

EXPLANATORY STATEMENT

Carbon Credits (Carbon Farming Initiative) Act 2011

Carbon Credits (Carbon Farming Initiative—Avoided Clearing of Native Regrowth) 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 Australian Parliament passed 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 reduction 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 must not make or vary a methodology if the ERAC considers it inconsistent with the offsets integrity standards, which are set out in section 133 of the Act. The Minister must 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 ERF is available on the Department of the Environment website at:

www.environment.gov.au/emissions-reduction-fund.

Application of the Determination

Land clearing is a significant contributor to Australia's greenhouse emissions. In 2011, deforestation (the direct human-induced conversion of forest, on or after 1 January 1990, to a non-forest land use) represented around 7 per cent of Australia's net emissions, as reported under the Kyoto Protocol.

While land clearing rates in Australia have been in decline since 1990, more than 180,000 hectares of forest were cleared or re-cleared in 2011, predominantly in Queensland and New South Wales¹.

The *Carbon Credits (Carbon Farming Initiative—Avoided Clearing of Native Regrowth) Methodology Determination 2015* (the Determination) provides a potential mechanism to reduce emissions associated with land clearing.

The Determination sets out the detailed rules for implementing and monitoring offsets projects that avoid emissions by not clearing native forest and meet the eligibility requirements in Part 2. 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.

A project proponent wishing to generate ACCUs as a result of implementing the Determination must make an application to the Regulator under section 22 of the Act and the Regulator must declare the project under section 27 of the Act. This requires, among other things, the project to meet 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) provides that a methodology determination that covers the project may specify requirements in lieu of any of the above requirements. However, the Determination does not specify any requirements in lieu, and so all three requirements apply to projects under the Determination.

Section 23 of the Act provides that, if a project is a sequestration offsets project, an application to the Regulator under section 22 must include a request that the project be subject to either a 100-year or 25-year permanence period. Then, if the Regulator declares that the project is an eligible offsets project, the Regulator will declare that the project is subject to a 100-year or 25-year permanence period. Once declared, the permanence period is fixed and it will not be possible for projects to 'move between' permanence periods.

If the project proponent elects a 25-year permanence period, a permanence discount applies in accordance with section 16 of the Act. The permanence discount is 20 per cent of the net abatement number unless another percentage is specified in accordance with the legislative rules.

As they are sequestration offsets projects under section 54 of the Act, projects undertaken in accordance with the Determination are subject to a risk of reversal buffer, as provided by section 16 of the Act.

¹ See Australian National Greenhouse Accounts: Australian Land Use, Land Use Change and Forestry Emissions Projections to 2030, Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (2013).

The Determination is similar to the *Carbon Credits (Carbon Farming Initiative) (Avoided Deforestation) Methodology Determination 2013 (Avoided Deforestation)* and the *Carbon Credits (Carbon Farming Initiative) (Native Forest from Managed Regrowth) Methodology Determination 2013 (Native Forest from Managed Regrowth)*. *Avoided Deforestation* applies to a similar activity—avoided deforestation of Kyoto forests—but has stricter eligibility requirements, including that the project proponent has a clearing permit issued before 1 July 2010. *Native Forest from Managed Regrowth* takes a similar approach to modelling and crediting abatement but does not apply to land on which there is forest cover.

Public Consultation

An exposure draft of the Determination was published on the Department's website for public consultation from 25 September 2014 to 23 October 2014. One submission was received. Details of the non-confidential submission are provided on the Department of the Environment website, www.environment.gov.au.

Determination Details

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

The Determination commences on the day after it is registered.

The Determination ends 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.

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

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 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 393A(2) of Schedule 1 of the *Carbon Farming Initiative Amendment Act 2014* operated in relation to this Determination to deem the request to the Interim ERAC to be the relevant request to the statutory ERAC under subsection 106(10) of the Act. Subitem 393A(3) then allowed the ERAC to consider the consultation on the exposure draft which occurred before 13 December 2014 and not re-open consultation under section 123D of the Act.

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

Note on this explanatory statement

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

Details of the Methodology Determination

Part 1 Preliminary

1 Name

Section 1 sets out the full name of the determination, which is the *Carbon Credits (Carbon Farming Initiative—Avoided Clearing of Native Regrowth) Methodology Determination 2015*.

2 Commencement

Section 2 provides that the Determination commences on the day after it is registered.

3 Authority

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

4 Duration

Under subparagraph 122(1)(b)(i) of the Act, a methodology determination remains in force for the period specified in the Determination. Section 4 specifies a period for the purpose of this subparagraph. That period commences on the day after the Determination is registered.

Paragraph 4(b) provides that the period 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 or is revoked 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).

5 Definitions

Section 5 defines a number of terms used in the Determination.

The note at the bottom of section 5 lists terms that are not defined in the Determination but instead have the meaning given to them by section 5 of the Act.

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

Part 2 Avoided clearing projects

6 Avoided clearing 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.

Subsection 6(1) provides that the Determination applies to sequestration offsets projects that avoid emissions by not clearing native forest, meet the eligibility requirements in Part 3, result in eligible carbon abatement and have not been an eligible offsets project under the *Avoided Deforestation* methodology determination.

Projects under *Avoided Deforestation* cannot transition to the Determination because there are no rules in the Determination for accounting for carbon credits already issued to projects under *Avoided Deforestation*.

Subsection 6(2) provides that a project covered by subsection (1) is known as an ‘avoided clearing project’.

Part 3 Project requirements

Division 1 Eligible projects

7 General

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 an offsets project is an eligible offsets project unless the Regulator is satisfied that the project meets these requirements. The effect of section 35 of the Act is that the Regulator may, if an appropriate regulation or legislative rule is made, revoke the declaration that a project is an eligible offsets project if eligibility requirements have not been met.

Part 3 of the Determination specifies a number of requirements that must be met in order for a project to which the Determination applies to be an eligible offsets project. Part 3 requires project proponents to:

- assess whether the land on which the project is to be carried out meets the eligibility criteria in Division 2;
- stratify the land that meets the eligibility criteria in Division 2 into carbon estimation areas in accordance with Division 3; and
- assess whether the first baseline clearing event in each carbon estimation area falls within the specified period in accordance with Division 4.

A carbon estimation area can be included in the project only if the first baseline clearing event falls within the specified period.

The eligibility requirements are more extensive and complex than in some other methodology determinations, including *Avoided Deforestation*. This is because an assessment needs to be made whether the forest in each carbon estimation area would be cleared in the baseline scenario at such a time that, when that clearing is avoided in the project scenario, the avoided clearing produces abatement that is additional and not forward credited, i.e. credited before it occurs. The extent and complexity of the eligibility requirements is made up for by the fact that avoided clearing projects are relatively straightforward to operate.

Part 3 also sets out a number of management activities in Division 5.

Division 2 Land on which the avoided clearing project is carried out

8 General

Section 8 provides that every part of the land on which the project is carried out must meet the requirements of sections 9, 11, 13, 16 and 18. The project cannot be carried out on land that does not meet the requirements. This rule is consistent with the definition of ‘project area’ in the Act, where ‘project area’ is defined as an area of land on which the project has been, is being, or is to be, carried out.

Some methodology determinations, including *Avoided Deforestation*, take an alternative approach to defining the project area for a project. Under the alternative approach, the project area is a larger area than the areas of land on which the ‘project mechanism’ is implemented. Typically this larger area of land encompasses an entire property. The areas of land on which the project mechanism is not implemented are defined as exclusion areas and ‘deducted’ from

the project area. However, the Determination does not take this alternative approach, and does not permit or require the creation of exclusion areas.

Similarly, unlike some other methodology determinations, the Determination does not provide for exclusion zones to be incorporated into the project area. An exclusion zone is normally defined as an area of land in the project area where the project activity (or project mechanism) will not, or cannot, take place. Exclusion zones are not provided for in the Determination, partly to ensure that at the time of the section 22 application it is clear to the proponent and the Regulator where the project will take place. This is necessary given the high importance of demonstrating compliance with the eligibility criteria.

Figure 1 provides an illustrative example of land on which a project can be carried out. The project cannot be carried out in the forest that has not been cleared, or the areas that are not forest, so this land is not included in the project area. The eligible land is divided into carbon estimation areas in accordance with Division 3.



Figure 1: Land on which a project can be carried out (the project area) must be a forest that has been cleared at least twice (shown in green) and meets the other eligibility requirements.

9 Native forest cover

Paragraph 9(a) provides that the land on which the project is carried out must have native forest cover. ‘Native forest cover’ is defined in section 5. Land has native forest cover if the land is dominated by trees that are located within their natural range, are two metres or more in height and provide crown cover of at least 20 per cent of the land.

The Determination uses the term ‘native forest cover’ to distinguish between trees that have *actually* reached a state of forest cover, and the Kyoto definition of ‘forest’ which includes trees that have the *potential* to achieve forest cover.

The land must have native forest cover because projects are credited for not clearing existing native forest. If land does not have native forest cover, the project cannot be carried out on that land.

Paragraph 9(b) provides that the land on which the project is carried out must be substantially uniformly covered in trees. The effect of the provision is that there must not be large ‘gaps’ in the forest cover on an area of land. For example, a 100 hectare area of land may be covered in native forest across 80 hectares. It could be argued that the whole 100 hectares meet the requirement for native forest on the grounds that the trees provide crown cover of at least 20 per cent of the land. However, the whole 100 hectares are not substantially uniformly covered in trees, so an avoided clearing project could only be carried out on the 80 hectares covered in native forest.

10 Native forest cover—evidence

Subsection 10(1) provides that the project proponent must provide the Regulator with evidence that the land on which the project is to be carried out has native forest cover and is substantially uniformly covered in trees at the time of the section 22 application.

Subsection 10(2) provides that the evidence must include a list of the dominant tree species on the land and written evidence that the dominant tree species are within their natural range. This requirement ensures that the project protects a *native* forest.

