation if required.
		• For projects involving a modification, provide information on scope 1 and 2 emissions from existing operations, including:
		  ○ inventoried emissions by source (see Appendix E)
		  ○ mitigation measures and offset strategies being implemented
		  ○ any obligations under the Safeguard Mechanism
		  ○ current and planned emission goals.

	4.4 Mitigation measures	• Describe the mitigation measures that currently exist and that are planned for inclusion in the project design. • Include reference to the mitigation hierarchy. • Provide an assessment of the feasibility and effectiveness of the mitigation measures (consider qualitative or quantitative approach). • Include a reference to the cost of emissions. • Provide the uncertainties in the effectiveness of GHG mitigation measures and contingency actions to ensure level of performance.
	4.5 Assessment methodology	• Document emission estimation methods applied. • Describe the underlying assumptions and data inputs applied to develop the emissions estimates.

	4.6 Emissions estimate 4.6.1 Scope 1 and scope 2 emissions estimate	• Provide the underlying activity data, emissions factors, emissions intensities (all data that will allow for the replication of the emissions estimates). (See Appendix E.) • 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 E.) • Describe the scope 1 and 2 emissions intensity per unit of production or activity.
	4.6.2 Scope 3 emissions estimate	• Describe the underlying assumptions used to develop the emissions estimates. • Provide the underlying activity data, emissions factors, emissions intensities (all data that will allow for the replication of the emissions estimates. • Describe in tabulated form, scope 3 emissions for each financial year over the project life (see Appendix E).
	4.6.3 Independent expert review outcome	• Describe the outcome from the independent expert review if applicable and attach a copy of the review report as an attachment to the GHG assessment report.
5. Emission benchmarking and goal setting	5.1 Reporting obligations	• Describe the relevant information in relation to safeguard reporting. • Describe project's obligations for electricity firming infrastructure.
	5.1 Goals	• Compare project emissions against NSW emissions projections using data from the NSW Net Zero Emissions Dashboard. • Compare the average annual percentage change in project emissions to 2030 and 2035 relative to the average annual percentage change in the relevant industry-sector or overall NSW net zero emissions trajectory over these time frames, and note any project-related emissions projected for 2050. • Describe scope 1 emissions goals (long term and interim), scope 2 emission goals, and consider scope 3 goals.
	5.2 Emissions trajectory	• Consider developing a graphical figure which shows the project's estimated emissions trajectory taking into account emission goals.

6. Offset strategy	-	• Provide a projection of the quantum of offsets planned to be used for the project (see Appendix E). • Describe the domestic offsets considered for the project in order to meet the project's emission goals. • Describe how the offsets meet the offset integrity principles in the Commonwealth *Carbon Credits (Carbon Farming Initiative) Act 2011*.

7. Conclusion	-	• Describe the results from the GHG emissions assessment including:
		  ○ scope 1, 2 and 3 emissions estimates
		  ○ emissions goals.
		• Describe project's Safeguard Mechanism or NGER reporting obligations if applicable.

References	-	• Include references to all sources described and utilised in the assessment.
Appendices	-	• Activity and emissions data to be attached as an appendix. Emissions are to be provided for all scenarios (see Appendix E). • Projects exceeding 100,000 tonnes CO_2-e per year to attach documentation and findings from the independent expert review including evidence that the review was undertaken by a suitably qualified reviewer.

Appendix D: GHG Mitigation Plan outline

Section	Subsection	Requirements

1. Introduction	-	Provide the following details:
		• Project details:
		  ○ Project name
		  ○ Proponent name
		  ○ Project description (including all stages of project i.e., construction, operation, decommissioning, closure and post-closure such as remediation and rehabilitation) and scope
		  ○ Project life
		• Project context
		  ○ Brief description of NSW's legislative context including consideration of the *Climate Change (Net Zero Future) Act 2023*, Net Zero Plan Stage 1: 2020–2030, the *Protection of the Environment Administration Act 1991*, the *Protection of the Environment Operations Act 1997* and other relevant policies.
		  ○ Overview of anticipated NGER and Safeguard Mechanism requirements
		• Purpose of GHG Mitigation Plan
		• How all relevant guiding principles in section 8 of the *Climate Change (Net Zero Future) Act 2023* have been addressed when preparing this GHG Mitigation Plan. This must document how the principles (where relevant) have been met, and if they have not been met, why not.

Section	Subsection	Requirements
2. GHG emissions estimate	GHG emissions	GHG emissions must be provided for each scenario. Emission estimates are to be provided for the project as designed, accounting for emission mitigation and management measures to be applied. Refer to the template in Appendix E. Provide a concise description of the assessment boundary providing skematic diagrams where necessary to clearly delineate activities and sources included. Provide estimated scope 1 emissions for all project phases for each financial year of the project life and for all relevant greenhouse gas, with emission specified for each emissions source with categorisation based on IPCC sectors and subsectors. Provide estimated scope 2 emissions for all project phases for each financial year of the project life with emission specified for each emissions source with categorisation based on IPCC sectors and subsectors. For scope 1 and scope 2 emission estimates, provide the relevant activity data and abatement effectivness underpinning the annual emission estimates to support the replication of emission estimates. Provide estimated scope 3 emissions by GHG protocol category for categories most likely to be relevant and representative of most scope 3 emissions. For proposed modifications, the projected annual scope 1 and 2 emissions for the modification, including the 'project only' and 'modified business' scenarios, must be compared to a 'business-as-usual' scenario (i.e. without the modification).
	Emissions intensity	Scope 1 emissions intensities must be specified per unit of production or activity for the primary scheduled activity under Schedule 1 of the *Protection of the Environment Operations Act 1997* (POEO Act). Refer to the template in Appendix E. Where relevant, reference must be made to the Safeguard Mechanism: Prescribed production variables and default emissions intensities when estimating emission intensities for the project.
	Comparison with NSW emissions	Provide projected scope 1 emissions of the project to 2050 compared to the base-case and current policy emission projections for NSW for relevant IPCC sectors by year and for the life of the project. Refer to the template in Appendix E.

