

## **EXPLANATORY STATEMENT**

### *Carbon Credits (Carbon Farming Initiative) Act 2011*

#### *Carbon Credits (Carbon Farming Initiative) Methodology (Coal Mine Waste Gas) Determination 2014*

### **EXPOSURE DRAFT**

#### **Background: Emissions Reduction Fund**

The *Carbon Credits (Carbon Farming Initiative) Act 2011* (the Act<sup>1</sup>) 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 trees.

In 2014, the Australian Government introduced the *Carbon Farming Initiative Amendment Bill 2014*, which establishes the Emissions Reduction Fund (ERF). The ERF expands on the Carbon Farming Initiative (CFI) by extending the scope of eligible emissions reduction activities and by streamlining existing processes. The ERF has three elements: crediting emissions reductions, purchasing emissions reductions, and safeguarding emissions reductions.

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 avoidance or 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 that will be established to advise the Minister on proposals for methodology determinations. The Minister will also consider any adverse environmental, economic or social impacts likely to arise as a result of projects to which the determination applies.

The *Carbon Farming Initiative Amendment Bill 2014* also provides a process for an Interim ERAC to advise on draft methodology determinations before the Bill is passed by Parliament. In particular, clause 393 of Schedule 1 to the *Carbon Farming Initiative Amendment Bill 2014* enables the advice of the Interim ERAC to be used in the place of advice of the statutory ERAC after the Bill commences. It is intended that consultation on this exposure draft be used to inform the advice of the Interim ERAC under that provision.

The ERAC (or Interim ERAC) must include in its advice to the Minister the Committee's opinion on whether the proposed determination complies with the proposed offsets integrity standards to be set out in section 133 of the Act. The offsets integrity standards require that an eligible project should result in carbon abatement that is unlikely to occur in the ordinary

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<sup>1</sup> All references to 'the Act' in this document refer to the *Carbon Credits (Carbon Farming Initiative) Act 2011*, as if were amended by the *Carbon Farming Initiative Amendment Bill 2014* (as introduced into the Senate on 26 June 2014).

course of events and is eligible carbon abatement under the Act. In summary, the offsets integrity standards also include that:

- amounts are measurable and capable of being verified;
- the methods used are supported by clear and convincing evidence;
- material emissions which are a direct consequence of the project are deducted; and
- estimates, assumptions or projections used in the determination should be conservative.

Offsets projects that are undertaken in accordance with the methodology determination and approved by the Clean Energy Regulator (the Regulator) can generate Australian Carbon Credit Units (ACCUs), representing emissions reductions from the project.

Project proponents can receive funding from the ERF by submitting their projects into a competitive auction run by the Regulator. The Government will enter into contracts with successful proponents, which will guarantee the price and payment for the future delivery of emissions reductions.

Further information on the ERF is available on the Department of the Environment website, [www.environment.gov.au/emissions-reduction-fund](http://www.environment.gov.au/emissions-reduction-fund).

### **Background: Coal mine waste gas**

During coal mining activities, as coal beds are excavated, trapped coal mine waste gas is released from the coal and surrounding geological strata into the atmosphere.

Coal mine waste gas can be drained from behind the worked coalface through strategic drilling whereby the gas is extracted before the area is mined (commonly known as pre mine methane drainage), or it may be mixed with air in the mine to lower the concentration of methane released as coal is mined and then removed from the mine through ventilation (known as ventilation air methane).

Methane is a potent greenhouse gas with a global warming potential 21-25 times the warming effect of carbon dioxide. The destruction (through combustion or oxidation) of the methane component of coal mine waste gas, which chemically converts most of the methane to carbon dioxide, can achieve substantial emissions reductions.

The predominant types of methane capture and destruction technology deployed in Australia include:

- Methane capture and destruction devices, which are used to produce electricity; and
- Flaring devices, which encompass technologies that combust methane for a purpose other than producing energy.

The Exposure Draft *Carbon Credits (Carbon Farming Initiative) Methodology (Coal Mine Waste Gas) Determination* 2014 (the draft Determination<sup>[2]</sup>) provides an incentive to implement new methane destruction activities or expand upon existing activities.

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<sup>[2]</sup> All references to 'the draft Determination' refer to the exposure draft of the *Carbon Credits (Carbon Farming Initiative) Methodology (Coal Mine Waste Gas) Determination* 2014.

## **Application of the draft Determination**

The draft Determination sets out the detailed rules for implementing and monitoring offsets projects that would avoid emissions through the destruction of the methane component of coal mine waste gas. These rules have been designed to reflect the requirements of the proposed offsets integrity standards and ensure that emissions reductions are real and additional to business as usual.

Project proponents wishing to implement projects under the draft Determination, once it is made, must make an application to the Regulator under section 22 of the Act. They must also meet the general eligibility requirements for an offsets project set out in subsection 27(4) of the Act, which includes compliance with the requirements set out in the draft Determination, and the additionality requirements in subsection 27(4A) of the Act. The additionality requirements are:

- the newness requirement
- the regulatory additionality requirement, and
- the government program requirement.

Subsection 27(4A) of the Act provides that a methodology may specify requirements in lieu of any of the above requirements. The draft Determination outlines requirements in lieu of the regulatory additionality requirement in the Act, as outlined in Attachment A.

## **Public Consultation**

The draft Determination has been developed by the Department of the Environment in collaboration with a technical working group of experts from the waste industry and the Regulator. The waste sector technical working group held meetings on 26 November 2013, 27 February 2014 and 21 July 2014. The technical working group has reviewed several draft versions of this methodology prior to release of this draft Determination for public consultation.

The exposure draft of the Determination has been published on the Department's website for public consultation from 3 September 2014 to 1 October 2014. Details for how to make a submission are provided on the Department of the Environment website, [www.environment.gov.au](http://www.environment.gov.au).

## **Draft Determination Details**

The draft Determination will be a legislative instrument within the meaning of the *Legislative Instruments Act 2003*.

The draft Determination will begin on the day after it is registered.

The draft Determination will end when it is either revoked under section 123 of the Act, or on the day before it would otherwise be repealed under the *Legislative Instruments Act 2003*, whichever happens first. Under subsection 50(1) of that Act, a legislative instrument such as the draft Determination is repealed on the first 1 April or 1 October falling on or after the tenth anniversary of registration of the instrument on the Federal Register of Legislative Instruments. For example, if the draft Determination is registered between 1 October 2014 and 1 April 2015, it would expire on 31 March 2025.

Details of the draft Determination are at [Attachment A](#).

## **Note on this explanatory statement**

Numbered sections in this explanatory statement align with the relevant sections of the draft Determination.

Definitions for terms which are highlighted in ***bold italics*** can be found in the draft Determination.

## **Details of the Draft Methodology Determination**

### **Part 1 Preliminary**

#### 1 Name of Determination

Section 1 sets out the full name of the draft Determination, which is the *Carbon Credits (Carbon Farming Initiative) Methodology (Coal Mine Waste Gas) Determination 2014*.

#### 2 Commencement

Section 2 provides that the draft Determination would commence on the day after it is registered.

#### 3 Authority

Section 3 provides that the draft Determination would be made under subsection 106(1) of the Act.

#### 4 Duration

Paragraph 4(a) provides that the draft Determination would begin when it is made by the Minister.

Under subparagraph 122(1)(b)(i) of the Act, a determination remains in force for the period specified in the draft Determination.

Paragraph 4(b) provides that the draft Determination would end on the day before it would otherwise be repealed under subsection 50(1) of the *Legislative Instruments Act 2003*.

Instruments are repealed under that provision on the first 1 April or 1 October following the tenth anniversary of registration on the Federal Register of Legislative Instruments.

Paragraph 4(b) ensures that the draft Determination would expire in accordance with subparagraph 122(1)(b)(i) of the Act.

If the draft Determination expires or is revoked during a crediting period for a project to which the draft Determination applies, the draft Determination would continue to apply to the project during the remainder of the crediting period under subsections 125(2) and 127(2) of the Act. Project proponents may apply to the Regulator during a reporting period to have a different methodology determination apply to their projects from the start of that reporting period (see subsection 128(1) of the Act).

## 5 Definitions

Section 5 defines a number of terms used in the draft Determination. Generally, where terms are not defined in the draft Determination, they have the meaning given by section 5 of the Act.

Under section 23 of the *Acts Interpretation Act 1901*, words in the draft Determination in the singular number include the plural and words in the plural number include the singular.

Key definitions in section 5 include those set out below.

***Coal mine waste gas*** refers to the gas, consisting mainly of methane and carbon dioxide, released during the mining process due to fracturing of coal seams, overburden and underburden strata. This gas is drained or conveyed from a coal mine that is or was covered by a coal mining lease.

