

EXPLANATORY STATEMENT

Carbon Credits (Carbon Farming Initiative) Act 2011

Carbon Credits (Carbon Farming Initiative—Plantation Forestry) Methodology Determination 2017

General 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 established 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 avoidance or sequestration) from eligible projects and rules for monitoring, record keeping and reporting. These determinations 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 determination if the ERAC considers it inconsistent with the offsets integrity standards, which are set out in section 133 of the Act. The Minister will also consider any adverse environmental, economic or social impacts likely to arise as a result of projects to which the methodology determination applies.

Offsets projects undertaken in accordance with a methodology determination and approved by the Clean Energy Regulator (the Regulator) can generate Australian carbon credit units (ACCUs). These units represent emissions reductions from the project. Project proponents can receive funding 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 at www.environment.gov.au/emissions-reduction-fund.

Background: Plantation Forestry

The sequestration of carbon in commercial timber plantations has helped Australia meet its greenhouse emissions reduction goals. Converting land to forest between 1990 and 2015 removed around 13 million tonnes of carbon dioxide from the atmosphere in 2015 (Australian Government, 2017).

The area of plantations in Australia expanded by around 1 million hectares between 1994 and 2009 (Figure 1). This increase in plantation area was primarily funded by the private sector (Indufor Asia Pacific (Australia), 2014). Most of the new plantation area was made up of hardwood eucalypt species (Figure 2). These species were predominantly planted on a short rotation (typically harvested between 10 and 20 years after planting) in order to produce pulpwood. In 2015–16 approximately 82 per cent of Australia’s hardwood plantation estate was managed for pulpwood (ABARES 2017).

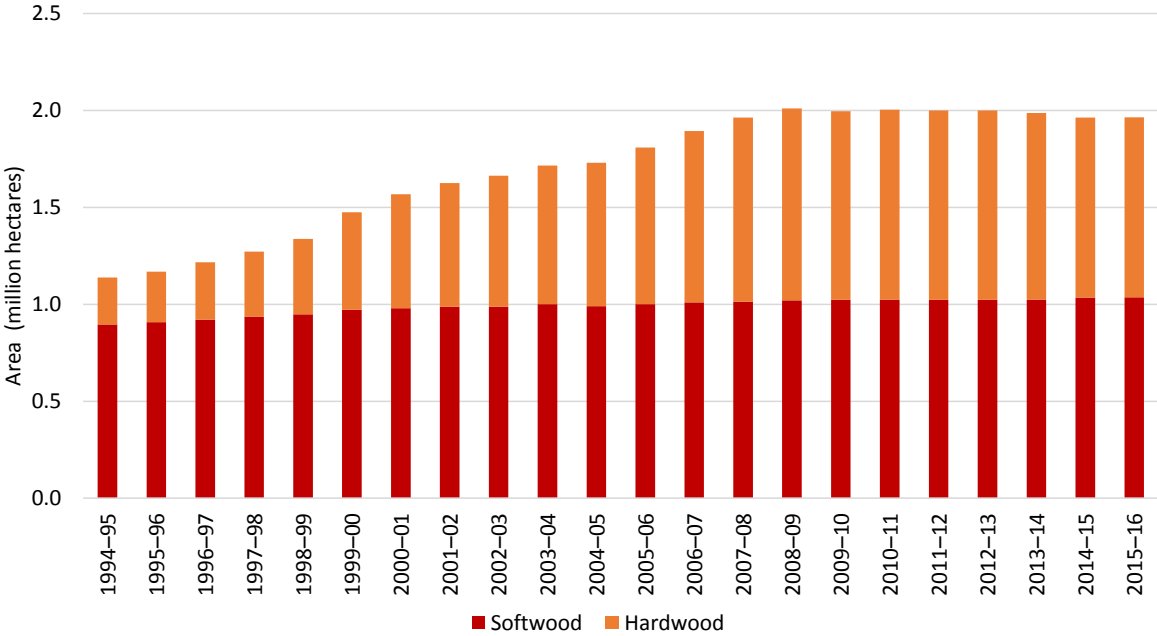


Figure 1. Total Australian plantation area, by type, 1994–95 to 2015–16.
Source: ABARES 2017

The rate of new plantation establishment in Australia has been declining since 2007 (Figure 2). Establishment of softwood plantations, mainly by state and territory governments, has been declining since the 1990s. The more recent decline in hardwood plantation establishment is linked to factors including winding up of plantings under management investment schemes, rising costs, and challenging market conditions. Between 2014–15 and 2015–16, the total area of Australia’s plantations increased by 0.1 per cent. Only 1,415 hectares of new plantations were established in 2015–16 (ABARES 2017).

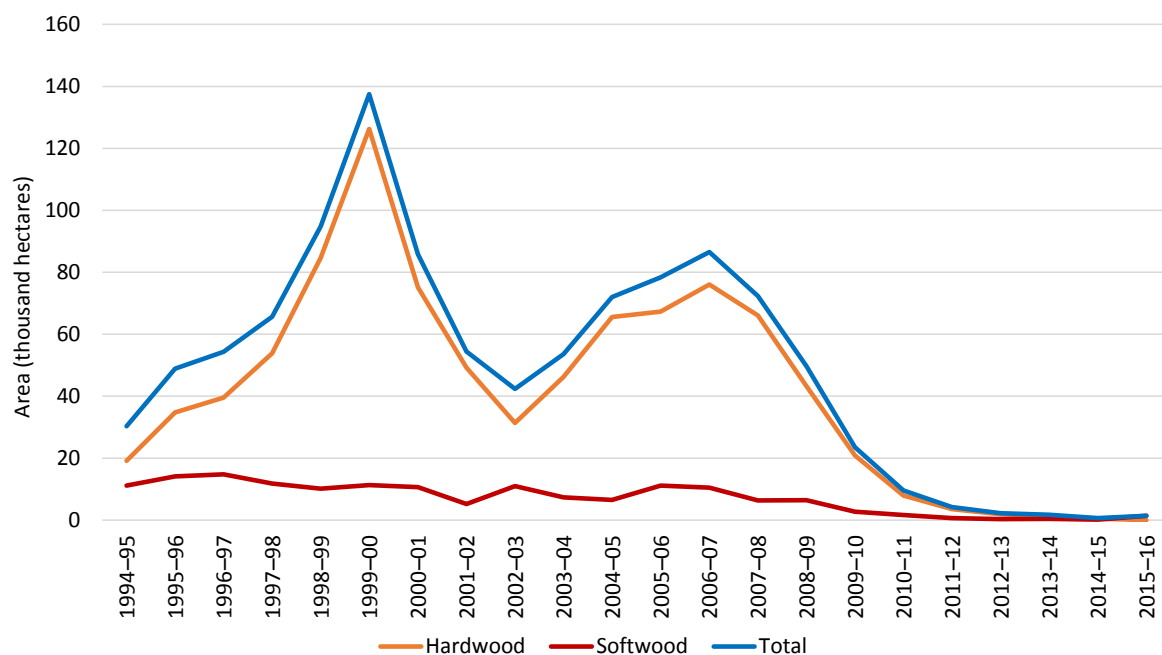


Figure 2. New plantations, 1994–95 to 2015–16.

Source: ABARES 2017

Analysis by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) in 2015 suggests that this downward trend in the area of plantations is likely to continue, given policy and market settings in 2013–14 (Burns et al, 2015).

This analysis indicates that, under market conditions in 2013–14:

- establishment of new plantations in most regions of Australia is unlikely to occur in the ordinary course of events;
- the area of plantations in Australia is likely to decline in the short to medium term; and
- these changes will have a negative impact on Australia’s efforts to reduce greenhouse gas emissions.

Analysis by Indufor Asia Pacific (Australia) in 2014 found there was a low likelihood of substantial new plantation establishment nationally in the ordinary course of events up to 2020.

The *Carbon Credits (Carbon Farming Initiative—Plantation Forestry) Methodology Determination 2017* (the Determination) provides a mechanism to increase carbon sequestration through establishment of new plantation forests, and increase sequestration in existing plantation estates through transition from short-rotation plantation forests to long-rotation plantation forests. Eligible plantations under the Determination are restricted to plantations that are managed with the intention of harvesting forest products.

Eligibility is restricted to plantations established in regions defined under the National Plantation Inventory (NPI). The NPI covers regions where plantations are potentially feasible,

based on biophysical and logistical constraints. The NPI collects data on changes in plantation area in each region over time. This data allows the level of business as usual plantation establishment activity to be determined, and therefore enables assessment of whether new plantation establishment meets the additionality criteria and offsets integrity standard in paragraph 133(1)(a) of the Act. Conversely, for areas outside national plantation inventory regions, there is a lack of data on plantation establishment and therefore it is not possible to determine whether potential new plantation establishment would meet these requirements of the Act. Accordingly, the limitation to national plantation inventory regions is considered reasonably necessary for ensuring that genuinely additional projects are registered.

The NPI also collects data on the types of plantations in each national plantation inventory region. The Determination draws on this data to determine eligibility of plantation types as short-rotation plantations suitable for conversion to long-rotation plantations. It also applies the data to establish plantation clearfell ages for calculating abatement. Accordingly, the limitation to national plantation inventory regions is also considered reasonably necessary for ensuring eligibility of conversion projects and accurate abatement calculations.

Some plantation types within national plantation inventory regions are not eligible under the Determination. These plantation types in these regions are considered likely to see expansion of the plantation estate in the business as usual scenario, and therefore plantations in those regions are unlikely to meet the additionality criteria and offsets integrity standard in paragraph 133(1)(a) of the Act.

Plantations managed as part of a forestry managed investment scheme as defined under Division 394 of the *Income Tax Assessment Act 1997* are also ineligible. This avoids providing a double incentive from Division 394 tax deductions and crediting under the Act and supports the additionality of projects which are eligible under the Determination.