Section	Subsection	Requirements
3. Safeguard Mechanism obligations (if applicable)	-	For the life of the project, provide information about the project's expected Safeguard Mechanism obligations under the Australian Government's *National Greenhouse and Energy Reporting Act 2007*, including, where relevant: a. any expected individual facility baseline determinations b. how the project's proposed emission goals align with any expected decline rate for the individual facility baseline c. any sectoral baseline d. how the project's proposed emissions will impact on the sectoral baseline 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.
4. Electricity Firming Infrastructure obligations (if applicable)	Electricity firming infrastructure contracted under a Long-Term Energy Service Agreement with the Consumer Trustee	For the life of the project, provide information about the project's expected obligations under Part 12 of the Electricity Infrastructure Investment Regulation 2021, including, where relevant: a. how the project's proposed emission goals align with obligations under the Regulation, including the requirement for net zero emissions from 2036 b. how the project's offset obligations under the Regulation will be reduced, as the NSW grid emissions intensity reduces over time.

Section	Subsection	Requirements
5. Measures to avoid and reduce GHG emissions	GHG avoidance and mitigation measures	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 scope 2 mitigation measures, include the following details from the assessment of mitigation measures: a. whether the planned measures represent the full range of best-practice design, technology and management measures that could be implemented b. the likely effectiveness of these measures, including risk mitigation and performance measures to be implemented, where relevant 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 d. where best practice is not proposed to be adopted, provide a robust, verifiable justification. Specify contingency actions to be implemented in the event that mitigations measures are ineffective or fail, as relevant. For projects with scope 1 and 2 emissions exceeding 100,000 t CO_2-e per year at any time over the operational life of the project, mitigation assessments must be verified by an independent expert review. Evidence is to be provided that the review has been conducted by an independent and suitably credentialled reviewer.
6. GHG emission goals	GHG emissions reduction goals	Provide details of: • the overarching, long-term, scope 1 GHG emission goals for the project • regular interim scope 1 emission goals that establish a trajectory to achieving the overarching scope 1 emission goal, with interim goals to be specified at 5-year or shorter-term intervals • scope 2 emissions goals specified for the project • any scope 3 emission goals to be adopted. Scope 1 emission goals must be specified in absolute terms e.g. tonnes CO_2-e for a given year, with emission intensity goals specified where appropriate. Scope 2 emission goals are to be specified for the project. Scope 3 emission goals are encouraged but not required. Provide an explanation of, and justification for, the proposed long-term and interim goals for the project and how these will make a meaningful contribution to the emissions reduction objectives of the State. A meaningful contribution refers to the expectation that project emissions would reduce at a comparable rate to the NSW net zero emissions trajectory. If the project does not align with the NSW net zero emissions trajectory, provide a comprehensive explanation as to why the alternative trajectory is appropriate.

Section	Subsection	Requirements
7. Strategies to offset emissions	Offset strategies	Provide a description of all strategies proposed to offset the project's scope 1 and scope 2 emissions, including the projected offsets required on an annual CO_2-e basis, and the expected location, provenance, integrity and type or legislated method of any offsets. For projects with scope 1 and 2 emissions exceeding 100,000 tonnes CO_2-e per year at any time over the operational life of the 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 offset units. Evidence is to be provided that the review has been conducted by an independent and suitably credentialled reviewer.
8. Monitoring and reporting and Plan review	Monitoring and reporting	Provide a description of the measures that would be implemented to monitor and periodically report on the GHG emissions performance relative to project's emissions goals. This is to include: • monitoring and reporting on the implementation and effectiveness of GHG emission mitigation measures • monitoring and reporting on the project's scope 1, 2 and 3 emissions and progress being made towards goals. A description of related GHG reporting obligations, such as under the NGER scheme, and whether any additional information on GHG emissions is proposed to be made publicly available, and if so, indicate the format, frequency and form of such reporting.
9. Review of the GHG Mitigation Plan	-	Provide a timetable for review of the project's GHG Mitigation Plan that reflects the project's lifespan and the identified interim and overarching goals.
References	-	• Include references to all sources described and utilised in the assessment
Appendices	-	• Activity and emissions data to be attached as an appendix. Emissions are to be provided for all scenarios (see Appendix E). • Projects exceeding 100,000 tonnes CO_2-e per year to attach documentation and findings from the independent review

Appendix E: Emissions estimate template

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

An example of the format of operational stage emissions is provided below.

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	GHG type	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	GHG type	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_2-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_2-e										
	Emissions intensity	t CO_2-e / t production										
Maximum capacity	Production variable	Mtpa										
	Scope 1 emissions	t CO_2-e										
	Emissions intensity	t CO_2-e / t production										