***Coal seam methane*** refers to the gas drained from coal seams for the purpose of extracting the methane; the activity is not undertaken at a coal mine covered by a coal mining lease. This differentiation from ***coal mine waste gas*** is important as the draft Determination is only intended to incentivise the capture and destruction of the gas where it is produced as a by-product from the primary activity of extracting coal.

***Destruction device*** refers to flaring devices or electricity production devices that destroy the methane component of coal mine waste gas. The definition of flaring device excludes flaring devices that are directly associated with the operation of an electricity production device. The reason for this is that they are not considered to be a device installed for the primary purpose of destroying methane, rather as an integrated operational device that is utilised when the electricity production device is not operational due to either a planned or unplanned event.

***Recognised capacity*** refers to either the maximum volume of methane capable of being destroyed or the maximum amount of electricity capable of being produced through the destruction of methane by an operating device that is possible within a given measurement time interval, as provided in the manufacturer's specifications for the device.

To be declared an eligible expansion offset project, the proponent is required to assess the ***recognised capacity*** of all existing ***destruction devices***.

***Recognised capacity*** is determined and considered in calculations as a deduction in determining the net abatement amount for all expansion offset projects (as per Part 4 of the draft Determination).

Accounting for ***recognised capacity*** of existing ***destruction devices*** ensures that the methane destruction achieved by the project (through devices installed for the purposes of the project) is likely to be additional to what would occur in the absence of the offsets project.

## 6 Meaning of existing regulatory obligation

Section 6 provides a definition of ***existing regulatory obligation*** for the purpose of informing section 16 which specifies requirements in lieu of the regulatory additionality requirement under sub paragraph 27(4A)(b)(i) of the Act.

## 7      *Meaning of material abatement*

Section 7 provides the meaning of ***material abatement***. This concept is introduced in the draft Determination to allow for coal mine waste gas projects to be declared eligible as a ‘new project’ under section 12 and 14 where the project has a very small recorded amount of abatement from the destruction of the methane component of coal mine waste gas in the past (such as from testing a flare).

The material abatement threshold level for historic abatement is set at 5,000 tonnes of CO<sub>2</sub>-e in a financial year. Proponents will be required to consider historic levels of abatement from the destruction of methane drawn from the same coal mine as will be used by the project. This includes all abatement from destruction of methane from the coal mine, not only that undertaken by existing destruction devices managed by the proponent. The method for calculating historic abatement for the purpose of determining whether the material abatement threshold has been met is outlined in section 33.

Historic abatement of less than 5,000 tonnes CO<sub>2</sub>-e per year is deemed not to be ***material abatement*** for the purposes of the draft Determination; it represents less than two per cent of the average annual abatement achieved by Australian underground coal mines that have undertaken destruction activities.

If the proponent is able to demonstrate that abatement achieved in any previous, or current, financial year is less than 5,000 tonnes CO<sub>2</sub>-e, they would be eligible to participate as a ‘new’ offset project. However, in these circumstances the historic abatement level would be deducted from the net abatement amount, proportionate to the duration of the reporting period. This approach is consistent with the offsets integrity standards outlined in section 133 of the Act.

## 8      *Meaning of integrated monitoring device*

Section 8 provides the meaning of ***integrated monitoring device***.

An ***integrated monitoring device*** would require the concurrent monitoring of the methane volume sent to the destruction device and the operation of the destruction device (e.g. the flame status of a flare).

The draft Determination allows these parameters to be monitored using separate monitoring devices operating concurrently or through a single ***integrated monitoring device*** that is able to measure both parameters concurrently. This provision specifies that an integrated monitoring device must meet or exceed the required monitoring specifications for the two parameters.

## **Part 2 Coal mine waste gas projects**

### **9 Coal mine waste gas projects**

The effect of paragraphs 27(4)(b) and 106(1)(a) of the Act is that a project must be covered by a methodology determination, and that the determination must specify the kind of offsets project to which it applies.

Paragraph 9(1)(a) provides that the draft Determination applies to an offsets project that reduces emissions through the destruction of methane that is sourced from coal mine waste gas at an operating underground coal mine.

The destruction of methane undertaken by eligible projects requires the installation and operation of one or more flaring devices or electricity production devices. In the case of electricity production devices, destruction activity also reduces or avoids electricity consumption from the main electricity grid.

Paragraphs 9(1)(b) and 9(1)(c) restrict projects where there is methane available for destruction but where the proponent's standard business activities do not resemble the operation of a coal mine for the purpose of mining coal.

Subsection 9(2) provides that a project covered by the draft Determination is deemed a ***coal mine waste gas project***. This term is used throughout the draft Determination.



## Part 3            Project Requirements

### Division 1            General requirements

#### 10    Operation of this Division

The effect of paragraph 106(1)(b) of the Act is that a determination must set out requirements that must be met for a project to be an eligible offsets project. Under paragraph 27(4)(c) of the Act, the Regulator must not declare that an offsets project is an eligible offsets project unless the Regulator is satisfied that the project meets these requirements.

Division 1 of Part 3 of the draft Determination specifies a number of requirements to be met in order for a project to be declared an eligible offsets project. Different requirements apply to five types of offsets projects outlined in sections 11 to 15.

The criteria allow proponents to assess the eligibility of their proposed offsets project through a straightforward assessment of their previous and current business operations relating to the destruction of methane.

#### 11    Requirements for a new flaring project

Section 11 provides eligibility requirements for a *new flaring project* to be declared as an eligible offsets project.

The draft Determination provides that if declared eligible, this type of project involves the installation and operation of flaring devices used to destroy methane.

The eligibility criteria for a new flaring project require a proponent to assess the level of previous abatement from the destruction (if any) of the methane component of coal mine waste gas at the mine. This assessment is intended to ensure that abatement achieved by the project is likely to be additional to that which would have occurred in the absence of the project.

Under subsection 11(1) a proponent must consider whether there has been any *material abatement* from destruction of the methane component of coal mine waste gas the proponent intends to use under the project.

Proponents with a relatively minor history of abatement from methane destruction – which is specified as less than 5,000 tonnes CO<sub>2</sub>-e in all previous and current financial years since the *National Greenhouse & Energy Reporting Act 2007* (NGER Act) commenced in 2008 – will be eligible as a new flaring project. In circumstances where a proponent has exceeded the material abatement threshold, they may be eligible as an ‘expansion’ type of offsets project (outlined in sections 12 and 14).

For a new flaring project, consideration of previous methane destruction must include destruction from both flaring and electricity production devices.

Subsection 11(2) outlines the manner by which a proponent must determine the level of abatement from methane destruction that is required to be assessed under subsection 11(1).

The draft Determination draws on existing processes where possible, to avoid introducing new administrative processes. Paragraph 11(2)(a) provides that a proponent must use previous **NGER reports** that the relevant coal mine and user of the coal mine waste gas submitted under the NGER Act. The NGER reports provide information to easily determine whether there has been material abatement from destruction of methane from the mine (as specified under division 7 of Part 4). By using the NGER reports a proponent can determine if they meet the eligibility requirements for a **new flaring project**.

Paragraph 11(2)(b) provides that in circumstances where a proponent submits an application for declaration as an eligible offsets project during the course of a financial year and an NGER report for that financial year is not yet available, the proponent must provide a written declaration that there has been no material abatement from destruction of methane in the current financial year.

All operating underground coal mines are currently meeting greenhouse gas emission thresholds that require the submission of NGER Act emissions reports and as such all current operating coal mines should be capable of considering NGER reports outlined in subsection 11(2).

There may be instances in the future where a coal mine does not have previous NGER reports. These circumstances would be isolated to new or planned coal mines that are not yet operational. A proponent intending to use coal mine waste gas in these circumstances would be eligible as a new flaring offsets project with recognition of no material abatement from destruction of methane.

## 12 Requirements for an expansion flaring project

Section 12 provides eligibility requirements for an **expansion flaring project** to be declared as an eligible offsets project.

The draft Determination provides that if declared eligible, this type of project involves the installation and operation of flaring devices that undertake methane destruction that is additional to the existing capacity of methane destruction devices.

The eligibility criteria for an expansion flaring project require a proponent to assess the **recognised capacity** of all existing **destruction devices** installed as part of the previous destruction of methane at the coal mine. This assessment is required to ensure that methane destruction undertaken by an offsets project is likely to be additional to what would have occurred in the absence of the project. This approach is in accordance with the offsets integrity standards outlined in section 133 of the Act.

Paragraph 12(a) requires that there has been some destruction of methane at the mine where the offsets project intends to combust methane. This simple check ensures that the offsets project best fits with an 'expansion' type of project in that there would have been a history of methane destruction to expand upon.

