EXPLANATORY STATEMENT

Carbon Credits (Carbon Farming Initiative) Act 2011

Carbon Credits (Carbon Farming Initiative—Landfill Gas) Methodology Determination 2015

Background

The *Carbon Credits (Carbon Farming Initiative) Act 2011* (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 trees.

In 2014, the Parliament agreed to the *Carbon Farming Initiative Amendment Act 2014*, which establishes the Emissions Reduction Fund (ERF). 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 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 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.

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 Emissions Reduction Fund is available at:
www.environment.gov.au/emissions-reduction-fund.

Application of the Determination

The *Carbon Credits (Carbon Farming Initiative—Landfill Gas) Methodology Determination 2015* (the Determination) sets the requirements for implementing and monitoring offsets projects that avoid emissions by operating a landfill gas collection system. These rules have been designed to reflect the requirements of the offsets integrity standards and ensure that emissions reductions are real and additional to business as usual. The offsets integrity standards require that an eligible project should result in carbon abatement that is unlikely to occur in the ordinary course of events and is eligible carbon abatement under the Act. In summary, the offsets integrity standards also require 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
- estimates, assumptions or projections used in the Determination should be conservative.

The Carbon Farming Initiative (CFI), on which the ERF is built, developed two landfill gas methodology determinations for crediting emissions reductions of landfill gas generated by legacy waste, which is waste accepted at a landfill facility before 1 July 2012 (the start date of the carbon tax). The existing methodology determinations (collectively referred to as 'legacy Determinations') are:

- *Carbon Farming (Capture and Combustion of Methane in Landfill Gas from Legacy Waste) Methodology Determination 2012* (referred to as the 'legacy Determination')
- *Carbon Credits (Carbon Farming Initiative) (Capture and Combustion of Methane in Landfill Gas from Legacy Waste: Upgrade Projects) Methodology Determination 2012* (referred to as the 'legacy upgrade Determination').

These legacy Determinations were assessed and endorsed by the Domestic Offsets Integrity Committee as meeting the additionality and offsets integrity requirements of the CFI. In general, the Determination applies an approach consistent with the existing legacy Determinations to demonstrate consistency with the offsets integrity standards.

The Determination provides an incentive to install a new landfill gas collection system, upgrade an existing system or recommence operation of a system at a site where one has existed before, however, not operated for some time. Credits are given for the destruction of emissions from both legacy waste and non-legacy waste, which is waste that was accepted at the landfill facility after 30 June 2014 (the end date of the carbon tax).

The Determination also enables CFI landfill gas projects to transition to the ERF so that they can receive credits for the destruction of emissions from non-legacy waste as well as legacy waste.

All projects will be able to generate emission reductions for a seven year crediting period.

Public consultation

The 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 multiple meetings in 2013 and 2014 and has reviewed several draft versions of the Determination.

The exposure draft of the Determination was published on the Department's website for public consultation from 3 September 2014 to 1 October 2014. Seven submissions were received. Details of the non-confidential submissions made are provided on the Department of the Environment website, www.environment.gov.au.

Determination details

Details of the Determination are at Attachment A. Numbered sections in the Explanatory Statement align with the relevant sections of the Determination. The definition of terms highlighted in ***bold italics*** can be found in the Determination.

For the purpose of subsections 106(4), (4A) and (4B) of the Act, in making this Determination the Minister has had regard to, and agrees with, the advice of the Interim ERAC that the Determination complies with the offsets integrity standards and that the proposed Determination 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 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 Determination applies and other relevant considerations.

Subitem 393(2) of Schedule 1 of the *Carbon Farming Initiative Amendment Act 2014* operated in relation to this Determination to deem the request to, and advice from, the Interim ERAC to be the relevant request to and advice from the statutory ERAC under subsections 106(10) and 123A(2) of the Act respectively.

A Statement of Compatibility with Human Rights is at Attachment B.

Attachment A

Details of the Methodology Determination

Part 1 Preliminary

1 Name of Determination

Section 1 sets out the full name of the Determination, which is the *Carbon Credits (Carbon Farming Initiative - Landfill Gas) Methodology Determination 2015*.

2 Commencement

Section 2 provides that the Determination commences on the day after it is registered on the Federal Register of Legislative Instruments.

3 Authority

Section 3 provides that the Determination is made under subsection 106(1) of the Act. Section 4 sets out the period the Determination is in force.

4 Duration

Under subparagraph 122(1)(b)(i) of the Act, a methodology determination remains in force for the period specified in the Determination. The Determination will remain in force for the duration set out in this section unless revoked in accordance with section 123 of the Act or section 42 of the *Legislative Instruments Act 2003*.

Paragraph 4(a) provides that the Determination begins on commencement (as set out in section 2).

Paragraph 4(b) provides that the Determination ends 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 Determination will expire in accordance with subparagraph 122(1)(b)(i) of the Act.

If the Determination expires in accordance with section 122 of the Act or is revoked under section 123 of the Act during a crediting period for a project to which the Determination applies, the Determination will 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).

Under section 27A of the Act the ERAC may also suspend the processing of applications under a Determination if there is reasonable evidence that the Determination does not comply with one or more of the offsets integrity standards. This does not impact applications for declaration already received by the Regulator before such a suspension or declared eligible offset projects which apply the Determination.

5 Definitions

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

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

Two terms are particularly important because they help specify project requirements in Part 3.

The definition of ***collection efficiency*** supports the requirements in Part 3 for upgrade projects. The term is defined as the proportion of landfill gas that is generated in a landfill that is collected and combusted by a landfill gas collection system, expressed as a percentage. This distinguishes that an upgrade project is not simply one that collects more landfill gas than the amount collected before the upgrade. This definition enables upgrade projects to be potentially undertaken at landfills with decreasing or variable landfill gas generation rates, provided that the collection efficiency of the existing system improves.

The definition of ***combustion device*** expands on the definition given in the legacy Determinations by allowing the crediting of combustion of landfill gas not only by flare or internal combustion engine, but also by boiler or any other device that has a methane destruction efficiency of at least 98 per cent and whose operation, specifically the combustion process, can be monitored each minute. All combustion devices must be operated in accordance with the manufacturer's instructions.

6 References to factors and parameters from external sources

Section 6 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 *National Greenhouse & Energy Reporting Act 2007* (NGER Act).

The effect of subsection 6(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 end of the reporting period.

Paragraph 6(2)(a) provides that subsection 6(1) does not apply if the Determination sets out other requirements.

Paragraph 6(2)(b) provides that subsection 6(1) does not apply where it is not possible to retrospectively apply a factor or parameter in an instrument that is in force at the end of the reporting period. An example of circumstances where this may occur is where the monitoring approach defined in an external source is amended to require additional or different monitoring practices after the reporting period has commenced. In this circumstance it is not possible to retrospectively undertake monitoring activities in accordance with the new requirement.

