# EXPLANATORY STATEMENT

## Issued by the Minister for Industry, Energy and Emissions Reduction

*Carbon Credits (Carbon Farming Initiative) Act 2011*

*Carbon Credits (Carbon Farming Initiative—Animal Effluent Management) Methodology Determination Variation 2022*

### Purpose

The *Carbon Credits (Carbon Farming Initiative—Animal Effluent Management) Methodology Determination Variation 2022* (the Variation) amends the *Carbon Credits (Carbon Farming Initiative—Animal Effluent Management) Methodology Determination 2019* (the Determination).

The Determination credits emissions reductions achieved through capturing and combusting methane from treatment facilities used in the management of animal effluent.

The Variation facilitates new activities under the Emissions Reduction Fund (ERF) through projects that generate abatement by capturing and refining waste biogas from animal effluent management facilities to produce biomethane that can be used as a natural gas substitute.

The Variation amends the Determination by including concepts and equations to enable the creation of Australian carbon credit units (ACCUs) from two types of abatement associated with the production of biomethane from biogas, conversion abatement (associated with the destruction or avoidance of waste methane emissions) and displacement abatement (associated with the avoidance of natural gas combustion emissions due to displacement of natural gas by biomethane). The provisions in the Variation that replace existing provisions in the Determination with substantively the same content are a consequence of the drafting approach. The Variation does not seek to replicate the Determination but rather add new and different provisions. Conversion abatement and displacement abatement are discussed in further detail below.

New projects involving biomethane will be able to access a 12-year crediting period for both conversion abatement and displacement abatement. This is longer than the standard 7 years for emissions avoidance projects provided under the Act. The longer crediting period recognises that the high capital and operating costs of biomethane projects and the nascent renewable gas market are barriers to the uptake of biomethane projects in Australia, and that abatement from biomethane over the length of the crediting period will be unlikely to occur in the ordinary course of business.

Existing projects that have already been creating conversion abatement, for example, through flaring of waste methane, that transfer to the varied Determination and commence biomethane production will be able to access a crediting period of 12 years less the time the project has already received credits for conversion abatement. The Variation allows for a project to restart as a new project to access the balance of the 12-year crediting period for displacement

abatement if the project has earned credits for displacement abatement for less than 12 years when the project's original crediting period ends.

By including these new eligible project activities, the Variation expands opportunities for the waste sector to participate in the ERF.

**Legislative provisions**

The Determination was made under subsection 106(1) of the *Carbon Credits (Carbon Farming Initiative) Act 2011* (the Act).

The Variation amends the Determination, and is made under subsection 114(1) of the Act, which empowers the Minister to vary, by legislative instrument, a methodology determination.

**Background to the Emissions Reduction Fund**

The Act enables the crediting of greenhouse gas abatement from emissions reduction activities across the economy. Greenhouse gas abatement is achieved either by reducing or avoiding emissions or by removing carbon from the atmosphere and storing it in soil or vegetation.

In 2014, the Australian Parliament passed the *Carbon Farming Initiative Amendment Act 2014*, which established the ERF. Further information on the ERF is available at: www.industry.gov.au/funding-and-incentives/emissions-reduction-fund or www.cleanenergyregulator.gov.au/ERF.

Emissions reduction activities are undertaken as offsets projects. The process involved in establishing an offsets project is set out in Part 3 of the Act. An offsets project must be covered by, and undertaken in accordance with, a methodology determination.

Subsection 106(1) of the Act empowers the Minister to make by legislative instrument a methodology determination. The purpose of a methodology determination is to establish procedures for estimating abatement (emissions reductions and sequestration) from eligible projects and rules for monitoring, record keeping, and reporting. These methodologies will ensure that emissions reductions are genuine—that they are both real and additional to business as usual.

In deciding to make a methodology determination, the Minister must have regard to the advice of the Emissions Reduction Assurance Committee (ERAC), an independent expert panel which assesses whether methods meet the integrity requirements of the ERF. The Minister must not make or vary a methodology determination if the ERAC considers it inconsistent with the offsets integrity standards, which are set out in section 133 of the Act. The Minister will also consider any adverse environmental, economic, or social impacts likely to arise as a result of projects to which a methodology determination applies.

Offsets projects that are undertaken in accordance with a methodology determination and approved by the Clean Energy Regulator can generate ACCUs. These units represent emissions reductions from the project.

## Background to the Variation

In late 2020, the Minister for Industry, Energy and Emissions Reduction prioritised the development of an ERF method that would enable the crediting of ACCUs from the combustion and use of biomethane produced from waste methane.

Biomethane is a gas with a high methane concentration (95% or above) and is a direct substitute for natural gas. It is produced from biogas that is generated when organic waste decomposes anaerobically – this typically occurs in an anaerobic digester, or in a landfill. The resulting biogas is then captured and refined into biomethane by removal of impurities to leave a high methane concentration gas. Landfills, wastewater treatment facilities and animal effluent treatment plants are examples of waste treatment sites that produce biogas and may be suited to 'upgrading' (refining) that biogas into biomethane.

The intent of the Variation is to credit 2 types of abatement resulting from the production of biomethane: conversion abatement and displacement abatement.

The first type of abatement, called *conversion abatement*, arises when biomethane produced by the project from waste biogas is combusted for energy by an end user. This process converts the methane, a potent greenhouse gas with a global warming potential 28 times greater than carbon dioxide over a 100-year period, to carbon dioxide, reducing net emissions. Conversion abatement has been credited in previous versions of the Determination – projects that earn ACCUs for the destruction of methane in a flare or generator, or aerobic treatment of effluent to avoid methane emissions, are being credited for conversion abatement. The Variation introduces a new project activity, biogas generation for biomethane production, that is also eligible to be credited for generating conversion abatement.

The second type of abatement, called *displacement abatement*, arises from biomethane produced by the project displacing the use of an equivalent quantity of natural gas when it is combusted as a natural gas substitute. Combustion of biomethane releases the carbon absorbed by the biogenic material from the atmosphere during its life, and on this basis is often considered to have net-zero carbon emissions. This is consistent with the approach used by the Intergovernmental Panel on Climate Change (IPCC) in guidelines for national greenhouse gas inventory reporting and accounting for bio-based energy sources. Therefore, combusting biomethane produced by the project creates abatement from the avoided combustion of natural gas and the associated emissions. This abatement is termed displacement abatement in the Variation and is generated by the biomethane production project activity.

## Operation of the Variation

The Variation amends the Determination to incorporate projects that involve the production of biomethane from biogas. Such projects can be credited for both conversion abatement and displacement abatement, or displacement abatement only. The Variation allows for projects that do not involve biomethane production activities to continue to operate under the

Determination in a manner consistent with the Determination prior to the making of the Variation.

The Variation repeals and replaces section 5, introducing new definitions specific to biomethane projects including biogas upgrading, biomethane, conversion abatement, and displacement abatement. In addition to new definitions, the Variation amends several existing definitions to incorporate biomethane projects and improve clarity.

The Variation substantially amends section 7 of the Determination to incorporate biomethane projects by modifying the project activities that constitute an *animal effluent management project*, and introduces 5 project types:

- **Non-biomethane projects** – a new name for projects covered under previous versions of the Determination that involve the capture and combustion of biogas from the management of animal effluent, or avoidance of emissions from animal effluent.

- **Biomethane conversion and displacement projects** – a new project type that covers projects involving production of biomethane from biogas sourced from animal effluent treatment facilities. These projects involve installing equipment, called biogas upgrading systems in the Determination, that upgrade biogas into biomethane. Existing animal effluent management projects that commence biomethane production part-way through their project may change project type to become biomethane conversion and displacement projects

- **Biomethane displacement-only projects** – a new project type that covers projects that install biogas upgrading systems and upgrade biogas into biomethane. Only displacement abatement is credited for these project types. An example of a project that may wish to register as a biomethane displacement-only project is a 'biomethane hub' facility that upgrades biogas from a range of sources but does not directly include the treatment of eligible wastes at an animal effluent treatment facility. Such a facility may not meet the eligibility requirements to be credited for conversion abatement, for example, because animal effluent treated in the project was already treated by anaerobic digestion prior to the project commencing.

- **Restarting biomethane conversion and displacement projects** – this project type covers animal effluent management projects that have never undertaken biomethane production and whose crediting periods have expired. These former projects can re-enter the scheme if they commence biomethane production. The crediting period for a restarting biomethane conversion and displacement project subtracts the length of the previous ERF project's crediting period to ensure abatement credited remains additional and consistent with the offsets integrity standards in section 133 of the Act.

- **Restarting biomethane displacement-only projects** – this project type covers projects that were previously biomethane conversion and displacement projects or restarting biomethane conversion and displacement projects whose crediting periods expired after receiving less than 12 years of crediting for displacement abatement for

producing biomethane. Such projects can re-enter the scheme as restarting biomethane displacement-only projects and earn credits for the balance of the 12-year crediting period for displacement abatement.

To incorporate biomethane projects under the Determination, the Variation repeals and substitutes Part 3 of the Determination, introducing 7 new Divisions relating to requirements for animal effluent management projects. The new Divisions set out the specific requirements for each of the new project types identified in the amended section 7, and the activities that each type of project must or may involve.

The Variation introduces the new section 8A that specifies the 4 project activities that can be carried out by an animal effluent management project:

- **Biogas generation for biomethane** – this activity involves treating organic waste to produce biogas, which is sent to a project biogas upgrading system to be upgraded into biomethane. The methane in biogas produced by this treatment activity is taken to be destroyed when it is sent to be upgraded into biomethane, resulting in conversion abatement.

- **Biomethane production** – this activity involves treating biogas by biogas upgrading to produce biomethane. This biomethane must be sent to an end use where it can reasonably be expected to be combusted in Australia as a natural gas substitute, resulting in displacement abatement.

- **Emissions destruction** – this activity involves treating organic waste to produce biogas, which is sent to a combustion device for destruction, resulting in conversion abatement. This activity does not involve producing biomethane.

- **Emissions avoidance** – this activity involves diversion of volatile solids from an organic waste stream and subsequent aerobic treatment of that material in a way that results in fewer methane and nitrous oxide emissions, resulting in conversion abatement. This activity does not involve producing biomethane.

The Variation introduces new sections 11A and 11B to provide in lieu of newness requirements for restarting biomethane conversion and displacement projects and restarting biomethane displacement-only projects respectively. The in lieu of newness requirements facilitate projects that are eligible to restart as these project types.

The new Division 7 of Part 3 repeals and replaces section 17 to specify the crediting period for non-biomethane animal effluent management projects. The Variation introduces new sections 17A to 17D, which set out the crediting periods for the 4 project types that involve biomethane production.

The Variation repeals and substitutes Part 4 of the Determination to introduce new equations for calculating net abatement for conversion abatement and displacement abatement.

Part 5 of the Determination is amended by the Variation to include additional monitoring and reporting requirements, and parameters for biomethane animal effluent management projects. Section 34 is amended to specify the general information that must be included in offsets reports for the five project types provided for by the Variation. New sections 34A and 34B require additional information to be included in an offsets report for the purposes of a project that involves biomethane. The Variation also amends Division 2 and Division 3, Part 5 for both non-biomethane and biomethane animal effluent projects to clarify the record-keeping and monitoring requirements respectively for all projects under the Determination.

The Supplement to the *Carbon Credits (Carbon Farming Initiative—Animal Effluent Management) Methodology Determination 2019* (the ***Supplement***) has also been updated as a consequence of the changes made to the Determination by the Variation. The Supplement sets out input data and measurement approaches required by the Determination when estimating abatement.

The Supplement will be updated from time to time by the Department in conjunction with the Regulator. Public consultation will be undertaken prior to and inform any decision to recommend an update to the Supplement. Proposed updates to the Supplement will be subject to final consideration and approval by the ERAC, which will assess whether updates comply with the offsets integrity standards. Project proponents must ensure they always use the latest version of the Supplement document, as in force at the end of the offsets reporting period, in accordance with section 6 of the Determination, subsection 106(8) of the Act and subsection 14(2) of the *Legislation Act 2003*, when estimating abatement for the entire reporting period. The Supplement can be accessed on the Clean Energy Regulator's website at www.cleanenergyregulator.gov.au.