Paragraph 12(b) outlines the approach by which a proponent must determine the **recognised capacity** of existing **destruction devices**. **Recognised capacity** is drawn from the highest total

***recognised capacity*** of existing destruction devices that existed between 24 April 2014 and the time of the application. Existing destruction devices refers to ***existing flaring devices*** and ***existing electricity production devices***.

The backdate of 24 April 2014 aligns with the date the Emissions Reduction Fund (ERF) White Paper was released and intends to avoid any influence that government policy, as stated in the ERF White Paper, may have had on existing methane destruction activities after the White Paper was released.

The draft Determination requires that the ***recognised capacity*** corresponds with the manufacturer's specifications for the relevant destruction devices. The approach by which ***recognised capacity*** is considered during an ***expansion flaring project*** is detailed in division 3 of Part 4 of the draft Determination.

### 13 Requirements for a new electricity production project

Section 13 provides eligibility requirements for a ***new electricity production project*** to be declared an eligible offsets project.

The draft Determination provides that if declared eligible, this type of project involves the installation and operation of electricity production devices used to destroy methane.

Consistent with the approach for a ***new flaring project***, the eligibility criteria for a ***new electricity production project*** requires a proponent to assess the level of previous abatement from the destruction (if any) of the methane component of coal mine waste gas at the mine where the gas is intended to be destroyed by the project.

Subsection 13(1) requires a proponent to consider whether there has been any ***material abatement*** from destruction of the methane component of coal mine waste gas. Material abatement is considered in the same way as a ***new flaring project*** under subsection 11(1).

Whilst a ***new electricity production project*** relates to methane destruction from electricity production, consideration of previous methane destruction is required to include destruction from both flaring and electricity production devices.

Subsection 13(2) is consistent with the approach outlined in subsection 11(2) for a ***new flaring project***, and includes the requirement to determine the level of methane destruction that will be assessed under subsection 13(1).

### 14 Requirements for an expansion electricity production project

Section 14 provides eligibility requirements for an ***expansion electricity production project*** to be declared as an eligible offsets project of the type.

The draft Determination provides that if declared eligible, this type of project would involve the installation and operation of electricity production devices that undertake methane destruction that is additional to the existing capacity of methane destruction devices. This

approach is in accordance with the offsets integrity standards outlined in section 133 of the Act.

The eligibility criteria in paragraphs 14(a) and 14(b) is consistent with the approach for an *expansion flaring project* in paragraphs 12(a) and 12(b), and requires a proponent to assess the *recognised capacity* of all existing *destruction devices* that have existed between 24 April 2014 and the time of the application.

The method by which *recognised capacity* is considered during an *expansion electricity production project* is detailed in division 5 of Part 4 (Net abatement amounts).

## 15 Requirements for a displacement electricity production project

Section 15 provides eligibility requirements for a *displacement electricity production project* to be declared as an eligible offsets project.

The draft Determination provides that if declared eligible, this type of project involves the installation and operation of electricity production devices that undertake methane destruction and electricity production. An eligible project would produce electricity that is additional to the existing electricity production capacity. The existing electricity production capacity may be zero in circumstances where there is a history of destruction through flaring devices and no history of electricity production.

The eligibility criteria for a *displacement electricity production project* require a proponent to assess the *recognised capacity* of all *existing electricity production devices* installed as part of the previous destruction of methane. This assessment is required in order to ensure that electricity production undertaken is likely to be additional to that which would occur in the absence of the offsets project.

This type of offsets project differs from an *expansion electricity production project* in that it does not require consideration of previous destruction capacity. This is because methane destruction would not be eligible abatement under a *displacement electricity production project*.

Paragraph 15(a) requires that there has been some historic destruction of methane from the mine using flaring devices. This ensures that regardless of whether an eligible project decides to continue operating flaring devices, the installation and operation of electricity production devices harness the ability to produce electricity through methane destruction that would have otherwise not been possible with flaring devices.

Paragraph 15(b) outlines the approach a proponent must use to determine the *recognised capacity* of all *existing electricity production devices* and is only required in circumstances where there has been some historic abatement from the destruction of methane from electricity production devices as well as from flaring devices.

The *recognised capacity* is drawn from the highest total *recognised capacity* for generating electricity that has existed at any point between 24 April 2014 and the time of the application.

This date is consistent with the date is used for the two expansion types of offset project in sections 12 and 14.

The approach by which *recognised capacity* is considered during a *displacement electricity production project* is detailed in division 6 of Part 4 of the draft Determination.

## **Division 2                      Additionality requirements**

The effect of subparagraph 27(4A)(b)(ii) of the Act is that a determination may set out requirements in lieu of the regulatory additionality requirement specified in the Act. These requirements must be met for a project to be an eligible offsets project.

Division 2 of Part 3 of the draft Determination specifies circumstances under which additionality requirements specified in the Act are to be replaced with specific provisions in the draft Determination.

The intent of specifying additionality requirements in lieu of those specified in the Act is to enable consideration of circumstances that the additionality requirements specified in the Act would otherwise oppose.

For example, the government program requirement specified in subparagraph 27(4A)(c)(i) of the Act requires that the project would be unlikely to be carried out under another Commonwealth, State or Territory government program or scheme in the absence of a declaration of the project as an eligible offsets project. With this requirement in place, expansion types of offsets projects outlined in the Determination are required to consider whether the expansion offsets project (which is the installation of additional destruction devices) would be likely to be carried out by another government program or scheme in the absence of the project being declared an eligible offsets project. It is intended that proponents with existing activities eligible under another government program or scheme would be capable of demonstrating that activities undertaken for an expansion offsets project will be activities undertaken solely for the purpose of the Determination and will be able to satisfy this test.

### **16       Requirements in lieu of regulatory additionality requirement**

Section 16 provides that in lieu of the regulatory additionality requirement specified under subparagraph 27(4A)(b)(i) of the Act, all types of coal mine waste gas project are required to demonstrate that the coal mine lease holder for the mine from which they intend to use the coal mine waste gas does not have an *existing regulatory obligation* to destroy the methane component of the mine's coal mine waste gas.

This requirement intends to define the circumstances that determine a proponent's *existing regulatory obligation* in lieu of a potentially broader interpretation of the regulatory additionality requirement that is specified in the Act.

**Part 4                      Net abatement amounts**  
**Division 1                      Operation of this Part**

17            Operation of this Part

Part 4 of the draft Determination sets out the method for working out the carbon dioxide equivalent net abatement amount for a reporting period as per paragraph 106(1)(c) of the Act.

18            Overview of gases accounted for in abatement calculations

Section 18 provides an overview of the greenhouse gas emission sources that are relevant in calculating the net abatement amount for a coal mine waste gas project. Depending on the eligible offset project undertaken, emissions sources will vary. The calculations specified in Part 4 of the draft Determination relate to the specific emissions that determine the net abatement amount.

<b>Table 1 – Greenhouse gases and emissions sources</b>		
<b>Relevant emissions calculation</b>	<b>Emissions source</b>	<b>Greenhouse gas</b>
Project emissions	Fuel consumption	Carbon dioxide (CO <sub>2</sub> )
		Methane (CH <sub>4</sub> )
		Nitrous oxide (N <sub>2</sub> O)
Project emissions	Methane destruction	Carbon dioxide (CO <sub>2</sub> )
		Methane (CH <sub>4</sub> )
		Nitrous oxide (N <sub>2</sub> O)
Project emissions	Unburned methane	Methane (CH <sub>4</sub> )

The following minor emission sources are to be excluded from abatement calculations for all coal mine waste gas projects in order to simplify the calculation method:

- fugitive emissions of methane from on-site equipment;
- fugitive methane emissions from a gas supply pipeline or from vehicles; and
- accidental release of methane.

Emissions associated with the delivery of electricity to the grid are incorporated by applying a marginal loss factor to electricity production calculations.

The Determination seeks to recognise the destruction of the methane component of coal mine waste gas that would otherwise be vented to the atmosphere. Carbon dioxide and nitrous oxide that are also components of the coal mine waste gas will not be affected by destruction activity from the project and are therefore excluded from abatement calculations.

## 19      References to factors and parameters from external sources

Section 19 refers to factors or parameters used in calculations that are derived from external sources. Most parameters are derived from the *National Greenhouse and Energy Reporting Regulations 2008* (the NGER Regulations) or the *NGER (Measurement) Determination* made under subsection 10(3) of the NGER Act.

The effect of subsection 19(1) is that if those legislative instruments are amended during a project's reporting period, then the project proponent will be required to use the factor or parameter prescribed in the instrument that is in force at the time the report is submitted, or required to be submitted, whichever is earlier. The application of referenced documents current at the time of reporting is consistent with the approach used in existing CFI determinations.