As provided for by section 10 of the *Acts Interpretation Act 1901* and section 13 of the *Legislative Instruments Act 2003*, references to external documents which are legislative instruments (such as the *NGER (Measurement) Determination*) are references to versions of those instruments as in force from time to time. In circumstances where paragraph 6(2)(b) applies, it is expected that project proponents will use the version of legislative instruments in force at the time at which monitoring or other actions were conducted. Subsection 31(1) sets out reporting requirements to be followed when paragraph 6(2)(b) applies.

Part 2 Landfill gas projects

7 Landfill 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 methodology determination must specify the kind of offsets project to which it applies.

Section 7 specifies the high level features of the project that distinguishes it from other types of offset projects. The statement in subsection 7(1) that a project 'aims to' reduce greenhouse gas emissions is to accommodate new projects which have not commenced collecting and combusting landfill gas. This statement also applies to recommencing and upgrade projects because they would not have begun to reduce greenhouse gas emissions as a result of recommencing or upgrading the landfill gas collection system.

Subsection 7(2) defines the kinds of projects covered by the Determination as ***landfill gas projects***. Such a project, according to subsection 7(3), can be a ***new project***, ***recommencing project***, ***upgrade project*** or a ***transitioning project***.

Project requirements for new, recommencing, upgrade and transitioning projects are defined more extensively in Part 3 of the Determination.

Part 3 Project requirements

8 Operation of this Part

Section 8 provides that an ***eligible offsets project*** to which the Determination applies must be operated in accordance with Part 3.

The effect of paragraph 106(1)(b) of the Act is that a methodology 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 a project is an eligible offsets project unless the Regulator is satisfied that the project meets these requirements.

Part 3 of the Determination specifies requirements that must be met in order for a project to be an eligible offsets project. These are specified for the four types of projects to which the Determination applies:

- a ***new project***
- a ***recommencing project***
- an ***upgrade project***
- a ***transitioning project***.

Subsections 8(2) and 8(3) indicate that the Determination sets out two requirements in lieu of the additionality requirements, which are set out in section 13.

9 Requirements for a new project

Subsection 9(1) sets out requirements for ***new projects*** which collect and combust landfill gas in a combustion device. New projects are those that install a new landfill gas collection system where there has never been a system located on any part of the landfill previously.

10 Requirements for a recommencing project

Section 10 sets out requirements for ***recommencing projects*** which recommence operation of a landfill gas collection system at a site where a system previously operated. It is an eligibility requirement that both

- a landfill gas capture system has not operated at the landfill after 24 April 2014
- a landfill gas capture system has not operated at the landfill for at least three years before an application for the project as an eligible offsets project is made.

The date 24 April 2014 reflects the date the ERF White Paper was released. A decision to switch off a landfill gas collection system prior to this date is assumed to have been made for reasons other than an attempt to receive support under the ERF by reopening the project. The minimum three year period of non operation of a system also helps ensure that the system has not been temporarily switched off in order to benefit from the ERF.

11 Requirements for an upgrade project

Section 11 sets out requirements for ***upgrade projects*** which collect and combust landfill gas in a combustion device. An upgrade project is one that upgrades an existing and operating landfill gas collection system to increase the collection efficiency of the system.

There are no restrictions on the type of activities that can be undertaken to improve the existing system's collection efficiency. Examples include upgrading the way landfill gas is

collected by adding more wells, upgrading the capacity of the combustion devices or installing new software for optimising the operation of the system. The calculation of the net abatement achieved by an upgrade project depends on the magnitude of improvement to collection efficiency. It is therefore assumed that the upgrade action requires a capital investment, which is incentivised by the ERF and not likely to occur in the ordinary course of events.

Consistent with the legacy upgrade Determination, subsection 11(2) requires the previous two years' records of landfill gas collected by the existing system to calculate the ***collection efficiency*** before the upgrade and 12 months' records following the upgrade to calculate the improved collection efficiency. The two year time period prior to the upgrade reflects collection rates under the full range of seasonal conditions, with allowance for year on year variation. The 12 months' data following the upgrade is considered a practical compromise between ensuring the data represents the full seasonal conditions, whilst allowing the proponent to receive credits around 12 months after the commencement of the project. In line with this data requirement, subsection 11(3) states that it is not possible to submit an offsets report within the first twelve months of a project.

The requirement to have *at least* two years of record prior to making an application for declaration of an upgrade project as an eligible offsets project reflects the possibility that in some circumstances the upgrade may have begun before the application is made. In this situation the proponent will need records that extend more than two years prior to the application to perform the calculation of collection efficiency before the upgrade.

12 Requirements for a transitioning project

Section 12 sets out requirements for ***transitioning projects***, which are that it has been declared under either of the legacy Determinations:

- *Carbon Farming (Capture and Combustion of Methane in Landfill Gas from Legacy Waste) Methodology Determination 2012*

- *Carbon Credits (Carbon Farming Initiative) (Capture and Combustion of Methane in Landfill Gas from Legacy Waste: Upgrade Projects) Methodology Determination 2012.*

As transitioning projects have already been declared eligible offsets projects and met the additionality criteria in the Act which applied at the time they were declared eligible, they do not need to apply under section 22 of the Act to remain an eligible offset project.

The Determination does not automatically apply to CFI landfill gas projects. Instead, CFI landfill gas project proponents must make an application to the Regulator under section 128 of the Act to request to have the Determination apply to their project with effect from the start of the reporting period, which may pre-exist the commencement of the ERF or the Determination. The Regulator must be satisfied that the project is covered by this Determination under subsection 130(3) of the Act, however, the additionality and other requirements of subsections 27(4) and 27(4A) of the Act are not assessed under section 130 of the Act for a transition to the Determination to be approved.

13 Additionality requirements

A key requirement of the ERF is that credits are issued for emissions reductions that are 'additional' - that is, emissions reductions would not likely have occurred under normal business conditions, in the absence of the ERF. ***Transitioning projects*** have already been

assessed as additional when previously approved, and therefore do not need to pass the additionality requirements under subsection 27(4A) of the Act. However, the newness requirement, regulatory additionality requirement and government program requirement do apply to new, recommencing and upgrade projects.

Subsection 13(1) specifies a requirement in lieu of the newness requirement under subparagraph 27(4A)(a)(ii) of the Act for ***recommencing projects*** to ensure that the assessment of newness disregards the previous operation of a landfill gas collection system at the landfill outside of either the three years before the application is made or the time before the release of the ERF White Paper on 24 April 2014 (whichever occurred first) required under section 10. No requirement in lieu is specified for ***new projects*** or ***upgrade projects*** because they have clear actions, not undertaken previously at the landfill, which can be taken to mark the beginning of the project.