**Consultation**

The Variation was developed by the Clean Energy Regulator.

Public consultation was undertaken from 2 November to 30 November 2021, published on the Department's website at www.industry.gov.au.

Eighteen submissions were received. Many submissions sought an extension to the crediting period. The ERAC considered the feedback and agreed that a 12-year crediting period would support additional abatement. Other minor technical amendments were also made.

**Variation details**

Details of the Variation are at Attachment A. Numbered sections and items in this explanatory statement align with the relevant sections and items of the Variation. This is intended to assist the interpretation of the Determination as amended by the Variation.

For the purpose of subsections 114(2), (2A), (7A) and (7B) of the Act, in varying the Determination the Minister has had regard to, and agrees with, the advice of the ERAC that the Variation complies with the offsets integrity standards and that the Variation should be made. The Minister is satisfied that the carbon abatement used in ascertaining the carbon

dioxide equivalent net abatement amount for a project is eligible carbon abatement from the project. The Minister has also had regard to whether any adverse environmental, economic or social impacts are likely to arise from the carrying out of the kind of project to which the Variation applies and other relevant considerations.

A Statement of Compatibility with Human Rights prepared in accordance with the *Human Rights (Parliamentary Scrutiny) Act 2011* is at Attachment B.

**Attachment A**

# Details of the Legislative Instrument

## 1 Name

Section 1 sets out the full name of the Variation, which is the *Carbon Credits (Carbon Farming Initiative—Animal Effluent Management) Methodology Determination Variation 2022*.

## 2 Commencement

Section 2 provides that the Variation commences on the day after it is registered on the Federal Register of Legislation.

## 3 Authority

Section 3 provides that the Variation is made under subsection 114(1) of the Act.

## 4 Amendment of methodology determination

Section 4 provides that the *Carbon Credits (Carbon Farming Initiative—Animal Effluent Management) Methodology Determination 2019* is amended as set out in Schedule 1 of the Variation.

## Schedule 1 Amendments

### *Carbon Credits (Carbon Farming Initiative–Animal Effluent Management) Methodology Determination 2019*

1 Section 5

Item 1 repeals the former section 5 and introduces a new section 5 to allow the undertaking of projects involving biomethane under the Determination. Amendments include changes to existing terms and introducing new terms, particularly biogas upgrading, biomethane, conversion abatement, displacement abatement, and project treatment facility.

The term ***biogas upgrading*** is a non-exclusive list of the processes by which biogas can be refined into biomethane. ***Biomethane*** is upgraded biogas with a high concentration of methane that can be used as a natural gas substitute.

The Variation introduces the term ***biomethane facility*** and amends an existing term ***treatment facility***. A biomethane facility is defined as a facility that undertakes, or intends to undertake, biomethane production, and from which the resulting biomethane is sent to an end use where it can reasonably be expected to be combusted within Australia as a natural gas substitute. The definition of ***treatment facility*** is amended to include a facility that treats animal effluent through biogas generation for biomethane.

Biomethane facilities and treatment facilities that are part of an animal effluent management project are known as ***project biomethane facilities*** and ***project treatment facilities*** respectively. Different ***project activities*** occur at each type of facility. The project activities of ***emissions avoidance***, ***emissions destruction***, and ***biogas generation for biomethane*** take place at project treatment facilities, while ***biomethane production*** occurs at project biomethane facilities. It is possible for a single facility to be both a project treatment facility and a project biomethane facility if it meets the requirements for each.

***Conversion abatement*** is defined as the abatement attributable to the conversion of methane to carbon dioxide by carrying out biogas generation for biomethane, emissions destruction, or emissions avoidance. This type of abatement occurs when waste methane is combusted either in the form of biogas or biomethane.

***Displacement abatement*** is defined as the abatement attributable to biomethane production and occurs when biomethane is produced and displaces the consumption of natural gas. Emissions from biomethane combustion are considered to have net-zero emissions because it is of biogenic origin. By comparison, combustion of natural gas emits 51.5 kilograms of carbon dioxide equivalent ($CO_2$-e) per gigajoule (see the *National Greenhouse Energy Reporting (Measurement) Determination 2008* (NGER (Measurement) Determination)). Displacing natural gas with biomethane therefore results in carbon abatement, termed ‘displacement abatement’.

A project biomethane facility may undertake upgrading of biogas from multiple sources, including biogas imported from outside the project. This allows animal effluent management projects that undertake biomethane production to access a greater range of biogas sources, as

they are not restricted to animal effluent facilities that are part of the project. A facility that supplies biogas to a project biomethane facility for biogas upgrading is defined as a ***biogas source facility***. If a single facility treats waste to produce biogas and also upgrades that biogas into biomethane, that facility may simultaneously be a project treatment facility, a project biomethane facility, and a biogas source facility.

To ensure biogas that is upgraded by the project into biomethane is waste methane that would have been emitted in the absence of the project, Item 1 introduces the concept of ***eligible biogas***, being biogas produced from ***eligible biogas waste*** or ***landfill gas***. ***Eligible biogas waste*** is defined as ***eligible animal effluent biogas waste*** (worked out under section 15A of this Determination, Item 4), or wastes that meet the eligibility criteria of terms under 3 other Emissions Reduction Fund waste methods:

- mixed solid waste within the meaning of the *Carbon Credits (Carbon Farming Initiative—Alternative Waste Treatment) Methodology Determination 2015*
- eligible organic material within the meaning of the *Carbon Credits (Carbon Farming Initiative—Source Separated Organic Waste) Methodology Determination 2016*, and
- domestic or commercial wastewater, or industrial wastewater, within the meaning of the *Carbon Credits (Carbon Farming Initiative—Domestic, Commercial and Industrial Wastewater) Methodology Determination 2015*.

Eligible biogas waste references these definitions because the wastes covered by the ERF methods above are known to be treated in a manner that produces methane under business-as- usual scenarios. Ineligible biogas comes from waste that is not eligible biogas waste. These types of waste may not necessarily produce methane under a business-as-usual scenario. As a result, biomethane produced from biogas sourced from these wastes may be from methane that would not have been produced without the project. For example, crop waste left in the field may decompose aerobically and not emit methane. If these wastes are diverted into an anaerobic digester to produce biogas, additional methane is being produced that would not have occurred in the absence of the project. To ensure a conservative approach is taken when working out a project's net abatement, displacement abatement from ineligible biogas is discounted – see Division 3 of Part 4 of this Determination (Item 5).

Item 1 of the Variation inserts and amends other defined terms to support the inclusion of the new project types, being non-biomethane, biomethane conversion and displacement, biomethane displacement-only, restarting biomethane conversion and displacement, and restarting biomethane displacement-only.

2 After section 5

Item 2 inserts a new section, section 5A, that sets out requirements for monitoring and control systems for flares, biogas upgrading systems, and other devices. Section 5A incorporates aspects of the monitoring and control system definition contained in the previous section 5.

3 Section 7

Item 3 repeals the former section 7 and replaces it with a new section 7 that expands the scope of an animal effluent management project to be a project that involves one or both of:

- treatment of animal effluent, with or without other organic effluent, in a way that avoids methane emissions that would otherwise arise if that material was treated in an anaerobic pond (subsection 7(1)(a)); or

- treatment of eligible biogas produced from organic effluent, with or without biogas produced from other biogas waste, by biogas upgrading to produce biomethane that is sent to an end use where it can reasonably be expected to be combusted within Australia as a natural gas substitute (subsection 7(1)(b)).

Subsection 7(1)(a) covers projects that involve the treatment of organic effluent to avoid methane emissions. This may occur through diversion and aerobic treatment of volatile solids (emissions avoidance), anaerobic treatment of material to produce biogas and subsequent combustion of that biogas (emissions destruction), or anaerobic treatment of material to produce biogas that is refined into biomethane that will be combusted as a natural gas substitute (biogas generation for biomethane) – see Item 4, section 8A.

Subsection 7(1)(b) covers projects that upgrade biogas into biomethane and send the biogas to an end use where it is combusted as a natural gas substitute within Australia – see Item 4, section 8A.

A project that is covered by one or both of subsections 7(1)(a) or (b) is an ***animal effluent management project***.

Subsection 7(3) sets out the 5 project types that an animal effluent management project could be. Requirements for each project type are set out in Item 4, sections 8B to 8F. A project's project type determines the project's crediting period and what project activities it may undertake to generate eligible carbon abatement. A project may change its project type if it meets the requirements of a different project type – see Item 4, Section 8G.

4 Part 3 – Project Requirements

Item 4 repeals Part 3 and replaces it with a new Part 3 that sets out requirements for animal effluent management projects involving biogas generation for biomethane, biomethane production, emissions destruction, and emissions avoidance.

## Part 3 – Project requirements

### Division 1 Operation of this Part

Section 8 Operation of this Part

Section 8 provides that Part 3 of the Determination sets out requirements that must be met for a project to be an eligible offsets project for the purpose of paragraph 106(1)(b) of the Act. Section 8 also states that Part 3 specifies the crediting period for a project under the Determination for the purposes of paragraph 69(3)(b) and subparagraph 70(3)(d)(ii) of the Act.

Section 8 sets out that Part 3 of the Determination has 7 Divisions.

Section 8A Project activities

Section 8A specifies 4 project activities:

- Biogas generation for biomethane involves treating organic effluent to create biogas, for example in an anaerobic digester. That biogas must be captured and sent to a biogas upgrading system at a project biomethane facility.
- Biomethane production involves treating biogas by biogas upgrading to produce biomethane at a project biomethane facility. The resulting biomethane must be sent to an end use where it can reasonably be expected to be combusted within Australia as a natural gas substitute. Only biomethane produced from biogas that is eligible biogas will contribute towards the project's net abatement.
- Emissions destruction involves treating organic effluent to create biogas and destroying that biogas using a combustion device.
- Emissions avoidance involves treating organic effluent by removing volatile solids and treating the volatile solids aerobically in a manner that produces fewer emissions than treatment in an anaerobic pond.

An animal effluent management project must involve one or more project activities.

Biogas generation for biomethane, emissions destruction and emissions avoidance create conversion abatement because of waste methane being destroyed or avoided, while biomethane production creates displacement abatement when produced biomethane replaces natural gas. Item 5, Section 18A specifies how abatement from each activity is to be accounted for depending on the project's project type.

**Division 2 Project-specific requirements**

Section 8B Requirements for non-biomethane projects

Section 8B specifies requirements for the ***non-biomethane*** project type. Non-biomethane projects must involve emissions avoidance, emissions destruction, or both.

The non-biomethane project type covers animal effluent management projects that do not involve biogas generation for biomethane or biomethane production. Projects that would have been covered by the Determination prior to the making of the Variation would be non-biomethane projects.

A non-biomethane project can also undertake biogas generation for biomethane or biomethane production activities, recognising that some projects may wish to commence making biomethane. However, until the project type is changed in accordance with section 8G, net abatement amounts calculated for the project will not include abatement associated with biogas generation for biomethane or biomethane production activities – see Item 4, paragraph 18A(a).

Section 8C Requirements for biomethane conversion and displacement projects

Section 8C specifies requirements for the ***biomethane conversion and displacement project*** type.

Biomethane conversion and displacement projects may undertake any of the 4 project activities and earn conversion abatement and displacement abatement associated with those activities. They must also involve the installation of one or more biogas upgrading systems. If a biomethane conversion and displacement project undertakes biogas generation for biomethane, it must also involve biomethane production – this is to ensure all biogas generated by the project under a biogas generation for biomethane activity is upgraded into biomethane as part of the project and sent for eventual combustion within Australia as a natural gas substitute.

If a biomethane conversion and displacement project stops the biogas generation for biomethane and biomethane production project activities, it continues as a biomethane conversion and displacement project because those activities are not mandated under section 8C. This prevents the project's project type changing if a facility stops producing biomethane for a period of time. However, net abatement will only be calculated for project activities that are undertaken by the project – if a project stops biomethane production, no abatement from biomethane production will be credited.

To avoid doubt, a biomethane conversion and displacement project must not be a restarting biomethane conversion and displacement project.