Subsection 10(3) provides that the evidence of native forest cover may include aerial remotely-sensed imagery or the most recent forest cover data layer shown in the Carbon Farming Mapping Tool. The kind of evidence that project proponents may provide to the Regulator is not limited, but subsection 10(4) provides that any remotely-sensed imagery must be date-stamped and of sufficient quality to identify forest cover.

The Carbon Farming Mapping Tool is available at <http://ncat.climatechange.gov.au/CMT/>. Normally, the most recent forest cover data layer in the Carbon Farming Mapping Tool will not in itself be conclusive evidence that the land has forest cover because the most recent forest cover data layer will predate the section 22 application.

11 Unrestricted clearing permitted

Subsection 11(1) provides that clearing must be permitted on the land on which the project is carried out. This is an additionality requirement that operates alongside (but not in lieu of) the requirement in subparagraph 27(4A)(b)(i) of the Act that the project is not required to be carried out by or under a law of the Commonwealth, a State or Territory. If clearing were not permitted on the land, then the carbon sequestered in the biomass on the land would be sequestered in the business-as-usual (baseline) scenario and the project would not produce any additional abatement.

Clearing must be permitted at the time of the application under section 22. It would not matter if clearing were subsequently prohibited as a result of regulatory changes. This is because, if the right to clear had been exercised at the time of application, there would be no forest in the baseline scenario to which a regulatory change could apply (at least until the forest regrew).

Subsection 11(2) provides that the clearing must be permitted without restriction. Subsection 11(3) provides that restrictions include requirements that a species cannot be removed from the land and requirements for an offset to mitigate any effect from the clearing of the land. Subsection 11(3) is not exhaustive.

The ‘no offsets’ requirement in subsection 11(3) is an additionality requirement that operates alongside (but not in lieu of) the requirement in subparagraph 27(4A)(b)(i) of the Act that the project is not required to be carried out by or under a law of the Commonwealth, a State or Territory. If the right to clear required another area of forest to be protected when the right to clear is exercised, there would be a reduced net benefit in terms of avoided emissions when the right to clear is not exercised.

The requirement that there can be no restriction on the species that can be removed from the land ensures that there is no possibility that the clearing could *not* result in a loss of native forest cover.

12 Unrestricted clearing permitted—evidence

Subsection 12(1) provides that project proponents must provide the Regulator with evidence that unrestricted clearing is permitted on the land on which the project is to be carried out at the time of the application under section 22. Subsection 12(2) provides that the evidence must comprise either a valid clearing permit, or written evidence that the area may be cleared without a permit.

13 Clearing history

Section 13 provides that at least two clearing events must have occurred on the land on which the project is to be carried out. This is an additionality requirement that operates alongside (but not in lieu of) the requirements in subsection 27(4A) of the Act.

Paragraph 133(1)(a) of the Act provides that a project carried out in accordance with a methodology determination should result in carbon abatement that is unlikely to occur in the ordinary course of events, i.e. it should be additional. If a project is to earn carbon credits by not clearing forests, then for the project to result in abatement that is unlikely to occur in the ordinary course of events, the forest would have to have been cleared in the ordinary course of events. This means that carbon credits can only be issued under the Determination in respect of projects that protect forests that would have been cleared in the ordinary course of events.

Underlying the Determination is the assumption that land that has been cleared twice and is likely to be cleared again. This assumption is supported by the following argument.

- Land clearing in Australia is largely driven by the expansion and maintenance of agriculture, especially cattle grazing, for economic gain to the landholder.
- However, if land has been cleared only once, it cannot be assumed—without further information—that clearing the land provided an economic gain to the landholder. The cost of clearing the land may have outweighed the benefit of using the land for cropping or grazing. Such land may return to a forested state and never be cleared again.
- However, if land is cleared a second time, it can be assumed—without further information—that the land provided an economic gain to the landholder the first time

it was cleared. Using the land for cropping or grazing was worth the cost of clearing it, which is why it is being cleared a second time.

- Therefore—assuming that economic conditions remain stable—it can be assumed that land that was cleared a second time because there was an economic incentive to do so will be cleared a third time.

14 Clearing history—evidence

Subsection 14(1) provides that the project proponent must provide the Regulator with evidence of the two most recent clearing events in each carbon estimation area. Carbon estimation areas are specific areas of land where the project is carried out, and are described in detail in Division 3. The note at the bottom of subsection 14(1) clarifies the meaning of ‘most recent clearing event’:

For example, if a carbon estimation area was cleared in 1960, 1974, 1982, 1991 and 2005, the two most recent clearing events are the clearing events in 1991 and 2005.

The evidence used must be sufficient to satisfy the Regulator as to when the clearing events occurred in accordance with section 24. From this, the age of vegetation at the time of clearing is estimated in accordance with section 25.

Subsection 14(2) provides that evidence must demonstrate either the calendar year in which the most recent clearing event occurred, or that the clearing event occurred within a period of not more than three years.

Subsection 14(3) provides an indicative list of what the evidence may include:

- remotely-sensed imagery;
- clearing permits;
- farm management records;
- tax invoices;
- published vegetation mapping; or
- derived vegetation cover data.

The list is not exhaustive and the project proponent may provide the Regulator with other forms of evidence.

Subsection 14(4) provides that the Regulator may disregard any remotely-sensed imagery that is not date-stamped, or that is of insufficient quality to identify changes in vegetation cover.

15 Regeneration after clearing events—evidence

Subsection 15(1) provides that the project proponent must provide the Regulator with evidence of regeneration after each of the two most recent clearing events in each carbon estimation area.

Subsection 15(2) provides that the evidence of regeneration after the most recent clearing event must include remotely-sensed imagery.

Subsection 15(3) provides that the remotely-sensed imagery must be date-stamped and of sufficient quality to identify changes in vegetation cover.

While it is not a requirement that remotely-sensed imagery be provided as evidence of regeneration after the second most recent clearing event, it is anticipated that such evidence would normally be provided to the Regulator. Any remotely-sensed imagery provided to the regulator as evidence of regeneration would have to be date-stamped and of sufficient quality to identify changes in vegetation cover.

Subsection 15(4) constrains the evidence that can be provided for the purpose of section 15. The evidence used must be sufficient to satisfy the Regulator as to when the first baseline clearing event is set in accordance with section 27, and the start of the modelling period in accordance with section 37. Because of the interactions with project eligibility and modelling of abatement, it is necessary to establish not only that regeneration has occurred, but to establish when it began. While the evidence does not need to pinpoint the exact time when regeneration began, it must be sufficient to show a time for which regeneration is taken to occur.

The combination of a degree of vagueness of what is considered regeneration, and the limitations of the evidence that will be available, mean that it may not always be possible to determine unequivocally a year, or even a period, in which the regeneration began. In such a case, the method requires the proponent to provide evidence of a three year period during which the evidence for regeneration moved from being inconclusive to conclusive. A three year period is used, because it is expected that a change in vegetation cover will be detectable over this timeframe.

The evidence must also show regeneration across the carbon estimation area. That is, that there is a spatial distribution of the regeneration across the carbon estimation area, as opposed to a single tree regenerating or a clump of trees regenerating in one portion of the carbon estimation area. This does not require regeneration on every part of the carbon estimation area.

The provisions in subsection 15(4) prevent proponents from being able to manipulate the regeneration date to minimise the baseline carbon stocks (thereby maximising net abatement from project activities) or to meet the eligibility requirements in section 28.

Paragraphs 15(4)(a) through to 15(4)(c) provide a hierarchy of options for demonstrating the period in which regeneration began.

Paragraph 15(4)(a) provides that if available, the project proponent must provide the Regulator with evidence of the calendar year in which regeneration began across the carbon estimation area.

Paragraph 15(4)(b) provides that if the proponent does not have the kind evidence at 15(4)(a), then evidence can be provided to demonstrate that, for a period of no more than three years, there was no regeneration at the start of the period and there was regeneration by the end of the period. For example, a project proponent has evidence that covers a two year period. They have aerial and ground-based images of the carbon estimation area clearly demonstrating an absence of regeneration at the start of the period, and similar kinds of images from two years later (at the end of the period) demonstrating that regeneration had occurred across the carbon estimation area. In this case, it would be demonstrated that regeneration began during the two year period.

Paragraph 15(4)(c) is a further option that applies only if evidence is not available for meeting either of the previous two options. In that case, evidence can be provided to demonstrate that, for a period of not more than three years, it is inconclusive as to whether regeneration had

begun by the start of the period, but it can be demonstrated to have begun by the end of the period. For example, the project proponent may only have satellite images from the start of the period that are not of sufficient quality to clearly demonstrate the presences or absence of regeneration, however the same kind images are sufficient to demonstrate the presence of regeneration across the carbon estimation area two years later. In this situation, it cannot be said with certainty when regeneration began. However, as a result of section 23, the regeneration is taken to have begun at the end of that period.

Evidence that is inconclusive differs from no evidence. For example, if the project proponent has a satellite image from the start of the period with cloud cover over the entire project area, this would not constitute evidence, as it would not provide a reasonable basis from which to draw an inference as to whether or not regeneration had already begun.

The project proponent must have evidence that meets the requirements of section 15 in order to have a carbon estimation area that is eligible for inclusion in the project.

16 Land use history

Section 16 provides that the project proponent must provide the Regulator with evidence that the land has been used for either grazing or cropping. This requirement is to distinguish between other forest activities which change forest cover, such as native forest harvesting.

17 Land use history—evidence

Subsection 17(1) provides that the project proponent must provide the Regulator with evidence that the land use after each of the two most recent clearing events in each carbon estimation area was grazing or cropping.

Subsection 17(2) provides that the evidence of land use may include farm management records or tax invoices. The project proponent may provide the Regulator with other forms of evidence to demonstrate the historical land use.

18 Excluded forest types

Section 18 clarifies that the land must not be a plantation or an environmental planting. These forest types are excluded as they have characteristics outside those considered in the development of the Determination.