To complement the eligibility requirements of the method, the Australian Government Minister responsible for the Agriculture portfolio has a role to assess whether a project may lead to an undesirable impact on agricultural production in the region in which the project is to be located. More information can be obtained from the *Carbon Credits (Carbon Farming Initiative) Rule 2015* and the Department of Agriculture and Water Resources' website.

The Determination requires that at least one of three possible project activities must be undertaken in the eligible area:

- establishment of a new plantation forest on land that has had no plantation forest for seven years; or
- conversion of a short-rotation plantation to a long-rotation plantation, where the conversion might occur either part-way through the short-rotation plantation cycle, or following harvest of a short-rotation plantation; or
- maintenance of a pre-existing plantation forest that meets the eligibility requirements of the Determination but was established under another determination.

Specific eligibility requirements apply for each project activity.

Abatement is calculated using the Full Carbon Accounting Model (FullCAM), which is the model used to construct Australia's national greenhouse gas emissions accounts for the land sector. With the exception of monitoring tree survival following planting, there is no need for proponents to conduct field work to collect data for estimating abatement.

The Determination sets out requirements for using FullCAM, while more detailed requirements and instructions are provided in FullCAM guidelines. The FullCAM guidelines are published on the Department's website.

The Determination requires accounting for carbon stock changes in trees, debris, and harvested forest products, taking into account forest growth, disturbances and harvesting. It also accounts for carbon stock changes and emissions due to management activities such as thinning, pruning, fertilising and controlled burning, and emissions from fossil fuel use.

The quantity of carbon stored in harvested forest products depends on the lifespan of the products. For example, forest products used in construction generally have a longer lifespan than paper. Forest products decay over time, and may be placed in landfill, recycled, or burnt. The Determination requires proponents to specify the types of forest products and the proportions going to end uses such as paper, packaging, furniture and construction. The FullCAM guidelines provide the required information. Carbon stock estimates in FullCAM use parameters for each national plantation inventory region, species, log class and end use. The Determination does not include wood products in landfill, to avoid potential double counting of abatement under ERF waste projects.

Modelling is conducted separately for each Carbon Estimation Area (CEA), where CEAs are stratified according to management activities rather than biophysical characteristics. The proponent must use FullCAM to model two types of project scenario:

- the project scenario, estimating abatement up to the end of the reporting period; and
- the long-term project scenario, estimating abatement over a 100-year modelling period.

In both project scenarios a project proponent must account for the emissions associated with harvesting and the temporary loss of carbon stock on the land as a result of a harvest, and the subsequent regrowth. To prevent over-crediting due to carbon stock fluctuations in the carbon cycle, proponents are not permitted to be credited for carbon stocks that exceed those of the long-term project scenario.

For CEAs where a short-rotation plantation is converted to a long-rotation plantation, the baseline will be non-zero. In such cases, the proponent must also use FullCAM to model a baseline scenario. The baseline represents the long-term (100-year) average carbon stocks on the land had the project not been carried out. The average carbon stock is used to account for fluctuations in carbon stocks as the result of the harvest cycles in the baseline. That is, the baseline carbon stock estimate will always be a flat line.

For CEAs where new plantations are established on land that has been non-forested in the seven years prior to project application, the baseline is assumed to be zero.

In general, abatement is calculated by subtracting the long-term average baseline carbon stock (where applicable) and any project emissions from the project carbon stock, with a cap on maximum abatement represented by the long-term average project carbon stock. Figures 3-5 provide indicative examples of how abatement is calculated under different project activities in the Determination. These simplified examples show carbon stocks only. Figure 3 shows a new long-rotation plantation, which reaches the long-term average in 2036. No further credits would be issued beyond this point. Figure 4 shows a project to establish a long-rotation plantation following completion of a short-rotation. Figure 5 shows the calculation of abatement for the example in Figure 4.

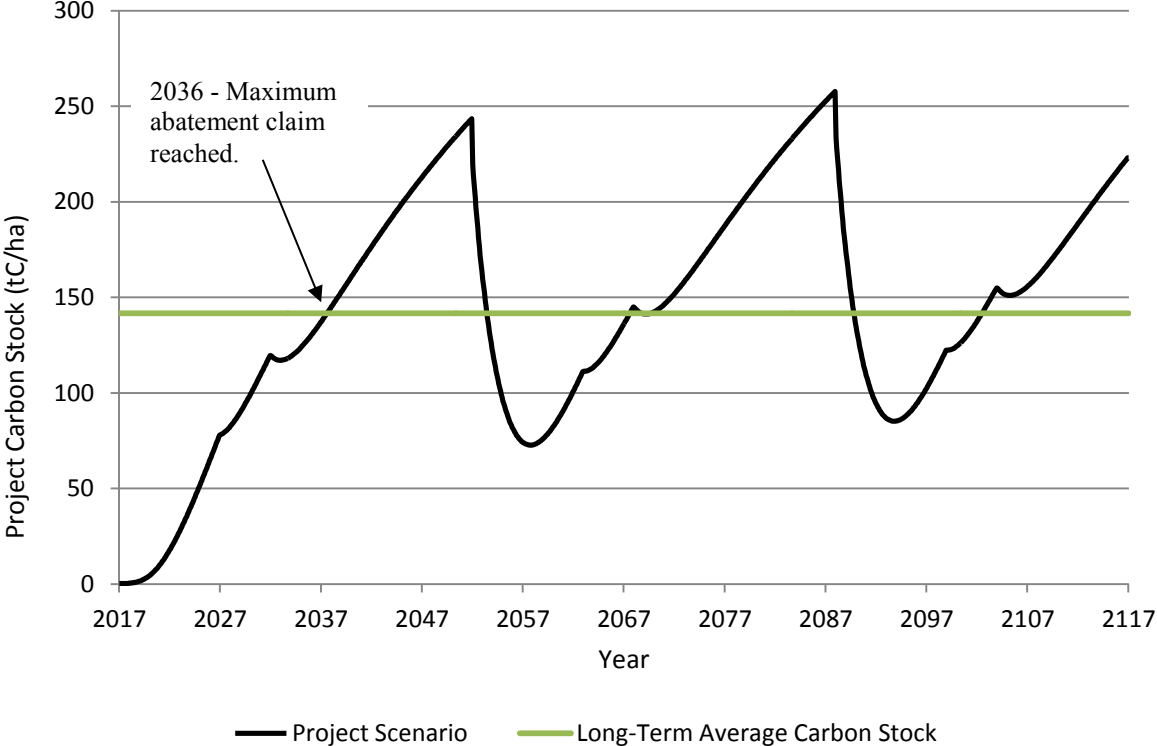


Figure 3. Example showing calculation of abatement for a plantation established on an area that is eligible for a new plantation. Note that in this example the project has a zero baseline.

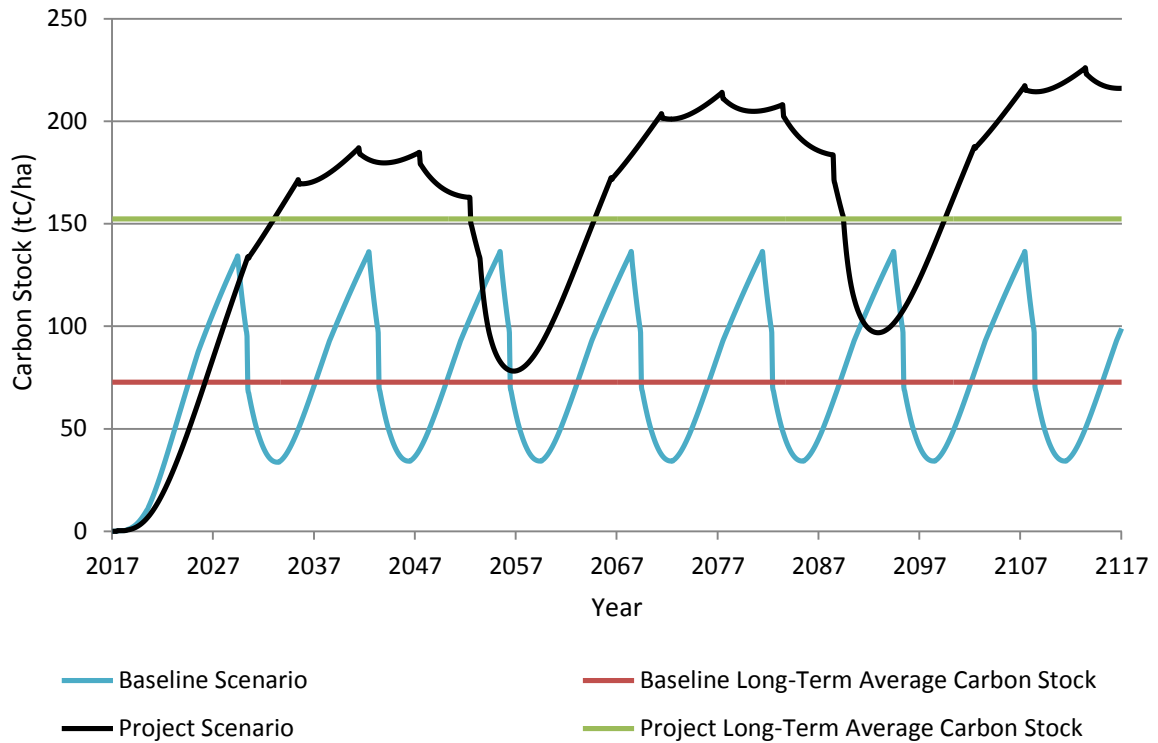


Figure 4. Example showing calculation of baseline and project carbon stocks for a project that converts a plantation from short-rotation to long-rotation. This example shows a conversion which involves establishing a new rotation with a different species.