Section 8D Requirements for biomethane displacement-only projects

Section 8D specifies requirements for the ***biomethane displacement-only*** project type.

Biomethane displacement-only projects must involve biomethane production, generating displacement abatement, and the installation of one or more biogas upgrading systems. Biogas generation for biomethane, emissions destruction and emissions avoidance may be undertaken, but they will not be counted towards the project's net abatement – see Item 5 paragraph 18A(c).

To avoid doubt, a biomethane displacement-only project must not be a restarting biomethane displacement-only project.

Section 8E Requirements for restarting biomethane conversion and displacement projects

Section 8E specifies requirements for the ***restarting biomethane conversion and displacement project*** type. Restarting biomethane conversion and displacement projects must occur at a treatment facility that was part of a ***forerunner project***. The forerunner project must:

- have been registered under the Determination or a legacy determination
- not have involved biogas generation for biomethane or biomethane production

- have had its last or only crediting period end.

The restarting biomethane conversion and displacement project must also involve the installation of one or more biogas upgrading systems and undertake biomethane production if it undertakes biogas generation for biomethane.

Restarting biomethane conversion and displacement projects may undertake all 4 project activities. However, only conversion abatement generated by biogas generation for biomethane, and displacement abatement generated by biomethane production project activities will contribute towards the project's net abatement – see Item 5, paragraph 18A(d).

The restarting biomethane conversion and displacement project type intends to allow projects that were previously registered under the Determination or a legacy determination whose crediting periods have expired to re-enter the scheme if they are beginning to produce biomethane, as such projects are unable to utilise the transfer provisions in section 128 of the Act.

The new section 17C specifies the crediting period for restarting biomethane conversion and displacement projects. A restarting biomethane conversion and displacement project must have a crediting period greater than zero under Item 4, section 17C.

Section 8F Requirements for restarting biomethane displacement-only projects

Section 8F specifies requirements for the ***restarting biomethane displacement-only project*** type. Restarting biomethane displacement-only projects must occur at a treatment facility that was part of a forerunner project. The forerunner project must have:

- been registered under the Determination,
- involved biomethane production, and
- had its last or only crediting period end.

Restarting biomethane displacement-only projects may undertake all 4 project activities, but only displacement abatement generated by biomethane production project activities will contribute towards the project's net abatement – see Item 5, paragraph 18A(e).

The restarting biomethane displacement-only project type intends to allow projects that have previously undertaken biomethane production but have not received a full 12 years of crediting for displacement abatement to re-enter the scheme and earn ACCUs until the project has received a full 12 years of displacement abatement crediting.

The new section 17D, Item 4, specifies the crediting period for restarting biomethane displacement-only projects. A restarting biomethane displacement-only project must have a crediting period greater than zero under section 17D, Item 4.

Section 8G Changing project types

Section 8G specifies an animal effluent management project that is one of the types listed in new subsection 7(3), Item 3, may change to a different project type if it satisfies the requirements for that project type. Project proponents must detail that the project has changed type in the project's next offsets report and provide evidence that the project meets all the requirements of the new project type.

**Division 3 Information required to be included in section 22 and 128 applications**

The new Division 3 of Part 3 sets out the information that must be included in section 22 and section 128 applications under the Determination.

Section 9 Applications about non-biomethane projects

Section 9 specifies details that are required for a section 22 or section 128 application for a project that intends to be declared as a non-biomethane project.

Subparagraph 9(2)(c)(v) requires the project proponent to describe how they expect that the use of project treatment facilities during the crediting period will comply with the requirements under the Determination.

Subparagraph 9(2)(c)(vi) requires emissions avoidance projects to describe the proposed solid separation devices to be used and the post-diversion treatments to be applied. This will allow the Clean Energy Regulator (the Regulator) to assess whether such approaches are likely to comply with subsection 8A(5).

A note to this section clarifies that it is possible to add further project facilities after the project has commenced. Any project facilities added after the commencement of the project must meet the eligibility requirements set out in the new Part 3 of the Variation and must comply with the provisions in Part 5 of the Determination as amended by the Variation. Abatement generated from project facilities added after the commencement of the project will only be credited from the date on which the facility was declared as having been added to the project.

Section 9A Applications about other projects

Section 9A specifies details that are required for:

- a section 22 or section 128 application for a project that intends to be declared as a biomethane conversion and displacement project or a biomethane displacement-only project, or
- a section 22 application for a project that intends to be declared as a restarting biomethane conversion and displacement project or a restarting biomethane displacement-only project.

Paragraph 9A(2)(c) requires applications relating to biomethane conversion and displacement projects or restarting biomethane conversion and displacement projects to provide details about project treatment facilities that will be used in the project. This requirement does not apply to biomethane displacement-only projects and restarting biomethane displacement-only projects because those project types do not involve treatment facilities.

Subparagraphs 9A(2)(c)(v) and 9A(2)(c)(vi) are equivalent to subparagraphs 9(2)(c)(v) and 9(2)(c)(vi), whose operations are described above.

Subparagraph 9A(2)(d)(v) requires that the intended recipients of biomethane produced by project biomethane facilities be specified. This will allow the Regulator to assess whether the project is likely to comply with paragraph 8A(3)(b).

Paragraph 9A(2)(f) requires that the project proponent provide a declaration that biomethane produced by the project can reasonably be expected to be combusted within Australia. This provides further assurance that the project is likely to comply with paragraph 8A(3)(b).

Two notes to this section clarify that it is possible to add project treatment facilities and project biomethane facilities after the commencement of the project. Any project facilities added after the commencement of the project must meet the eligibility requirements set out in the new Part 3 of the Variation and must comply with the provisions in Part 5 of the Determination as amended by the Variation.

Abatement generated from project facilities added after the commencement of the project will only be credited from the date on which the facility was declared as having been added to the project.

## Division 4 Project treatment facilities

Division 4 of Part 3 sets out requirements for project treatment facilities based on the project activities undertaken by each respective project treatment facility.

### Section 9B Project treatment facilities–biogas generation for biomethane

Section 9B specifies requirements for project treatment facilities that undertake biogas generation for biomethane. These facilities must use anaerobic digesters to treat organic effluent to produce biogas and send that biogas to biogas upgrading systems that are part of a project biomethane facility. Biogas produced by project treatment facilities cannot be sent for biogas upgrading at a biomethane facility that is not part of the project.

### Section 9C Project treatment facilities–emissions destruction

Section 9C specifies requirements for project treatment facilities that undertake emissions destruction and materially serves the same function as section 13 of this Determination as in force prior to the making of the Variation. For further explanation of the operation of this provision, see the Explanatory Statement that accompanied the Determination that first included the provision.

Section 9D Project treatment facilities–emissions avoidance

Section 9D specifies requirements for project treatment facilities that undertake emissions avoidance and materially serves the same function as section 14 of this Determination as in force prior to the making of the Variation. For further explanation of the operation of this provision, see the Explanatory Statement that accompanied the Determination that first included the provision.

**Division 5 Newness**

Division 5 of Part 3 specifies newness requirements for projects under the Determination.

Section 10 Project treatment facilities must not be pre-existing

Subsection 10(1A) specifies that section 10 applies to biomethane conversion and displacement projects and non-biomethane projects. Restarting biomethane conversion and displacement projects are covered by separate in lieu of newness requirements.

The remainder of section 10 specify criteria for project treatment facilities not pre-existing prior to the project and materially serves the same function as section 10 of this Determination as in force prior to the making of the Variation. For further explanation of the operation of this provision, see the Explanatory Statement that accompanied the Determination that first included the provision.

Section 11 Requirement in lieu of newness requirement for certain projects–emissions avoidance

Section 11 specifies an in lieu of newness requirement for emissions avoidance project treatment facilities that operate one or more solids separation devices that pre-existed prior to a section 22 application and materially serves the same function as section 11 of this Determination as in force prior to the making of the Variation. For further explanation of the operation of this provision, see the Explanatory Statement that accompanied the Determination that first included the provision.

Section 11A Requirement in lieu of newness requirement – restarting biomethane conversion and displacement project

Section 11A sets out an in lieu of newness requirement for restarting biomethane conversion and displacement projects under subparagraph 27(4A)(a)(ii) of the Act. The in lieu of newness requirement recognises that restarting biomethane conversion and displacement projects occur at facilities that previously carried out an eligible offsets project. However, these projects must still meet the relevant requirements set out in section 8E.

Section 11B Requirement in lieu of newness requirement–restarting displacement-only project

Section 11B sets out an in lieu of newness requirement for restarting biomethane displacement-only projects under subparagraph 27(4A)(a)(ii) of the Act. The in lieu of newness requirement recognises that restarting displacement-only projects occur at facilities

that previously carried out an eligible offsets project. However, these projects must still meet the relevant requirements set out in section 8F.

## Division 6 Eligible and ineligible material

Division 6 of Part 3 specifies the meaning of eligible and ineligible material under the Determination.

### Section 15 Eligible material

Subsection 15(1) defines ***eligible material*** for the purposes of a project. Eligible material is defined as organic effluent that meets the requirements set out under paragraphs 15(1)(a) and 15(1)(b).

Paragraph 15(1)(a) defines how the eligible material must be produced. The eligible material must be produced by either an eligible animal facility (subparagraph 15(1)(a)(i)), as defined by section 5 of the Determination, or a facility that produces materials of one or more listed types as a waste stream (subparagraph 15(1)(a)(ii)). Listed types are defined in, section 5, Item 1 of the Variation as a type of material whose default methane-producing capacity is specified in the Supplement. Schedule 1 of the Supplement contains the listed types for the purposes of section 5, Item 1.

Listed types in Schedule 1 of the Supplement cover eligible material being treated by emissions avoidance, emissions destruction, or biogas generation for biomethane. For emissions avoidance, the methane-producing capacities of these listed types are used to estimate the gross emissions avoided (see section 25 of the Determination as amended by Item 5 of the Variation).

For emissions destruction and biogas generation for biomethane projects, emissions from eligible material destroyed by the project are calculated from the amount of biogas produced or the amount of electricity generated from combustion of methane (see section 24 of the Determination as amended by Item 5 of the Variation). For these activities, materials of listed types are relevant for calculating emissions resulting from the combustion of ineligible material (see section 26 of the Determination as amended by Item 5 of the Variation), which are deducted from the gross abatement. Listed types are a type of material that has a default methane-producing capacity specified in the Supplement.

Paragraph 15(1)(b) defines what the eligible material must consist of.

Subparagraph 15(1)(b)(i) requires that eligible material must consist of animal effluent.

Further, subparagraph 15(1)(b)(ii) provides that eligible material must satisfy three conditions. These conditions are:

- the eligible material must predominantly consist of materials of one or more listed types;

- if the eligible material contains material of another (that is, non-listed) type, then this material must contribute no more than 2% of the methane avoided or combusted by the project treatment facility; and

- the eligible material must not have been diverted from a facility that is part of an eligible offsets project related to the avoidance of methane emissions. The intent of this provision is that effluent management credited for emissions reduction under another ERF project cannot be included in projects under the Determination, thus preventing the abatement being considered twice.

All three defined criteria in subparagraph 15(1)(b)(ii) must be met for the organic material to be defined as eligible material under this section.

Subparagraph 15(1)(c)(i) requires that for projects that are not restarting biomethane conversion and displacement projects, the eligible material would have been produced and treated in an anaerobic pond if the project did not occur. The intent of this provision is to ensure that abatement resulting from undertaking the project activity is additional to that which would have occurred in the absence of the project. As a result, the same type of material, for example, piggery effluent, if treated by an animal effluent management project could be eligible if it was ordinarily going into an anaerobic pond at the site of origin, but ineligible when sourced from an animal facility at another site that already treated the effluent in a digester.

Subparagraph 15(1)(c)(ii) recognises that for restarting biomethane conversion and displacement projects, the forerunner project will likely have been treating organic effluent in a digester already (see section 8E). Considering this, the requirement for such projects is that the project proponent must be able to demonstrate that prior to the declaration of the forerunner project, the organic effluent would have otherwise been treated in an anaerobic pond.