Division 3 Carbon estimation areas

Subdivision 1 Requirement for carbon estimation areas

19 General

Subsection 19(1) provides that the project proponent must stratify the land on which the project is carried out into carbon estimation areas. ‘Carbon estimation area’ is defined in section 5 as an area or areas of land in the project area in respect of which the baseline scenario and project scenario are modelled in the Full Carbon Accounting Model (FullCAM). Areas where the project cannot be carried out, for example a dam or an area of forest which

has never been cleared, cannot be included within a carbon estimation area. The project area is then equal to the area of all the carbon estimation areas (see section 8).

The number of carbon estimation areas into which the project is stratified is not limited, and a project may consist of a single carbon estimation area.

Unlike some other methodology determinations including *Avoided Deforestation* and *Native Forest from Managed Regrowth*, which require stratification to occur before the submission of the first offsets report, the Determination requires stratification to be undertaken (if at all) before the section 22 application is submitted. This is because stratification into carbon estimation areas is an essential prerequisite to determining the project's eligibility against the criteria in Subdivision C in Division 3 of Part 3 (Timing of clearing and regeneration) and Division 4 of part 3 (First baseline clearing event).

The Determination does not require or allow for re-stratification. Some methodologies require re-stratification where, for example, there has been a natural disturbance such as wildfire in the project area. In methodology determinations that rely on direct sampling to measure carbon stock, fire affected areas have to be re-stratified into new carbon estimation areas (or classified as exclusion areas) because they do not sequester carbon at the same rate as non fire-affected areas. However, in the Determination carbon estimation areas do not have to be re-stratified after a fire because losses in carbon stock caused by the fire are modelled in FullCAM as a part of the project scenario, and emissions from the fires are deducted from the net abatement amount at the project level. This approach was taken to simplify project implementation.

Subdivision 2 General requirements and boundaries

20 General requirements

Paragraph 20(1)(a) provides that each carbon estimation area must cover an area of at least 0.2 hectares to ensure that the minimum requirements of the definition of a 'forest' are met, as set out in section 5.

Paragraph 20(1)(b) provides that each carbon estimation area must contain the same forest type or vegetation community. This is because forest cover with different characteristics is likely to sequester carbon at different rates and must therefore be modelled separately.

Paragraph 20(1)(c) provides that each carbon estimation area must have the same clearing history, from the second most recent clearing event onwards. This is because the clearing history of an area of land is used to determine the first baseline clearing event, a key eligibility requirement (see Divisions 2 and 4).

Paragraph 20(1)(d) provides that each carbon estimation area must have the same regeneration history, from the second most recent clearing event onwards. This requirement is directed at circumstances where parts of the land on which the clearing event occurred are put to different uses in such a way as to affect regeneration and therefore carbon sequestration. For example, if half an area of land that has been cleared is used intermittently to graze livestock, and the other half is at some time cropped, it is likely that regeneration will occur earlier in the first half, and that the land in the first half will sequester more carbon before the next clearing event.

The requirements in subsection 20(1) are cumulative. That is, each carbon estimation area must cover a minimum area and have the same forest type and the same clearing history and

the same regeneration history. This is illustrated by the examples provided at the bottom of subsection 20(1):

Example A: If area P in the land on which the project is carried out was cleared in 1990 and 2001, and area Q was cleared in 1990 and 1999, then areas P and Q are separate carbon estimation areas.

Example B: If area P in the land on which the project is carried out was cleared in 1990 and 2001, and area Q was cleared in the same years, but regeneration in areas P and Q occurred in different years, then areas P and Q are separate carbon estimation areas.

Example C: If area P in the land on which the project is carried out was cleared in 1990 and 2001, and area Q was cleared in the same years, but areas P and Q do not contain the same forest type, then areas P and Q are separate carbon estimation areas.

Figure 2 provides another example. The coloured areas represent the land on which the project can be carried out (also see Figure 1). The coloured areas are divided into four carbon estimation areas according to forest type and clearing history.

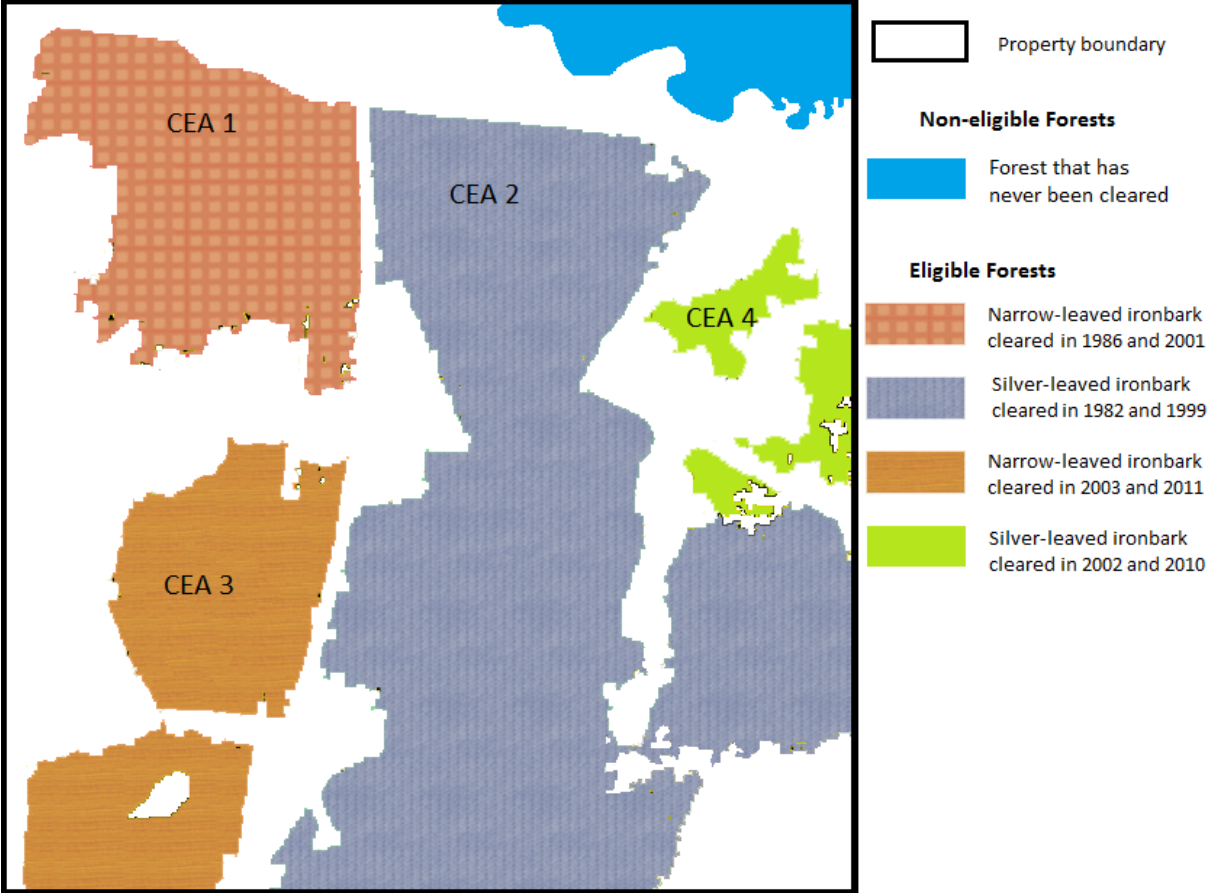


Figure 2: Example of stratification based on clearing history and vegetation type

Subsections 20(2) and (3) together provide that a carbon estimation area may comprise a single area of land or separate areas of land, provided that the areas are not more than 250 metres apart. This rule is illustrated by the example provided in the note to subsection 20(3):

For example, if a carbon estimation area is divided by a river and a riparian buffer where clearing is not permitted, then the separate areas of land on either side of the river must not be more than 250 metres apart. If those areas are more than 250 metres apart, they must be defined as separate carbon estimation areas.

A carbon estimation area can comprise more than one area of land with similar growing conditions because the only spatial information needed to model carbon stock in FullCAM is a model point location (latitude and longitude) and the area of the land (in hectares) over which carbon stock is modelled. It does not matter that a carbon estimation area is ‘split’ by an area whose carbon stock is not modelled, so long as this area is not included in the total area of the carbon estimation area. This is illustrated in Figure 3.

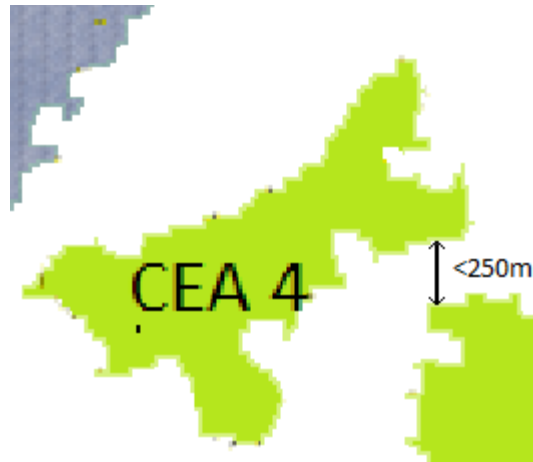


Figure 3: ‘Split’ carbon estimation area, where the distance between the split carbon estimation areas (CEAs) is less than 250m.

Subsection 20(4) provides that each carbon estimation area must contain a model point location at the approximate centre of the carbon estimation area. This model point is used to represent the entire carbon estimation area and is needed to model carbon stock in FullCAM. Once fixed, and submitted to the Regulator with the section 22 application, a carbon estimation area’s model point location cannot change. This is to ensure consistency of modelling over the crediting period.

Subsection 20(5) provides that the model point location must be within the boundaries of the carbon estimation area. This requirement is directed at circumstances where the carbon estimation area is ‘split’ or has an unusual shape. This is illustrated in Figure 4 below.