Subsection 19(2) clarifies that projects are not expected to retrospectively apply monitoring requirements specified in the *NGER (Measurement) Determination*, or other relevant sources, current at the time of reporting, but rather that are current at the time monitoring occurs.

## **Division 2                      New flaring project method**

Division 2 specifies how net abatement is calculated for a ***new flaring project***. The net abatement is:

- the amount of emissions avoided as a result of methane destroyed by the project, calculated using subsection 20(5)

*less*

- emissions released as a result of the destruction of methane, worked out using subsection 20(6), and
- ancillary emissions relating to energy used for the purposes of the project worked out using section 34.

New flaring projects can have a maximum historic abatement of less than 5,000 tonnes CO<sub>2</sub>-e per year. A maximum historic abatement of less than 5,000 tonnes CO<sub>2</sub>-e per year is deemed not to be ***material abatement*** for the purposes of the Determination; it represents less than 1.5 per cent of the average annual abatement achieved by Australian underground coal mines that have undertaken destruction activities. Maximum historic abatement is to be determined according to section 33, and subtracted from the net abatement amount, where applicable, according to subsection 20(3).

## 20      Net abatement amount

Section 20 provides the steps to determine the net abatement amount in tonnes CO<sub>2</sub>-e.

Subsection 20(1) specifies that the project must have a historic level of abatement less the amount considered to be *material abatement*. As noted in division 9, this means less than 5,000 tonnes CO<sub>2</sub>-e per year in every past NGER reporting year and in the period from the start of the current NGER reporting year up to the date of application as an eligible offsets project.

Historic abatement is determined through section 33. Where historic abatement is determined to be zero, the net abatement is determined using subsection 20(2); where historic abatement is above zero but less than 5,000 tonnes CO<sub>2</sub>-e, the net abatement amount is determined using subsection 20(3).

Subsection 20(3) specifies that where historic abatement is above zero and below 5,000 tonnes CO<sub>2</sub>-e, the historic abatement must be subtracted from the net abatement amount. As the reporting period may not be exactly one year, a correction factor of  $T/365$  is applied, where T is the number of days in the reporting period.

Project emissions resulting from the combustion of methane include three major greenhouse gases: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O). These three gases must be accounted for, for all project devices. As such, in subsection 20(6), the summation over the index (h) must be performed over all project devices and the summation over the index (j) must be performed over the three greenhouse gases CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O.

## 21 Volume of methane destroyed by flaring device

Section 21 specifies how to calculate the volume of methane destroyed by a project device in cubic metres.

Measurement of the volume of methane sent to the flaring device and the operational status of the flaring device (e.g. the presence of a flame at appropriate temperature or other threshold) are key inputs into calculations of net abatement. As coal mine waste gas may continue to be sent to a flaring device and released into the atmosphere when the device is not operating, additional requirements for concurrent measurements of volume flow and device operation are specified to ensure that only actual destruction is recognised.

Subsection 21(1) specifies that the amount of methane destroyed by a device (h) in a given time interval (t) is the product of:

- the volume of methane sent to the destruction device in that time interval,  $Q_{CH_4,h,t}$ ; and
- the operation of the destruction device during that time interval  $O_{h,t}$ .

The total volume of methane destroyed by a device (h) over the period is obtained by summing the volume of methane destroyed by the device in each time interval in the reporting period.



Division 3 of Part 5 specifies the bounds for choice of time interval (t); and criterion for determining destruction device operation  $O_{h,t}$  where the destruction device is a flare. Device operation must be monitored at least once every 15 minutes.

## 22 Emissions

Emissions from the destruction of methane consist primarily of carbon dioxide, with some amounts of nitrous oxide due to the reaction of nitrogen and oxygen in the air and residue methane.

Section 22 presents several options for determining emissions as a result of the combustion of coal mine waste gas for the project, in tonnes CO<sub>2</sub>-e. The options are provided as a hierarchy, with each subsequently listed option corresponding to more advanced measurements.

A summary of key differences between methods is provided in the **Table 2** below.

<b>Option</b>	<b>Quantity of gas</b>	<b>Emission factors</b>
1	Volume of coal mine waste gas (CMWG)	NGER default factors
2	Volume of methane in CMWG	NGER default factors
3	Volume of methane in CMWG	<ul style="list-style-type: none"> <li>Carbon dioxide factor determined using division 2.3.3 of the <i>NGER (Measurement Determination)</i></li> <li>NGER default factors for nitrous oxide and methane</li> </ul>
4	Volume of methane in CMWG	<ul style="list-style-type: none"> <li>Carbon dioxide factor determined using division 2.3.4 of the <i>NGER (Measurement Determination)</i></li> <li>NGER default factors for nitrous oxide and methane</li> </ul>

Under all options, a correction factor for the oxidation of coal mine waste gas,  $OF_{fl}$ , is to be applied with the value of 0.98 divided by 0.995.

Once an option is chosen, proponents must continue to use the same option, or a higher numbered option for the remainder of the project. This is outlined in subsection 22(2).

Under Option 3, two different equations are used. **Equation 9** is used to determine emissions of carbon dioxide; **equation 10** is used to determine emissions of methane or nitrous oxide. This is outlined in subsection 22(5).

Under Option 4, two different equations are used. **Equation 11** is used to determine emissions of carbon dioxide; **equation 12** is used to determine emissions of methane or nitrous oxide. This is outlined in subsection 22(8).

The gas stream may also contain carbon dioxide and nitrous oxide that are not affected by the project. They are therefore excluded from abatement calculations.

## Division 3

## Expansion flaring project method

Division 3 specifies how net abatement is calculated for an *expansion flaring project*. The net abatement is:

- the amount of emissions avoided as a result of methane destroyed by the project, accounting for the *recognised capacity* of existing destruction devices, calculated using subsection 23(3);

less

- emissions released as a result of the destruction of methane worked out using subsection 23(4); and
- ancillary emissions relating to energy used for the purposes of the project worked out using section 34.

### 23 Net abatement amount

Section 23 provides steps and equations to determine the net abatement amount in tonnes CO<sub>2</sub>-e.

Project emissions resulting from the combustion of methane include major greenhouse gases carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O). These three gases must be accounted for, for all project devices. As such, in subsection 23(4), the summation over the index (h) must be performed over all project devices and the summation over the index (j) must be performed over the three greenhouse gases CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O.

### 24 Volume of methane destroyed

Section 24 specifies how to calculate the volume of methane destroyed by a project device (h) in cubic metres.

In determining the volume of methane destroyed by the project, an *expansion flaring project* must net out destruction capacity from existing flaring and/or electricity production devices.

Subsection 24(1) specifies that in each time interval (t), the volume of methane destroyed by the project is determined from the volume of methane destroyed by:

- flaring devices as determined according to **equation 18**, and
- electricity production devices as determined according to **equation 19**.

Destruction will be considered to have resulted from the offsets project where it is above the *recognised capacity* of existing destruction devices within a time interval. If destruction during a time interval is less than the recognised capacity of existing devices (e.g. as may arise during a pause in mining operations), projects will not be penalised. Subsection 24(1) provides that where methane destruction during a time interval is negative (i.e. less than the

**recognised capacity** of existing destruction devices), the destruction would be set to zero for that interval.

#### *Volume of methane destroyed by flaring devices*

The volume of methane destroyed is to be determined through continuous monitoring at regular time intervals. Subsection 24(2) specifies that the volume of methane destroyed in each time interval by flaring devices for the purposes of the project is determined by:

- the amount of methane destroyed by project devices; and
- the amount of methane destroyed by **existing flaring devices**;

*less*

- the destruction capacity of **existing flaring devices** during that period.

Measurement of the volume of methane sent to the flaring device and the operational status of the flaring device (e.g. the presence of a flame at appropriate temperature or other threshold) are key inputs into calculations of net abatement. As coal mine waste gas may continue to be sent to a flaring device and released into the atmosphere when the device is not operating, additional guidance has been specified for concurrent measurements of volume flow and device operation to ensure only destruction is recognised.

The amount of methane destroyed by a flaring device (h) or (m) in a given time interval (t) is the volume of methane sent to the destruction device in that time interval,  $Q_{CH_4,h,t}$  or  $Q_{CH_4,m,t}$  multiplied by the operation of the destruction device during that time interval  $O_{h,t}$  or  $O_{m,t}$ .

Division 3 of Part 5 specifies the bounds for choice of time interval (t); and specific criterion for determining destruction device operation  $O_{h,t}$  or  $O_{m,t}$  where the destruction device is a flare. Device operation must be monitored at least once every 15 minutes.