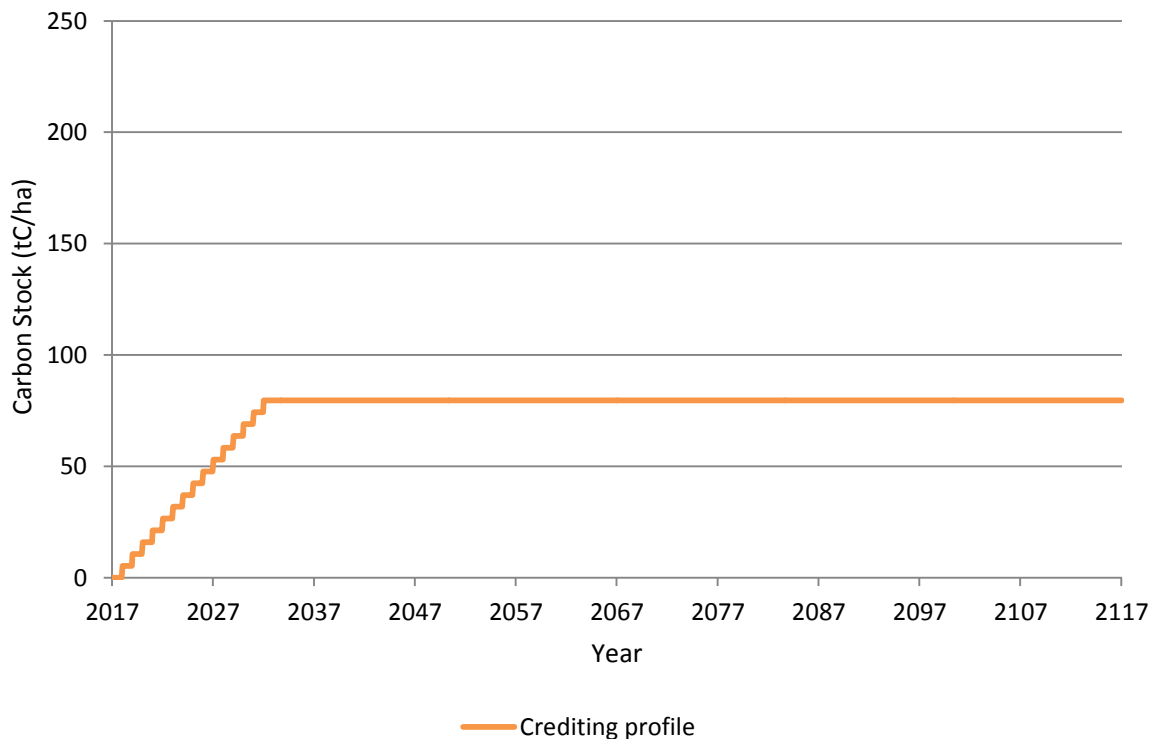


Figure 5: Calculation of abatement for the conversion example shown in Figure 4. The carbon stock is assumed to increase linearly in annual increments for 15 years, up to the maximum of the long-term average net carbon stock less the baseline carbon stock.

The Determination has some similarities to the *Carbon Credits (Carbon Farming Initiative) (Measurement Based Methods for New Farm Forestry Plantations) Methodology Determination 2014* (farm forestry method) and the *Carbon Credits (Carbon Farming Initiative) (Reforestation and Afforestation—1.2) Methodology Determination 2013* (reforestation and afforestation method). Both these determinations, like the Determination, allow planting of new forests as a project activity. The farm forestry method permits forest product harvesting, whereas the reforestation and afforestation method does not. The farm forestry method places upper limits—based on average annual rainfall—on the area of each harvest plantation. The Determination does not apply such restrictions.

The farm forestry method's approach to modelling and crediting abatement is similar to the Determination's approach, but also requires field measurement to collect data for abatement estimates. The reforestation and afforestation method requires field measurement and does not use FullCAM.

Application of the Determination

The Determination sets out the detailed rules for implementing and monitoring offsets projects that sequester carbon by establishing and maintaining a plantation forest, or increase sequestration by converting an existing plantation forest from a short rotation to a long rotation. Plantations are defined as forests established for harvest, and forests have height and canopy cover requirements. For projects that establish a new plantation, there are no restrictions on the type of plantation forest (that is, either short or long rotation) that can be established, as long as the proposed management plans for the plantation are to harvest forest products.

The rules set out in the Determination 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; and
- estimates, assumptions or projections used in a methodology determination should be conservative.

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

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

The government program requirement is provided for in the *Carbon Credits (Carbon Farming Initiative) Rule 2015*. Subsection 27(4A) of the Act provides that a methodology determination may specify requirements in lieu of the newness requirement or the regulatory additionality requirement.

The regulatory additionality requirement specified in the Act applies to projects covered by the Determination.

The Determination does, however, specify requirements in lieu of the newness requirement (see section 32). The purpose of the specified requirements is to allow for preparation of any written management schedule that may be used to implement a project management action, where the management schedule is prepared before the action begins.

Permanence period and discounts

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 the legislative rules. The *Carbon Credits (Carbon Farming Initiative) Rule 2015* applies a permanence period discount of 25 per cent to new plantation forestry projects that have a rotation length of less than 20 years and which nominate a 25-year permanence period. This helps meet the offsets integrity standard requirement for estimates, assumptions or projections used in a methodology determination to be conservative.

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. The risk of reversal buffer number is 5 per cent unless another percentage is specified in the legislative rules.

Public consultation

The Determination has been developed by the Department of the Environment and Energy in collaboration with a technical working group of experts from the plantation industry, and the Regulator. The Plantation Forestry Technical Working Group met in 2015 and reviewed several versions of the draft Determination.

The exposure draft of the Determination was published on the Department’s website for public consultation from 2 December 2016 to 30 December 2016. Twenty submissions were received. Details of the non-confidential submissions are provided on the Department of the Environment and Energy website, www.environment.gov.au.

Determination details

Details of the Determination are at Attachment A. Numbered sections in this 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 a methodology determination the Minister must have regard to, and agree with, the advice of the ERAC that the methodology determination complies with the offsets integrity standards and that the proposed methodology determination should be made. The Minister must be 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.

Details of the Determination

Part 1—Preliminary

1 Name

Section 1 sets out the full name of the Determination, which is the *Carbon Credits (Carbon Farming Initiative—Plantation Forestry) Methodology Determination 2017*.

2 Commencement

Section 2 provides that the Determination would commence on the day after it is registered on the Federal Register of Legislation.

3 Authority

Section 3 provides that the Determination would be made under subsection 106(1) of the Act. Subsection 106(1) of the Act provides that the Minister may, by legislative instrument, make a certain type of determination. Subsection 106(2) of the Act specifies that the determination is to be known as a ***methodology determination***.

4 Duration

Under subparagraph 122(1)(b)(i) of the Act, a methodology determination remains in force for the period specified in the methodology determination. The Determination would remain in force for the duration set out in section 4 unless revoked in accordance with section 123 of the Act or section 42 of the *Legislation Act 2003* (which replaced the *Legislative Instruments Act 2003*).

Section 4 provides that the Determination would be in force from its commencement (as provided for in section 2) until the day before it would otherwise be repealed under subsection 50(1) of the *Legislation 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 Legislation. In accordance with subparagraph 122(1)(b)(i) of the Act, paragraph 4(b) of the Determination sets out the time that the Determination would expire.

If the Determination were to expire in accordance with section 122 of the Act or were to be revoked under section 123 of the Act during a crediting period for a project to which the Determination would apply, the Determination would continue to apply to the project during the remainder of the crediting period under sections 125 and 127 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 section 128 of the Act).

Under section 27A of the Act, the ERAC may also suspend the processing of applications for declaration under a methodology determination if there is reasonable evidence that the methodology 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 offsets projects to which the methodology determination applies.

5 Definitions

Section 5 defines a number of 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 the methodology determination in the singular number include the plural and words in the plural number include the singular.

Key definitions in section 5 of the Determination include those set out below.

National Plantation Inventory is defined to mean the inventory of plantations established primarily for timber production in Australia that is managed by the Department of Agriculture and Water Resources, as in force on the day this determination commences. In 2017, the National Plantation Inventory could be viewed at <http://www.agriculture.gov.au>.

National plantation inventory region is a region defined in the National Plantation Inventory. The effect of the National Plantation Inventory definition is that national plantation inventory regions as defined in the National Plantation Inventory on the day this Determination commences are applicable for the purposes of determining project eligibility and calculating abatement.

plantation forest means a plantation established by planting or seeding for the harvest of forest products. A forest product can include but is not limited to:

- sawn products;
- paper-based products;
- biomass for bioenergy production; and
- essential oils.

A plantation forest excludes horticultural plantings where the harvest does not involve removal of wood-based biomass, such as an orchard.

A plantation forest must be managed with the purpose of harvest involving removal of biomass, where harvesting means periodic clearfelling of the forest. To help ensure projects meet the requirement in the offsets integrity standards for providing carbon abatement that contributes to Australia's climate change targets, plantation forests must be expected, in the absence of a natural disturbance, to reach forest cover before clearfelling. Management actions involving planting, re-seeding or coppicing can only occur after a harvest. A plantation forest can comprise a short-rotation or long-rotation plantation.

rotation means a phase that lasts from planting, seeding or coppicing to the subsequent clearfelling. The term is defined in this way to allow proponents flexibility in choosing a silvicultural technique to begin the rotation.