Subsection 15(2) provides, for projects that are not restarting biomethane conversion and displacement projects, additional requirements to demonstrate evidence that the eligible material would have been treated in an anaerobic pond in the absence of the project. This evidence must include one or more of the following:

- evidence that for the 12 months prior to being part of the project, the organic effluent was treated in an anaerobic pond (paragraph 15(2)(a)); or

- if the Supplement specifies a particular effluent type—evidence that the material would have been treated in an anaerobic pond consistent with the requirements of the Supplement, and that satisfies the Regulator (paragraph 15(2)(b)).

Subsection 15(3) requires restarting biomethane conversion and displacement projects to provide additional evidentiary requirements that eligible material would have been treated in an anaerobic pond in the absence of the forerunner project, analogous to the operation of

subsection 15(2) for projects that are not restarting biomethane conversion and displacement projects.

Subsection 15(4) provides that for the purposes of paragraph 15(3)(b), references in the Supplement to 'the project' are to instead be read as references to 'the forerunner project' of the restarting biomethane conversion and displacement project. Subsections 15(3) and 15(4) allow the evidentiary requirements set out in subsection 15(2) to be applied to the forerunner project of restarting biomethane conversion and displacement projects.

Three notes provide further information regarding the provisions in section 15.

Note 1 confirms that ineligible material can be processed in emissions destruction or biogas generation for biomethane project facilities. The methane-producing capacity of the ineligible material are subtracted from the gross abatement determined from undertaking the activity using equation 2 in section 22 of the Determination as amended by Item 5 of the Variation. Excluding methane destruction from ineligible material from the net abatement amount means that credits are only received for the methane destroyed from eligible material.

In practice, it is expected that ineligible material will be included in project facilities only in small quantities, and where the cost or inconvenience of separating it from the eligible material would outweigh the likely loss of abatement credits.

Note 2 confirms that the material in a waste stream from a project source is only eligible if it is produced by the normal operation of the eligible animal facility as defined by section 5 of the Determination. Therefore, this eligible material would only include incidental amounts of ineligible material such as feed waste.

Note 3 further clarifies the evidence required to satisfy the Regulator that material that would have been treated in an anaerobic pond in the absence of the project may differ between new project facilities and treatment facilities that are changing their approach to treating effluent as a result of undertaking the project. For instance, where a pond does not exist evidence is likely to be required that a pond would be built should the project not go ahead. This is dealt with in the Supplement.

Section 15A  Eligible animal effluent biogas waste

Item 4 inserts a new section 15A that specifies the meaning of ***eligible animal effluent biogas waste***.

Displacement abatement from biomethane production credited under the Determination is only calculated for biomethane produced from ***eligible biogas***. Eligible biogas is a new definition inserted by the Variation and means biogas produced from eligible biogas waste or landfill gas. Section 5, Item 1 of the Variation includes a definition of ***eligible biogas waste*** which is biogas waste that is eligible animal effluent biogas waste within the meaning of new section 15A or eligible wastes under the *Carbon Credits (Carbon Farming Initiative – Alternative Waste Treatment) Methodology Determination 2015, Carbon Credits (Carbon Farming Initiative – Source Separated Organic Waste) Methodology Determination 2016*,

and *Carbon Credits (Carbon Farming Initiative – Domestic, Commercial and Industrial Wastewater) Methodology Determination 2015*.

This ensures that displacement abatement is only credited where the waste sources used to create biomethane would have been likely to emit methane in the absence of the project. Biomethane can also be created from ineligible biogas but that biomethane will not be eligible to earn ACCUs under the net abatement calculations in Part 4 of the Determination.

Section 15A sets out requirements for eligible animal effluent biogas waste separate to the requirements for eligible material in section 15 because eligible material considers the treatment of organic effluent in the absence of an animal effluent management project. It is possible that biogas from animal effluent will be treated by biomethane production under another ERF method, for example, under the *Carbon Credits (Carbon Farming Initiative—Domestic, Commercial and Industrial Wastewater) Methodology Determination 2015*, under a 'hub and spoke' processing model. The concept of eligible animal effluent biogas waste is designed to provide clarity on eligible and ineligible biogas.

Paragraphs 15A(a) and 15A(b) follow the operation of paragraphs 15(1)(a) and 15(1)(b) in listing requirements for organic effluent to be considered eligible animal effluent biogas waste.

Paragraph 15A(c) requires that this organic effluent must be reasonably expected to be treated in an anerobic pond if it was not treated instead by anaerobic digestion. This provides assurance that organic effluent turned into biomethane and credited displacement abatement would likely have been methane-emitting in the absence of the biomethane production activity.

Project proponents will need to provide details of the sources of biogas waste used in a project involving biomethane production and justify how eligible biogas waste is eligible. Division 1 of Part 5, Item 6, sets out how to provide those details.

Evidence that organic material meets the criteria for eligible animal effluent biogas waste may include: details of the waste source; records of historical treatment of the organic effluent; and signed statements and documentation from the relevant biogas waste source facility that verifies that the organic effluent meets the criteria set out in section 15A.

Section 16 Restrictions on treatment of ineligible material

Section 16 places restrictions on the use of ineligible material and materially serves the same function as section 16 of this Determination as in force prior to the making of the Variation. For further explanation of the operation of this provision, see the Explanatory Statement that accompanied the Determination that first included the provision.

**Division 7 Crediting period**

Division 7 of Part 3 specifies the crediting period for projects under the Determination for the purposes of paragraph 69(3)(b) and subparagraph 70(3)(d)(ii) of the Act.

Section 17 Crediting period for non-biomethane projects

Section 17 specifies the crediting period for non-biomethane projects. Non-biomethane projects receive a 12-year crediting period. The crediting period for a non-biomethane project ends after 7 years of electricity generation, that is, at the start of the 85th calendar month in which electricity generation takes place. Any projects operating under the previous versions of the Determination – all of which would be categorised as non-biomethane projects – will receive an identical crediting period under the varied Determination.

Subsection 17(3) clarifies that if any electricity is generated during 3 or more days in a calendar month, that month is treated as a month of electricity generation. This means that short outages or maintenance will not extend the crediting period, but that one or two days of testing will not count as generation. It also simplifies the assessment of when the 7 years of generation has been completed.

Paragraph 17(3)(b) makes clear that the calendar months of generation do not need to be consecutive.

Paragraph 17(3)(c) introduces a presumption of generation after it has commenced where there is no evidence to the contrary. It is expected that calendar months without generation would be evidenced by maintenance records or electricity metering data. The consideration of this evidence would be undertaken at the end of each reporting period as part of the offsets reporting requirement under paragraph 34(d).

For projects transitioning into the method, the calculation of the months of generation includes the calendar months that were part of the project's crediting period or periods on earlier methods. For instance, if a project had a first crediting period from 1 July 2010 to 13 December 2014 and a second crediting period from 14 December 2014, all of the calendar months since 1 July 2010 with 3 days or more of generation would count towards the 84 months.

If the project already has 84 months of generation before it transfers or exceeds 84 months before the end of its standard 7-year crediting period (due 14 December 2021), then subsection 17(1) would not apply and the 7-year crediting period in the Act would remain.

However, if by 14 December 2021 it only had a total of 80 cumulative months of generation, its crediting period would continue. If the project never generated again it would have a 12-year crediting period (ending 14 December 2026). If it continued to generate every month in 2022, the crediting period would end on 1 May 2022 as that would be the start of the 85th cumulative month of generation.

Section 17A Crediting period for biomethane conversion and displacement projects

Section 17A sets out the crediting period for biomethane conversion and displacement projects.

Subsection 17A(1) specifies that the crediting period for biomethane conversion and displacement projects that do not use biogas to generate electricity, or do not do so for a period of more than 84 months, receive a 12-year crediting period.

Subsection 17A(2) provides that the crediting period for a biomethane conversion and displacement project will end at the start of the 85$^{th}$ calendar month in which electricity generation takes place, making it consistent with non-biomethane projects.

Subsection 17A(3) replicates the effect of subsection 17(3) for non-biomethane projects and specifies that electricity generation is taken to occur in a calendar month if it occurs for 3 or more days, the total calendar months of generation do not need to be consecutive, and electricity generation is presumed to occur after the first month during which electricity is generated, unless evidence is provided to the contrary.

Projects that transition to the Determination as biomethane conversion and displacement projects, or that change project type to the biomethane conversion and displacement project type will have their crediting period under section 17A commence from the project's original start date. The crediting period for transitioning projects does not restart as the result of commencing biomethane activities. This approach reflects the considerations of the ERAC and safeguards the additionality of conversion abatement credited under the Determination, recognising that conversion abatement from the destruction or avoidance of methane emissions is equivalent whether it results from combustion in a flare or from production of biomethane that is ultimately combusted.

However, if a biomethane conversion and displacement project reaches the end of its crediting period and has undertaken biomethane production for less than 12 years, the project may be eligible to re-enter the scheme as a restarting biomethane displacement-only project – see section 17D. This recognises that displacement abatement is not currently credited under the ERF and is unlikely to occur in the ordinary course of business.

Section 17B  Crediting period for biomethane displacement-only projects

Section 17B sets out the crediting period for biomethane displacement-only projects. The crediting period for biomethane displacement-only projects is 12 years.

Section 17C  Crediting period for restarting biomethane conversion and displacement projects

Section 17C sets out the crediting period for restarting biomethane conversion and displacement projects. The crediting period for a restarting biomethane conversion and displacement project is 12-*x* years, where *x* is the length of the last or only crediting period for the project's forerunner project.

The crediting period for restarting biomethane conversion and displacement projects deducts the crediting period of the forerunner project for the same reasons projects that transition to become biomethane conversion and displacement projects do not receive a restarting crediting period under section 17A. It recognises that conversion abatement may be occurring

in the ordinary course of business, such as through flaring of methane in the forerunner project. Providing a new 12-year crediting period risks crediting conversion abatement that would have otherwise occurred, notwithstanding that the means of methane destruction may have changed from flaring to biogas generation for biomethane and biomethane production.

Section 17D Crediting period for restarting biomethane displacement-only projects

Section 17D sets out the crediting period for restarting biomethane displacement-only projects. The crediting period for restarting biomethane displacement-only projects is 12-*x* years, where *x* is the length of time between:

- the start date of the first reporting period in which the project's forerunner project first undertook biogas upgrading to produce biomethane, and
- the end date of the crediting period of the forerunner project.

This allows a project that had received less than 12 years of displacement abatement to re-enter the scheme to claim the remainder of that 12 years of displacement abatement crediting. For example, if a non-biomethane project commenced in January 2024 and transitioned to a biomethane conversion and displacement project – including undertaking biomethane production – in January 2030, that project's crediting period would end in January 2036, 12 years after it originally began (see sections 17 and 17A).

At that point, the project would only have been credited for 6 years of displacement abatement, between 2030 and 2036. The project could then re-enter as a restarting biomethane displacement abatement project with a crediting period of 12 – 9 = 3 years. This allows projects to be credited for the full 12-year displacement abatement crediting period, consistent with biomethane displacement-only projects, without being disadvantaged by having started biomethane production part-way through an existing ERF project.

## Part 4 Net abatement amounts

5 Part 4 – Net abatement amounts

Item 5 repeals Part 4 and replaces it with a new Part 4 that sets out how to determine the net abatement amount for an animal effluent management project involving biogas generation for biomethane, biomethane production, emissions destruction, or emissions avoidance.

### Division 1 Operation of this Part

Section 18 Operation of this Part

Section 18 sets out that this Part operates in accordance with paragraph 106(1)(c) of the Act.

Section 18A What can be included in calculating net abatement

Section 18A specifies that a project may only include abatement associated with particular project activities when working out net abatement for a reporting period. The types of project activity that can contribute to the project's net abatement depends on the project's project

type. For example, non-biomethane projects cannot earn ACCUs for undertaking biomethane production unless they change to a project type that includes abatement from biomethane production – for instance, the biomethane conversion and displacement project type.

Paragraph 18A(a) specifies that the net abatement calculations for non-biomethane projects must only include conversion abatement attributable to emissions avoidance, emissions destruction, or both, worked out in accordance with Division 2 of this Part.