Subsection 13(2) specifies a requirement in lieu of the regulatory additionality requirement under subparagraph 27(4A)(b)(ii) of the Act. State and territory regulations for the management of landfill gas to meet safety, odour and environmental objectives are a common reason why landfill gas collection systems are installed or upgraded. The existence of a regulatory requirement does not, in itself, render a project ineligible. Instead, the Determination credits abatement which goes beyond the level required by regulation. Accordingly, the Determination simply specifies that in lieu of the regulatory additionality requirement a project must be a ***landfill gas project***, and the abatement calculations in Part 4 of the Determination require the project's baseline to be set in line with the relevant regulatory requirements for the project.

Part 4 Net abatement amount

To assist project proponents calculate the net abatement amount in accordance with Part 4, project proponents can use the *ERF landfill gas calculator* to automate the calculations. This calculator will be available on the Department of the Environment's website: http://www.environment.gov.au. The use of this calculator is not mandatory or given any particular legal status under the Determination.

Division 1 Operation of this part

14 Operation of this Part

Section 14 sets out that Part 4 of the Determination contains formula to calculate net abatement. Paragraph 106(1)(c) of the Act provides that a methodology determination must specify how to calculate the carbon dioxide equivalent (CO_2-e) net abatement amount for the project in relation to a reporting period.

15 Overview of gases accounted for in abatement calculations

Section 15 sets out the greenhouse gas sources that are assessed to determine the net abatement amount. These emission sources are set out in Table 1.

Table 1: Overview of gases accounted for in the abatement calculations

Relevant emissions calculation	Emissions source	Greenhouse gas
Baseline abatement	Destruction of methane in landfill gas by combustion	Methane (CH_4)
Baseline abatement	Destruction of methane in landfill gas by oxidation in the near surface conditions of the landfill	Methane (CH_4)
Project abatement	Destruction of methane in landfill gas by combustion	Methane (CH_4)
Project emissions	Combustion of landfill gas	Methane (CH_4)

A number of emissions sources are excluded from the abatement calculations for the following reasons:

- Emissions from generating, collecting, transporting, processing and disposing of the waste that generates landfill gas collected in the project is excluded because these activities are common to both the baseline scenario and project.
- Carbon dioxide emissions emitted from the decay of organic waste in a landfill or the combustion of landfill gas are excluded because these emissions have a biogenic origin (originate from organic material). This means that without the project, this carbon dioxide from organic material would have been released in any case.
- Emissions from using fuel or electricity to operate the landfill gas system, including any processing of the landfill gas, are excluded based on analysis of data from existing landfill gas projects showing that this emission source is immaterial.
- Emissions of nitrous oxide from the combustion process are excluded because it is an immaterial amount. Methane emissions from the combustion device are included

through the application of a destruction efficiency factor in the calculation of abatement.

16 Inputs and parameters

Section 16 sets out instructions relevant to the inputs and parameters used in the net abatement calculation. Subsection 16(1) sets out that inputs and parameters are for the whole landfill. This is relevant in the context that the *NGER (Measurement) Determination* provides calculation approaches that apply to a part of a landfill (a sub-facility zone), which are not appropriate for calculating the net abatement amount.

Subsection 16(2) sets out that if the same parameter is an input to more than one equation, then the value used for that parameter must be the same in each circumstance. An example of this is methane combusted during the reporting period (M_{Com}), which is used in **equations 3** and **4**. Depending on which technique is used to determine the amount of methane sent to a combustion device ($M_{Sent,h}$), it is possible to reach different values for M_{Com}. Therefore subsection 16(2) requires that the same value of M_{Com} is used in both equations to ensure consistency across calculations.

Division 2 Method for calculating net abatement amount

17 Summary

For landfill gas projects the net abatement amount is project abatement minus baseline abatement. This means that credits are only given for the abatement achieved in the project that goes beyond what would have been achieved in the baseline scenario.

18 Net abatement amount

The carbon dioxide equivalent net abatement amount for an eligible offsets project is set out in **equation 1**.

Division 3 Method for calculating project abatement

19 Summary

Section 19 sets out a summary of the method for calculating project abatement.

20 Project abatement

Section 20 sets out that the project proponent determines the project abatement amount for each reporting period by completing **equation 2**, which has two elements:

- the amount of methane that is combusted, which was not generated by carbon tax waste, during the reporting period ($M_{Com,NCT}$)

less

- the portion of this combusted methane that, without the project, would have been oxidised in the near surface conditions of the landfill ($M_{Com,Ox}$).

The method only credits the destruction of emissions from legacy waste (accepted at the landfill before the start of the carbon tax) and non-legacy waste (accepted at the landfill after the end of the carbon tax). Waste deposited between these periods generates landfill gas that is not eligible for emission reduction credits. This is referred to as ***carbon tax waste***.

21 Methane combusted that was not generated from carbon tax waste

Section 21 sets out how to determine the amount of methane that is combusted, which was not generated by ***carbon tax waste***. This means the methane combusted that was generated either by legacy waste (deposited at the landfill before the start of the carbon tax) or non-

legacy waste (deposited at the landfill after the end of the carbon tax). This calculation is done by completing **equation 3**, which has three elements:

- the default conversion factor used to express the result of this calculation in carbon dioxide equivalent (ɣ)

  multiplied by

- the total volume of methane combusted (irrespective of whether it was generated by legacy waste, non-legacy waste or carbon tax waste) (M_{Com})

  multiplied by

- the proportion of the methane combusted that was not generated by carbon tax waste (W_{NCT}).

22 Proportion of methane combusted that was not generated from carbon tax waste

Section 22 sets out the calculation for the proportion of methane combusted that was not generated by carbon tax waste (W_{NCT}). This calculation is performed on a financial year basis in line with calculations in the *NGER (Measurement) Determination*. Because flexible reporting periods could be up to two years in length, a reporting period could span up to three financial years and not necessarily align with financial years. In the case that a reporting period covers more than one financial year, then a single proportion must be derived for the reporting period.

To achieve this, the proportion of methane generated in the landfill that is generated from carbon tax waste is determined for each financial year y that the reporting period partly or fully covers. The proportion for each financial year y is then adjusted by multiplying by the proportion of methane combusted in the reporting period that was combusted in each financial year y. Summing these adjusted proportions calculates the result (W_{NCT}) for the reporting period. For example, if 10 per cent of the methane combusted in a reporting period was combusted in the 2014-15 financial year and the other 90 per cent in the 2015-16 financial year, then the proportion calculated for the reportion period is 10 per cent multiplied by the proportion for 2014-15 added to 90 per cent multiplied by the proportion for 2015-16.

A benefit of this calculation approach is that the calculation of W_{NCT} in one reporting period would be applicable for other reporting periods falling within the same financial year.

Equation 4 consists of two main parts. The first part is to adjust the proportions calculated for more than one financial year. This part of the equation has two terms:

- the amount of methane combusted in the financial year y ($M_{Com,y}$)

divided by

- the amount of methane combusted in the reporting period (M_{Com}).