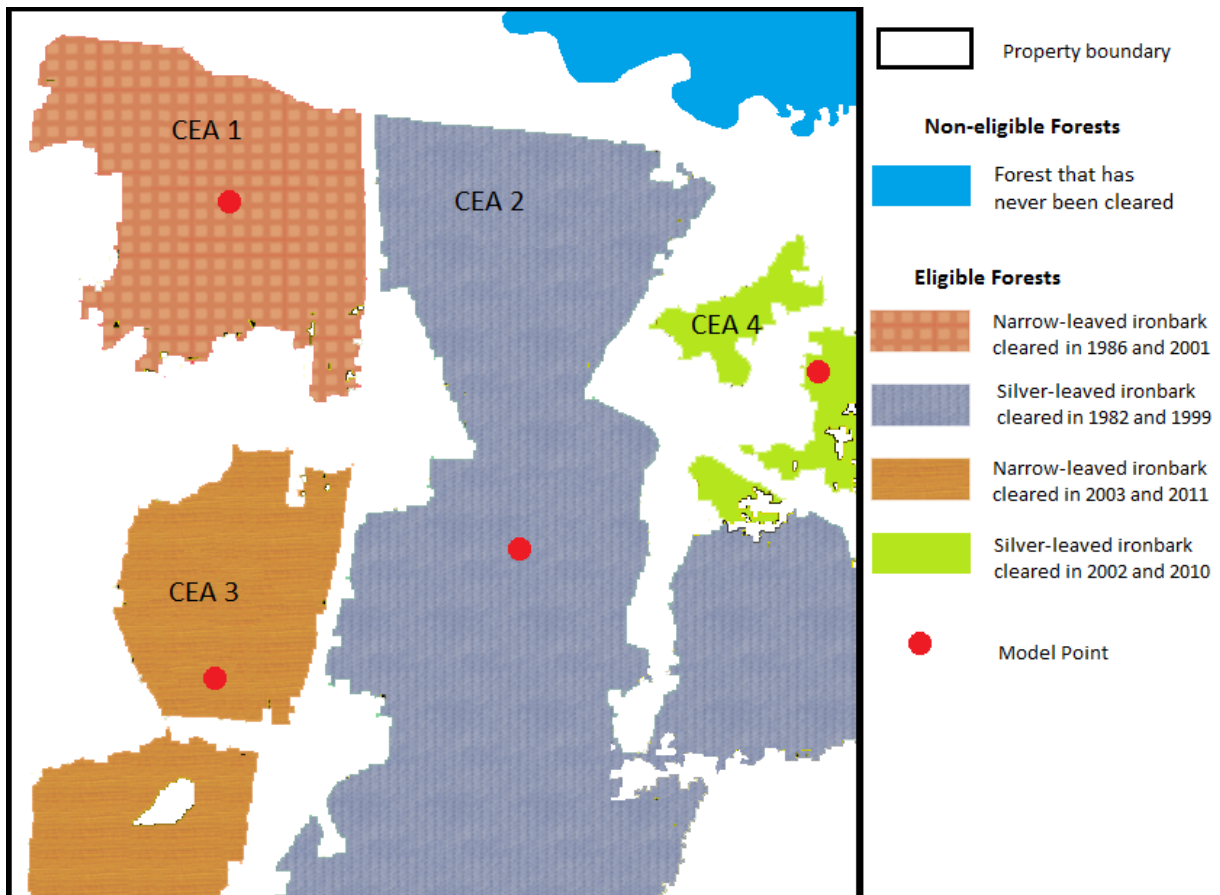


Figure 4: Example of model point locations for different carbon estimation areas.

Subsection 20(6) provides that the land in each carbon estimation area must separately meet the requirements in Division 2 (Land on which the project is carried out). This means that for each carbon estimation area:

- there must be forest cover
- clearing must be permitted
- at least two clearing events must have occurred in the carbon estimation area, and
- all the evidence requirements in Division 2 have been met.

21 Boundaries and mapping

The boundaries of each carbon estimation area must be identified before the submission of the section 22 application. This is because stratification into carbon estimation areas is an essential part of determining the project's eligibility against the criteria in Subdivision B (Timing of clearing and regeneration) and Division 4 (First baseline clearing event).

Paragraph 21(1)(a) provides that the geographic boundaries of each carbon estimation area must be defined in accordance with the CFI Mapping Guidelines. The CFI Mapping Guidelines are available at <http://www.climatechange.gov.au/reducing-carbon/carbon-farming-initiative/methodologies/spatial-mapping-guidelines>.

Paragraph 21(1)(b) provides that project proponents may use a range of approaches to determine the boundaries of a carbon estimation area, but must include at least one of the following:

- field surveys;
- soil, vegetation or landform maps; or
- remotely-sensed imagery, including:
 - aerial photographs; and
 - satellite imagery including derived vegetation cover data.

Subsection 21(2) provides that any remotely-sensed imagery must be date-stamped and geo-referenced.

Subsection 21(3) provides that the project proponent must provide the Regulator with a map showing each carbon estimation area in the project area.

Subdivision 3 Timing of clearing and regeneration

22 General

Subsection 22 provides that the project proponent must determine:

- the year in which the forest began to regenerate across the carbon estimation area after the second most recent clearing event;
- the year in which the most recent clearing event occurred;
- the age of the forest at the most recent clearing event;
- the date on which the forest began to regenerate across the carbon estimation area after the most recent clearing event; and
- the day on which the first baseline clearing event occurs.

These values must be determined for each carbon estimation area.

The values determined in accordance with sections 23 to 26 are used to determine the timing of the first baseline clearing event in section 27. The timing of the first baseline clearing event is a key eligibility requirement. This is why the values need to be determined before the submission of a section 22 application.

The values are also used to determine the modelling start date (see section 37) and the interval between projected events in the baseline scenario (see section 36).

23 Regeneration after second most recent clearing event

The year in which the forest began to regenerate across the carbon estimation area after the second most recent clearing event is determined in accordance with section 23. The evidence provided in section 15 is used to deem a year in which regeneration began after the second most recent clearing event in a carbon estimation area. If the evidence is in accordance with paragraph 15(4)(a) and demonstrates that regeneration began in a particular calendar year, then that is taken to be the year in which regeneration began. Similarly, if the evidence is in accordance with paragraphs 15(4)(b) or (c) which demonstrates that regeneration occurred within a period, then regeneration is taken to have begun in the calendar year that ends that period.

The note at the bottom of subsection 23 provides an example:

For example, if the project proponent has a satellite image from 1996 showing no regeneration and another image from 1998 showing regeneration, then the forest began to regenerate in 1998, i.e. in the last year of the three year period 1996 to 1998.

24 Year of most recent clearing event

The year of the most recent clearing event is determined in accordance with section 24. The evidence provided in section 14 is used to deem the year in which the most recent clearing event occurred within a carbon estimation area. If the evidence is in accordance with paragraph 14(2)(a) and demonstrates that the clearing event occurred in a particular calendar year, then that is taken to be the year in which clearing occurred. Similarly, if the evidence is in accordance with paragraph 14(2)(b) and demonstrates that clearing occurred within a period of not more than three years, then the clearing event is taken to have occurred in the calendar year that ends that period.

For example, if the project proponent does not have evidence that the forest was cleared in a particular year, but has evidence that the land had forest cover in 1995 and that the forest cover was cleared by 1998, then the forest was taken to be cleared in 1998.

If the project proponent does not have evidence that the forest in a carbon estimation area was most recently cleared in a particular year or within a period of no more than three years, then that carbon estimation area is not eligible for inclusion in the project.

25 Age of forest at most recent clearing event

The age of the forest in a carbon estimation area when it was most recently cleared is determined in accordance with section 25.

Section 25 provides that the age at which the forest was most recently cleared is the year in which it was most recently cleared—from section 24—minus the year in which it began to regrow after the second most recent clearing—from section 23.

The note at the bottom of section 25 provides an example:

For example, if the forest was most recently cleared in 1998 and began to regenerate in 1987 after the second most recent clearing in 1985, then the age at which the forest was most recently cleared is 11 years (1998 minus 1987).

26 Regeneration after most recent clearing

The date on which the forest began to regenerate across the carbon estimation area after the most recent clearing event is determined in accordance with section 26. As with section 23, the evidence provided in section 15 is used to deem the date in which regeneration began after the most recent clearing event in a carbon estimation area. If the evidence is in accordance with paragraph 15(4)(a) and demonstrates that regeneration began in a particular calendar year, then 1 January of that year is taken to be the date on which regeneration began. Similarly, if the evidence is in accordance with paragraphs 15(4)(b) or (c) which demonstrates that regeneration occurred within a period, then regeneration is taken to have begun on 1 January of the calendar year that ends that period.

The date 1 January has been chosen because FullCAM requires that events are modelled to occur on a calendar date. 1 January has been chosen for convenience. Because the baseline scenario is a series of events modelled over 100 years, it does not matter what the date is.

27 Day on which the first baseline clearing event occurs

The day on which the first baseline clearing event occurs in a carbon estimation area is determined in accordance with section 27.

Subsection 27(1) provides that the first baseline clearing event occurs on 1 January in the year in which the forest reaches the age at which it was most recently cleared.

1 January has been chosen for convenience as FullCAM requires that modelled events must be modelled to occur on a calendar date. To ensure consistency of modelled intervals all projected events are modelled to occur on 1 January.

Subsection 27(2) provides that the year in which the forest reaches the age at which it was most recently cleared is the year in which regeneration began after the most recent clearing—from section 26—plus the age at which the forest was most recently cleared—from section 25.

The note at the bottom of section 27 provides an example:

For example, if, after the most recent comprehensive clearing in 1998 when it was 17 years old, the forest began to regenerate in 2000, then the first baseline clearing event occurs on 1 January 2017.

Division 4 First baseline clearing event

28 When the first baseline clearing event must occur

Subsection 28(1) provides that the day on which the first baseline clearing event occurs in a carbon estimation area—from section 27—must fall within the period beginning on the 1 January of the year three years prior to submitting the application made under section 22 of the Act and ending on the 31 December of the year 3 years after submitting the application made under section 22 of the Act.