Paragraph 18A(b) specifies that the net abatement calculations for biomethane conversion and displacement projects must include the following:

- Conversion abatement attributable to biogas generation for biomethane, worked out in accordance with Division 2 of this Part.
- If the respective project activities are undertaken, conversion abatement attributable to emissions avoidance, emissions destruction, or both, worked out in accordance with Division 2 of this Part.
- Displacement abatement attributable to biomethane production, worked out in accordance with Division 3 of this Part.

Paragraph 18A(c) specifies that the net abatement calculations for biomethane displacement-only projects must only include displacement abatement attributable to biomethane production, worked out in accordance with Division 3 of this Part.

Paragraph 18A(d) specifies that the net abatement calculations for restarting biomethane conversion and displacement projects must only include conversion abatement attributable to biogas generation for biomethane, worked out in accordance with Division 2 of this Part, and displacement abatement attributable to biomethane production, worked out in accordance with Division 3 of this Part. Unlike biomethane conversion and displacement projects, restarting biomethane conversion and displacement projects cannot include conversion abatement associated with emissions avoidance or emissions destruction project activities.

Similar to paragraph 18A(c), paragraph 18A(e) specifies that the net abatement calculations for restarting biomethane displacement-only projects must only include displacement abatement attributable to biomethane production, worked out in accordance with Division 3 of this Part.

Section 18B Working out net abatement

Section 18B sets out **equation 1A**, used to calculate an animal effluent management project's net abatement amount for a reporting period. Total net abatement is the sum of net abatement attributable to conversion activities, worked out using equation 1 or equation 1B, and net abatement attributable to displacement activities, worked out using equation 14.

**Division 2—Working out conversion abatement**

**Subdivision 1—Overview**

Section 19 Overview of gases accounted for in conversion abatement calculations

Section 19 describes the emissions sources that need to be accounted for to determine the total net abatement amount resulting from project activities that generate conversion abatement.

**Subdivision 2 Method for calculating net conversion abatement amount**

Section 20 Summary

Section 20 provides an overview of how net conversion abatement is worked out. Conversion abatement amounts are worked out for each project treatment facility, based on the quantity of methane emissions destroyed or avoided, and summed to determine gross conversion abatement. From this total, ineligible material emissions, project operating emissions and post-diversion emissions are deducted to derive net abatement.

For biomethane conversion and displacement projects or restarting biomethane conversion and displacement projects that only upgrade biogas sourced from project treatment facilities, an alternative calculation approach is available that works out gross abatement based on the amount of biomethane produced.

Section 21 Net conversion abatement amount

Section 21 sets out how the net conversion abatement amount is to be worked out. Two methods are provided to work out net conversion abatement amounts.

- Method 1 in subsection 21(2) works out the conversion abatement for each project treatment facility, based on the amount of methane destroyed, taken to be destroyed, or avoided by that facility (**equation 1**). Summing across all project treatment facilities returns the project's gross abatement amount, from which project emissions are deducted. Method 1 can be used by all animal effluent management projects.

- Method 2 in subsection 21(5) provides an alternative calculation method that works out conversion abatement based on the output of both project treatment facilities and project biomethane facilities (**equation 1B**). Conversion abatement from emissions avoidance and emissions destruction are worked out for each project treatment facility, as with Method 1. However, in Method 2, conversion abatement arising from biogas generation for biomethane is worked out by determining the quantity of methane sent out by project biomethane facilities. Method 2 is intended to reduce monitoring requirements for projects that produce biomethane, allowing abatement to be worked out directly through measurement of produced biomethane rather than requiring measurement of sent-out biogas on a project treatment facility basis as in Method 1. To ensure that conversion abatement is only being accredited for destruction of methane that is part of the project, paragraph 21(1)(a) specifies that Method 2 can only be used by biomethane conversion and displacement projects or restarting biomethane conversion and displacement projects that only upgrade biogas

sourced from project treatment facilities. No biogas from non-project sources is to be imported to the project for biogas upgrading.

Subsections 21(3), 21(4), 21(6) and 21(7) specify circumstances in which net abatement for a project treatment facility is zeroed for a reporting period. This occurs if the project treatment facility does not comply with the requirements in section 16, Item 4, which places restrictions on treatment of ineligible material, or if the facility sends biogas to a biogas upgrading system but that gas is not upgraded into biomethane that could be reasonably expected to be combusted in Australia as a natural gas substitute. This provision would trigger if, for example, biogas sent from a project treatment facility was vented to atmosphere.

Subsection 21(8) analogously zeroes the net abatement for a project biomethane facility under Method 2 if biomethane produced by that facility could not be reasonably expected to be combusted in Australia as a natural gas substitute.

Section 22 Project treatment facility net abatement amount

Section 22 sets out in **equation *2*** the calculation for determining the net abatement amount, $A_{conversion,\ h}$ in tonnes $CO_2$-e for each project treatment facility.

**Subdivision 3—Gross abatement amount**

Section 23 Gross abatement amount for a project treatment facility

Subsection 23(1) sets out in **equation 3** the gross abatement amount for a project treatment facility. It is the sum of methane avoided from emissions avoidance activities (***MA***) and the methane destroyed, or taken to have been destroyed, from emissions destruction and biogas generation for biomethane activities ($MC_{h,\ i}$). Subject to subsection 23(2), ***i*** is a combustion device of project treatment facility ***h***, or a biogas upgrading system of a project biomethane facility. This quantity of methane is multiplied by **γ**, the factor that converts cubic metres of methane to tonnes $CO_2$-e.

Subsection 23(2) specifies that if the project works out net abatement for the reporting period using Method 2 in section 21, ***i*** for $MC_{h,\ i}$ refers only to combustion devices of project treatment facility ***h*** and does not include biogas upgrading systems. Under Method 2, conversion abatement from biogas upgrading for biomethane is determined by the quantity of methane in biomethane sent out by project biomethane facilities. To avoid double counting of abatement resulting from biogas upgraded into biomethane, methane in biogas sent to biogas upgrading systems must not be counted when working out $GA_{conversion,\ h}$.

Section 24 Methane destroyed by combustion devices or taken to have been destroyed by biogas upgrading systems

Section 24 sets out how the volume of methane from a project treatment facility that is destroyed by a combustion device or taken to be destroyed by a biogas upgrading system for a reporting period, $MC_{h,\ i}$, is calculated. This quantity underpins the gross abatement amount for emission destruction and biogas generation for biomethane project activities.

Subsection 24(1) specifies that $MC_{h,i}$ can be calculated using either Method A or Method B if the combustion device ***i*** is an internal combustion engine used to generate electricity. In all other cases, $MC_{h,i}$ is worked out using Method A.

Subsection 24(2) sets out in **equation 4** how $MC_{h,i}$ is to be worked out under Method A. Equation 4 multiplies the total volume of biogas $Q_{biogas,h,i}$ by 4 factors that reduce the total biogas volume to the volume of methane that is eventually combusted:

- The proportion of biogas that is methane, $W_{BG,CH4}$, isolates the percentage of the biogas that is actually methane worked out in accordance with the Supplement.

- The biomethane production loss factor, $PL_i$, identifies the percentage of gas lost during the biogas upgrading process, worked out in accordance with section 24B. The factor $1\text{-}PL_i$ gives the percentage of gas that is not lost during the biogas upgrading process. The biomethane production loss factor is only relevant for biogas sent to a biogas upgrading system.

- The transport loss factor, $TL_i$, identifies the percentage of gas lost during transport, prior to combustion. For biogas sent to a combustion device, or biogas upgraded into biomethane where the biomethane is used on-site, this factor is assumed to be zero – transport losses are taken to be negligible. For biogas upgraded into biomethane that is combusted off-site, it is conservatively estimated that some gas will be lost during the transport process. A conservative factor of 2% is applied in this circumstance, based on an average of the unaccounted for gas fractions for states and territories in the National Greenhouse Account (NGA) Factors 2021. This value takes a weighted average of the state and territory factors weighted by the proportion each jurisdiction represents of Australia's total gas consumption (based on the Australian Energy Statistics 2020), and accounts for the NGA Factors attributing 55% of unaccounted for gas to leakage. The factor $1\text{-}TL_i$ gives the percentage of gas that is not lost during transport.

- The destruction efficiency, $DE_i$, identifies the percentage of methane that is fully combusted and converted to carbon dioxide, accounting for incomplete combustion. This factor is set out in the Supplement.

Subsections 24(3) and 24(4) define how to calculate the volume of methane destroyed by a combustion device in accordance with Method B. Method B can only be used for a combustion device that is an internal combustion engine used to generate electricity.

**Equation 5** (subsection 24(3)) must be used to calculate the volume of methane destroyed by a combustion device. Equation 5 multiplies the total energy content of the methane destroyed by the combustion device, $QE_i$, by a conversion factor that converts the gigajoules of energy into the volume of methane in cubic metres. This conversion factor is equal to 26.52.

**Equation 6** (subsection 24(4)) estimates the total energy content of the methane destroyed by a combustion device, $QE_i$. This equation multiplies the total amount of electricity produced

by the combustion device, $Q_{EG,i}$, in megawatt hours, by the energy content per megawatt hour, ***EC***, equal to 3.6, and then divides this value by the electrical efficiency of the combustion device, $Eff_i$. Both $Q_{EG,i}$ and $Eff_i$ are determined in accordance with the Supplement.

Section 24A Methane destroyed in biomethane produced by project biomethane facilities

Section 24A sets out in **equation 6A** how the volume of methane sent out from a project biomethane facility, $BC_f$, is worked out. Biomethane produced by a project must be reasonably expected to be combusted within Australia as a natural gas substitute. As such, $BC_f$ represents the volume of methane taken to be destroyed from biogas generation for biomethane activities.

Equation 6A multiplies the total volume of biomethane sent out by a biogas upgrading system that is part of a project biomethane facility ($Q_{BM,k}$), determined in accordance with the monitoring requirements, by the proportion of that biomethane that is methane ($W_{BM,CH4,k}$), worked out in accordance with the Supplement. This is summed over all biogas upgrading systems at the project biomethane facility, resulting in the total volume of methane sent out by that facility during the reporting period.

In equation 6A, the total volume of methane sent out is multiplied by one minus the transport loss factor ($1-TL_{BM,f}$) and destruction efficiency factor ($DE_{BM}$), which respectively serve the same function as $TL_i$ and $DE_i$ in section 24 in accounting for methane that is not ultimately combusted due to loss.

Section 24B Biomethane production loss factor

Subsection 24B(1) sets out that the biomethane production loss factor for a combustion device is zero. This eliminates the biomethane production loss factor when calculating abatement for emissions destruction under section 24. For biogas upgrading systems, the biomethane production loss factor is worked out in accordance with subsection 24B(2).

Subsection 24B(2) specifies that the biomethane production loss factor must be determined or measured, as a fraction, in accordance with the manufacturer of the biogas upgrading system's specifications. Determination of this factor may be used where the manufacturer sets out values representing the proportion of gas lost during the upgrade process when using a particular device. Measurement of this factor must take place in accordance with the technical manual for the system.

Subsection 24B(3) specifies that, for paragraph 24B(2)(a), if the manufacturer's listed specifications for the biomethane production loss factor include a range of values, the highest of those values is to be selected. This ensures estimates and factors are conservative, consistent with the offsets integrity standards.

Section 25 Methane avoided by diversion

Section 25 sets out in **equation 7** the calculation for estimating the volume of methane avoided in a project treatment facility by the diversion of material that includes volatile solids and materially serves the same function as section 25 of this Determination as in force prior to the making of the Variation. For further explanation of the operation of this provision, see the Explanatory Statement that accompanied the Determination that first included the provision.

**Subdivision 4—Ineligible emissions**

Section 26 Ineligible emissions for a project treatment facility

Section 26 sets out in **equation 8** the calculation for estimating the ineligible emissions for a project treatment facility and materially serves the same function as section 26 of this Determination as in force prior to the making of the Variation. For further explanation of the operation of this provision, see the Explanatory Statement that accompanied the Determination that first included the provision.