These parameters are determined in accordance with section 23. For the case of $M_{Com,y}$ the calculations are carried out as if the reporting period is the part of the reporting period occurring in financial year y. This calculation requires inputting the amount of methane sent to the combustion device calculated in section 24, which is determined based on the same time period. If the reporting period is completely within a single financial year, then $M_{Com,y}$ would equal M_{Com} and the proportion equals one and can be ignored.

The second part of the equation calculates the proportion of the methane generated that was not generated by carbon tax waste for the financial year y. It consists of three terms:

- the amount of methane that was generated by carbon tax waste in the financial year y ($M_{CTW,y}$)

divided by

- the total amount of methane that was generated by the landfill in the financial year y ($M_{Gen,y}$)

subtracted from

- one so that it represents the proportion ***not*** generated by carbon tax waste.

Subsection 22(2) sets out that the methane generated from ***carbon tax waste*** in a particular financial year y ($M_{CTW,y}$) is determined using the *NGER (Measurement) Determination*. The calculation is performed using the assumption that the only waste disposed in the landfill is carbon tax waste. Inputs for waste that is not carbon tax waste are zero.

Subsections 22(3) and 22(4) sets out that the total methane generated in the landfill in a particular financial year *y* ($M_{Gen,y}$) is also determined using the *NGER (Measurement) Determination*. This calculation is performed for all waste that has been disposed to the project landfill.

Subsections 22(5), 22(6) and 22(7) sets out how other parameters that are also estimates of methane generation in a landfill are calculated. These similar instructions are grouped together in this section of the Determination to avoid repetition.

The *NGER (Measurement) Determination* calculates landfill gas generation on a financial year basis. For the situation that the particular year for which landfill gas generation is being calculated is not a financial year, subsection 22(8) sets out the instructions for how to calculate this using the *NGER (Measurement) Determination.* In this situation, the year will partly cover two financial years, so subsection 22(8) requires that landfill gas generation is calculated for both of these financial years, and the result then multiplied by the proportion of days in the particular year that fall in each financial year. The results are then summed to work out the landfill gas generation for the particular year.

23 Methane combusted

Subsection 23(1) sets out **equation 5** that calculates the volume of methane combusted in the project M_{Com} as the sum of methane combusted by each combustion device h ($M_{Com,h}$).

To account for the situation that a combustion device does not achieve complete combustion of methane, subsection 23(2) contains **equation 6** that determines the amount of methane combusted by a combustion device h as:

- the amount of methane sent to the combustion device ($M_{Sent,h}$)

multiplied by

- a default destruction efficiency factor (DE), which is one for internal combustion engines and 98 per cent for other combustion devices, consistent with the *NGER (Measurement) Determination.*

Unless the combustion device is an internal combustion engine, boiler or flare with a monitoring and control system, it is necessary to ensure that the amount of methane sent to the combustion device when the combustion process is not occurring in a satisfactory manner (and therefore may not be properly combusting the methane) is excluded from the calculation of net abatement. To achieve this adjustment **equation 7**, given in subsection 23(3), includes a third term that is the operation of the combustion device h in each hour a of the reporting period ($O_{h,a}$). If the combustion process of the device is occurring satisfactorily in an hour (for instance determined by a temperature reading above 500 degrees Celsius), then the value is one and otherwise it is taken to be zero. This approach is consistent with the legacy Determinations.

For both **equations 6** and **7**, any landfill gas that is sent to a combustion device when it is not being operated in accordance with manufacturer's instructions must be excluded, in line with the project requirements in Part 3 of the Determination.

24 Methane sent to combustion device

Subsection 24(1) outlines three options in **equations 8, 9** or **10** to calculate the methane sent to a combustion device h ($M_{sent,h}$). The reference in this subsection that this amount is determined for a *particular period*, indicates that, depending on the output required, the calculation is carried out for different periods. These time bases are the default reporting period (calculating $M_{Sent,h}$), the hour a in the reporting period (calculating $M_{Sent,h,a}$) or the year y (calculating $M_{Sent,h,y}$).

Each of the three options requires a different monitored parameter, either the volume of landfill gas sent to the combustion device together with the proportion of landfill gas that is methane (applying either a monitored or default value) in **equation 8**, the energy content of the landfill gas sent to the combustion device in **equation 9** or the electricity produced by the combustion device (this option is only applicable to internal combustion engines) in **equation 10**.

Subsection 24(2) (option 1) provides **equation 8**, which is the option of using measurement of the volume of landfill gas sent to the combustion device. The equation has two terms:

- the volume of landfill gas sent to combustion devices ($Q_{LFG,h}$), which is a monitored parameter

multiplied by

- the fraction of the volume of landfill gas sent to combustion devices that is methane ($W_{LFG,CH4}$), which is either a monitored parameter or a default value sourced from the *NGER (Measurement) Determination.*

Subsection 24(3) directs that if a project proponent chooses to monitor the fraction of the volume of landfill gas sent to combustion devices that is methane ($W_{LFG,CH4}$), then they must monitor do so for the entire crediting period. If a project uses the default value for $W_{LFG,CH4}$, the project may change to monitoring however, cannot change back to using the default. The reference in this subsection to 'at any time during which this determination is the applicable methodology' means that a transitioning project can decide at the time the Determination becomes their applicable methodology to either monitor or use the default, disregarding whether they had elected to monitor under the legacy Determination.

Subsection 24(5) (option 2) provides **equation 9**, which is the option using measurement of the energy content of landfill gas sent to the combustion device. The equation has two terms:

- the energy content of landfill gas sent to combustion devices ($Q_{En,h}$), which is a monitored parameter

divided by

- the energy content factor for landfill gas (EC_{LFG}), which is sourced from the *NGER (Measurement) Determination.*

Subsection 24(6) (option 3) provides **equation 10**, which is the option that uses measurement of the electricity generated from combusting landfill gas in an internal combustion engine. The equation has four terms:

- the electricity generated from combusting landfill gas in an internal combustion engine h ($Q_{EG,h}$), which is a monitored parameter

multiplied by

- the factor that converts megawatt hours to gigajoules, which is 3.6

divided by

- the factor for electrical efficiency of the internal combustion engine, which is the factor specific to the internal combustion device h and landfill gas fuel, which is the amount of electricity produced from an amount of landfill gas, expressed as a percentage. If this factor is not stated in manufacturer's specifications for the internal combustion engine then an amount of 36 per cent is used

divided by

- the energy content factor for landfill gas (EC_{LFG}), which is sourced from the *NGER (Measurement) Determination.*

25 Methane combusted that was not generated from carbon tax waste that would have been oxidised in near surface conditions

Section 25 sets out **equation 11**, which is used to calculate the amount of methane combusted in the project that was not generated by carbon tax waste that would have been oxidised in the near surface conditions of the landfill ($M_{Com,Ox}$). Under the project activity, this oxidation effect is reduced as a part of the landfill gas is collected and does not pass through the top layer of the landfill.