The note at the bottom of subsection 28(1) provides an example:

For example, if the application to the Regulator was made on 1 July 2015, the day on which the first baseline clearing event occurs must fall between 1 January 2012 and 31 December 2018.

Subsection 28(2) provides—for clarity—that if the day on which the first baseline clearing event occurs in a carbon estimation area does not fall within the six-year period mentioned in subsection (1), the carbon estimation area must not be included in the project.

The eligibility requirement in section 28 relates to two issues: additionality and forward crediting. Under the Determination, project proponents can earn carbon credits by avoiding clearing events that are projected to occur in carbon estimation areas in the crediting period. If the first baseline clearing event occurs before the crediting period has commenced, then it has already been avoided, and so avoiding the clearing event in the crediting period adds nothing to the business-as-usual scenario. Similarly, if the first baseline clearing event occurs far into or indeed after the crediting period, then project proponents could receive carbon credits for abatement (avoided emissions) that has not yet occurred. It is not the Government's policy to allow forward crediting.

Division 5 Management activities

Division 5 outlines certain activities which are either required or restricted as they may have an impact on carbon stock in the project area. This division does not aim to list all potential activities relevant to an avoided clearing project. Management activities, which are not expected to have an impact on the carbon stock in the project area, such as periodic grazing, are permitted.

29 Ongoing management

Subsections 29(1) and (2) provide that project proponents must actively manage the land to reduce the risk of damage to the native forest within the carbon estimation area from fire, weeds, and feral animals. These management activities sit alongside, not instead of, any management activities required by a law of the Commonwealth, a State or a Territory, or local government.

30 Removal of biomass from project area

Section 30 provides that no more than 10 per cent of fallen timber from a carbon estimation area may be removed for personal use each calendar year. No other removal of biomass is permitted.

Any emissions associated with the removal of biomass for personal use—for example, for firewood—are considered immaterial to project abatement. The removal of this biomass therefore does not need to be modelled in FullCAM.

One effect of section 30 is that commercial timber harvesting is not permitted in the project area.

31 Thinning

Subsections 31(1) and (2) provide that trees in a carbon estimation area may be thinned for ecological purposes, provided that the biomass resulting from thinning remains in the carbon estimation area.

Subsection 31(3) provides that any forest cover in a carbon estimation area must be maintained despite any thinning. Because forest cover is an eligibility requirement (see section 9) a carbon estimation area must have forest cover unless there has been a fire or another natural disturbance. The removal of forest cover would amount to deforestation, which is the very outcome avoided under the Determination.

Subsection 31(4) provides that thinning must not result in a decrease in carbon stock below the stock reported for the carbon estimation area in the most recent offsets report. This ensures that project proponents are not credited for abatement in one reporting period that is reversed in the next reporting period.

Subsection 31(5) provides that all thinning events in a carbon estimation area must be modelled in FullCAM in the project scenario. This ensures that the emissions associated with thinning are deducted from the carbon estimation area's carbon stock in the project scenario.

32 Use of fertiliser

Section 32 provides that fertiliser must not be used in a carbon estimation area. This requirement contributes to a conservative estimate of abatement because emissions fertiliser is not accounted for in the Determination.

Part 4 The net abatement amount

Division 1 The net abatement amount

33 The net abatement amount

Section 33 provides that, under the determination, the carbon dioxide equivalent net abatement amount in relation to a reporting period for the project is taken to be the change in carbon stock for the total number of carbon estimation areas within the project area when compared to the baseline, less the project emissions.

Division 2 FullCAM modelling

34 Modelling baseline and project scenario in FullCAM

Section 34 provides that the project proponent must model the baseline and project scenario for each carbon estimation area in FullCAM in accordance with Division 2 and the FullCAM Guidelines.

The FullCAM Guidelines are published on the Department's website. They provide detailed instructions, including a number of screenshots, to help users model carbon stocks.

FullCAM is used in Australia's National Greenhouse Accounts for the land sector. FullCAM provides fully integrated estimates of carbon pools in forest and agricultural systems for Australia's land sector reporting. In addition, it accounts for human-induced changes in emissions and sequestration of major greenhouse gases. FullCAM was developed under the National Carbon Accounting System (NCAS) at the then Australian Greenhouse Office to provide a dynamic account of the changing stocks of carbon in Australia's land systems since 1970 by integrating data on land cover change, land use and management, climate, plant productivity, and soil carbon over time. FullCAM estimates carbon stock change and greenhouse gas emissions at fine spatial and temporal scales, and uses a wide range of spatially referenced data.

The effect of section 34 is that the project proponent has to create two FullCAM plots for each carbon estimation area: one for the baseline scenario and one for the project scenario.

35 Baseline scenario

Subsection 35(1) provides that the baseline scenario for each carbon estimation area is a series of modelled events consisting of projected regeneration, clearing, and windrow and burn fire events. The interval at which these projected events are modelled to occur is determined in accordance with section 36 using the outputs of Subdivision C in Division 3 of Part 3 (Timing of clearing and regeneration). Events that occur during the project scenario are not incorporated into the baseline scenario, such as thinning or fire events after project commencement.

A windrow and burn event is modelled to occur after each projected clearing event because the use of fire after mechanical clearing is common practice, and because fire events reduce the size of the debris pool. This is reflected in the FullCAM model: if the size of the debris pool were not reduced by fire in a FullCAM model, the model would show debris accumulating at an unrealistic rate.

The events modelled in the baseline scenario reflect what would occur in a carbon estimation area if the project were not carried out. As the note at the bottom of subsection 35(1) says, this includes the first baseline clearing event.

Subsection 35(2) provides that the first event in the baseline scenario is the regeneration event following the most recent clearing of the carbon estimation area.

The note at the bottom of section 35 explains that the effect of subsection 35(2) is that the first event in the (modelled) series corresponds to the most recent (actual) regeneration event in the carbon estimation area.

Detailed instructions on how to model the baseline scenario are provided in the FullCAM Guidelines.

36 Interval between projected events

The interval between the projected events in the baseline scenario is determined in accordance with section 36.

Subsection 36(2) provides that the interval between projected clearing events in a carbon estimation area is the age at which the forest in the carbon estimation area was most recently cleared—from section 25—plus two years. The additional two years account for the time it takes for the debris from the cleared forest to be burned and for the forest to start regrowing.

Subsection 36(3) provides that each projected regeneration event occurs two years after the preceding projected clearing event.

Subsection 36(4) provides that subsection (2) does not apply to the first regrowth event. This is because the first regrowth event does not follow a projected clearing event.

Subsection 36(5) provides that each projected windrow and burn fire event occurs one year after the preceding projected clearing event.

Detailed instructions on how to model the baseline scenario are provided in the FullCAM Guidelines.

In Figure 5, the first baseline clearing event occurs in 2018, having met the requirement in section 28 that the first baseline clearing event must occur within three years of the start of the crediting period, which commences when the project begins in 2015. The trees are aged 11 when the first baseline clearing event occurs, so the interval between projected clearing events is 13 years. Because a projected windrow and burn fire event occurs one year after each projected clearing event, the interval between projected windrow and burn fire events is also 13 years, likewise for projected regeneration events which occur two years after each projected clearing event. All projected events in the modelling period are listed in the table in Figure 5.

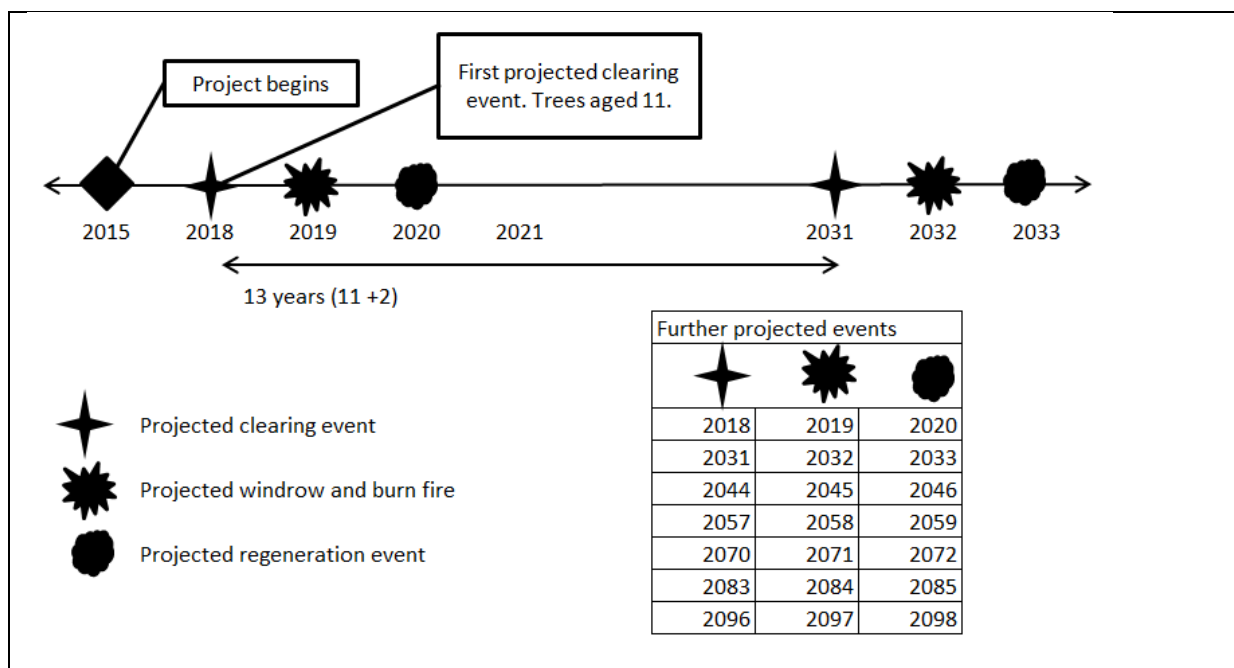


Figure 5: Interval between projected events

37 Modelling start date and modelling period

Subsection 37(1) provides that the modelling start date for a carbon estimation area is one day before the regeneration event following the last clearing event in the carbon estimation area.