Section 27 Methane producing capacities of different types of material ($B_{o,\,w}$ and $B_{o,Div,w,n}$)

Section 27 specifies how the methane producing capacities of different materials are to be worked out and materially serves the same function as section 27 of this Determination as in force prior to the making of the Variation. For further explanation of the operation of this provision, see the Explanatory Statement that accompanied the Determination that first included the provision.

**Subdivision 5—Conversion abatement project emissions**

Section 28 Summary

Section 28 provides an overview of how project emissions for conversion abatement are worked out in this Subdivision. Project emissions encompass emissions that would not have resulted in the absence of the project. These include emissions from fuel and electricity used to conduct the project, and, for projects that undertake emissions avoidance, emissions from post-diversion treatment of diverted material. The total project emissions are subtracted from a project's gross abatement for a reporting period.

Section 29 Project emissions: conversion abatement

Subsection 29(1) sets out in **equation 9** how project emissions are worked out for a project treatment facility. They are the sum of emissions from fuel ($\boldsymbol{E_{F,\,conversion}}$), emissions from purchased electricity ($\boldsymbol{E_{PE,\,conversion}}$), and emissions from methane and nitrogen from post-diversion treatment of materials treated by emissions avoidance ($\boldsymbol{E_{Post,\,Methane}}$ and $\boldsymbol{E_{Post,\,Nitrogen}}$ respectively).

Subsection 29(2) specifies that when determining $\boldsymbol{E_{F,\,conversion}}$ and $\boldsymbol{E_{PE,\,conversion}}$, emissions associated with the biomethane production project activity, as worked out under **equation 19** in Division 3 of this Part, should be disregarded. This includes emissions from fuel and

electricity used to operate biogas upgrading systems, and any emissions associated with the transport of biomethane.

A note to this paragraph specifies that this provision exists to ensure double counting of project emissions does not occur. Project emissions for the biomethane production project activity are accounted for under net displacement abatement calculations and worked out under Division 3 of this Part. Specifying that project emissions associated with biomethane production are not to be accounted for under conversion abatement project emissions ensures that the same emissions are not being accounted for twice.

Note that project emissions associated with biomethane production will always be accounted for in a project's net emissions. This is because a project that undertakes biogas generation for biomethane must also undertake biomethane production – see paragraphs 8C(c) and 8E(c), Item 4, that specify requirements for biomethane conversion and displacement projects and restarting biomethane conversion and displacement projects respectively.

Section 30 Emissions from fuel use: conversion abatement

Subsection 30(1) sets out in **equation 10** the calculation for estimating emissions from fuel used at a project treatment facility during the reporting period. Methane, nitrous oxide and carbon dioxide emissions from fuel use are calculated from the quantity of each fuel type used, $\boldsymbol{Q_{F,\,conversion,\,i}}$, the energy content factor for each fuel type, $\boldsymbol{EC_i}$, and the emissions factor for each greenhouse gas type, $\boldsymbol{EF_{ij}}$. Emissions from each fuel type and greenhouse gas are summed to estimate the total emissions from fuel used to undertake the project activity. This equation converts the emissions from each fuel type to gigajoules as a common measure of energy.

Estimates of the amount of fuel used must be determined in accordance with the Supplement.

Default values for the energy content factor for each fuel type and the emissions factor for each greenhouse gas type are provided in the Supplement and must be used in these calculations.

Subsection 30(2) provides that if fuel is used by the project treatment facility in performing a function that was also performed before the implementation of the project, the fuel use that is attributable to the operation of the project treatment facility is only to the extent that the project has caused an increase in fuel use.

Section 31 Emissions from purchased electricity use: conversion abatement

Subsection 31(1) sets out in **equation 11** the calculation for estimating the emissions from purchased electricity that is used to undertake the project activity. Equation 11 multiplies the amount of purchased electricity that is specifically attributable to the operation of the project treatment facility during the reporting period, $\boldsymbol{Q_{PE,\,conversion}}$, with $\boldsymbol{EF_{PE,\,conversion}}$, the emissions factor for electricity obtained from the electricity grid.

The electricity grid from which electricity is sourced may or may not be an electricity grid that is a grid in relation to the NGA Factors document. Paragraph 31(1)(a) states that whenever possible, the project proponent must apply the relevant emissions factor from the NGA Factors document that is in force at the end of the reporting period in accordance with section 6.

Paragraph 31(1)(b) provides for a situation when the electricity used to undertake the project activity is not sourced from a grid in relation to which the NGA Factors document applies. In this circumstance the project proponent must apply a factor that reflects the emissions intensity of the electricity (subparagraph 31(1)(b)(i)). For example, this could be a factor provided by the supplier of the electricity. Subparagraph 31(1)(b)(ii) provides that if this factor is not known, then the factor for off-grid electricity that is provided in the NGA Factor document must be used.

Subsection 31(2) specifies how the emissions factor must be calculated if subparagraph 31(1)(b)(i) applies. In these circumstances, the emissions factor must be worked out using the amount of electricity sent out and be determined using a measurement or estimation approach that is consistent with the *NGER (Measurement) Determination 2008*.

Section 32 Emissions from post-diversion treatment of material diverted in emissions avoidance: conversion abatement

Section 32 sets out the calculation methods for determining both the methane and nitrogen related greenhouse gas emissions from post-diversion treatment of material diverted in an emissions avoidance project treatment facility and materially serves the same function as section 32 of this Determination as in force prior to the making of the Variation. For further explanation of the operation of this provision, see the Explanatory Statement that accompanied the Determination that first included the provision.

## Division 3—Working out displacement abatement

### Subdivision 1—Overview of gases

Section 32A Overview of gases accounted for in displacement abatement calculations

Section 32A describes the emissions sources that need to be accounted for to determine the total net abatement amount resulting from project activities that generate displacement abatement.

### Subdivision 2—Method for calculating net displacement abatement amount

Section 32B Summary

Section 32B provides an overview of how net displacement abatement is worked out.

Displacement abatement amounts are worked out for each project biomethane facility based on:

- the quantity of biomethane produced under the assumption biomethane displaces natural gas on a one-to-one basis, and
- summed to determine gross displacement abatement.

The gross abatement is then multiplied by the proportion of biogas that is ineligible biogas. This ensures that biomethane created from ineligible waste sources do not contribute towards the project's net displacement abatement.

Project operating emissions are deducted from this adjusted total to derive net abatement.

Section 32C Net displacement abatement amount

Subsection 32C(1) sets out in **equation 14** how the net displacement abatement amount attributable to biomethane production ($A_{displacement}$) is to be worked out, based on the sum of the net abatement amounts for project biomethane facilities ($A_{displacement, h}$) that are part of the project.

Subsection 32C(2) specifies that if during the reporting period, biomethane produced by a project biomethane facility cannot be reasonably expected to be combusted within Australia as a natural gas substitute, the net abatement amount for that project biomethane facility is taken to be zero for that reporting period.

Section 32D Project biomethane facility net abatement amount

Section 32D sets out in **equation 15** the calculation for determining the net abatement amount, $A_{displacement, h}$ in tonnes $CO_2$-e for each project treatment facility, being the gross displacement abatement for that facility, $GA_{displacement, h}$, multiplied by the eligible abatement fraction for that facility ($EA_h$), from which the project emissions for the facility, $PE_{displacement, h}$, are subtracted.

Section 32E Certain abatement must not be included in calculating net displacement abatement amount

Subsection 32E(1) specifies that for the purposes of working out $A_{displacement}$, under **equation 14**, the project cannot include abatement from a project biomethane facility that undertakes biomethane production and sends some or all of the biomethane produced to be used as an energy source in a fuel switching emissions reduction activity at an emissions avoidance offsets project within the meaning of the Act.

Subsection 32E(2) specifies that a fuel switching emissions reduction activity means the changing of energy sources in a way that results in eligible carbon abatement. The paragraphs 32E(2)(a) to 32E(2)(d) set out a non-exhaustive list of activities under methods that would constitute a fuel switching emissions reduction activity. Activities that involve changing the energy sources in a way that results in eligible carbon abatement that are not specified in paragraphs 32E(2)(a) to 32E(2)(d) may still constitute a fuel switching emissions reductions activity within the meaning of the Determination.

Displacement abatement credited under the Determination amended by the Variation credits the avoidance of emissions associated with natural gas combustion emissions that are displaced by biomethane produced by the project.

There is the potential for this biomethane to be used under another ERF project for the purposes set out in subsection 32E(2), and for that second project to also receive ACCUs for replacing a high-emissions fuel source for the same biomethane credited under this Determination. This situation would result in a single unit of biomethane earning ACCUs for displacing natural gas or other fuels twice – once under the Determination as displacement abatement, and once under the fuel switching project. To prevent this 'double credit' from occurring, section 32E prevents a project biomethane facility's displacement abatement from contributing to a project's net abatement if some or all of the biomethane it produces is used for a fuel switching purpose in another ERF project.

**Subdivision 3–Gross abatement amount**

Section 32F Summary

Section 32F provides an overview of how net displacement abatement is worked out for a project biomethane facility for a reporting period, being the emissions avoided from the carrying out of biomethane production.

Section 32G Gross abatement amount for a project biomethane facility

Section 32G sets out in **equation 16** the gross abatement amount for a project biomethane facility. It is the total quantity of biomethane sent out by biogas upgrading systems that are part of the project biomethane facility ($\boldsymbol{Q_{BM,\,k}}$) multiplied by both the energy content factor for pipeline natural gas ($\boldsymbol{EC_{NG}}$) and the carbon dioxide combustion emissions factor for pipeline natural gas ($\boldsymbol{EF_{NG,\,CO2}}$). Both factors are based on values in the *NGER (Measurement) Determination 2008*.

Equation 16 operates by assuming a one-to-one displacement of natural gas based on the volume of biomethane produced. The emissions avoided will be the emissions associated with that quantity of natural gas being combusted. These emissions are worked out by multiplying the gas volume $\boldsymbol{Q_{BM,\,k}}$ by the natural gas energy content and emissions factors, as if that volume of gas were pipeline natural gas.

A note to this section clarifies that methane and nitrous oxide emissions are constant regardless of whether biomethane or natural gas is combusted. Combustion of gas will result in small amounts of methane and nitrous oxide greenhouse gas emissions due to incomplete combustion. These emissions occur for both natural gas and biomethane, and hence biomethane production and use does not displace these emissions as they will occur anyway. Therefore, only the natural gas emissions factor for carbon dioxide ($\boldsymbol{EF_{NG,\,CO2}}$) is used when working out displacement abatement.

**Subdivision 4–Eligible abatement fraction**

Section 32H Summary

Section 32H provides an overview of how the eligible abatement fraction is worked out for a project biomethane facility for a reporting period. The eligible abatement fraction is the proportion of gross displacement abatement associated with biomethane produced from eligible biogas, on a project biomethane facility basis, during a reporting period.

It prevents the crediting of displacement abatement for biomethane produced from ineligible biogas. If 30 % of a project biomethane facility's biogas comes from ineligible sources, the eligible abatement fraction for that project biomethane facility will be 70%.

The eligible abatement fraction is worked out as the total quantity of eligible biogas that a project biomethane facility upgrades during a reporting period divided by the total quantity of biogas upgraded by that facility during that reporting period. The quantity of eligible biogas sent from a biogas source facility is worked out either by, if possible, direct measurement of the quantity of eligible biogas sent by that facility for upgrading, and otherwise through estimation based on the method provided in this Subdivision.

Section 32I Eligible abatement fraction for a project biomethane facility

Section 32I sets out in **equation 17** the eligible abatement fraction for a project biomethane facility. It is given by the total volume of eligible biogas sent to the project biomethane facility by a biogas source facility or facilities (where ***g*** is a biogas source facility), divided by the total volume of biogas sent to the project biomethane facility by biogas source facilities ($Q_{BG, El, g}$).

Section 32J Determining the quantity of eligible biogas from a biogas source ($Q_{BG, El, g}$)

Paragraph 32J(1)(a) specifies that the volume of eligible biogas sent to a project biomethane facility from a biogas source facility during a reporting period ($Q_{BG, El, g}$) is to be worked out by, if possible, measurement of $Q_{BG, El, g}$ in accordance with the monitoring requirements. If it is not possible to measure $Q_{BG, El, g}$ in this way, paragraph 32J(1)(b) specifies that $Q_{BG, El, g}$ is to be worked out in accordance with subsection 32J(2) instead.