The following documents and models are defined in the determination as in force from time to time consistent with subsection 106(8) of the Act:

- *CFI mapping guidelines* available at <http://www.environment.gov.au>
- *FullCAM* (the Full Carbon Accounting Model) available at <http://www.environment.gov.au>
- *FullCAM guidelines* available at <http://www.environment.gov.au>
- *National Greenhouse and Energy Reporting Regulations 2008* available at <http://www.legislation.gov.au>

6 Factors and parameters from external sources

Under the Determination, certain factors or parameters used in calculating the net abatement must be obtained through a specified external source. Section 6 provides that where this is the case, the proponent must use the instrument or writing in force at the end of the reporting period for which the calculation is made. Subsection 106(8) of the Act provides that a methodology determination may refer to a matter contained in an instrument or writing as in force at a particular time, or as in force from time to time.

Section 6 applies to the version of FullCAM used to model the carbon stocks under the project, meaning that a proponent must use whatever the most recent version of FullCAM is available at the end of the reporting period. Section 6 also means that the proponent must use the version of the FullCAM guidelines available at the end of the reporting period.

Part 2—Plantation forest projects

7 Plantation forest 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 7(1) provides that the Determination applies to sequestration offsets projects that sequester carbon in new plantation forests, by converting short-rotation plantation forests to long-rotation plantation forests, or by maintaining a pre-existing plantation forest that meets the eligibility requirements of the Determination but was established under another determination. The projects must be expected to result in eligible carbon abatement.

The Determination does not apply to activities to avoid converting plantation forest land to a land use other than plantation forestry following harvest.

Subsection 7(2) provides that a project to which the determination would apply is known as a ‘plantation forest project’.

Part 3—Project requirements

Division 1—General

8 Operation of this Part

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.

The intent of this Part is to define the eligible area of the project, and then set up a series of FullCAM modelling events (including nature, timing, and intensity), for the project scenario and long-term project scenario as well as a baseline scenario (if applicable). This modelling is to be conducted for each CEA, in accordance with the requirements in Part 4.

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

- assess whether the project area includes eligible land that meets the eligibility criteria in section 9, and supply evidence of land eligibility in accordance with section 10;
- undertake one of the following project activities:
 - establishment of a new plantation forest (section 13);
 - conversion of a short-rotation plantation forest to long-rotation plantation forest (section 14);
 - maintenance of a pre-existing plantation forest (section 16);
- stratify the eligible area into CEAs, on the basis of defined management actions, as specified in section 17;
- re-stratify if part of a CEA has been affected by natural disturbance (events that could not reasonably be prevented by a project proponent, such as flood, bushfire, drought, pest attack or disease), or if the management actions differ between parts of a CEA, as specified in sections 21 to 23;
- record the management regimes (including nature, timing, and intensity) for the project scenario, the long-term project scenario and the baseline scenario (if applicable), as specified in sections 24 to 30; and
- using FullCAM, test and report whether a proposed management action that differs from the proposed management regime will result in negative abatement, and update the management regime if necessary, as specified in section 31.

Division 2—Information required in application

9 Information required in application

Section 9 provides that the project proponent must provide the Regulator with evidence that the project area includes eligible land, to help demonstrate that the project meets the additionality requirements of the Act.

The baseline scenario simulation in the Determination is based on the assumption that, in the absence of the project:

- land where there has been no plantation forest for seven years before the eligibility date is likely to continue to be managed in a non-plantation land use (that is, there is no carbon stock resulting from plantation forests); and

- land that has been managed as a short-rotation plantation at any time over the seven years prior to the eligibility date is likely to continue to be managed as a short-rotation plantation over the baseline period.

This assumption is supported by the following arguments:

- establishment of new plantations on previously non-forested land in Australia is not a business as usual activity in 2017, and this is not expected to change in the foreseeable future, and therefore it is reasonable to assume a zero carbon stock baseline for such projects; and
- where land is viable for short-rotation plantations, the assumption that the land would continue to be managed as a short-rotation plantation is appropriate. Alternatively, where land is not viable for short-rotation plantations, the assumption of continual use as a plantation is likely to be conservative as the land would likely be converted to a non-forest land use.

Subsection 9(2) requires applications to specify one or more areas of land and the project activity to be undertaken on each area of land. Applications must provide evidence that each area of land is eligible for the specified project activity.

Subsection 9(3) provides that the evidence must include remotely sensed imagery covering the period of seven years before the eligibility date for the land. Any remotely sensed imagery must be date-stamped and geo-referenced. If the land is eligible for a new plantation, the remotely sensed imagery should show that there has been no plantation forest (or any other forest) at any time over the seven-year period. If the land is eligible for conversion, the remotely sensed imagery should show that the land has been used for a plantation forest for either all or part of the seven-year period before the eligibility date. The frequency of imagery should be sufficient to demonstrate that these requirements are met across the entire seven-year period.

Subsection 9(4) specifies evidence that must be presented to demonstrate that land is eligible for conversion from a short rotation to a long rotation plantation. In each case this takes the form of management records or other evidence. As per paragraph 14(2)(b), a plantation must belong to a category listed in Schedule 1 to be eligible for conversion from a short rotation to a long rotation plantation. In effect, this means it must be within a specified national plantation inventory region and is or has been planted with a species listed for that national plantation inventory region in Schedule 1. For example, a *Eucalyptus globulus* plantation in Western Australia would meet this requirement, provided sufficient management records are submitted to demonstrate the species type and location.

Division 3—Eligibility requirements—plantation type and type of management scheme

10 Plantation types and regions that are excluded

Section 10 provides that a plantation forest project relating to a type and region in Schedule 3 is ineligible to participate in this method. Section 10 is necessary to ensure that plantations which are likely to occur in the ordinary course of events are not eligible under the scheme, consistent with the offsets integrity standard in paragraph 133(1)(a) of the Act. Crediting

abatement from such plantations would not assist Australia meet its international emission reduction obligations and achieve the objects of the Act. The effect of section 10 is that the following plantations are not eligible:

- African mahogany (*Khaya senegalensis*) in the Northern Territory national plantation inventory region
- Indian sandalwood (*Santalum album*) in all regions.

The exclusion of these types of plantations has been made on the basis of a review of publicly available information, expert advice and analysis from Indufor Asia Pacific (Australia) Pty Ltd and consultations with the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) and the ERAC. Unlike other plantation types and regions, evidence indicates recent expansion of the plantation estate for these plantation types, and likely future expansion in the business as usual scenario. Accordingly, it is considered reasonably necessary to exclude plantations of this type to effectively meet the offsets integrity standards and exclude plantations which are likely to occur without support from the ERF.

The exclusion of these plantation types is based only on these additional requirements. It is not related to any other aspect of investment in, or management of, these plantation types.

11 Forestry managed investment schemes that are excluded

Section 11 includes an ongoing eligibility requirement that no plantation in a project is managed as part of a forestry managed investment scheme which is designed in a way that expects, or relies on the possibility of, payments being made by participants under the scheme that would be deductible under section 394-10 of the *Income Tax Assessment Act 1997*. Should any plantation in a project come under such a forestry managed investment scheme during the crediting period, the project would no longer meet the eligibility requirements in the Determination.

However, the requirement does not prevent a project from including a plantation that was once managed as part of such a forestry management investment scheme, but which ceased to be so managed before becoming part of the project.

This complements the general restriction in the list of excluded offsets projects for the establishment of a forest under a forestry managed investment scheme for Division 394 of Part 3-45 of the *Income Tax Assessment Act 1997* (see paragraph 27(4)(m) and section 56 of the Act and regulation 3.36 of the *Carbon Credits (Carbon Farming Initiative) Regulations 2011*). While the focus of excluded offsets projects is at the initial declaration of a project, the eligibility requirement in section 11 will apply throughout the crediting period. In particular, the effect of section 35 of the Act and section 32 of the *Carbon Credits (Carbon Farming Initiative) Rule 2015* is that the Regulator may revoke the declaration that a project is an eligible offsets project if the plantation becomes a forestry managed investment scheme and this eligibility requirement is no longer met. Non-compliance with this requirement could be identified in an audit report or compliance investigations by the Regulator.

If a project proponent changed their mind and wanted to support a plantation through taking advantage of tax deductions available under section 394-10 of the *Income Tax Assessment Act*

1997 rather than under the Act (or if a proponent wanted to withdraw an eligible project for another reason), they could apply for voluntary revocation of their declaration under sections 29 and 30 of the *Carbon Credits (Carbon Farming Initiative) Rule 2015*. This would require relinquishment of credits equivalent to those issued for the project. It would also be possible to move part of the project area with such a forest to another sequestration offsets project under section 23 of the *Carbon Credits (Carbon Farming Initiative) Rule 2015* and then apply for revocation under sections 29 or 30 (with relinquishment of credits related to that forest).

Division 4—Eligibility requirements—project activities and types of eligible land

12 Project must include project activity on eligible land

A project must be one in which a project activity set out in this Division is conducted on the appropriate kind of eligible land. The eligible land requirements for each project type are given in sections 13, 14 and 16. The note preceding section 12 summarises the three types of activity and associated eligibility requirements.

For all project activity types, the project area must fall within a national plantation inventory region as defined in the NPI. Areas within the national plantation regions are considered feasible for plantation forest establishment, based on biophysical and logistical constraints. Requiring projects to be located within national plantation regions is designed to ensure plantations established under the Determination will be viable and deliver additional abatement. A map of the national plantation inventory regions is published by the Department of Agriculture and Water Resources. In 2017, spatial files delineating the national plantation regions could be downloaded at:

http://www.agriculture.gov.au/abares/publications/display?url=http://143.188.17.20/anrdl/DAFFService/display.php?fid=pb_aplnsd9abfe20160816.xml

13 Eligibility—new plantation

Section 13 sets out eligibility requirements for a project to establish one or more new plantation forests. Other than the requirements of this section and the maximum rotation lengths provided in Schedule 2, the Determination does not prescribe or restrict the species or rotation lengths used for new plantations.