Given a proportion of the methane combusted in the project would also have been combusted in the baseline, oxidation in the near surface conditions of the landfill only needs to be accounted for the amount of methane combusted that is beyond what would have been combusted in the baseline. This is done using the baseline proportion value of W_B. The oxidation factor (OF) is sourced from the *NGER (Measurement) Determination* and is a default value indicating how much of the methane passing through the near surface layer of the landfill is converted to carbon dioxide. The equation has three terms:

- the methane that was not generated by carbon tax waste combusted in the project ($M_{Com,NCT}$), calculated in section 21

multiplied by

- the oxidation factor (OF), which is a default value sourced from the *NGER (Measurement) Determination*

multiplied by

- the proportion of the methane combusted in the reporting period that would otherwise have been combusted without the project subtracted from one (1 - W_B). The effect of subtracting from one is to calculate the proportion of the amount combusted that goes beyond the amount combusted without the project.

Division 4 Method for calculating baseline abatement

26 Summary

Section 26 sets out that baseline abatement is calculated as the amount of methane combusted by the project that was not generated by carbon tax waste multiplied by the proportion representing the amount of methane combusted during the project that would have been combusted without the project.

The determination of this baseline proportion depends on the type of project.

27 Baseline abatement

Section 27 sets out **equation 12**, which is used to calculate baseline abatement. It has two terms:

- the methane that was not generated by carbon tax waste combusted in the project ($M_{Com,NCT}$), calculated in section 21

  multiplied by

- the proportion of the methane combusted in the reporting period that would have been combusted without the project (W_B).

28 Proportion of methane that would have been combusted without the project

Section 28 sets out three approaches for determining the proportion of methane that would have been combusted without the project. The approach used depends on whether it is a ***new or recommencing project***, ***upgrade project*** or ***transitioning project***.

Subsection 28(1) sets out how to determine the baseline proportion for ***new or recommencing projects***. As set out by **equation 13**, the proponent uses whichever of the following proportions is highest:

- the regulatory proportion of the methane combusted during the reporting period that would have been combusted without the project, which is derived using Schedule 1 based on quantitative regulatory requirements ($W_{B,Reg}$)

- the default proportion of the methane combusted during the reporting period that would have been combusted without the project ($W_{B,Def}$).

The default value represents the proportion that meets qualitative regulatory requirements and is either 30 per cent or zero per cent. There are no conditions for applying the 30 per cent default; however, the zero per cent default can only be applied if the proponent is able to demonstrate that no qualitative requirements apply to the landfill.

Project proponents applying the zero per cent default are required to demonstrate that the landfill is not subject to qualitative requirements, including through:

- state or territory legislation

- regulatory guidelines for landfill, which means the guidelines that establish policy and regulatory requirements for sustainable waste management and landfill performance and are applied by environment agencies and environmental protection agencies in Australian jurisdictions (examples of these documents are listed in the explanatory text for Part 2 of Schedule 1). Topics in these guidelines usually cover siting, design, management or operation of landfills.
- landfill licences, operating requirements or development approvals, which may include a qualitative requirement to capture, collect, control, manage or limit landfill gas, methane, odour or greenhouse gases.

Qualitative requirements may be expressed in a variety of ways and do not need to include specific instructions or directions. Examples of qualitative requirements are:

- install a landfill gas collection system
- develop a plan to install a landfill gas collection system
- install a landfill gas collection system to keep within allowable methane concentrations
- control or reduce methane concentrations
- control, manage or limit odour
- capture landfill gas where practicable
- reduce emissions of greenhouse gases
- limit, minimise or control greenhouse gases.

Subsection 28(2) sets out the formula for how to determine the baseline proportion for ***upgrade projects***. **Equation 14** sets out that the baseline proportion is the higher of:

- the regulatory proportion of the methane combusted during the reporting period that would have been combusted without the project, which is derived using Schedule 1 based on quantitative regulatory requirements ($W_{B,Reg}$)
- the default proportion of the methane combusted during the reporting period that would have been combusted without the project ($W_{B,Def}$), which is defined in subsection 28(1)
- the proportion representing the improvement to the collection efficiency achieved by the upgrade ($W_{B,Ex}$).

The first two terms ($W_{B,Def}$ and $W_{B,Reg}$) are also used to determine the baseline proportion for new and recommencing projects, and the third is specific for upgrade projects. The approach is a conservative and verifiable approach, consistent with the legacy upgrade Determination and the offsets integrity standards.

Subsections 28(3) and 28(4) set out that ***transitioning projects*** retain their existing baseline proportion, which was determined under the legacy Determinations. **Equation 15** sets the baseline proportion to be R_P, which is applicable to transitioning projects covered by the legacy Determination, and **equation 16** sets the baseline proportion to be B_P, which is applicable to transitioning projects covered by the legacy upgrade Determination.

Subsection 28(5) sets out that the baseline proportion is determined once only. The value determined and used in the first offsets report is used throughout the crediting period.

29 Proportion of methane that would have been combusted without upgrade

Section 29 applies only to ***upgrade projects*** and subsection 29(1) sets out how to calculate the proportion of methane that represents the magnitude of improvement to collection efficiency achieved by the upgrade project ($W_{B,Ex}$). The calculation given in **equation 17** is consistent with the legacy upgrade Determination and has two terms;

- the collection efficiency of the existing landfill gas capture system before the upgrade ($W_{Com,Bef}$)

  divided by

- the collection efficiency of the landfill gas capture system after the upgrade ($W_{Com,Aft}$).

The collection efficiency of the landfill gas capture system after the upgrade is calculated in subsection 29(2) using **equation 18**. Proponents require 12 months records of landfill gas collection after the upgrade is completed to perform this calculation, which has three terms:

- the sum of the amount of methane sent to all combustion device h ($M_{Sent,h}$) used in the 12 months following the upgrade

  multiplied by

- the conversion factor ($\boldsymbol{\gamma}$), which is used to express the amount of methane in tonnes CO_2-e

  divided by

- the total amount of methane that was generated by the landfill in the year y ($M_{Gen,y}$), where the year y is the 12 months following completion of the upgrade.

Subsection 29(3) sets out how to calculate the collection efficiency of the existing landfill gas collection system, before the upgrade ($W_{Com,Bef}$). To perform this calculation proponents require two years' information on the amount of landfill gas collected and combusted from the landfill before starting the upgrade. This requirement is included as an eligibility requirement for upgrade projects, to ensure that proponents have access to this historic data prior to commencing their project.