Subsection 37(2) provides that the modelling period is the 100 year period beginning on the modelling start date.

The note at the bottom of subsection 37(2) provides an example:

For example, if the regeneration event is on 1 January 2016, the modelling start date is 31 December 2015 and the modelling period is 31 December 2015 to 30 December 2115.

Subsection 37(3) provides that the modelling start date and period are the same in the baseline and project scenarios. This ensures that the baseline and project scenarios are synchronised for the purposes of estimating the net abatement amount.

The 100 year modelling period should not be confused with the permanence period, which can be 100 years or 25 years depending on whether the project proponent requested that the project be treated as a 100 year permanence period project or a 25 year permanence period project (see paragraph 23(1)(g) of the Act). The modelling period is 100 years because 100 years is an appropriate period over which to model long-term average carbon stock in a carbon estimation area.

Detailed instructions on how to model the baseline scenario are provided in the FullCAM Guidelines.

In Figure 6 the regeneration event is on 1 January 2003. Accordingly, the modelling period begins on 31 December 2002 and ends 100 years later on 30 December 2102. Figure 6 also shows the 25 year crediting period, which begins on 1 July 2015 and ends on 30 June 2039.

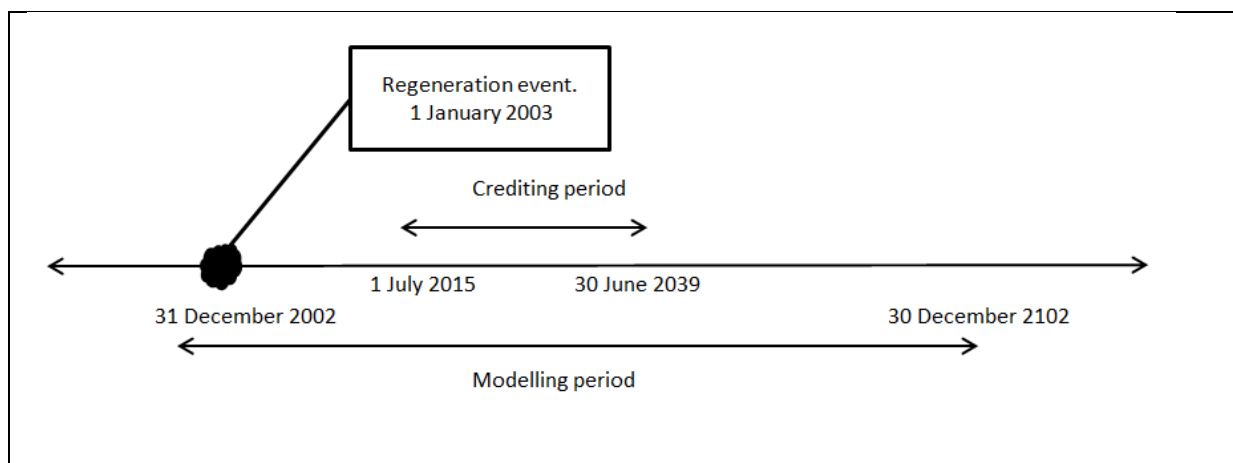


Figure 6: Modelling period

38 Project scenario

Section 38 provides that the project scenario is a series of modelled events consisting of a single regeneration event, thinning events, and fire events. The single regrowth event is the regrowth event following the most recent clearing of the carbon estimation area, which is also the first event in the baseline scenario.

The thinning and fire events modelled in the project scenario are not projected events. They are real events that occur in the project area during the crediting period. The requirements for modelling thinning, fire and non-fire events are set out in sections 39 to 41. Thinning and fire events are modelled as they occur by updating the relevant FullCAM plot files.

Detailed instructions on how to model the project scenario are provided in the FullCAM Guidelines.

39 Adding thinning events to project scenario

Subsection 39(1) provides that if thinning is undertaken in a carbon estimation area, the project proponent must model a thinning event in the project scenario. Modelling thinning events in a carbon estimation area is mandatory because thinning has a material impact on carbon stock in the carbon estimation area.

Subsection 39(2) provides that the project proponent must enter the date of the thinning event into FullCAM. This is the date on which the thinning event occurs and not a projected date.

Subsection 39(3) provides that if the thinning event occurred over more than one day, the project proponent must enter the date on which the thinning event began. This is because FullCAM requires thinning events to be modelled as occurring on a single day.

The note to subsection 39(3) provides an example:

For example, if thinning is conducted between 12 July 2017 and 15 August 2017, the date of the thinning is 12 July 2017.

Subsection 39(4) provides that the project proponent must enter an estimate of the proportion of the trees in the carbon estimation area that were killed in the thinning event. This is because FullCAM requires an estimate of the proportion of the trees killed for modelled thinning events.

Detailed instructions on how to enter thinning events to the project scenario are provided in the FullCAM Guidelines.

40 Adding fire events to project scenario

Subsection 40(1) provides that the project proponent must model any fire events that occur in the project scenario. Modelling fires in a carbon estimation area is mandatory because they have a material impact on carbon stock in the carbon estimation area.

Paragraph 40(1)(a) provides that if the fire kills trees, a 'Wildfire – trees killed' event must be modelled, and paragraph 40(1)(b) provides that if trees are not killed, a 'Wildfire – trees not killed' event must be modelled in the project scenarios.

'Wildfire' is a FullCAM label. The use of the label does not imply that only wildfires are modelled.

Three examples are provided to illustrate the rule in subsection 40(1):

- Example A: If a prescribed burn is carried out in carbon estimation area in order to reduce the risk of severe bushfires, and trees are killed, the project proponent must enter a 'Wildfire – trees killed' event.
- Example B: If a prescribed burn is carried out and trees are not killed, the project proponent must enter a 'Wildfire – trees not killed' event.
- Example C: If a bushfire occurs, and trees are not killed, the project proponent must enter a 'Wildfire – trees not killed' event.

The examples illustrate the principle that fire events are to be considered in terms of their effects. The intention behind the fire does not matter. Even if the project proponent did not intend to kill trees with a prescribed burn, if the burn gets out of control and trees are killed, a 'Wildfire – trees killed' event must be modelled.

Subsection 40(2) provides that the project proponent must enter the date of each fire event into FullCAM. This is the date on which the fire occurs and not a projected date.

Subsection 40(3) provides that if the fire event occurs over more than one day, the project proponent must enter the day on which the fire event began into FullCAM. This is because FullCAM requires fire events to be modelled as occurring on a single day.

The note to subsection 40(3) provides an example:

For example, a wildfire burns between 12 February 2018 and 14 February 2018, the date of the fire event is 12 February 2018.

Subsection 40(4) provides that, if the date on which the fire began is not known, the project proponent must enter the day on which the fire was identified. Again, this is because FullCAM requires fire events to be modelled as occurring on a single day.

Subsection 40(5) provides that the project proponent must enter an estimate of the proportion of the carbon estimation area that was affected by the fire. This is necessary because FullCAM estimates fire emissions from the proportion of the trees in the carbon estimation area that were affected by the fire. The estimate should be made on the basis of area. For example, if half a carbon estimation area is affected by fire the estimate is 50 per cent.

Detailed instructions on how to enter fire events to the project scenario are provided in the FullCAM Guidelines.

41 Adding non-fire disturbance events to project scenario

Subsection 41(1) provides that section 41 applies when a disturbance event occurs in the project scenario and satisfies each of the requirements specified in paragraphs 41(1)(a) to 41(1)(e). These events are non-fire disturbance events, such as insect attack. It is important to model such disturbance events, as they have the potential to have a material impact on carbon stock in the carbon estimation area.

Subsection 41(2) provides that if there such a natural disturbance event that requires modelling, it must be modelled in FullCAM as a ‘thinning event’. It needs to be modelled as a thinning event because FullCAM has a limited number of options for simulating a disturbance event. Thinning, where biomass in living trees is moved into the debris pool, best represents a natural disturbance event that kills trees and is not a fire event.

Subsection 41(3) provides that the project proponent must enter the date of each natural disturbance event into FullCAM. This is the actual date on which the disturbance occurs and not a projected date.

Subsection 41(4) provides that if the natural disturbance event occurs over more than one day, the project proponent must enter the day on which the natural disturbance event began into FullCAM. This is because FullCAM requires natural disturbance events to be modelled as occurring on a single day.

The note to subsection 41(4) provides an example:

For example, natural disturbance event occurs between 12 July 2017 and 15 August 2017, the date of the disturbance event is 12 July 2017.

Subsection 41(5) provides that if the date on which the natural disturbance event is not known, the project proponent must enter the day on which the natural disturbance was identified.

Subsection 41(6) provides that the project proponent must enter an estimate of the proportion of the carbon estimation area that was affected by the disturbance event. This is necessary because FullCAM estimates affects of disturbance events from the proportion of the carbon estimation area that were affected by the disturbance event. The estimate should be made on the basis of area. For example, if half a carbon estimation area is affected by a disturbance event, the estimate is 50 per cent.

Instructions on how to enter non-fire disturbance events to the project scenario are provided in the FullCAM Guidelines.

42 Adding regeneration events to the project scenario

Subsection 42(1) provides that section 42 applies if there is a natural disturbance event that kills all the trees in a carbon estimation area. That is, that the carbon estimation area is affected by a natural disturbance, and the disturbance event was severe enough to kill the trees. In such a circumstance, subsection 41(2) provides that the project proponent may subsequently model a regeneration event. This provision is included because FullCAM is an event-based model, which means that if all the trees are killed and no subsequent regeneration event is added, then the carbon stocks would be shown to remain at the post-disturbance level, even if there was regeneration.

Subsection 42(3) provides that the regeneration is taken to occur on the date on which there is evidence of regeneration. This is the date that would then be used in FullCAM to model the regeneration event. Subsection 42(4) provides that the evidence must include remotely-sensed imagery, or photography. Both of these must be date-stamped, as required by subsection 42(5).