Subsection 13(1) provides that the project activity that applies to land eligible for a new plantation is:

- a) planting or seeding to establish and maintain the land as a new plantation forest;
- b) ensuring that no rotation is longer than 60 years duration;
- c) as far as reasonably practicable, ensuring that the periods between rotations are not more than 24 months.

Subsection 13(2) sets out the eligibility requirements for land relating to new plantation forests. Land is eligible for a new plantation where there have been no plantation forests on the land for seven years before the eligibility date. Regulation 3.36 of the *Carbon Credits (Carbon Farming Initiative) Regulations 2011* (the Regulations) provides a list of excluded offsets projects, which among other exclusions, prohibits the establishment of vegetation on

land that has been subject to clearing of a native forest in the seven years prior to the project application. The combined effect of the Regulations and the Determination means that subsection 13(2) should be taken to mean that there has been no forest on the land for seven years before the eligibility date. Subsection 13(2) also provides that land must be within a national plantation inventory region at the eligibility date, to be eligible for a new plantation. National plantation inventory regions are those in force on commencement of the Determination.

Subsection 13(3) defines the eligibility date for land for a new plantation as the date of the application for declaration of the project as an eligible offsets project under section 22 or request under section 128 of the Act (the *section 22 application*). If the proponent has submitted a variation of the declaration under section 29 of the Act, the eligibility date is equivalent to the date of the application for the variation, but this only applies to that part of the project area to which the variation relates.

14 Eligibility—conversion from short to long rotation

Section 14 sets out the eligibility requirements for a project to convert a short-rotation plantation to a long-rotation plantation.

Subsection 14(1) provides requirements for a conversion project activity under two scenarios:

- if no rotation was in progress on the eligibility date, then the conversion involves managing the first rotation that occurs after the eligibility date as a long-rotation plantation;
- if a short rotation was in progress on the eligibility date, then the conversion involves either:
 - completing that rotation as a short rotation, and managing the following rotation as a long rotation; or
 - managing the current rotation as a long-rotation plantation.

Subsection 14(1) also sets out further requirements applicable to either of the above scenarios:

- thereafter using management actions to ensure that every subsequent rotation is a long rotation;
- as far as reasonably practicable, ensuring that the periods between rotations are not more than 24 months.

The chosen project activity is carried out throughout the crediting period. In addition, since the permanence obligations require the project proponent to maintain the degree of carbon sequestration for which credits were given, there will be in practice an obligation to continue long rotations throughout the permanence period where this is longer than the crediting period.

Subsection 14(2) sets out the eligibility requirements for land for conversion from short to long rotation. For land to be eligible for conversion, during the seven years before the eligibility date, a short rotation must have been completed on the land; or at the eligibility

date, a rotation must have been in progress on the land, within which thinning or pruning had not occurred. In addition, the land must not have been used other than as a plantation forest with a short rotation or as land with no plantation forest in the seven years before the eligibility date, and at the eligibility date, must have been within a national plantation inventory region.

The effect of subsection 14(2) is that the principal eligibility requirement for conversion projects is to demonstrate that the plantation is of a species within a region that is usually managed as a short rotation, and that the current rotation has not been pruned or thinned. As pruning and thinning are management actions that have a financial cost that would only be offset by the production of clear timber in long-rotation plantations in suitable areas, it is assumed that growers of short-rotation plantations would have no incentive to undertake these actions outside of the range specified in Schedule 1.

Paragraph 14(2)(a) provides that land eligible for a conversion project cannot include land that is part of a pre-existing project. This means a project to maintain a pre-existing project cannot include an activity to convert a short-rotation plantation to a long-rotation plantation.

Subparagraph 14(2)(b)(ii) provides that where a rotation is in progress on the eligibility date, then the proponent must demonstrate that the plantation had not been thinned or pruned. For example, a plantation established with *Eucalyptus nitens* in the Central Victoria national plantation inventory region would be eligible if management records or other evidence could demonstrate that no pruning or thinning had been undertaken.

Subparagraph 14(2)(b)(iii) provides that if a plantation forest rotation was under way using a species listed in Part 2 of Schedule 1, then the proponent must provide additional evidence to demonstrate there had been at least one previous rotation of the plantation forest that was a short rotation using the same species.

For the species in regions listed in Part 1 of Schedule 1, it is estimated that greater than 97 per cent of plantations of that species are managed as short-rotation plantations, whereas for species in regions listed in Part 2 of Schedule 1, the historical rotation length is less certain. Parts 1 and 2 of Schedule 1 are based on research by ABARES (2016). The effect of subparagraph 14(2)(b)(iii) is to provide a further test that in the baseline scenario a plantation listed in Part 2 of Schedule 1 would have been managed as a short rotation.

Subsection 9(4) describes the evidence requirements to demonstrate eligibility for conversion projects.

Subsection 14(3) defines the eligibility date for land for a new plantation as the date of the application for declaration of the project as an eligible offsets project under section 22 or request under section 128 of the Act (the **section 22 application**). If the proponent has submitted a variation of the declaration under section 29 of the Act, the eligibility date is equivalent to the date of the application for the variation, but this only applies to that part of the project area to which the variation relates.

Subsection 14(4) defines the management actions and features which distinguish a short rotation from a long rotation. The definitions apply only to section 14 and instances referring to section 14.

A short rotation is a plantation of a species listed in Schedule 1 of the Determination and has a rotation length no longer than specified in Schedule 1 of the Determination. The definition of inner tree is provided in order to explain the management actions ‘thinning’ and ‘pruning’. It is required so that management action undertaken for regulatory reasons on trees on the edge of the plantation do not rule out a plantation from being a short rotation plantation. Whether a plantation has been thinned or pruned in turn determines whether the plantation is a long rotation plantation. The definition of thinned permits the removal of some stems from coppiced trees without the tree being removed, which allows productive growth from the coppice without ruling out the plantation from being a short rotation plantation.

A rotation is a long rotation if a plantation has been thinned or pruned after the starting date of the rotation (defined in subsection 24(6)) and the rotation period is at least 10 years longer than the baseline rotation period.

Subsection 14(5) determines the length of the baseline rotation period for the land. The baseline rotation period is used in specifying the default baseline management regime for a CEA (see section 30). In the event that a rotation was in progress at the eligibility date, the baseline rotation period is the longer of the age of the rotation underway or the default rotation period listed for the species and region in Schedule 1.

In the event that no rotation was in progress on the eligibility date (where ‘no rotation’ means the CEA is between rotations), then at least one rotation must have been completed on the CEA, the most recent of which is used as the basis for the default baseline management regime. The rotation length modelled must be either the length of the previous rotation on that CEA, or the default rotation period specified for the species and region in Schedule 1, whichever is longest.

These defaults in Schedule 1 represent industry standard rotation lengths by region and species. The intent of the choice of rotation length is to be conservative, as modelling baseline rotation lengths less than industry standards would increase the net abatement amount.

15 Meaning of *pre-existing project* and *former determination*

A plantation forest project is a ***pre-existing project*** if this determination applies to it because of an approval under section 130 of the Act. This section of the Act provides for approval by the Regulator of the application of a methodology determination to a project during a project’s reporting period; that is, the eligible offsets project is already established.

If the project had been part of more than one determination since it was newly established, then the ***former determination*** is defined to be the most recent past determination applied to the project.

16 Eligibility—maintenance of plantation in a pre-existing project

Section 16 sets out the eligibility requirements for a project to maintain a plantation in a pre-existing project.

Subsection 16(1) sets out that the project activity of maintenance constitutes using management actions to maintain the land as a plantation forest and as far as reasonably practicable, ensuring that the periods between rotations are not more than 24 months.

Subsection 16(2) sets out that for a pre-existing project, land that had formed part of a project area under the former determination is eligible for maintenance if on the date of the request under section 128 of the Act:

- a) the land was a plantation forest; and
- b) the land was within a national plantation inventory region; and
- c) the land was part of a CEA under the former determination.

In addition, the reporting requirements in relation to the CEA must have been satisfied; as per subsection 16(4), and on the eligibility date, there had been no plantation forest on the land in the previous 7 years.

For example, a proponent has a plantation forest in the national plantation inventory region of Western Australia that was part of a CEA registered under the *Carbon Credits (Carbon Farming Initiative) (Measurement Based Methods for New Farm Forestry Plantations) Methodology Determination 2014*. This plantation would be eligible for maintenance under the Determination if no plantation forests existed on that land for the seven years before the date that it became eligible as a farm forestry project, and provided that it meets the other requirements in subsection 16(2).

Subsection 16(3) defines the eligibility date for land maintenance of an existing project. If the land was within a project area covered by the original section 22 application for the pre-existing project, then the eligibility date is the date the original section 22 application was made. If the land was included in the project area as a result of a variation under section 29 of the Act, then the eligibility date is the date the application for variation of the pre-existing project was made.

Paragraph 16(4)(a) provides that at least one offsets report for the pre-existing project must have been submitted under the previously applied determination (the ‘former determination’). Paragraph 16(4)(b) provides that the Regulator must be satisfied that the carbon stocks for each CEA reported in the most recent offsets report (the ‘closing carbon stocks’) prepared under the former determination are taken to be the same as the existing carbon stocks for the CEA for that reporting period.

Subsection 16(5) sets out circumstances in which the Regulator may be satisfied that the closing carbon stocks are representative of existing carbon stocks. If the closing carbon stock is greater than zero, the Regulator is taken to be satisfied if the Regulator has issued ACCUs on the basis of the most recent offsets report (note that this does not mean that closing carbon stocks will be equivalent to the number of ACCUs issued to the project).

If the value of the closing carbon stocks is zero, the Regulator is taken to be satisfied where it can be demonstrated that this value was determined on the basis of field measurement or modelling rather than a default value.