The calculation using **equation 19** has the following terms:

- the sum of the amount of methane captured and combusted on site ($Q_{cap,y} + Q_{flared,y}$) and the methane captured and destroyed when transferred out of the landfill ($Q_{tr,y}$), which are terms defined in the *NGER (Measurement) Determination*

  multiplied by

- the conversion factor ($\boldsymbol{\gamma}$), which is used to express the amount of methane in tonnes CO_2-e

  divided by

- the total amount of methane generated by the landfill ($CH^{*}_{4,y}$), determined using the *NGER (Measurement) Determination.*

The calculation is repeated for each of the two years immediately prior to the upgrade starting. The average of these values is determined by summing the results for each of the two years and dividing by two.

Subsection 29(4) sets out that $CH^{*}_{4,y}$ is determined using the *NGER (Measurement) Determination*. In other cases in the Determination, the amount of landfill gas generated in a landfill is calculated as CH_{4gen}, also using the *NGER (Measurement) Determination.* The parameter $CH^{*}_{4,y}$ is used instead for this equation, because it has a calculation step (not used for the calculation of CH_{4gen}) that ensures that the amount of landfill gas collected does not exceed the amount of landfill gas that is estimated to have been generated in the landfill. This helps prevent a calculation of collection efficiency that exceeds 100 per cent.

If the year y for which $CH^{*}_{4,y}$ is determined partly covers two financial years, then subsection 29(5) directs that the calculation is done in accordance with the instructions set out in section 22(8).

Part 5 Reporting, record keeping and monitoring requirements

Subsection 106(3) of the Act outlines that a methodology determination may subject the project proponent of an eligible offsets project to specified monitoring, record keeping and reporting requirements.

Under Parts 17 and 21 of the Act, a failure to comply with these requirements may constitute a breach of a civil penalty provision, and a financial penalty may be payable.

Any monitoring, record keeping and reporting requirements specified in Part 5 of the Determination are in addition to any requirements specified in the Act, Regulations or legislative rules.

Division 1 Offsets report requirements

30 Operation of this Division

The effect of paragraph 106(3)(a) of the Act is that a methodology determination may set out requirements to be included in each offsets report. Division 1 sets out offsets report requirements.

31 Determination of certain factors and parameters

Section 31 sets out what must be included in an offsets report.

Subsection 31(1) sets out that the offsets reporting requirements in this subsection apply where it is not possible to meet the requirements of subsection 6(1), as outlined in paragraph 6(2)(b). Further explanation of these circumstances is provided in section 6. The purpose of subsection 31(1) is to provide the Regulator with information on which version of the *NGER (Measurement) Determination* or other relevant external source has been used by a project proponent to meet the monitoring requirements set out in section 33. The proponent is required to detail in their offsets report the version of the *NGER (Measurement) Determination* or external source that was used when undertaking monitoring, the dates that the version was used and why it was not possible for the proponent to use the version that was in force at the end of the reporting period.

Subsection 31(2) sets out that the requirements in this subsection apply if a parameter is worked out using section 34, which is applied if a project proponent fails to meet requirements to monitor certain parameters. The information required to be reported is listed in paragraphs 31(2)(a) to 45(2)(d) and is to provide the Regulator with evidence that will allow them to determine the nature and frequency of the failure to meet the monitoring requirements of the Determination and determine what compliance action may be appropriate.

Division 2 Monitoring requirements

32 Operation of this Division

The effect of paragraph 106(3)(d) of the Act is that a methodology determination may provide specified requirements to monitor the project.

33 Requirements to monitor certain parameters

Section 33(1) sets out the five parameters used in the calculation of net abatement amounts in Part 4 of the Determination that require monitoring, including specifications for the manner and frequency of monitoring. All parameters support the calculation of the amount of methane combusted in the project.

A project will not necessarily be required to monitor these five parameters, because monitored parameters are associated with options which may not be selected by the proponent or that do not apply to the project (for instance there are three options given in the calculation of $M_{sent,h}$ in section 24 that each require different monitored parameters).

The Determination sets out that measurement procedures must be undertaken in accordance with relevant *NGER (Measurement) Determination* specifications. This is the case for the following four monitored parameters, which all relate to the calculation of the amount of methane sent to a combustion device in the project:

- energy content of the landfill gas sent to combustion device h ($Q_{En,h}$)
- landfill gas sent to combustion device h ($Q_{LFG,h}$)
- electricity (supplied to the grid or used on site) generated by internal combustion engine h ($Q_{EG,h}$)
- fraction of the volume of landfill gas that is methane ($W_{LFG,CH4}$).

If there are no relevant *NGER (Measurement) Determination* specifications, then a monitored parameter must meet ***appropriate measuring requirements*** (defined in subsection 33(4)). This is only applicable to the monitoring of the operation of combustion device h in the hour a ($O_{h,a}$). If the device is a flare, then the combustion process is determined by the temperature being 500 degrees or hotter for a minimum of 40 minutes in the hour a. For an unspecified type of combustion device, then its operation (specifically that the combustion process is occurring) is based on manufacturer's specifications.

The monitoring requirements are listed in the table in subsection 33(1). The first three columns are the parameter name, description and units (consistent with how the parameter is presented, defined and the units needed for the calculation of net abatement in Part 4). The fourth column is the measurement procedure, which is usually a reference to a division in the *NGER (Measurement) Determination* and the frequency of monitoring if relevant. If the requirement is continuous then spot measurements do not meet this requirement (for instance determining the fraction of the volume of landfill gas that is methane is on a continuous basis so cannot be based on weekly samples and analysis).

The fifth column sets how the monitored parameter is to be derived from the measurements. For the case that the fraction of the volume of landfill gas that is methane is monitored, then the measurements are paired with measurements made of the flow of landfill gas for the same interval for the purpose of **equation 7**. The maximum time interval for pairing these measurements is one hour. If the default value is used for this proportion, then the landfill gas flow measurements do not need to be paired. In this case the landfill gas measurements can be accumulated for the time the default value is applied (noting that a proponent could decide to change from using the default value to monitoring, but not from monitoring to using the default, in accordance with subsection 24(3) of the Determination.

Subsection 33(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, that are in accordance with the manufacturer's specifications.

Subsection 33(3) defines ***appropriate measuring requirements*** as being consistent either with *NGER (Measurement) Determination* specifications that apply to similar measurements or estimates or relevant standards and other requirements under the *National Measurement Act 1960*.

As reiterated by subsection 34(2) below, failure to monitor parameters in accordance with this section is a breach to requirements of the Determination. In the case of certain parameters, where it has not been possible to monitor in accordance with the requirements projects should use one of the approaches provided in section 34.

34 Consequences of not meeting requirement to monitor certain parameters

Compliance with requirements for monitoring of parameters is important to ensure that abatement credited by the project is calculated correctly. Monitoring requirements (section 33) include the process for monitoring and the standard to which monitoring must occur.