#### *Volume of methane destroyed by electricity production devices*

Subsection 24(5) specifies that the volume of methane destroyed by existing electricity production devices for the purposes of the project would be equal to:

- the amount of methane destroyed by **existing electricity production devices**,

*less*

- the destruction capacity of **existing electricity production devices** during that period.

The volume of methane destroyed from electricity production devices is based on the amount of electricity produced by the device that is supplied to the grid or used as part of the project,  $Q_{eg,h}$ , in megawatt hours.

The conversion factors in Equation 40 are to be applied to estimate the volume of methane that would have been destroyed to produce the metered amount of electricity  $Q_{eg,h}$ .

Subsection 24(7) specifies that if the total methane destruction from **existing electricity production devices** exceeds the **recognised capacity** of **existing electricity production devices** in any time interval (t), the excess would not be counted toward the volume of methane

destroyed for the purposes of the project. This is because abatement for this type of project will be isolated to additional destruction that is achieved through flaring.

#### *Destruction capacity of existing destruction devices*

The **recognised capacity** of existing destruction devices is determined according to guidance provided in division 3 of Part 5. It corresponds with the greatest **recognised capacity** of **destruction devices** that existed at any point between 24 April 2014 and the date of the application for declaration as an eligible offsets project. This includes all **destruction devices** that have used the coal mine waste gas from the mine, not only existing destruction devices managed by the proponent. This ensures the project is neutral to the continued use of existing devices which may be managed by more than one operator.

## 25 Emissions

Emissions from the destruction of methane consist primarily of carbon dioxide, with some amounts of nitrous oxide due to the reaction of nitrogen and oxygen in the air and residue methane. Only emissions from project devices are considered.

Section 25 presents several options for determining emissions as a result of the combustion of coal mine waste gas for the project, in tonnes CO<sub>2</sub>-e. The options are provided as a hierarchy, with each higher numbered option corresponding to more advanced measurements.

A summary of key differences between different measurement options is provided in the table below.

<b>Table 3 – Options for determining emissions</b>		
<b>Option</b>	<b>Quantity of gas</b>	<b>Emission factors</b>
1	Volume of CMWG	NGER default factors
2	Volume of methane in CMWG	NGER default factors
3	Volume of methane in CMWG	<ul style="list-style-type: none"> <li>Carbon dioxide factor determined using division 2.3.3 of the <i>NGER (Measurement) Determination</i></li> <li>NGER default factors for nitrous oxide and methane</li> </ul>
4	Volume of methane in CMWG	<ul style="list-style-type: none"> <li>Carbon dioxide factor determined using division 2.3.4 of the <i>NGER (Measurement) Determination</i></li> <li>NGER default factors for nitrous oxide and methane</li> </ul>

Under all options, a correction factor for the oxidation of coal mine waste gas,  $OF_{fl}$ , is to be applied with the value of 0.98 divided by 0.995.

Once an option is chosen, proponents must continue to use either the same option or a higher numbered option for the remainder of the project. This is noted in subsection 25(2).

Under Option 3 two different equations are to be used. **Equation 22** is used to determine emissions of carbon dioxide; **equation 23** is used to determine emissions of methane or nitrous oxide. This is noted in subsection 25(5).

Under Option 4, two different equations are to be used. **Equation 24** is used to determine emissions of carbon dioxide; **equation 25** is used to determine emissions of methane or nitrous oxide. This is noted in subsection 25(8).

Carbon dioxide and nitrous oxide that are in the input gas stream are not affected by the project are therefore excluded from abatement calculations.

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## Division 4

## New electricity production project method

Division 4 specifies how net abatement is calculated for a *new electricity production project*. The net abatement is:

- the amount of emissions avoided as a result of methane destroyed by the project, calculated in accordance with subsection 26(5); and
- the amount of emissions avoided as a result of deferring grid electricity use through the use of project devices that produce electricity from coal mine waste gas, calculated using section 35;

*less*

- emissions released as a result of the destruction of methane worked out using subsection 26(6); and
- ancillary emissions relating to energy used for the purposes of the project worked out using section 34.

New projects can have a maximum historic abatement of less than 5,000 tonnes CO<sub>2</sub>-e per year. This approach is consistent with consideration of historic abatement with new flaring projects outlined in division 2. Maximum historic abatement is to be determined according to section 33 and subtracted from the net abatement amount annually, where applicable, according to subsection 26(3).

### 26 Net abatement amount

Section 26 provides the key steps determine the net abatement amount in tonnes CO<sub>2</sub>-e.

Subsection 26(1) specifies that new projects must have a historic level of abatement less the amount considered to be *material abatement*. As noted in division 9, this means less than 5,000 tonnes CO<sub>2</sub>-e per year in every past NGER reporting year and in the period from the start of the current NGER reporting year up to the date of application.

Historic abatement is determined through section 33. Where historic abatement is determined to be zero, the net abatement is determined using subsection 26(2); where historic abatement is above zero but less than 5,000 tonnes CO<sub>2</sub>-e, the net abatement amount is determined using subsection 20(3).

Subsection 26(3) specifies that where historic abatement is above zero and below 4,000 tonnes CO<sub>2</sub>-e, the historic abatement must be subtracted from the net abatement amount. As the reporting period may not be exactly one year, a correction factor of T/365 is applied to the adjustment, where T is the number of days in the reporting period.

Project emissions of three major greenhouse gases, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) must be accounted for, for all project devices. As such, in subsection 26(6), the summation over the index (h) must be performed over all project devices and the

summation over the index (j) must be performed over the three greenhouse gases CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O.

## 27 Volume of methane destroyed by an electricity production device

Section 27 provides two options for determining the volume of methane destroyed by the project electricity production device (h), in cubic metres, either:

1. by concurrent measurements of the quantity of methane sent to destruction device, and the operational status (the ‘operation’) of the destruction device; or
2. by metering the electricity produced by the device that is supplied to the grid or used as part of the project.

Measurement of the volume of methane sent to the destruction device and the operational status of the destruction device are key inputs into calculations of net abatement. As coal mine waste gas may continue to be sent to a destruction device and released into the atmosphere when the destruction device is not operating, additional guidance has been specified for concurrent measurements of volume flow and device operation to ensure only destruction is recognised

Subsection 27(3) specifies that under Option 1, the volume of methane destroyed by a device (h) in a given time interval (t) is the product of:

- the volume of methane sent to the destruction device in that time interval,  $Q_{CH_4,h,t}$ ; and
- the operation of the destruction device during that time interval  $O_{h,t}$ .

Subsection 27(4) specifies the total volume of methane destroyed by the device (h) over the period is obtained by summing the volume of methane destroyed by the device in each time interval in the reporting period.

Division 3 of Part 5 specifies the bounds for choice of time interval (t); and specific criterion for determining destruction device operation  $O_{h,t}$  where the destruction device is a flare. Device operation must be monitored at least once every 15 minutes.

Subsection 27(5) specifies that under Option 2, estimation of the volume of methane destroyed from electricity production devices is based on the amount of electricity produced by the device that is supplied to the grid or used as part of the project,  $Q_{eg,h}$ , in megawatt hours.

The conversion factors in **equation 32** are applied to estimate the volume of methane that would have been destroyed to produce the metered amount of electricity  $Q_{eg,h}$ .

Emissions from the destruction of methane consist primarily of carbon dioxide, with some amounts of nitrous oxide due to the reaction of nitrogen and oxygen in the air and residue methane.

Section 28 specifies how these emissions are calculated, in tonnes CO<sub>2</sub>-e. Several options are presented for determining the:

- energy content factor  $EC_{CMWG}$ ;
- emission factor  $EF_{OX,j}$  where (j) refers to carbon dioxide; and
- emission factor  $EF_{OX,j}$  where (j) refers to methane.

To determine the emission factor  $EF_{OX,j}$  where (j) refers to nitrous oxide, project proponents must use the NGER default factor.

Options are available for determining each of the three parameters above. They are provided as a hierarchy, with each subsequently listed option corresponding to more advanced measurements. Once an option is chosen, proponents must continue to use the same option, or a subsequently listed option for the remainder of the project.

A summary of key differences between options is provided in the tables below.

**Table 4(a) – Options for determining emissions**

Option	Energy content factor
28(2)(a)	NGER default factor
28(2)(b)	Determined by analysis in accordance with Subdivision 2.3.3.2 of the <i>NGER (Measurement) Determination</i> .

**Table 4(b) – Options for determining emissions**

Option	Emission factor for carbon dioxide
28(4)(a)	NGER default factor
28(4)(b)	Estimated in accordance with section 2.22 of the <i>NGER (Measurement) Determination</i> .
28(4)(c)	Determined by analysis in accordance with section 2.26 of the <i>NGER (Measurement) Determination</i> .