These requirements are to ensure that any differences in calculation processes between the Determination and other determinations, for example in relation to initial carbon stock calculations, are adequately accounted for.

The note to section 16 explains that eligibility for a plantation forest transferring from a pre-existing project depends on the land use history as at the date it became eligible under the former determination. The note also explains that if a pre-existing project has some non-forest land, that land could potentially be eligible for a new plantation.

Division 5—Stratification

17 CEAs must be defined

Section 17 provides that the project proponent must stratify into CEAs the land on which the project is carried out. A CEA is defined in subsection 17(1) as an area for which abatement will be calculated under the Determination.

The number of CEAs into which the project area can be stratified is not limited, and a project may consist of a single CEA.

The date that a CEA is taken to be in existence varies according to the project activity. For a new plantation, the CEA comes into existence on the plantation start date. For a conversion project, the date the CEA comes into existence depends on whether the conversion involves establishing a long-rotation plantation following completion of a short rotation or managing the current short-rotation plantation as a long rotation. Where the former applies, a new CEA come into existence on the date a planting or seeding of a species in Schedule 2 is completed. Where the latter applies, it is the date on which a plantation is thinned or pruned in accordance with the definitions of ‘thinning’ and ‘pruning’ in subsection 14(3). Note that this thinning or pruning must occur at least four years after the starting date for that rotation.

For maintenance of a pre-existing project, the CEA will have been included in the latest offsets report under the former determination, and must be defined in the first offsets report under this determination.

18 Requirements for CEAs

Subsection 18(1) provides that each CEA must consist of eligible land only.

Paragraph 18(1)(a) provides that each CEA must consist of land that was proposed to be established as a CEA in the application to be an eligible offsets project under paragraph 9(2)(b). Paragraph 18(1)(b) provides that each CEA must consist of land on which a project activity is undertaken. The effect of paragraph 18(1)(b) is that each CEA is a subset of the project area in which the proponent undertakes one of the three described project activities at sections 13, 14 and 16.

CEAs are defined at the date when the project activity commences to ensure that crediting only commences after there is a deviation from the baseline scenario. For example, if the project activity is the conversion of a short-rotation plantation to a long-rotation plantation through thinning the forest, then the land can be mapped as a CEA only after the thinning has occurred, in accordance with section 17. Ending the current rotation and establishing a long rotation with the same species is permitted under the Determination, but it is important to note that the project activity in this scenario would be either thinning or pruning, so crediting would not commence until a thinning or pruning had been undertaken.

Areas in which the project cannot be carried out, for example a dam or forest that has never been cleared, cannot be included in a CEA.

Stratification on the basis of biophysical characteristics is not required. This is based on the assumption that in plantation forests the timing and extent of management actions will vary with biophysical conditions in order to maximise the timber value. As such, homogeneous management actions will reflect relatively homogeneous biophysical conditions. As each separate management action will be modelled in FullCAM, it is important that the modelled management actions match those that have actually occurred, or are planned to occur, within the CEA.

Subsection 18(2) provides that a CEA must be more than 0.2 hectares because this is the minimum area of land required to meet Australia's international greenhouse gas reporting requirements.

Subsection 18(3) provides that the same management regime is applied uniformly across the whole area of a CEA. This is to ensure consistency for modelling purposes.

Subsection 18(4) specifies that a CEA must be a single area of land, or be comprised of multiple areas of land that are not separated by more than 250 metres. That is, it does not matter that a CEA is 'split' by an area whose carbon stock is not modelled, as long as the distance between the separate parts of the CEA do not exceed 250 metres.

Section 18 requires each CEA to contain a model point location. A model point location is a location, identified in latitude and longitude, for use in FullCAM to model carbon stocks for a CEA. Subsections 18(5), (6) and (7) set out requirements for determining the model point location so modelling in FullCAM accurately represents the whole CEA. The requirements are that the model point location must be within the CEA, at the approximate centre of the CEA and representative of the CEA. The 250 metre limit in paragraph 18(4)(a) also supports this purpose where a CEA comprises multiple areas of land.

In determining whether a model point location is representative of a CEA, consideration should be given to characteristics affecting spatial variation in forest productivity, such as soil type and fertility, aspect and slope.

Figure 6 shows an example of a CEA comprising multiple areas of land not separated by more than 250 metres, with a model point location within the CEA and at the approximate centre of the CEA. Figure 7 shows an example of CEAs with model point locations.

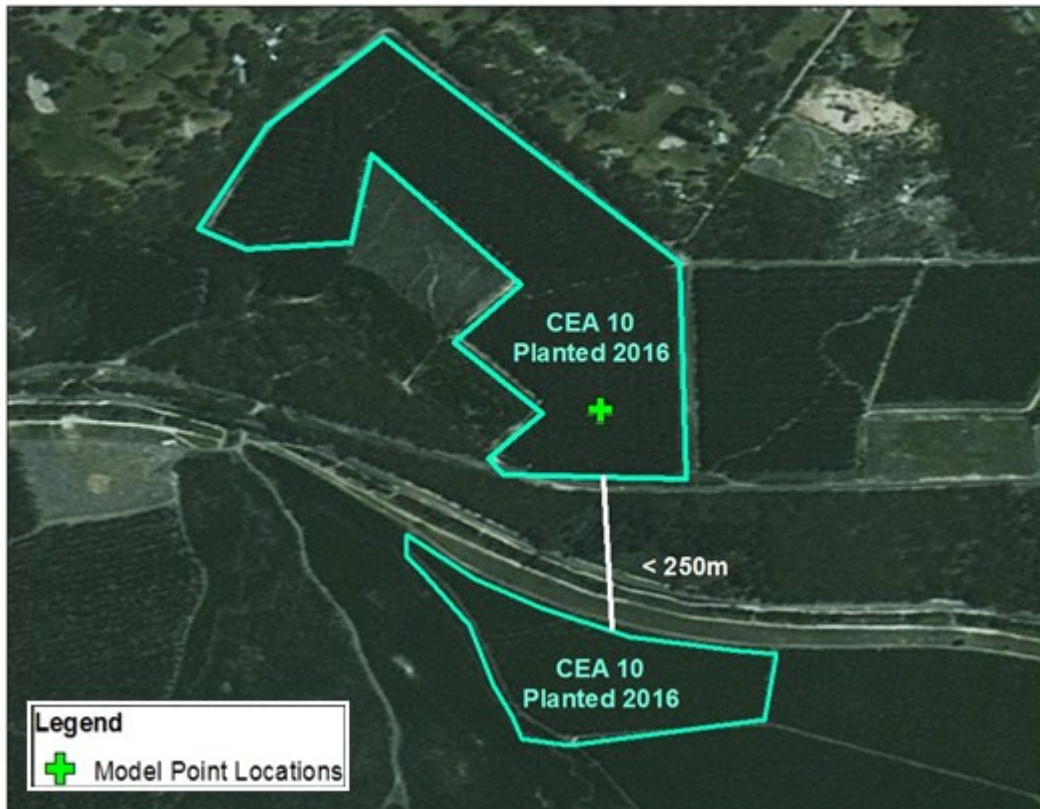


Figure 6. A single CEA split by a road, where the distance between the two parts of the CEA is less than 250 m.

Satellite image source: ESRI World Imagery.



*Figure 7. Example showing location of a model point location in each CEA.
Satellite image source: ESRI World Imagery.*

19 Boundaries and mapping

Section 19 provides that the geographic boundaries of each CEA must be defined in accordance with the CFI mapping guidelines. The CFI mapping guidelines are available on the Department's website: <https://www.environment.gov.au/climate-change/emissions-reduction-fund/cfi/publications/cfi-mapping-guidelines-2015>.

The boundaries of each CEA must be identified before the submission of the first offsets report for the project. This is because stratification into CEAs is an essential part of determining the project's eligibility under Division 4.

20 No re-stratification unless permitted by this Division

Section 20 provides that a CEA must not be re-stratified except in accordance with Division 5. That is, the boundaries of a CEA must not be changed except in the cases of natural disturbance or change in management regime, as described in sections 21 and 22.

21 Re-stratification following disturbance event

The intent of section 21 is that if a natural disturbance has affected part of a CEA, and the proponent proposes to undertake a new set of management actions in the affected part of the CEA, then the affected CEA must be split into at least two CEAs, and the new CEAs must meet the requirements of section 18. That is, the newly created natural disturbance-affected CEA must be allocated a new model point location, and the natural disturbance and subsequent management actions must be modelled in FullCAM. The newly created CEA that was unaffected by natural disturbance must also be allocated a new model point location but only the management actions which are applied to that CEA are to be modelled.

The procedures for modelling a natural disturbance affecting only part of a CEA, where no separate management actions are proposed in the affected part, are described in the FullCAM guidelines.

The implication of section 21 is that if a natural disturbance affects part of a CEA, but no separate management actions are proposed in the affected part, then re-stratification is not required, and the natural disturbance must be modelled as occurring across the affected part of the CEA. This is achieved by estimating the proportion of the CEA affected and entering this data into FullCAM when the disturbance event is created.

22 Re-stratification due to change in management regime

The intent of section 22 is that if the proponent proposes a new set of management actions in part of the CEA that are not a consequence of a natural disturbance, then this should trigger re-stratification of the CEA followed by re-modelling of each new CEA in FullCAM.

However, when new management activities are proposed that were not modelled in the previous reporting period (that is, they were not incorporated into the long-term project scenario), there is a risk that the change could result in negative abatement. Negative abatement is particularly a risk when:

- the proposed management action results in a reduction of carbon stocks (for instance thinning, reducing the rotation age), which reduce the long-term project scenario carbon stock; or
- the project scenario carbon stocks are close to or have exceeded the long-term project scenario carbon stocks.