In some cases a project may be unable to monitor a parameter to the requirements specified. When this occurs, section 34 requires that adjustments be applied for the time intervals that the parameters are not being monitored in accordance with requirements (termed the ***non-monitored period***). The adjustment is necessary to ensure that all estimates or assumptions used in the Determination are conservative and are in accordance with the offsets integrity standards outlined in section 133 of the Act.

For parameters listed in item 1 of the table in subsection 34(1), the consequence for not monitoring in accordance with the requirements is for the project to work out the parameter using the default emissions factor for that parameter (as is included in the lower order monitoring option for the parameter). The proponent applies a 10 per cent adjustment to the default emissions factor (i.e. the factor is multiplied by 0.9) for a period of up to three months in any 12 month period. For any period in excess of this three months, then the adjustment is 50 per cent (i.e. the factor is multiplied by 0.5).

For parameters listed in item 2 of the table, the consequence for not monitoring these parameters in accordance with the monitoring requirements is for the proponent to make a conservative estimate of the parameter for the duration of the ***non-monitored period***.

The need for a proponent to apply section 34 arises from failure to meet monitoring requirements. In accordance with the Act, the Regulator may determine an appropriate response within its compliance and enforcement framework depending on the nature of the non-compliance (i.e. whether it is a one-off minor event or a more significant or repeated breach). This could include determining that that no eligible net abatement has been achieved by the project for the period of the breach. A note to subsection 34(2) indicates other actions that the Regulator may choose to take in response to a project failing to meet monitoring requirements.

When section 34 is used the project will be required to include information relating to the monitoring failure in its offsets report for the relevant reporting period (set out in section 31). This is to provide the Regulator with evidence that will allow them to determine the nature, and frequency, of the failure to meet the monitoring requirements of the Determination and determine what compliance action may be appropriate.

Schedule 1 Determining regulatory proportion

Part 1 Operation of this Schedule

1 Operation of this Schedule

Clause 1 sets out that Schedule 1 provides the calculation steps for determining the baseline proportion that reflects quantitative regulatory requirements (referred to as the regulatory proportion) ($W_{B,Reg}$). Project proponents may determine $W_{B,Reg}$ by selecting one of the four ways given in Parts 2 to 5 of Schedule 1.

The source of the quantitative regulatory requirement in Schedule 1 is *methane concentration limits*, often expressed as parts per million methane permitted to be emitted from the landfill cover, as applied by state or territory regulators. For Part 2, the applicable methane concentration limit is sourced from regulatory guidelines for landfills. The limits used for any calculation approach are the most stringent that has been in place since 24 March 2011. Applying the most stringent requirement in place since 24 March 2011 is consistent with the negative list requirements under the Act. Kinds of projects included on the negative list are 'excluded offsets projects' meaning they are not eligible to generate ACCUs under paragraph 27(4)(m) of the Act. This includes projects involving activities previously mandated under a Commonwealth or a state or territory law that has been repealed, or amended to be less onerous, after 24 March 2011. The intent of this provision is to avoid legislative requirements being relaxed so that projects could access funding through the ERF, as abatement must be additional to what would occur in the absence of the ERF. For example, the ERF may credit flaring more landfill gas than is required to meet license conditions and comply with local government regulations.

The four approaches (Parts 2 to 5) to determine $W_{B,Reg}$ are:

- converting the quantitative requirement into $W_{B,Reg}$ using the methane flux rate that corresponds to the applicable methane concentrations limit and the landfill gas generated by the landfill
- asking the environmental regulator to determine the required gas collection rate to meet the quantitative requirement and then converting this to $W_{B,Reg}$
- asking the environmental regulator if the gas collection rate of an existing landfill gas collection system already meets the quantitative requirement
- engaging an independent expert to determine $W_{B,Reg}$.

Two of the ways to determine $W_{B,Reg}$ (Parts 3 and 4) require requesting the relevant environmental regulator for information. Subclause 1(2) sets out that this does not require the environmental regulator to do anything. Therefore these options (Parts 3 and 4) would not be available to a project proponent without the agreement of the environmental regulator. However, the proponent could still apply either of the other options (Parts 2 and 5).

Part 2 Regulatory proportion determined using regulatory guidelines for landfill

Part 2 of Schedule 1 lists the applicable methane concentration limit and corresponding flux rates (as sourced from state and territory guidelines and that represent the most stringent requirements since 24 March 2011). These values could be specified by environmental regulators differently for the ***final cover area*** and ***intermediate cover area*** of a landfill, because intermediate cover area is likely to be more permeable and temporary than the final cover area. These methane concentration limits and the corresponding flux rate may be updated periodically if applicable methane concentration limits become more stringent. The documents that are the basis of the tables in subclauses 4(2) and (3) are:

- Queensland Department of Environment and Heritage Protection - *Guideline—Landfill siting, design, operation and rehabilitation*
- NSW Environmental Protection Agency - *Environmental Guidelines: Solid Waste Landfills*
- EPA Victoria - *Siting, Design, Operation and Rehabilitation of Landfills*
- EPA South Australia - *EPA Guidelines: Environmental management of landfill facilities (municipal solid waste and commercial and industrial general waste),*
- EPA Tasmania - *Landfill Sustainability Guide*
- Northern Territory EPA - *Guidelines for the siting, design and management of solid waste disposal sites in Northern Territory.*

2 Regulatory proportion determined using regulatory guidelines for landfill

If, since 24 March 2011, there have been no methane concentration limits set for the state or territory where the landfill is located (indicated by a 'n/a' in tables in subclauses 4(2) and 4(3)), then there is no regulatory proportion and $W_{B,Reg}$ is zero. Otherwise Clause 2 sets out that $W_{B,Reg}$ may be worked out using **equation 20**, which has two principle terms:

- the annual amount of methane that is permitted to be emitted from the landfill to the atmosphere to comply with the quantitative regulatory requirement (M_{Reg})

divided by

- the amount of methane that was generated by the landfill ($M_{Gen,y}$), determined in accordance with the instructions in subsection 22(3).

Subtracting this amount from one calculates the regulatory proportion.

3 Annual amount of methane permitted to be emitted

Clause 3 contains **equation 21**, which calculates the total permitted methane emissions from the landfill by summing the permitted annual methane emissions from ***final cover area*** and ***intermediate cover area*** together with the permitted annual methane emissions from ***daily cover/operational area.***

4 Annual amount of methane permitted to be emitted from final and intermediate cover

Clause 4 sets out how to calculate the maximum amount of methane, expressed in carbon dioxide equivalent, that can be emitted from the ***final cover area*** and ***intermediate cover area***

in an annual period and meet the applicable quantitative regulatory requirement. **Equation 22** in subclause 4(1) has the following elements:

- the square metre area of the final cover area or intermediate cover area (C_x) multiplied by the permitted methane flux rate for the corresponding type of cover (S_x), which for final cover is set out in the table in subclause 4(2) and for intermediate cover is set out in the table in subclause 4(3). To date, the applicable methane concentration limits contained in regulatory guidelines for landfills have been the same for intermediate cover area and final cover area. The separate calculation and summation of permitted emissions from intermediate cover area and final cover area allow for the possibility that different methane concentration limits could be specified in the future. The result of this multiplication is then:

  multiplied by

- the Global Warming Potential value for methane (GWP_{CH4}) to convert this to tonnes CO_2-e, and

- hours in the year (8,760) to calculate the annual amount of methane that can be emitted

  divided by

- one minus the oxidation factor (OF), to account for the proportion of the amount of landfill gas generated that is oxidised to carbon dioxide in the near surface conditions of the landfill.