**Table 4(c) – Options for determining emissions**

Option	Emission factor for methane
28(6)(a)	NGER default factor
28(6)(b)	Using the emission factor that applies in estimating emissions of methane in section 2.27 of the <i>NGER (Measurement) Determination</i> .



## Division 5

## Expansion electricity production project method

Division 5 specifies how net abatement is calculated for an *expansion electricity production* project. The net abatement is:

- the amount of emissions avoided as a result of methane destroyed by the project, accounting for the *recognised capacity* of existing destruction devices, calculated using subsection 29(3); and
- the amount of emissions avoided as a result of deferring grid electricity use through the use of project devices that produce electricity from coal mine waste gas, accounting for the *recognised capacity* of *existing electricity production devices*, calculated using section 35;

less

- emissions released as a result of the destruction of methane worked out using section 29(4); and
- ancillary emissions relating to energy used for the purposes of the project worked out using section 34.

### 29 Net abatement amount

Section 29 provides the key steps and equations to determine the net abatement amount in tonnes CO<sub>2</sub>-e.

Project emissions of three major greenhouse gases, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) must be accounted for, for all project devices. As such, in subsection 29(4), the summation over the index (h) must be performed over all project devices and the summation over the index (j) must be performed over the three greenhouse gases CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O.

### 30 Volume of methane destroyed

Section 30 specifies how to calculate the volume of methane destroyed by a project device (h), in cubic metres.

In determining the volume of methane destroyed by the project, expansion electricity production projects must net out destruction capacity from existing flaring and/or electricity production devices.

Subsection 30(1) specifies that in each time interval (t), the volume of methane destroyed by the project is determined from the sum of methane destroyed:

- by flaring devices as determined according to **equation 39**, and
- by electricity production devices as determined according to **equation 40**.

Projects are recognised for destruction over the recognised capacity of existing devices within a time interval. If the destruction during a time interval is less than the recognised capacity of existing devices (e.g. as may arise during a pause in mining operations), projects are not penalised. Subsection 30(1) provides that where destruction during an interval is negative (i.e. less than the **recognised capacity** of existing destruction devices), the destruction is set to zero for that interval.

#### *Volume of methane destroyed by flaring devices*

Subsection 30(2) specifies that the volume of methane destroyed by flaring devices for the purposes of the project would be equal to:

- the amount of methane destroyed by **existing flaring devices**;

less

- the destruction capacity of **existing flaring devices** during that period.

Measurement of the volume of methane sent to the flaring device and the operational status of the flaring device (e.g. the presence of a flame at appropriate temperature or other threshold) are key inputs into calculations of net abatement. As coal mine waste gas may continue to be sent to a flaring device and released into the atmosphere when the device is not operating, additional guidance has been specified for concurrent measurements of volume flow and device operation to ensure only destruction is recognised.

For the purpose of this calculation, the amount of methane destroyed by a flaring device (h) or (m) in a given time interval (t) is the product of:

- the volume of methane sent to the destruction device in that time interval,  $Q_{CH_4,m,t}$ ;  
and
- the operation of the destruction device during that time interval  $O_{m,t}$ .

Division 3 of Part 5 specifies the bounds for the choice of time interval (t); and criterion for determining **destruction device** operation  $O_{h,t}$  or  $O_{m,t}$  where the destruction device is a flare. Device operation must be monitored at least once every 15 minutes.

Subsection 30(4) specifies that if the total destruction through **existing flaring devices** exceeds the total **recognised capacity** of **existing flaring devices** in any time interval (t), the excess would not be counted toward the volume of methane destroyed for the purposes of the project. This is because the offsets project is an expansion electricity production project where consideration of abatement is isolated to additional destruction that is achieved through electricity production devices.

#### *Volume of methane destroyed by electricity production devices*

Subsection 30(5) specifies that the volume of methane destroyed by electricity production devices for the purposes of the project is equal to:

- the amount of methane destroyed by project devices, and
- the amount of methane destroyed by **existing electricity production devices**;

less

- the destruction capacity of **existing electricity production devices** during that period.

Estimation of the volume of methane destroyed by electricity production devices are based on the amount of electricity produced by the device, that is supplied to the grid or used as part of the project,  $Q_{eg,h}$ , in megawatt hours.

The conversion factors in **equation 40** are applied to estimate the volume of methane that would have been destroyed to produce the metered amount of electricity  $Q_{eg,h}$ .

#### *Destruction capacity of existing destruction devices*

The capacity of existing destruction devices is determined according to division 3 of Part 5. It corresponds with the greatest **recognised capacity of destruction devices** that existed at any point between 24 April 2014 and the date of the application for declaration as an eligible offsets project. This refers to all destruction capacity for coal mine waste gas from the mine, not only destruction devices managed by the proponent. This ensures the project is neutral to the continued use of existing devices which may be managed by more than one operator.

### 31 Emissions

Emissions from the destruction of methane consist primarily of carbon dioxide, with some amounts of nitrous oxide due to the reaction of nitrogen and oxygen in the air and residue methane. Only emissions from project devices are considered.

Section 28 specifies how these emissions are calculated, in tonnes CO<sub>2</sub>-e. Several options are presented for determining the:

- energy content factor  $EC_{CMWG}$ ;
- emission factor  $EF_{OX,j}$  where (j) refers to carbon dioxide; and
- emission factor  $EF_{OX,j}$  where (j) refers to methane.

For determining the emission factor  $EF_{OX,j}$  where (j) refers to nitrous oxide, project proponents must use the NGER default factor.

Options are available for determining each of the three parameters above. They are provided as a hierarchy, with each subsequently listed option corresponding to more advanced measurements. Once an option is chosen, proponents are required to continue to use the same option, or a subsequently listed option for the remainder of the project.

A summary of key differences between options is provided in the tables below.

<b>Table 5(a) – Options for determining emissions</b>	
<b>Option</b>	<b>Energy content factor</b>
31(2)(a)	NGER default factor
31(2)(b)	Determined by analysis in accordance with Subdivision 2.3.3.2 of the <i>NGER (Measurement) Determination</i> .

<b>Table 5(b) – Options for determining emissions</b>	
<b>Option</b>	<b>Emission factor for carbon dioxide</b>
31(4)(a)	NGER default factor
31(4)(b)	Estimated in accordance with section 2.22 of the <i>NGER (Measurement) Determination</i> .
31(4)(c)	Determined by analysis in accordance with section 2.26 of the <i>NGER (Measurement) Determination</i> .

<b>Table 5(c) – Options for determining emissions</b>	
<b>Option</b>	<b>Emission factor for methane</b>
31(6)(a)	NGER default factor
31(6)(b)	Using the emission factor that applies in estimating emissions of methane in section 2.27 of the <i>NGER (Measurement) Determination</i> .

## **Division 6                      Displacement electricity production project method**

Division 6 specifies how net abatement is calculated for displacement electricity production projects. The net abatement is:

*the amount of emissions avoided as a result of deferring grid electricity use through the use of project devices that produce electricity from coal mine waste gas, accounting for the **recognised capacity** of existing destruction devices, calculated using section 35.*

Emissions that arise as a result of the project are accounted for as part of calculations in section 35. As the project only concerns displacement of grid electricity use, the destruction of methane for electricity production and the resultant combustion emissions are not considered in the net abatement calculations for this project.

### 32            Net abatement amount

Section 32 specifies how the net abatement is derived from the quantity of displacement grid emissions, as calculated under section 35, in tonnes CO<sub>2</sub>-e.

## Division 7

## Historic abatement

Division 7 is used to calculate a mine's historic abatement for the purpose of determining if the mine has **material abatement** in a previous year, and any necessary adjustment to net abatement amounts for **new flaring projects** or **new electricity production projects**.

This allows mines that have undertaken a very limited amount of historic abatement (e.g. testing flares) to host a new project. However, the project must estimate the maximum historic annual abatement achieved for the mine and subtract this amount from their annual net abatement. This estimate is considered to be conservative, as required under the offsets integrity standards outlined in section 133 of the Act.

### 33 Historic abatement

Section 33 specifies how to calculate the amount of historic abatement, in tonnes CO<sub>2</sub>-e. For the purpose of this method, a simplified estimation procedure has been adopted that makes use of previously submitted NGER data and/or standard NGER emissions estimation procedures.

**Equation 43** provides a simple estimate of the amount of historic abatement  $A_{\text{hist}}$  based on historic emissions resulting from the destruction of methane  $E_{\text{hist}}$ , where  $E_{\text{hist}}$  refers to the sum of emissions of carbon dioxide, methane and nitrous oxide, resulting from the destruction of coal mine waste gas, expressed in tonnes CO<sub>2</sub>-e.