43 Running baseline and project scenarios in FullCAM

Section 43 provides that the project proponent must run the baseline and project scenario for each carbon estimation area in the final month of each reporting period. This requirement addresses the fact that the default values in FullCAM are updated from time to time, for example to reflect updated climate data. These updates may affect the model outputs. The project proponent must calculate the net abatement amount for each reporting period. To ensure that the most up-to-date model outputs are used to calculate the net abatement amount, the FullCAM simulations should be run in the last month of the reporting period.

Division 3 Calculations—Preliminary

44 Calculating the net abatement amount

Section 44 provides that the project proponent must determine the net abatement amount for each reporting period by completing the formulas in Part 4.

45 References to factors and parameters from external sources

Section 45 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 45(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 45(2)(a) provides that subsection 45(1) does not apply if the Determination sets out other requirements.

Paragraph 45(2)(b) provides that subsection 45(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 to versions of those instruments as in force from time to time. In circumstances where paragraph 45(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 56(2) sets out reporting requirements to be followed when paragraph 45(2)(b) applies.

The calculation of the net abatement amount in the Determination includes factors taken from other sources, such as the Global Warming Potential factors from the *NGER Regulations*. The Determination specifies that such factors or parameters should be taken from the version of the external source that is current at the end of the reporting period.

46 Greenhouse gas assessment boundary

Section 46 describes the greenhouse gas sources and relevant carbon pools that are assessed in order to determine the net abatement amount. The greenhouse gas assessment boundary includes the tree and debris carbon pools within the project area and the emission of greenhouse gases from fires in the project scenario.

The carbon pools and events which need to be taken into account when calculating abatement for the project are set out in Table 1 of the Determination and reproduced in Table B below.

Table B: Gases accounted for in the abatement calculations

Carbon pool	Greenhouse gas
Live above ground biomass	Carbon dioxide (CO ₂)
Live below ground biomass	Carbon dioxide (CO ₂)
Debris	Carbon dioxide (CO ₂)
Event	Greenhouse gas
Fire—planned and unplanned	Methane (CH ₄)
	Nitrous oxide (N ₂ O)
	Carbon dioxide (CO ₂)
Non-fire disturbances	Carbon dioxide (CO ₂)
Biomass thinning	Carbon dioxide (CO ₂)

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

- Emissions from soils are excluded as these are not a net source of emissions over the life of the project.
- Ongoing emissions from dead plant material remaining after past clearing are excluded as they will not be materially affected by the project.
- Emissions from domestic fires that may occur using the 10 per cent of fallen timber that can be taken for personal use (see section 30) are excluded as the emissions are considered to be negligible.
- Emissions from fertiliser use are excluded on the grounds that the application of fertiliser is prohibited under the Determination (see section 32).
- Emissions from grazing of livestock in the project area are excluded because grazing would have occurred in the baseline scenario, most likely at greater intensity because the project area would have been cleared.
- Emissions from fossil fuel use are excluded because there is no reason to assume that fossil fuel use would be higher in the project scenario than in the baseline scenario, especially since the Determination does not require project proponents to conduct sampling or surveying.

47 FullCAM outputs

Table 2 in section 47 sets out the FullCAM outputs that must be used when calculating abatement in accordance with Part 4. The table has been reproduced in Table C below.

Table C: FullCAM output data required for calculating abatement

FullCAM Output	Scenario	Unit	Form	Parameter	Equation
C mass of trees	Baseline	tonnes C per hectare	Time series (cumulative monthly)	$C_{BT,i,k}$	1
C mass of debris	Baseline	tonnes C per hectare	Time series (cumulative monthly)	$C_{BD,i,k}$	1
C mass of trees	Project	tonnes C per hectare	Time series (cumulative monthly)	$C_{T,i}$	2
C mass of debris	Project	tonnes C per hectare	Time series (cumulative monthly)	$C_{D,i}$	2
CH ₄ emitted from debris due to fire	Project	tonnes CH ₄ per hectare	Time series (monthly)	$E_{CH_4,i,j}$	6
N ₂ O emitted due to fire	Project	kg N ₂ O per hectare	Time series (monthly)	$E_{N_2O,i,j}$	7

Division 4

Calculations

Subdivision 1

Calculation of carbon stock change in the project area over each reporting period

48 Calculating long-term average baseline carbon stock for carbon estimation area

Section 48 provides that the long-term average baseline carbon stock for each carbon estimation area ($C_{B,i}$) is calculated using Equation 1.

For $C_{BD,i,k}$ the FullCAM output for C mass in debris pools is: ‘Whole / Debris / C mass of debris’.

For $C_{BT,i,k}$ the FullCAM output for C mass of trees is: ‘Whole / Plant / C mass of trees’.

Figure 7 shows the long term average carbon stock as the sum of $C_{BD,i,k}$ and $C_{BT,i,k}$ averaged over the 100 year (1200 month) modelling period.

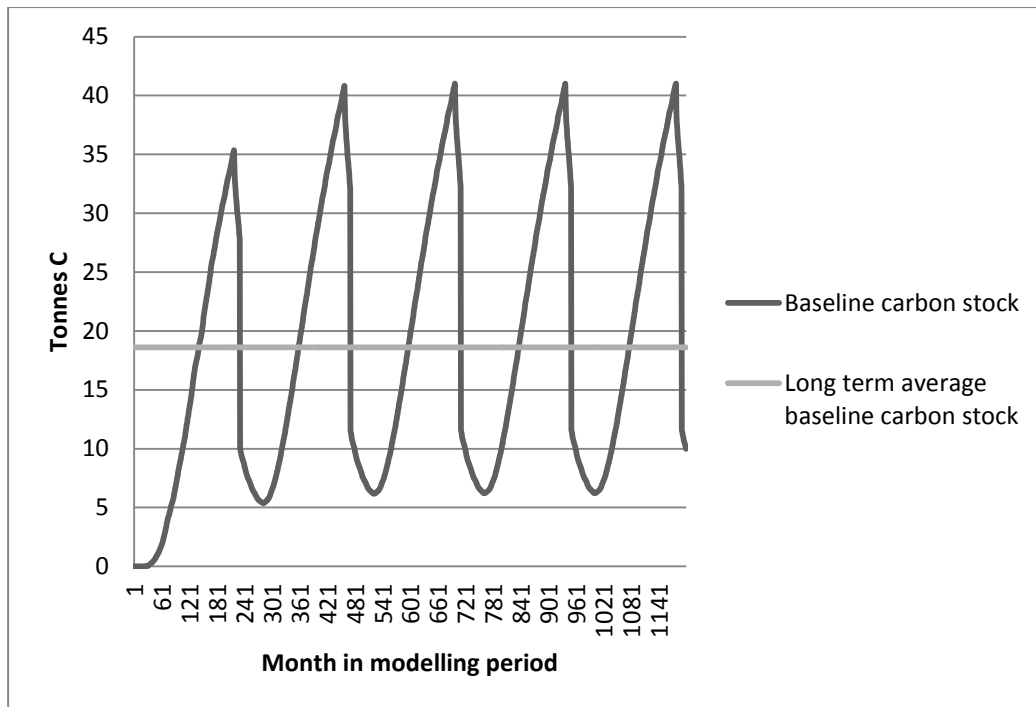


Figure 7: Long term average baseline carbon stock

49 Calculating carbon stock for carbon estimation area at the end of reporting period

Section 49 provides that the carbon stock in each carbon estimation area at the end of each reporting period (C_i) is calculated using Equation 2.

For $C_{D,i}$ the FullCAM output for C mass in debris pools is: ‘Whole / Debris / C mass of debris’.

For $C_{T,i}$ the FullCAM output for C mass of trees is: ‘Whole / Plant / C mass of trees’.

50 Calculating carbon stock change in each carbon estimation area at end of the first reporting period

Section 50 provides that the carbon stock change at the end of the first reporting period (ΔC_i) must be calculated using Equation 3. The note at the bottom of section 50 confirms that the value for ΔC_i can be zero or less than zero. This is because ΔC_i represents a net change in carbon stock relative to the baseline ($C_{B,i}$). Where ΔC_i is zero or less than zero, the carbon stock in the carbon estimation area has not yet exceeded the long-term average baseline carbon stock.

In Figure 8, ΔC_i is more than zero because project carbon stock exceeded the long-term average baseline carbon stock before project commencement in 2014 or later.

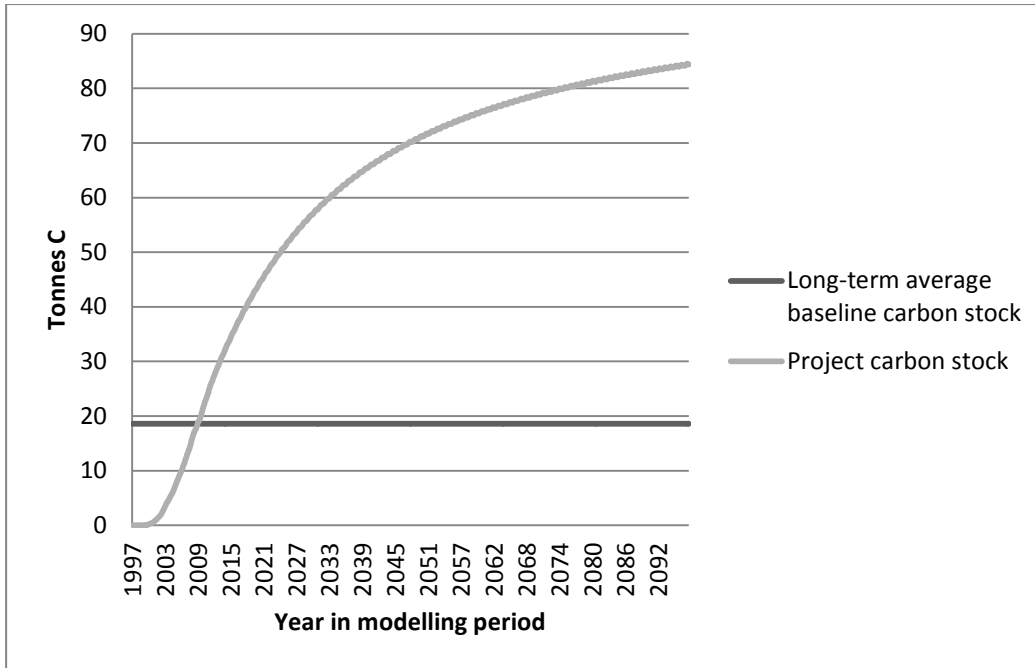


Figure 8: Carbon stock over modelling period

51 Calculating carbon stock change in each carbon estimation area at end of second and subsequent reporting period

Section 51 provides that the change in carbon stock over each reporting period after the first reporting period (ΔC_i) must be calculated for each carbon estimation area using Equation 4.