The Global Warming Potential value for methane is set out in regulation 2.02 of the *National Greenhouse and Energy Reporting Regulations 2008* and the oxidation factor set out in the *NGER (Measurement) Determination.* The only parameter that is worked out by the proponent is the square metre area of final and intermediate cover.

5 Annual amount of methane permitted to be emitted from the daily/operational cover

There are no methane concentration limits specified for ***daily cover/operational areas*** in regulatory guidelines for landfill. Clause 5 therefore sets the permitted methane emissions for the daily/operational cover area as equal to the methane that is generated by the waste deposited vertically below the daily cover/operational area.

The *NGER (Measurement) Determination* is used to calculate this amount of methane generated, in accordance with the instructions in subsection 22(3), based on the time period being the year before the project begins, and that the amount of waste that is assumed to be landfill comprises only the waste sited vertically below the daily cover/operational area.

Part 3 Regulatory proportion determined by asking environmental regulator

6 Regulatory proportion determined by asking environmental regulator

Clause 6 enables the proponent to ask their state or territory environmental regulator to determine the gas collection rate required to meet the applicable methane concentration limits applying to the landfill. It is necessary requirement for a proponent to use this Part that the environmental regulator gives the gas collection rate to the proponent in writing.

Subclause 6(2) allows for the situation that the environmental regulator could express the gas collection rate in different quantitative ways. This is a reason why the Determination does not require the regulator to express it in terms of collection efficiency. The different ways accounted for in the Determination are listed in the table and are:

- methane concentration limit
- flux rate of methane from the surface of the landfill
- proportion of methane generated that is allowed to be released
- proportion of methane generated that is required to be collected
- annual amount of landfill gas that must be collected
- any other quantitative gas collection rate, which the proponent then uses to calculate how much gas must be collected to meet the requirement.

The way that the gas collection rate is converted to $W_{B,Reg}$ is based on the method in Part 2 of Schedule 1 and set out in the third column of the table in subclause 6(2). For the case of item 1 in the table, which is that the environmental regulator specifies the methane concentration limit, then subclause 6(3) provides a table to convert this methane concentration limit to a flux rate that is then used in **equation 22** set out in clause 4. This table is not applicable to any other item listed in the table in subclause 6(2).

Part 4 Regulatory proportion determined by asking environmental regulator and using collection efficiency of existing landfill gas system.

7 Regulatory proportion determined by asking environmental regulator and using collection efficiency of existing landfill gas system

Clause 7 can be applied where there is an existing landfill gas collection system operating at the landfill. Subclause 7(1) enables the proponent to ask the environmental regulator whether the current gas collection rate at the landfill complies with the most stringent methane concentration limits for the landfill that have been in force since 24 March 2011.

If the response from the environmental regulator is that the current gas collection rate does comply with the relative requirement, then subclause 7(2) directs that $W_{B,Reg}$ is taken to be calculated with **equation 19.** This equation is used to calculate the collection efficiency of the existing landfill gas collection system before an upgrade project starts ($W_{Com,Bef}$). Data for only one year is required for calculating $W_{B,Reg}$, rather than the two years' records required to calculate $W_{Com,Bef}$, which is the reason that the divisor two is not required.

Subclause 7(3) clarifies that the option provided in Part 4 is only available if state or territory regulatory requirements have not changed since 24 March 2011.

Part 5 Regulatory proportion determined by independent expert

8 Regulatory proportion determined by independent expert

Subclause 8(1) enables the proponent to engage an independent expert to calculate $W_{B,Reg}$ on their behalf. This person is not approved or vetted by the Regulator and the choice of who to engage is up to the proponent, consistent with the framework set out in this subclause. The provision of this option is similar to one provided for the legacy Determinations. Instead of an independent expert, under the legacy Determinations the person is a Greenhouse and Energy Auditor registered as meeting the eligibility requirements of the *National Greenhouse and Energy Reporting Regulations 2008*. The option in this Determination is provided instead because there may be persons with more appropriate and targeted qualifications and expertise to determine the regulatory proportion than Greenhouse and Energy Auditors.

Subclause 8(2) sets out the criteria for a person to be considered an independent expert. These are to have no conflict of interest in determining the regulatory proportion for the proponent and have suitable qualifications, experience and knowledge. For the purposes of this requirement, an appropriately skilled and experienced person has a relevant degree and experience in the field of landfill operation and management or waste gas extraction.

It is also necessary for the person to have extensive knowledge of the regulatory framework relevant to the landfill gas management for the landfill. 'Extensive' refers to complete knowledge of the legislation and regulation that has implications for landfill gas management for the landfill, including regulatory guidelines for landfill as well as the landfill's licence, operating conditions and development approvals. To support a claim of extensive knowledge, the person could demonstrate that they have consulted with the environmental regulator regarding the regulatory framework and licensing of the landfill.

Subclause 8(3) requires the determination of the regulatory proportion $W_{B,Reg}$ to use the most stringent methane concentration limits that have been in force since 24 March 2011.

Subclause 8(4) requires the independent expert to give the proponent, in writing, evidence to verify that they satisfy the requirements of subclause 8(2) and to explain how $W_{B,Reg}$ was calculated. Such independent experts should be made aware that the provision of false or misleading information is a serious offence under the *Criminal Code.*

Attachment B

Statement of Compatibility with Human Rights

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—Landfill Gas) Methodology Determination 2015

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—Landfill Gas) Methodology Determination 2015* (the Determination) sets out the detailed rules for implementing and monitoring offsets projects that avoid greenhouse gas emissions by collecting and combusting the methane component of landfill gas. The Determination applies to new projects, recommencing projects, upgrade projects and projects that were declared under the Carbon Farming Initiative that collect and combust landfill gas and elect to transition into the Emissions Reduction Fund (ERF).

Project proponents wishing to implement the Determination must make an application to the Clean Energy Regulator (the Regulator) and meet the eligibility requirements set out under the Determination. Offsets projects that are approved by the Regulator can generate Australian Carbon Credit Units, representing emissions reductions from the project.

Project proponents can receive funding from the Emissions Reduction Fund 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.

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.

Greg Hunt, Minister for the Environment