A note to subsection 32J(1) clarifies that measurement of $Q_{BG, El, g}$ is possible if either all biogas from a biogas source facility is eligible, or if the eligible biogas from that facility is physically separated in a way that permits direct measurement of the volume of eligible biogas. For example, if an animal facility that supplies biogas to a project biomethane facility has two anaerobic digesters – one that treats only eligible biogas waste and the other that treats ineligible biogas waste – it would be possible to measure the volume of eligible biogas by measuring biogas sent from the anaerobic digester that treats the eligible biogas waste. It would not be possible to measure $Q_{BG, El, g}$ if the biogas from a biogas source facility was a mix of eligible and ineligible biogas, such as where the facility only has a single anaerobic digester that treated both eligible and ineligible biogas waste. If this mix occurs, $Q_{BG, El, g}$ must be worked out in accordance with subsection 32J(2) instead.

Subsection 32J(2) sets out in **equation 18** how $\boldsymbol{Q_{BG,\,El,\,g}}$ is to be worked out in accordance with paragraph 32J(1)(b). $\boldsymbol{Q_{BG,\,El,\,g}}$ is given by the proportion of biogas sent by the biogas source facility during a reporting period that is eligible biogas ($\boldsymbol{EB_g}$) multiplied by the volume of biogas sent by the biogas source facility during the reporting period ($\boldsymbol{Q_{BG,\,g}}$).

Subsection 32J(3) specifies how $\boldsymbol{EB_g}$ is to be worked out for a biogas source facility during a reporting period. Paragraph 32J(3)(a) species that $\boldsymbol{EB_g}$ must be determined using one of the following methods:

- the proportion of eligible biogas waste to biogas waste treated to produce biogas at the biogas source facility, by methane-producing capacity of the biogas wastes treated (subparagraph 32J(3)(a)(i)),
- the proportion of eligible biogas waste to biogas waste treated to produce biogas at the biogas source facility, by mass of the biogas wastes treated (subparagraph 32J(3)(a)(ii)), or
- another approach that can reasonably be expected to provide a fraction that accurately reflects the proportion of eligible biogas produced by the biogas source facility (subparagraph 32J(3)(a)(iii)).

Paragraph 32J(3)(b) specifies that the approach used must reasonably be expected to provide an accurate and conservative value for $\boldsymbol{EB_g}$. A conservative value for $\boldsymbol{EB_g}$ must not overestimate the proportion of eligible biogas produced by the biogas source facility.

Paragraph 32J(3)(c) specifies that the approach used to work out $\boldsymbol{EB_g}$ must be based on data and calculations that are auditable and verifiable. This supports the offsets report requirements set out in section 34A, Item 7, which require a clear explanation of how $\boldsymbol{EB_g}$ was determined, supported by data and a signed declaration from the person that estimated $\boldsymbol{EB_g}$ that the value derived is accurate and conservative.

The effect of subsection 32J(3) is that if it is not possible to physically measure the volume of eligible biogas produced by a biogas source facility during a reporting period, it may be estimated using a reasonable approach based on a metric relating to the quantities of eligible and ineligible biogas waste treated. In this situation, the project proponent must:

- have access to data that would allow such an estimate to be formulated, and
- clearly report how the value was derived.

If a project biomethane facility receives biogas from a range of sources, the project proponent must be able to determine the eligibility of biogas for each of those biogas source facilities and provide that information in offsets reports for the project.

Subsection 32J(4) specifies that if it is not possible to work out the volume of eligible biogas sent by a biogas source facility ($\boldsymbol{Q_{BG,\,El,\,g}}$) in accordance with subsection 32J(1), $\boldsymbol{Q_{BG,\,El,\,g}}$ is taken to be zero for the reporting period. This may occur if direct measurement fails and no

data is available to provide an estimate in accordance with subsection 32J(2), or if the approach to work out $Q_{BG, El, g}$ under subsection 32J(2) uses an estimate for $EB_g$ that cannot be reasonably expected to be accurate and conservative.

**Subdivision 5 – Displacement abatement project emissions**

Section 32K Summary

Section 32K provides an overview of how project emissions for displacement abatement are worked out in this Subdivision. Project emissions are worked out for each project biomethane facility that undertakes biomethane production during the reporting period.

Section 32L Project emissions: displacement abatement

Subsection 32L(1) sets out in **equation 19** how project emissions are worked out for a project biomethane facility. They are the sum of emissions from fuel ($E_{F, displacement, h}$) and emissions from purchased electricity ($E_{PE, displacement, h}$) attributable to the operation of the project biomethane facility and transport of biomethane produced by that facility during the reporting period.

Subsection 32L(2) specifies that in working out $E_{F, displacement, h}$ and $E_{PE, displacement, h}$, fuel and purchased electricity used in biogas generation for biomethane, emissions avoidance and emissions destruction activities are to be disregarded, as these emissions are accounted for in a project's net abatement under Division 2 of this Part.

Examples of emissions to be disregarded may include fuel and electricity consumed by anaerobic digesters or waste processing equipment. This provision may be relevant if a facility is both a project treatment facility undertaking biogas generation for biomethane, emissions avoidance or emissions destruction, and a project biomethane facility undertaking biomethane production. In this scenario, fuel and electricity consumption would need to be apportioned based on the project activity that uses that fuel or electricity. Displacement abatement project emissions are anticipated to primarily stem from fuel and electricity used in biogas upgrading systems and any transport of that biomethane to an end-user.

Section 32M Emissions from fuel use: displacement abatement

Subsection 32M(1) sets out in **equation 20** the calculation for estimating emissions from fuel used at a project biomethane facility or from transport of biomethane produced at that facility to an end user. Methane, nitrous oxide and carbon dioxide emissions from fuel use are calculated from the quantity of each fuel type used, $Q_{F, displacement, h, i}$, the energy content factor for each fuel type, $EC_i$, and the emissions factor for each greenhouse gas type, $EF_{ij}$. Emissions from each fuel type and greenhouse gas are summed to estimate the total emissions from fuel used to undertake the project activity. This equation converts the emissions from each fuel type to a common measure of energy being gigajoules.

Estimates of the amount of fuel used must be determined in accordance with the monitoring requirements.

Subsection 32M(2) provides that if fuel is used by either the project biomethane facility or equipment used to transport biomethane from that facility, and that fuel is used for a function that was also performed before the implementation of the project, the fuel use attributable to $Q_{F, displacement, h, i}$ is only to the extent the project causes an increase in fuel use. This means that fuel consumption emissions associated with transporting the biomethane in a pipeline that existed prior to the project, for example, in gas compression equipment, do not need to be accounted for.

However, if equipment is built to process and transport biomethane produced as the result of the project, fuel consumed by that equipment must be included in working out $Q_{F, displacement, h, i}$. If the biomethane is transported by road transport, the fuel consumed by trucks or other vehicles needs to be accounted for under this section unless the project proponent can demonstrate that the transport functions were already occurring in the absence of the project.

Section 32N Emissions from purchased electricity use: displacement abatement

Subsection 32N(1) sets out in **equation 21** the calculation for estimating the emissions from purchased electricity that is used by a project biomethane facility. Equation 21 multiplies the amount of purchased electricity that is specifically attributable to the operation of the project biomethane facility during the reporting period, $Q_{PE, displacement, h}$, with $EF_{PE, displacement, h}$, the emissions factor for electricity obtained from the electricity grid.

Paragraph 32N(1)(a) states that whenever possible, the project proponent must apply the relevant emissions factor from the NGA Factors document that is in force at the end of the reporting period in accordance with section 6.

Paragraph 32N(1)(b) provides for a situation when the electricity used to undertake the project activity is not sourced from a grid in relation to which the NGA Factors document applies. In this circumstance the project proponent must apply a factor that reflects the emissions intensity of the electricity (subparagraph 32N(1)(b)(i)). For example, this could be a factor provided by the supplier of the electricity. Subparagraph 32N(1)(b)(ii) provides that if this factor is not known, then the factor for off-grid electricity that is provided in the NGA Factor document must be used.

Subsection 32N(2) specifies how the emissions factor must be calculated if subparagraph 32N(1)(b)(i) applies. In these circumstances, the emissions factor must be worked out using the amount of electricity sent out and be determined using a measurement or estimation approach that is consistent with the *NGER (Measurement) Determination 2008*.

**Part 5 – Reporting, record-keeping and monitoring requirements**

**Division 1—Offsets report requirements**

6 Section 34

Item 6 repeals section 34 and replaces it with new sections 34, 34A and 34B that set out the information that must be included in offsets reports for projects that undertake certain project activities. Not all requirements set out in these sections will apply to all projects. For

example, biomethane displacement-only projects do not involve project treatment facilities, so provisions relating to project treatment facility information to be reported on will not apply. Similarly, non-biomethane projects will not report information relating to biogas generation for biomethane or biomethane production.

Section 34 General information that must be included in offsets report

Section 34 lists the information items that must be provided to the Regulator with each offsets report.

Paragraph 34(a) requires that if the project's project type has changed since its section 22 application, section 128 application, or since the previous offsets report, the offsets report must include information on when the project type changed and how the project meets the requirements of the new project type.

Paragraph 34(b) requires that a list of project activities that were carried out at each project treatment facility and project biomethane facility during the reporting period is to be provided with an offsets report for a reporting period.

Subparagraphs 34(b)(i) and 34(b)(ii) further specify that details of any new activities that commenced since the section 22 application, section 128 application, or previous offsets report, or any activities that have stopped being carried out, must be provided.

Paragraph 34(c) requires that a description of the sources of project emissions must be provided. This encompasses both conversion and displacement project emissions, where applicable.

Paragraph 34(d) requires that if the project is a non-biomethane project or a biomethane conversion and displacement project in which biogas has been used to generate electricity during the crediting period or periods of the project, the total number of calendar months that biogas was used to generate electricity since the start of the project's crediting period must be provided. This information is relevant for ensuring such projects have not exceeded the 84-month limit on electricity generation specified in Division 7 of Part 3, Item 4. A note to this paragraph clarifies that electricity generation is taken to have occurred during a calendar month if it occurred during 3 or more days in that month, months of generation do not need to be consecutive, and after generation commences it is presumed to continue unless evidence is provided to the contrary.

Paragraph 34(e) provides that if biogas generation for biomethane was carried out as part of the project, the offsets report must include evidence that biogas sent to biogas upgrading systems was used to produce biomethane that can reasonably be expected to be combusted within Australia as a natural gas substitute.

A note to this paragraph clarifies that suitable evidence may include invoices or other records of commercial transactions involving biomethane being bought or sold for combustion as a natural gas substitute.

Paragraph 34(f) provides additional reporting requirements for projects that undertake biomethane production.

Subparagraph 34(f)(i) specifies that details on the source of any biogas treated by biomethane production must be provided – this includes the biogas source facility, and information on whether that biogas is eligible biogas.

Subparagraph 34(f)(ii) specifies that details about the biogas upgrading systems used in the project must be supplied.

Subparagraph 34(f)(iii) requires details about the end use, or anticipated end use, of biomethane produced by the project to ensure that it can reasonably be expected to be combusted as a natural gas substitute within Australia.

Subparagraph 34(f)(iv) requires details about the measurement of produced biomethane volumes, including how the gas flow is measured and at which point the measurements are taken, to be supplied.

Subparagraph 34(f)(v) specifies that the project proponent must provide a declaration that all biomethane produced by the project during the reporting period can reasonably be expected to be combusted within Australia as a natural gas substitute.

Paragraph 34(g) requires that if the project involves emissions avoidance, the offset report must provide a description of the post-diversion treatment method, including details regarding the type and specifications of the solids separation device or devices used.

Paragraph 34(h) requires an explanation of whether the quality assurance plan has been complied with.

Paragraph 34(i) provides that if a quality assurance plan prepared under section 37 has not previously been provided to the Regulator, then a copy of this plan must be provided to the Regulator in the offset report.