In such cases, the project carbon stocks reported in a previous period may exceed the new long-term average project carbon stocks, and an over-issuance of credits will have occurred. The application of section 22 requires a project proponent to perform the test of negative abatement set out in section 31, before the proponent can proceed with the re-stratification due to change in management regime.

Section 22 provides that re-stratification is required if part of a CEA is managed differently from the remainder of the CEA. The affected CEA must be split into at least two new CEAs if the following conditions are met:

- the proponent proposes to treat part of a CEA with management actions that differ from those proposed for the remainder of the CEA;

- those management actions were not described in the management schedule as it stood in the previous reporting period; and
- either the CEA has not been affected by a natural disturbance such as a fire, or those management actions were not taken due to natural disturbance.

The new CEAs must meet the requirements of section 18. That is, each newly created CEA must be allocated a new model point location, and the management actions specific to each CEA must be modelled in FullCAM. This change must be documented in the next offsets report.

23 Re-stratification to remove area that is no longer suitable for plantation

Section 23 describes the circumstances under which a CEA can be re-stratified to remove an area of land from the project area. For instance, this could include removing an area of trees from a CEA, or removing a whole CEA, where tree growth is deemed to be not commercially viable following a natural disturbance.

Subsection 23(1) specifies that evidence will be required to demonstrate that maintaining the affected area in a CEA is insufficient for those trees to become commercially viable. The evidence required is described in section 56. If subsection 23(1) applies, subsection 23(2) permits the affected area to be re-stratified to remove it from the project area.

Subsection 53(4) contains the evidence requirements to support the decision to re-stratify under subsection 23(1).

A consequence of re-stratifying under section 23 will be a loss of net carbon stock during the current reporting period. This applies to the change in carbon stock calculations in section 49.

Division 6—Management regimes

Management regime is defined in section 5. Management regimes for a rotation include tree species, rotation period and management actions or disturbance events.

24 Management actions and when they occur

Section 24 provides guidance on when a management action that affects the project carbon stocks is taken to occur for modelling purposes. Actions undertaken by the project proponent as part of plantation management are referred to in the Determination as management actions.

Subsection 24(1) lists the management actions applicable to the Determination. Instructions on how to model each of these management actions are contained in the FullCAM guidelines.

Subsection 24(2) specifies when a management action that occurs over more than one day can be treated as a single event. The purpose of this is so that a management action can be modelled in FullCAM as occurring on a single day. The time periods for planting, seeding and coppicing are specified in subsections 24(7) and 24(8). Other management actions which occur, continuously or intermittently, over a period of up to 12 months can be treated as a single management action.

Subsection 24(3) specifies that terms used in subsection (1) have the meaning given in the FullCAM guidelines. This is to differentiate the meaning of these management actions from

other sections where a definition only applies to a specific section, such as the use of ‘pruned’ and ‘thinned’ in section 14.

Subsection 24(4) defines the management actions whose names do not correspond directly to management actions in FullCAM. Thinning and clearfelling occur with harvest if there is any significant recovery of forest product following the thin or clearfell. Clearfelling is differentiated from thinning in that a clearfell involves the removal of all trees in the area. A controlled burn is a human-induced fire which kills no trees. If any trees are killed, there is deemed to be no controlled burn and this management action needs to be replaced by a fire that is a disturbance event. Salvage harvesting means that the area is clearfelled and forest products are recovered following a disturbance event.

Subsection 24(5) provides that salvage harvesting may be undertaken in a CEA only following a fire or natural disturbance that affects the whole of the CEA. A requirement of salvage harvesting is that it must be applied to the entire CEA. If necessary, the CEA may need to be re-stratified before a salvage harvest can be modelled in FullCAM. The baseline scenario excludes salvage harvesting because this scenario assumes timber/forest products can only be harvested according to the default management regime.

Subsection 24(6) provides that if the rotation was begun by planting or seeding, the starting date is the date given by subsection 24(7). If the rotation was begun by coppicing, the starting date is the date given by subsection 24(8).

Subsection 24(7) sets out time restrictions that define the planting date and initial planting. The choice of planting date is conditional on the success of the initial planting. An initial planting requires all the area to be planted or seeded with trees within a period of up to 6 months. If at least 80 per cent of trees survive the initial planting for at least 12 months, the proponent can claim the start date to occur at the time the initial planting is completed. In this instance, this date is retained even if some further planting occurs after this date. If either of these conditions are not met, then the planting date must be taken to be the date that all planting or seeding is completed.

Subsection 24(8) provides that for the purpose of FullCAM modelling, beginning a rotation by coppice occurs 6 months after the previous clearfelling. This is a conservative assumption in line with the existing timeframes between rotations for modelling purposes.

Subsection 24(9) specifies the event date for modelling salvage harvesting in FullCAM. Following a fire, salvage harvesting is specified to follow 30 days after the date the fire occurred. Following any other type of disturbance event, salvage harvesting is specified to occur on the same date that natural disturbance occurred.

Subsection 24(10) provides the FullCAM event date for management actions other than planting, seeding, coppicing or salvage harvesting. The FullCAM ‘event queue’ requires that such management events be modelled on a single date, even where the management action might be spread over a number of days. If the management action occurs on a single day, the FullCAM management event should be modelled as occurring on that day. If the management activity occurs over a number of days (for example, thinning or pruning), then the FullCAM

management event should be modelled as occurring on the first day of the management action.

25 Disturbance events and when they occur

Section 25 specifies when natural disturbance events are required to be recorded as occurring. Subsection 25(1) sets out the criteria for defining disturbance events applicable to CEAs. The FullCAM guidelines provide instructions on how to model disturbance events in FullCAM. Fires, other than controlled burns, and other natural disturbances which affect less than 5 per cent of the CEA need not be modelled. However, if there are consequent management actions following the disturbance event then the affected area may need to be re-stratified in accordance with section 21. Paragraph 25(1)(c) provides that a failure of the CEA to satisfy the forest development condition is also a disturbance event.

Subsection 25(2) defines the forest development condition. The forest development condition specifies the criteria which determines that the forest is sequestering carbon. At least one of the criteria (a) to (e) must be met. Failure to meet the forest development condition implies that a growth interruption must be modelled in FullCAM.

Paragraph 25(3)(a) specifies that each of the natural disturbances are taken to occur on the day they began. If the date they began is unknown, then take the day they were first observed.

In paragraph 25(3)(b) the growth interruption is taken to occur on the date from which growth is expected to recover.

26 Requirement for a management schedule

The Determination requires the proponent to develop a management schedule for the project and baseline scenarios. The management schedule is a document, or series of documents, that describes all the management actions that have been undertaken or will be undertaken as part of the project. This information is then used for modelling in FullCAM.

Subsection 26(1) provides that each CEA must have a management schedule.

Subsection 26(2) details the required content of a management schedule. Paragraph 26(2)(a) provides that the management schedule must detail all the management actions undertaken within the CEA since the plantation start date. Note that these management actions are the types listed in the FullCAM guidelines, which will have a specific impact on project carbon stocks. Other activities, such as conducting a forest inventory, are not required to be detailed in the management schedule and are permitted under the Determination.

Paragraph 26(2)(b) provides that the management schedule must set out the current management regime for the CEA. Details of the content of the current management regime are set out in section 28.

Note that the activities covered by paragraph 26(2)(a) may also be listed under paragraph 26(2)(b). There is no requirement to duplicate these, and they should be recorded under the current management regime rather than listed separately.

Paragraph 26(2)(c) provides instructions for what to do if the current management regime differs from the default management regime. This will occur if there has been a natural

disturbance, and the default management regime will differ from the current management regime on the assumption that the natural disturbance will not recur. In such a scenario, the management schedule must set out the default management regime and a description of each natural disturbance. Details of the content of the default management regime are set out in section 28.

Paragraph 26(2)(d) provides that if the current management regime differs from what was listed as the current management regime in the previous reporting period, then the management schedule must set out the reason for the change. For example, during the previous reporting period the proponent sets out a management regime with a commercial thinning at age 13 years. In preparing the management schedule for the current reporting period, the proponent now intends to undertake the commercial thinning at age 12 years to secure an earlier stream of income. The management schedule must include this information as the reason for the change in the proposed regime.

Paragraph 26(2)(e) applies when a CEA is for a conversion from a short rotation to a long rotation. In this situation, the management schedule must include the default baseline management regime as provided for in section 30.

Paragraph 26(2)(f) provides that the management schedule must record the management actions and disturbance events that occur and include the specifications for how they were modelled in FullCAM. Subparagraph 26(2)(f)(i) provides that the date of the action or event is to be recorded as the date used to model the action or event in FullCAM.

Subparagraph 26(2)(f)(ii) provides that the FullCAM event type and FullCAM standard event corresponding to the management action or disturbance event must be recorded.

Subparagraph 26(2)(f)(iii) provides that the management schedule must set out the parameter values entered, or expected to be entered, into FullCAM, where these are not the defaults. This includes both the products at the end of the current regime and under the proposed management regime. It applies to both the final harvest of the plantation and any commercial thinning undertaken during the rotation. This includes a breakdown of sawlog grades and the proportion of pulplogs.

Paragraph 26(2)(g) specifies that a description must be included for any natural disturbance or growth interruption included in the management schedule.

Subsection 26(3) specifies when the first management schedule must be prepared. The first schedule must be completed before the scenario simulation for the first offsets report is created under section 35.

Subsection 26(4) sets out upper limits on rotation lengths under the current management regime and default regime. This helps avoid unrealistically optimistic expectations on the long-term feasibility of the proposed management regime. The maximum rotation length specified is to ensure that the modelled carbon sequestration does not exceed a realistic management scenario for the species. For example, a plantation of species *Araucaria cunninghamii* planted for longer than 60 years is not considered industry best practice, and cannot be modelled at this rotation length under the Determination.