ΔC_i is calculated by subtracting the value for C mass of biomass onsite from the previous reporting period ($C_{RP,i}$) from C-mass onsite for the current reporting period (C_i).

$(C_{B,i} - C_{BRP,i})$ is subtracted from $(C_i - C_{RP,i})$ to account for any changes in the baseline. The baseline can change because the baseline is modelled in the last month of each reporting period (see section 43) and the FullCAM model inputs may be updated.

If the baseline increases, with the result that $C_{B,i}$ is greater than $C_{BRP,i}$, then the result of $(C_{B,i} - C_{BRP,i})$ is more than zero. When this positive value is subtracted from $(C_i - C_{RP,i})$ the result will be a lower value for ΔC_i and therefore less net abatement.

If the baseline decreases, with the result that $C_{B,i}$ is less than $C_{BRP,i}$, then the result of $(C_{B,i} - C_{BRP,i})$ is less than zero. When this negative value is subtracted from $(C_i - C_{RP,i})$ the result will be a higher value for ΔC_i and therefore more net abatement.

For example, at the end of the first reporting period, $C_i = 30\text{tC/ha}$ and $C_{B,i} = 18\text{tC/ha}$ so $\Delta C_i = 12\text{tC/ha}$. At the end of the second reporting period, $C_i = 35\text{tC/ha}$ and $C_{RP,i} = 30\text{tC/ha}$. If $C_{BRP,i}$ remains at 18tC/ha (because the relevant defaults in FullCAM have not changed), $\Delta C_i = 5\text{tC/ha}$. If $C_{B,i}$ increases to 20tC/ha , $\Delta C_i = 3\text{tC/ha}$; and if $C_{B,i}$ decreases to 16tC/ha , $\Delta C_i = 7\text{tC/ha}$.

52 Calculating carbon stock change in the project area at the end of a reporting period

Section 52 provides that the change in carbon stock in the project area at the end of each reporting period (ΔC_p) must be calculated using Equation 5.

The project area consists of all the carbon estimation areas in the project so Equation 5 sums the change in carbon stock onsite for all the carbon estimation areas.

The note at the bottom of section 52 says that if ΔC_p is less than or equal to zero, project carbon stock is lower than baseline carbon stock. This could occur where the project carbon stock has not yet exceeded the long term average baseline carbon stock.

Subdivision 2 Emissions from project area at the end of each reporting period

Subdivision B provides for the calculation of methane and nitrous dioxide emissions from fires during a reporting period. Fire emissions are calculated at the level of the project area (rather than at the level of carbon estimation areas) and then subtracted from the net carbon stock change in the project area.

53 Calculating methane and nitrous oxide emissions from biomass burning

Subsection 53(1) provides that the emissions of methane due to biomass burning for the baseline forecast period must be calculated using Equation 6.

The relevant FullCAM output is: 'Carbon/ Whole / Emissions / CH₄ emitted due to fire'.

Subsection 53(2) provides that the emissions of nitrous oxide due to biomass burning for the baseline forecast period must be calculated using Equation 7.

The relevant FullCAM output is: 'Nitrogen / Whole / Emissions / N₂O emitted due to fire'.

Subsection 53(3) provides that the outcomes from Equations 6 and 7 are then added together to determine total emissions due to biomass burning for the baseline forecast period. This is calculated using Equation 8.

Subdivision 3 Calculation of the carbon dioxide equivalent net abatement amount

54 Calculating the carbon dioxide equivalent net abatement amount for a project

The note at the top of section 54 refers to paragraph 106(1)(c) of the Act, which provides that the Minister may, by legislative instrument, make a determination that provides that:

provides that, if such a project is an eligible offsets project, the carbon dioxide equivalent net abatement amount for the project in relation to a reporting period for the project is taken, for the purposes of this Act, to be equal to the amount ascertained using a method specified in, or ascertained in accordance with, the determination.

Subsection 54(1) provides that the carbon dioxide equivalent net abatement amount for the project in relation to a reporting period must be calculated using Equation 9 if one of two conditions is met: (1) the reporting period is the first reporting period; or (2) the net abatement amount for the previous reporting period was zero or greater than zero.

Subsection 54(2) provides the carbon dioxide equivalent net abatement amount for the project in relation to a reporting period must be calculated using Equation 10 if the net abatement amount for the previous reporting period was less than zero.

It is unlikely that the net abatement amount for the previous reporting period would be less than zero, since there is no point submitting an offsets report if abatement is less than zero and no carbon credits can be issued. However, section 76 of the Act provides that an offsets report must be submitted at least once every five years. The most likely scenario where net abatement after five years is less than zero is where a significant wildfire has affected the project area. In this kind of situation a negative net abatement amount would have to be reported. If an offsets report contains a negative net abatement amount, that amount will be subtracted from the net abatement amount calculated for the next offsets report.

Part 5 Reporting, record-keeping and monitoring requirements

Division 1 Offsets report requirements

55 Operation of this Division

Subsection 106(3) of the Act provides that a methodology determination may require the project proponent of an eligible offsets project to comply with 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.

The record-keeping and monitoring requirements specified in Part 5 of the Determination are in addition to any requirements specified in the rules made under the Act.

56 Information in each offsets report

Section 56 lists some of the information that the project proponent must include in each offsets report.

Subsection 56(2) sets out that the offsets reporting requirements in this subsection apply where it is not possible to meet the requirements of subsection 9(1), as outlined in paragraph 9(2)(b). Further explanation of these circumstances is provided in section 9. The purpose of subsection 56(2) 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. 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.

Division 2 Record-keeping

57 Operation of this Division

Section 57 provides that, Division 2 sets out record-keeping requirements for avoided clearing projects. The requirements are in addition to the requirements set out in the rules made under the Act.

58 Records that must be created and kept

Section 58 lists the records that must be created and kept by the project proponent. There is no requirement for records to be kept in hard-copy format. It is acceptable for the records to be kept electronically.

Thinning events

Paragraph 58(d) provides that the project proponent must create and keep records of every thinning event that occurs in the project area in a reporting period. The records must contain:

- the carbon estimation areas in which the thinning event occurred;
- the dates on which the thinning event occurred; and

- for each carbon estimation area in which thinning occurred—an estimate of the proportion of the trees that were affected in the thinning event.

The thinning events entered into the project scenario in FullCAM in accordance with section 39 will have to correspond to these records.

Subparagraph 58(d)(iv) provides that the project proponent must create and keep a record of evidence justifying the estimate of the proportion of trees affected by the thinning event. This evidence is required to ensure that emissions from thinning events are not under-estimated. No particular form of evidence is prescribed, but remotely-sensed imagery or aerial photography would normally provide justification for the estimate.

Fires

Paragraph 58(e) provides that the project proponent must create and keep records of every fire that occurs in the project area in a reporting period. The records must contain:

- the carbon estimation areas in which the fire occurred;
- the dates on which the fire occurred;
- for each carbon estimation area affected by the fire—the area affected by the fire; and
- an estimate of the proportion of trees affected by the fire.

The fires entered into the project scenario in FullCAM in accordance with section 40 will have to correspond to these records.

Subparagraph 58(e)(v) provides that the project proponent must create and keep a record of evidence justifying the estimate of the proportion of trees affected by the fire. This evidence is required to ensure that emissions from fires are not under-estimated. No particular form of evidence is prescribed, but remotely-sensed imagery or aerial photography would normally provide justification for the estimate.

Non-fire natural disturbances

Paragraph 58(f) provides that the project proponent must create and keep records of every non-fire natural disturbance that occurs in the project area in a reporting period. The requirements in paragraph 58(f) correspond to the requirements for fires in paragraph 56(e).

Division 3 Monitoring

59 Operation of this Division

Section 59 provides that Division 3 sets out monitoring requirements for avoided clearing projects. The requirements are in addition to the requirements set out in the rules made under the Act.

60 Project monitoring

Section 60 provides that the project proponent must monitor the project area for fires and other natural disturbances. No specific set of monitoring activities is prescribed, but section 58 requires detailed records to be created and kept of each thinning event and fire in the project area.

The note at the bottom of the section says that if a natural disturbance occurs in the project area, section 81 of the Act applies. Section 81 of the Act contains notification requirements that come into effect when a natural disturbance occurs.

Part 6 Reporting under section 77A of the Act

61 No division of carbon estimation area

Section 61 provides that, for subsection 77A(2) of the Act, the division of the overall project must not result in the division of a carbon estimation area. This provision is consistent with the Determination not permitting re-stratification. Re-stratification is not permitted because it is important that the baseline and project scenarios—series of actual and projected events modelled to occur at the model point location at the centre of each carbon estimation area—are modelled consistently over the modelling period.

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—Avoided Clearing of Native Regrowth) 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—Avoided Clearing of Native Regrowth) Methodology Determination 2015* (the Determination) sets out the detailed rules for implementing and monitoring offsets projects that sequester carbon by not clearing native forests. The Determination applies to projects on land with native forest cover at risk of clearing. It uses historical clearing practices to estimate when the clearing was going to occur, and abatement is estimated from this clearing event onwards.

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 *Carbon Credits (Carbon Farming Initiative) Act 2011*. Offsets projects that are approved by the Regulator can generate Australian carbon credit units.

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