The simplified estimate will use a dimensionless conversion factor of 6.775 that derives from:

- a) an estimation of the amount of methane, in cubic metres, that would have been destroyed to produce the emissions  $E_{\text{hist}}$ ;
- b) the conversion factor from volume of methane destroyed in cubic metres to avoided emissions in tonnes of CO<sub>2</sub>-e.

The quantity  $E_{\text{hist}}$  is the highest total annual emissions resulting from the destruction of the methane component of coal mine waste gas. This quantity must be determined by considering all previous NGER reports since its commencement on 1 July 2008, as well as an estimate of emissions for the current NGER reporting period (if an NGER report has not yet been submitted) determined in accordance with NGER reporting obligations as applicable to the mine for the duration between the start of the current NGER reporting year and the time of project application.

New flaring projects or new electricity generation projects will be required to subtract this maximum historic abatement from the net abatement amount.

## Division 8

## Ancillary project emissions

Division 8 specifies how ancillary emissions are calculated.

Emissions resulting from the use of fossil fuels other than coal mine waste gas, and from the use of grid electricity for the collection, transport and destruction of the coal mine waste gas as part of the project are collectively referred to as ancillary emissions. They include emissions relating to energy used for:

- collecting gas, such as compressors, blowers and or other coal mine waste gas gathering systems;
- transporting coal mine waste gas for the purpose of destroying it as part of the project; and
- destroying coal mine waste gas through flaring or electricity production devices.

Emissions relating to equipment installed for the safety of the mine are not considered part of ancillary emissions.

The electricity emissions factor to be used refers to scope 2 emissions and is to be taken from the *National Greenhouse Accounts Factors* published by the Department from time to time. Proponents will apply the factor for the relevant electricity grid from the document as in force on the day the project is declared an eligible offsets project.

Where electricity is obtained from, or supplied to, another source or grid not covered by the *National Greenhouse Accounts Factors*, proponents must use either the factor provided by the operator of the electricity source or grid which reflects the emissions intensity of the electricity. Where this factor is not available, the proponent will apply the off-grid electricity in the *National Greenhouse Accounts Factors*.

### 34 Ancillary project emissions

Section 34 specifies how ancillary emissions are calculated for the project in tonnes CO<sub>2</sub>-e.

**Equation 44** under subsection 34(1) considers emissions from use of:

- grid electricity, as calculated by multiplying the amount of energy used by a grid emission factor; and
- fossil fuels, as calculated by multiplying the amount of fuel consumed by the relevant energy content and emission factor, and dividing by 1000 (which corrects for the difference in units used in different parameters).

Where section 34 is applied to an expansion flaring project or expansion electricity production project, some existing equipment, infrastructure and devices may be necessary for project destruction. The project is required to estimate the portion of grid electricity or fossil fuel use, and consequent ancillary emissions that are attributable to the operation of the project.

## Division 9 Displaced grid emissions

Division 9 specifies how the net abatement is calculated for the displacement of grid emissions in tonnes of CO<sub>2</sub>-e. This is based on the net amount of electricity produced, multiplied by a grid emission factor.

The net amount of electricity produced is determined from the amount of electricity:

- produced by the device, accounting for the **recognised capacity** of existing destruction devices;

*less the amount of electricity*

- produced by fuels other than coal mine waste gas;
- consumed (referred to as auxiliary losses); and
- lost during transmission and distribution to a grid.

These calculations only concern abatement and emissions relating to the displacement of grid electricity use, the destruction of methane for electricity production and the resultant combustion emissions are not considered here.

### 35 Displaced grid emissions

Section 35 specifies how to calculate abatement from the displacement of grid emissions in tonnes of CO<sub>2</sub>-e, based on division 2.3 of the *Renewable Energy (Electricity) Regulations 2001*. This method provides additional guidance for netting out the recognised capacity of existing devices where applicable.

The electricity emissions factor to be used refers to scope 2 emissions and is to be taken from the *National Greenhouse Accounts Factors* published by the Department from time to time. Proponents will apply the factor for the relevant electricity grid from the document as in force on the day the project is declared an eligible offsets project.

Where electricity is obtained from, or supplied to, another source or grid not covered by the *National Greenhouse Accounts Factors*, proponents must use either the factor provided by the operator of the electricity source or grid which reflects the emissions intensity of the electricity. Where this factor is not available, the proponent will apply the off-grid electricity in the *National Greenhouse Accounts Factors*.

### 36 Electricity produced by project

Section 36 specifies how to calculate the total amount of electricity produced by the project in megawatt hours.

In determining the total amount of electricity produced by the project, the project must net out **recognised capacity** from **existing electricity production devices**, if any.

Projects are recognised for electricity production above the recognised capacity of existing devices within a time interval. If the electricity produced during a time interval is less than the

recognised capacity of existing devices (e.g. as may arise during a pause in mining operations), projects are not penalised. Subsection 36(1) provides that where electricity produced during an interval is negative (i.e. less than the ***recognised capacity of existing electricity production devices***), the electricity produced would be set to zero for that interval.

Subsection 36(2) specifies that the total amount of electricity produced by electricity production devices for the purposes of the project is equal to:

- the amount of electricity produced from coal mine waste gas by project devices, and
- the amount of electricity produced from coal mine waste gas by ***existing electricity production devices***;

less

- the electricity production capacity of ***existing electricity production devices*** during that period.

The capacity of ***existing electricity production devices*** is determined according to division 3 of Part 5. It corresponds to the total ***recognised capacity*** for electricity production for the mine at the point where it was at the highest value, between 24 April 2014 and the date of project application. This refers to all capacity to produce electricity from coal mine waste gas from the mine, not only destruction devices under the management of the project operator. This ensures the project is neutral to the continued use of existing devices which may be managed by more than one operator.

### 37 Electricity produced by using fuel other than coal mine waste gas

Section 37 specifies how to calculate the amount of electricity that was produced using fuel sources that are not coal mine waste gas, in megawatt hours, based on guidance provided in Part 6.5 of the *NGER (Measurement) Determination*.

### Default parameters used in the calculation of abatement

Table 6 below lists default factors or parameters used in the draft Determination, current at 1 July 2014. Several factors and parameters specified in section 19 are derived from external sources, usually either the *National Greenhouse and Energy Reporting Regulations 2008* (the NGER Regulations) or the NGER Measurement Determination. If these legislative instruments are amended during a project's reporting period, then the project proponent will be required to use the factor or parameter prescribed in the instrument in force at the time the report is submitted, or required to be submitted, whichever is earlier.

**Table 6 – Default factors and parameters used in Part 4 of the Determination**

Parameter	Description	Unit	Value or source
<b>EF<sub>Elec</sub></b>	Emission factor for the electricity grid from which the project	kg CO <sub>2</sub> -e/kWh	As published in the <i>National Greenhouse Accounts Factors</i> by



	consumes or supplies electricity.		the Department and in force at the time of project declaration or provided by the operator of the electricity source or grid.
<b>EC<sub>CMWG</sub></b>	Energy content factor of coal mine waste gas.	GJ/m <sup>3</sup>	Item 19 of Schedule 1 of the <i>NGER (Measurement) Determination 2008</i>
<b>F<sub>MWh→GJ</sub></b>	Factor converting energy in MWh to GJ.	(Dimensionless)	3.6
<b>EC<sub>i</sub></b>	Energy content factor of fuel type (i) for stationary energy purposes.	GJ/kL (or other appropriate units)	Part 3 of Schedule 1, of the <i>NGER (Measurement) Determination 2008</i>
<b>EF<sub>j</sub></b>	Emission factor for gas type (j) from the combustion of coal mine waste gas.	kg CO <sub>2</sub> -e/GJ	Item 19 of Schedule 1 of <i>NGER (Measurement) Determination 2008</i>
<b>EF<sub>ox,j</sub></b>	Emission factor for gas type (j) released during the reporting period (including relevant oxidation factors).	kg CO <sub>2</sub> -e/GJ	Item 19 of Schedule 1 of <i>NGER (Measurement) Determination 2008</i>
<b>EF<sub>ox,i,j</sub></b>	Emissions factor for each gas type (j) release during the reporting period (which includes the effect of an oxidation factor) due to project activities that consume fuel type (i).	kg CO <sub>2</sub> -e/GJ	Part 3 of Schedule 1, of the <i>NGER (Measurement) Determination 2008</i>
<b>γ</b>	Conversion factor cubic metres of methane at standard conditions to tonnes of CO <sub>2</sub> -e.	t CO <sub>2</sub> -e/m <sup>3</sup>	Section 3.21 of the <i>NGER (Measurement) Determination 2008</i> .
<b>DE</b>	Default methane destruction efficiency for a destruction device.	(Dimensionless)	0.98
<b>OF<sub>f</sub></b>	Correction factor for the oxidation of coal mine waste gas flared.	(Dimensionless)	0.98/0.995
<b>MLF</b>	Marginal loss factor, to allow for the amount of electricity losses in transmission networks, as determined by:  (a) if the power station is part of the national electricity market—	(Dimensionless)	Where the power station is part of the national electricity market, the marginal loss factor shall be the factor published by AEMO which was valid for the greatest number of days during the reporting period. If two or more factors fit these

	AEMO; or		criteria, then the average of those factors shall be used.
	(b) in any other case—an authority of the State or Territory where the power station is.		
$AF_{fl,m}$	Annual availability factor of flaring device ( <i>m</i> ).	(Dimensionless)	Has the default value of 1 (one) or as calculated in accordance with the standard maintenance cycle specified by the manufacturer.
$AF_{gen,m}$	Annual availability factor of electricity production device ( <i>m</i> ).	(Dimensionless)	Has the default value of 1 (one) or as calculated in accordance with the standard maintenance cycle specified by the manufacturer.