Paragraphs 34(j) and (k) require that piggeries and dairies include relevant information for the National Inventory Report to reflect the abatement from their activities. For piggeries, this includes the number of animal by class, such as boars, sows, and gilts.

Paragraph 34(l) provides that if ineligible material was included in an emissions destruction project facility during the reporting period, then the offsets report for that reporting period must describe how the provisions in section 16 of this Determination as amended by the Variation are satisfied. This includes volumes of methane attributable to any inconsistent material and other information necessary to ensure compliance with section 16 can be demonstrated.

Section 34A Information about net abatement calculations that must be included in offsets report

Section 34A provides that a project must include details of the net abatement calculations for a reporting period. A non-exhaustive list of information that must be provided to the Regulator with each offsets report is specified in this section.

Paragraph 34A(a) requires the output of each equation used to calculate net abatement for a reporting period to be provided.

Paragraph 34A(b) requires the basis of project treatment facility fuel and electricity calculations to be disclosed, including how fuel and electricity use have been allocated to project treatment facilities. This will not apply to a biomethane displacement-only project that does not include any project treatment facilities.

Paragraph 34A(c) requires that if the project involves biogas generation for biomethane, details about the biomethane production loss factor must be included. This includes how the biomethane production loss factor was worked out in accordance with section 24B, Item 5.

Paragraph 34A(d) specifies that projects that undertake biomethane production must provide information about displacement net abatement calculations made under Division 3 of Part 4 of this Determination (see Item 5). Specific information required in an offsets report for these projects include:

- the volumes and methane concentrations of produced biomethane (subparagraph 34A(d)(i)),
- the volumes and eligible abatement fractions of biogas treated by project biomethane facilities (subparagraph 34A(d)(ii))
- information about displacement abatement project emissions (subparagraph 34A(d)(iii)).

Subparagraph 34A(d)(iv) specifies that if the volume of eligible biogas, $\boldsymbol{Q_{BG,\,El,\,g}}$, is determined in accordance with subsection 32J(2), Item 5 for a reporting period – that is, $\boldsymbol{Q_{BG,\,El,\,g}}$ is estimated and not measured – the offsets report must include details about how this quantity was determined.

Sub-subparagraph 34A(d)(iv)(A) specifies this must include an explanation for how the proportion of biogas that is eligible biogas, $\boldsymbol{EB_g}$, was determined, including what estimation metrics and calculation approaches were used, for example, whether the estimate was based on the methane-producing capacities or masses of eligible and ineligible biogas wastes.

Sub-subparagraph 34A(d)(iv)(B) requires evidence or data used to calculate $\boldsymbol{EB_g}$ to be provided, and sub-subparagraph 34A(d)(iv)(C) requires a signed declaration from the person that estimated $\boldsymbol{EB_g}$ that the factor is accurate and conservative.

Section 34B Details of certain changes to a project must be included in offsets report

Section 34B provides that a project must include details of the following changes that have been made to the project since the section 22 application, section 128 application, or last offsets report provided to the Regulator:

- the addition of a new project treatment facility or changes to existing project treatment facilities – paragraph 34B(a).
- the addition of a new project biomethane facility or changes to an existing project biomethane facility – paragraph 34B(b). In this situation, the intended recipients of biomethane produced by the new or changed project biomethane facility must also be supplied – subparagraph 34B(b)(i). Additionally, the project proponent must provide a signed declaration that biomethane produced by the new or changed project biomethane facility can reasonably be expected to be combusted within Australia as a natural gas substitute – subparagraph 34B(b)(ii).
- new biogas upgrading systems or changes to existing biogas upgrading systems – paragraph 34B(c).
- if a new facility begins providing eligible material to the project, information on that new material source – paragraph 34B(d).
- any other changes to information that was provided in the project's section 22 or section 128 application, as specified in sections 9 to 9A, Item 4 – paragraph 34B(e).

7 Subsection 37(1)

Item 7 amends the current subsection 37(1) to specify references to the project proponent are references to the project proponent for an animal effluent management project.

8 Subsection 37(1)

Item 8 amends the current subsection 37(1) to change references to project facilities to project treatment facilities, and expand the requirements set out for a project's quality assurance plan to also include project biomethane facilities where applicable.

9 Sections 38 and 39

Item 9 repeals sections 38 and 39 and substitutes sections 38, 39, 39A, 39B and 39C that set out record keeping requirements relating to animal effluent management projects. As with the offsets report requirements set out in Item 6, not all requirements set out in these sections will apply to all projects, as some requirements will only apply to projects that undertake particular project activities. For example, sections 38 and 39 are only relevant for projects undertaking biomethane production.

Section 38 Records about biogas sent to a project

Section 38 sets out the record keeping requirements for biogas sent to a project for biogas upgrading, including information relating to volumes (paragraph 38(a), the biogas source

facilities (paragraph 38(c)), and how the eligible abatement fractions for the biogas were determined (paragraph 38(d)).

Section 39 Records about biomethane produced

Section 39 requires that records must be made and kept on the intended end use of biomethane produced by the project.

Section 39A Records about measurement

Section 39A sets out the information about measurement that must be made and kept as a record, including:

- recorded data (paragraphs 39A(a), (c) and (d)),
- information on net abatement calculations (paragraph 39A(b)), and
- auditable evidence relating to fuel and electricity use, electricity generation, ineligible material use, calibration data, use of laboratories for sampling and biogas received and biomethane produced by the project (paragraphs 39A(e) to (m)).

Section 39B Records about devices

Subsection 39B(1) requires that the project proponent must keep records relating to meters and monitoring devices used in the project of a type listed in this subsection.

Subsection 39B(2) specifies the information about those devices that must be recorded, including model and serial number, calibration procedures, and the size of biogas upgrading systems.

Section 39C Records about maintenance and operation of devices

Subsection 39C(1) specifies that the project proponent must keep records relating to maintenance and operation logs of project equipment used in the project, including records of shut-downs, start-ups, failures or adjustments.

Paragraph 39C(1)(c) specifies that records must be kept if monitoring instruments do not meet the accuracy thresholds specified in the monitoring requirements, including records of any corrections or adjustments applied due to insufficiency accuracy.

Paragraph 39C(d) specifies records must be kept that the operation of monitoring devices are in compliance with the monitoring requirements.

Subsection 39C(2) sets out the meaning of project equipment for this section.

10 Section 40

Item 10 repeals the former section 40 and substitutes it with a new section 40 that sets out the operation of Division 3, Part 5, being the specification of monitoring requirements and consequences for failure to monitor the project.

11 Section 41

Item 11 repeals the former section 41 and substitutes it with a new section 41 that sets out the requirement to monitor parameters.

Subsection 41(1) specifies that the project must monitor parameters relating to the calculation of net abatement amounts for an animal effluent management project in accordance with the operation of this section and the Supplement.

Subsection 41(1A) specifies monitoring requirements for 5 parameters for projects that involve biomethane production.

The Determination as amended by the Variation sets out that measurement procedures must be undertaken in accordance with relevant *NGER (Measurement) Determination 2008* specifications for the following 4 monitored parameters, which all relate to the calculation of the project's net displacement abatement:

- the volume of biomethane sent out by biogas upgrading system ***k*** ($Q_{BM, k}$)
- the volume of biogas sent to a project biomethane facility from biogas source facility ***g*** ($Q_{BG, g}$)
- if applicable – the volume of eligible biogas sent to a project biomethane facility from biogas source facility ***g*** ($Q_{BG, El, g}$)
- the quantity of each fuel type used by project biomethane facility ***h*** or by transport of biomethane from project biomethane facility ***h*** to an end use ($Q_{F, displacement, h, i}$).

The monitoring requirements are listed in the table in subsection 41(1A). The first 3 columns are the parameter name, description and units, and is consistent with how the parameter is presented, defined and the units needed for the calculation of net abatement in Part 4, Item 5 of the Variation.

The fourth column is the measurement procedure, which is usually a reference to a division in the *NGER (Measurement) Determination 2008*, and the frequency of monitoring if relevant. If the requirement is continuous then spot measurements do not meet this requirement. For example, if the volume of biomethane sent out by a biogas upgrading system is determined on a continuous basis, it cannot be based on weekly samples and analysis. The fifth column sets how the monitored parameter is to be derived from the measurements.

Subsection 41(2) sets out that any equipment or device used to monitor a parameter is calibrated by an accredited third-party technician at intervals, and using methods, in accordance with the manufacturer's specifications.

Subsection 41(3) specifies accuracy requirements for equipment used to measure biogas and biomethane pressures.

Subsection 41(4) specifies that ***i*** in this section means a fuel type.

12 Section 42

Item 12 repeals the former section 42 and substitutes it with a new section 42 that sets out the how the value of certain parameters may be estimated if not monitored.

Subsection 42(1) specifies that this section applies to a period in which the project proponent does not monitor a parameter specified in subsection 41(1) or subsection 42(1A) in accordance with the monitoring requirements. This period is known as the ***non-monitored period***.

Subsection 42(1A) specifies that in the event of a non-monitored period, the project proponent of the animal effluent management project must determine the value for that parameter by making a conservative estimate having regard to:

- any relevant estimation or measurement approaches or requirements under the *NGER (Measurement) Determination 2008,*
- any relevant historical data for the project,
- any other data for the project that relates to the non-monitored parameter, and
- any other matter the project proponent considers relevant.

Subsection 42(1B) specifies that the project proponent must take efforts to minimise the non-monitored period for a project.

Subsection 42(2) provides that the project proponent must make estimates under this section distinct from any other measured or derived records and must clearly document the approach taken to support audits of the project.

Subsection 42(3) further clarifies that even if these actions being taken to provide a conservative estimate for a parameter that failed to meet its monitoring requirements, the Regulator may still take action under the Act, or regulations or rules made under the Act, regarding the project proponent's failure to monitor a parameter in accordance with the Determination as amended by the Variation.

A note under this provision provides three examples as to when the Regulator may elect to take action.

The first example of when the Regulator may take action, is when the failure constitutes a breach of a civil penalty provision in section 194 of the Act, which deals with project monitoring requirements. In this situation, the Regulator may apply for a civil penalty order in respect of the breach.

The second example of when the Regulator may take action, is when the project proponent provides false or misleading information to the Regulator regarding the failure to meet the monitoring requirements. In this situation, the Regulator may revoke the project's section 27 declaration under regulations or rules made for the purposes of section 38 of the Act.

The third example of when the Regulator may take action, is when the project proponent provides false or misleading information to the Regulator that resulted in the issue of Australian carbon credit units. In this situation, the Regulator may require all or some of those units to be relinquished under section 88 of the Act.

**Attachment B**

## Statement of Compatibility with Human Rights

*Prepared in accordance with Part 3 of the Human Rights (Parliamentary Scrutiny) Act 2011*

***Carbon Credits (Carbon Farming Initiative—Animal Effluent Management) Methodology Determination Variation 2022***

This Legislative Instrument is compatible with the human rights and freedoms recognised or declared in the international instruments listed in section 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011*.

### Overview of the Legislative Instrument

The *Carbon Credits (Carbon Farming Initiative—Animal Effluent Management) Methodology Determination Variation 2022* (the Variation) amends the *Carbon Credits (Carbon Farming Initiative—Animal Effluent Management) Methodology Determination 2019* (the Determination).

The Variation facilitates new activities under the Emissions Reduction Fund through projects that generate abatement by capturing and refining waste biogas generated through wastewater treatment to produce biomethane, a high methane concentration gas that can be used as a natural gas substitute.

The Variation amends the Determination by including concepts and equations to enable the creation of Australian carbon credit units from two types of abatement associated with the production of biomethane from biogas, conversion abatement and displacement abatement.

Project proponents wishing to implement the Determination as varied by the Variation must apply to the Clean Energy Regulator (the Regulator) and meet the eligibility requirements set out under the *Carbon Credits (Carbon Farming Imitative) Act 2011*.

### Human Rights Implications

This Legislative Instrument does not engage any of the applicable rights or freedoms.

### Conclusion

This Legislative Instrument is compatible with human rights as it does not raise any human rights issues.