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

### **Division 1       Offsets report requirements**

#### 38       Operation of this Division

Division 1 of Part 5 of the draft Determination lists requirements that an eligible *coal mine waste gas project* must meet for offsets reports that are submitted for each reporting period.

The Act and subordinate legislation provide for flexible reporting periods between six months and two years in duration. Proponents should be aware that the Act and subordinate legislation may also specify other reporting and notification requirements affecting this draft Determination.

#### 39       Offsets report requirements

Section 39 provides specific requirements that must be included in each offsets report. This ensures that crediting for eligible abatement is supported by an offsets report that details the circumstances and quantities of methane destroyed during each reporting period.

### **Division 2       Record-keeping requirements**

#### 40       Operation of this Division

Division 2 of Part 5 of the draft Determination specifies the relevant part of the Act for which the draft Determination is authorised to include record keeping requirements.

#### 41       Record-keeping requirements

Further to requirements under the Act or subordinate legislation, section 41 specific additional requirements for this draft Determination.

Section 41 requires that an eligible *coal mine waste gas project* must keep specific records that are additional to requirements under the Act or subordinate legislation.

Paragraph 41(a) requires that a proponent must keep records of information relating to existing *destruction devices* that existed between 24 April 2014 and the date of application for declaration as an eligible offsets project.

Paragraph 41(b) requires that a proponent must keep records of information relating to equipment installed and operated as part of the offsets project. This equipment includes destruction devices installed as part of the offsets project as well as equipment associated with the operation of these devices.

The information required under Paragraphs 41(a) and 41(b) relates to the manufacturer's specifications associated with the *destruction devices*. The proponent must maintain this information as part of the record-keeping requirements.

In addition to the record-keeping requirements specified in the draft Determination, the Act and subordinate legislation specify further record-keeping requirements. These requirements include:

- evidence that the project is, and remains, of a kind to which the determination applies;
- evidence that project implementation and operation continues to satisfy requirements for maintaining its declaration;
- evidence that the carbon-dioxide equivalent net abatement amount for each reporting period has been ascertained using the method specified in, or ascertained in accordance with, the determination;
- evidence that the specified requirements to monitor the project have been met in relation to each reporting period;
- where relevant, operation, monitoring and calibration records of any combustion and monitoring device and evidence that the operation, monitoring and calibration of equipment is in accordance with manufacturers' specifications or instructions;
- correspondence between the proponent and the Regulator in relation to an eligible offsets project; and
- offset reports and CFI audit reports.

### **Division 3     Monitoring requirements**

Division 3 provides a summary of parameters that require monitoring, including specifications for the manner and frequency of monitoring.

#### 42     Operation of this Division

Section 42 specifies requirements to monitor a coal mine waste gas project that is an eligible offsets project under paragraph 106(3)(d) of the Act.

#### 43     Monitoring requirements

Section 51 tabulates parameters used in the calculation of net abatement amounts in Part 4 of the draft Determination, including specifications for the manner and frequency of monitoring.

Key monitoring parameters are:

- the volume of methane sent for destruction  $Q_{CH_4,h,t}$  and  $Q_{CH_4,m,t}$ ;
- the volume of methane destroyed by the project  $Q_{CH_4,h}$ ; and
- the operation of the destruction device  $O_{h,t}$  and  $O_{m,t}$ .

Measurement of the volume of methane sent to the flaring device and the operational status of the flaring device (e.g. the presence of a flame at appropriate temperature or other threshold) are key inputs into calculations of net abatement. Additional guidance the parameters above have been provided in subsections 43(2), 43(3), 43(7), 43(8) and 43(9).

As noted in item 2 of section 44, in any time interval where these parameters cannot be measured according to provided specifications, they must be assumed to be zero for those particular time intervals.

In subsection 43(1), where the monitoring frequency of a parameter is specified as ‘Continuously’, this means it should be monitored throughout the reporting period at intervals necessary to meet the specified standards.

As the volume of methane is a key parameter, subsections 43(2) and 43(3) specify that methane is required to be measured according to the AAA criterion in division 2.2.6 of the *NGER (Measurement) Determination*.

The draft Determination includes an allowance for project proponents to use methane analysers for determining methane content. If a methane analyser is to be used, the uncertainty relating to the measurement of the fraction of the volume of coal mine waste gas that is methane as sent to each device must be estimated in accordance with standard methods, from regular instrument calibration tests against certified standard methane samples. The total uncertainty of the measurement for each device must take into account:

- a) bias or offset uncertainty;
- b) uncertainty in the certified calibration gas sample; and
- c) uncertainty in calibration measurements;

A maximum upper bound uncertainty must be determined that includes the above, expressed as the decimal fraction  $U_h$ , and applied as a discount to the quantity of methane  $Q_{CH_4,h}$  and  $Q_{CH_4,h,t}$ , as the factor  $(1-U_h)$ .

For example, if the maximum upper bound uncertainty of measurements is 2 per cent, the discount factor is  $U_h=0.02$ , and the quantity of methane must be discounted by multiplication by the factor  $1-0.02=0.98$ . This discount factor is applied to comply with the offsets integrity standards outlined in section 133 of the Act.

The Department will consider further guidance on the determination of the uncertainty.

For subsections 43(4) and 43(5), the ***recognised capacity*** of existing ***destruction devices*** refers to the maximum capacity of methane destruction or electricity production that is possible within a given time interval, as provided in the manufacturers’ specifications for the device.

Reductions in capacity due to maintenance cycles as determined according to manufacturers’ specifications is accounted for in relevant sections through the factor  $AF_{gen,m}$  or  $AF_{fl,m}$ .

#### 44 Consequence for failure to monitor certain parameters

The correct monitoring of parameters is important to ensuring the correct determination of abatement credited by the project. As tabulated in section 43, in some cases, a default factor option is provided, however, in other cases, the parameter must be monitored according to specified standards.

In accordance with the offsets integrity standards outlined in section 133 of the Act, section 44 specifies that adjustments must be applied should the project fail to monitor certain parameters in section 43 according to specified standards for a time interval during the reporting period.

Item 1 in the table concerns parameters necessary to determine the net abatement from displacing emissions from use of grid electricity. In any time interval where a parameter in this item was not correctly monitored, the net electricity produced (NTLEG<sub>P</sub>) must be taken to be zero for the time interval.

Item 2 in the table concerns key parameters necessary to determine abatement from destruction activities. Where the project is unable to meet monitoring requirements for a parameter in the table for a time interval, that parameter must be set to zero for the time interval.

Item 3 in the table concerns parameters that are used to calculate project emissions. In most cases, failure to monitor parameters in item 2 will also affect parameters in item 3 such that no adjustment is necessary for parameters in item 3. For example,  $Q_{CH_4,h}$  is the sum of  $Q_{CH_4,h,t}$  over all time intervals, therefore adjustments due to monitoring failures in  $Q_{CH_4,h,t}$  would already be accounted for when determining  $Q_{CH_4,h}$ . The instructions in this item make this update explicit, and catch potential cases where parameters in item 3 are not automatically updated following changes to parameters in item 2. The project may elect to (but are not obliged to) make adjustments, as long as it is done so in consistent manner with adjustments to parameters in item 2.

Item 4 in the table also concerns parameters used to calculate project emissions. These factors are energy content or emission factors which affect the entire project.

Where the project is using an emissions estimation option that allow regular determination of the factors in item 4, and the monitoring requirements have not been met for a time interval, the project must exclude all inputs to the net abatement amount from the time interval.

This means, for example, the methane volume sent or destroyed for those time intervals must also be set to zero, and the net abatement for the period is zero.