27 Updating a management schedule

Section 27 provides that the management schedule for each CEA must be either prepared (that is, created from scratch) or updated before modelling is undertaken as part of an offsets report. Subsection 27(2) provides that if at any point a project proponent proposes to act inconsistently with the current management regime set out in a management schedule, including by refraining from an action in the management schedule, then the proponent must update the management schedule before the inconsistent action comes into effect.

Subsection 27(3) provides that if a management action is applied or a disturbance event occurs in a CEA, then the management schedule must be updated as soon as practical. This record is essential as it will be used in modelling for future offset reports.

28 The *current management regime* and the *default management regime*

Under the Determination, the set of management actions applied to a single rotation forms a management regime. For a rotation in progress, this is the *current management regime*. For the purpose of modelling subsequent rotations, this is the *default management regime*.

Subsection 28(1) details what must be recorded as the current management regime in the management schedule. This includes:

- the species grown in the CEA for the current rotation;
- all management actions that have already been applied within the CEA during the current rotation (including those applied because of natural disturbance); and
- all management actions that will be applied to the CEA for the remainder of the current rotation.

The current management regime must also set out the times at which each management action is intended to occur or has occurred, in accordance with section 24.

Subsection 28(2) details what forms the default management regime in the management schedule. The basis for the default management regime is always the current management regime, due to the assumption for modelling purposes that an existing rotation would be replicated in the subsequent rotation. The default management regime will differ from the current management regime only when a natural disturbance has occurred in the CEA during the current management regime. This is not replicated in the default management regime, and the default management regime reverts to the current management regime as it stood immediately before the disturbance.

29 Management schedule for a re-stratified CEA

Section 29 details what must occur if a CEA is re-stratified. The project proponent must create a new management schedule for each new CEA, setting out details of all management actions undertaken and disturbance events that have occurred up to the date of creation of the new CEA.

The default management regime that is applied to the new CEA will be the same as the default management regime that existed for the original CEA immediately before the creation of the new CEA. The default baseline management regime for the new CEA will be the same as it stood at the eligibility date.

30 The default baseline management regime (conversion CEA)

Section 30 sets out the content required for the default baseline management regime. This only applies to CEAs that are eligible for a conversion from short-rotation to long-rotation plantations. The baseline for a new plantation is zero.

The table in subsection 30(2) sets out the elements which specify the default baseline management regime; that is, the management regime in the baseline scenario. The elements are the choice of species planted, length of the rotation period, management actions and disturbance events. The default baseline management regime depends on whether a rotation was in progress on the eligibility date.

In the event that no rotation was in progress on the eligibility date (where ‘no rotation’ means the CEA is between rotations), then at least one rotation must have been completed on the CEA, the most recent of which is used as the basis for the default baseline management regime. The rotation length modelled must be either the length of the previous rotation on that CEA, or the default rotation period specified for the species and region in Schedule 1, whichever is longest. These defaults in Schedule 1 represent industry standard rotation lengths by region and species. The intent of the choice of rotation length is to be conservative, as modelling baseline rotation lengths less than industry standards would increase the net abatement amount.

For example, a proponent has an eight year old *Eucalyptus globulus* plantation in Western Australia at the eligibility date, which is intended to be converted to a long-rotation plantation by pruning and thinning. In accordance with the management regime used for demonstrating that the plantation is a short-rotation plantation as described in Schedule 1, the harvest age of that plantation has the default value of 13 years. The proponent would then include the harvest age of 13 years in the default baseline management regime.

In the event that a rotation was in progress on the eligibility date (where a plantation was converted by pruning and thinning), then the rotation period is modelled as the age of the rotation on the eligibility date, or the default rotation period specified in Schedule 1 for that region and species, whichever is longer. The default baseline management regime must also include the species, all management actions that were applied before the eligibility date, and any subsequent actions that would have been applied in the rotation had the conversion not taken place. The actions that establish a conversion are not included in the default baseline management regime.

Item 3(a) in the table provides that if there were no disturbance events in a rotation forming part of the default baseline management regime, then the regime should consist of the management actions that were applied or would have been applied in the rotation.

Item 3(b) in the table provides that if a rotation that forms part of the default baseline management regime was affected by a natural disturbance before the eligibility date, then the default baseline management regime should consist of the management actions that would have been undertaken had the disturbance event not occurred.

Subsection 30(3) provides that management actions that would have been applied in the normal course of a rotation for the purposes of section 30 must be actions that can be

demonstrated to have taken place at corresponding stages of the previous rotation, or to be commonly taken in similar plantations in the region at that stage of the rotation. This is to ensure the baseline regime is not modelled based on unrealistic scenarios that could result in a higher net abatement estimate.

31 Assessing a proposed change to a management regime

Section 31 applies if a project proponent proposes for a CEA a new set of management actions, or a variation of existing management actions (including not undertaking an action or undertaking an action in only part of a CEA) and their timing, that:

- is not modelled in the previous reporting period (that is, the actions were not incorporated into the long-term project scenario); and
- is not associated with a fire or natural disturbance.

In this scenario a project proponent is required to perform a ‘test’ of negative abatement to determine whether a change in the management regime can proceed. Changes that would result in negative abatement could expose the proponent to risk of shortfalls in delivery of abatement, and could compromise the integrity of the Determination. All proposed changes to the management regime must be modelled together, rather than individually, to ensure that the cumulative effect on the net abatement amount is calculated.

Paragraph 31(4)(a) requires that, if actions are proposed to be undertaken in only part of CEA, the CEA must be divided accordingly, with each new CEA meeting the requirements of section 18.

Subparagraph 31(4)(b)(i) requires the proponent to re-model the long-term project scenario using the new set of management actions. The proponent must then re-calculate the net abatement amount for the project for the current reporting periods in accordance with Part 4, using the revised long-term project scenario. This is referred to as the proposed abatement. If the proposed abatement is greater than or equal to zero, the change to the management regime can proceed (paragraph 31(5)(a)).

Subparagraph 31(4)(b)(ii) provides that if the proposed abatement is less than zero (that is, results in negative abatement), then the proponent must also calculate the net abatement that would have been produced if the action were not taken (referred to as the default abatement). If the proposed abatement is greater than or equal to the default abatement (that is, it would reduce the size of the negative abatement), the change to the management regime can proceed (paragraph 31(5)(b)).

Paragraph 31(5)(c) provides for circumstances where the proposed abatement is not greater than or equal to zero and not greater than or equal to the default abatement. In these cases the proponent must calculate both the long-term net average carbon stock of the new management actions and the long-term net average carbon stock of modelling the current management regime. If the proposed management actions would lead to a lower long-term net average carbon stock than occurs in the current management regime, then the new set of management actions is not permissible.

Notably, section 31 only restricts changes to the proposed management regime of a CEA if the changes result in reducing the carbon stock over the long term. It is not intended to stop proponents from adding a CEA through re-stratification where the addition results in negative abatement. For example, if a CEA is added to the project whose carbon stock is significantly below the baseline for that CEA, then it could generate a negative abatement amount. In this situation, it can reasonably be assumed that through time, the negative abatement will be corrected.

In addition, the intention of section 31 is not to disadvantage proponents with projects affected by natural disturbances. Subsection 31(3) provides that if the CEA is affected by a natural disturbance, then section 31 does not apply for the rest of the rotation. This is to be applied in conjunction with section 21, where a natural disturbance that leads the proponent to change management actions across different parts of the CEA triggers a requirement to re-stratify the CEA. Section 31 ensures that proponents can update management regimes in CEAs not affected by natural disturbances in the event that one or more CEAs have brought the project into negative abatement due to natural disturbance.

Division 7—Newness and additionality

32 Newness requirement

A key requirement of the Act 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 Act.

Section 32 specifies a requirement in lieu of the newness requirement under subparagraph 27(4A)(a)(ii) of the Act for plantation forest projects. The specified requirement is to ensure that the assessment of newness disregards any management schedule that may be used to implement a management action but that is prepared before the action begins. Section 32 clarifies that the project must otherwise comply with the ‘newness requirement’ set out in subparagraph 27(4A)(a)(i) of the Act.

Projects under the determination must meet the other additionality requirements of the Act. These are the regulatory additionality requirement and the government program requirement.

The regulatory additionality requirement in subparagraph 27(4A)(b)(i) of the Act applies without any modification through the determination.

Another important requirement for eligibility is that any potential project is not an excluded offsets project (see paragraph 27(4)(m) and section 56 of the Act and the *Carbon Credits (Carbon Farming Initiative) Regulations 2011*). A number of regulations defining excluded offsets projects have potential application to projects that would otherwise be eligible as plantation forest projects.

Part 4—Net abatement amount

Part 4 provides the procedures for calculating the project abatement amount for a reporting period. Abatement is calculated using FullCAM. Modelling is conducted separately for each CEA. A project proponent must use FullCAM to model the two types of project scenario. These are:

- the project scenario, estimating abatement up to the end of the reporting period; and
- the long-term project scenario, estimating abatement over a 100-year modelling period.

In both project scenarios the proponent must account for the emissions associated with harvesting and the temporary loss of carbon stock on the land as a result of a harvest, and carbon sequestration associated with the subsequent regrowth. To prevent over-crediting due to carbon stock fluctuations in the management cycle, proponents are not permitted to report project scenario carbon stocks that exceed those of the long-term project scenario.

For CEAs where a short-rotation plantation is converted to a long-rotation plantation, the baseline will be non-zero. In such cases, the proponent must also use FullCAM to model a baseline scenario. The baseline represents the long-term (100-year) carbon stocks on the land had the project not been carried out. The average carbon stock is used to account for fluctuations in carbon stocks as the result of the harvest cycles in the baseline. That is, the baseline carbon stock estimate will always be a flat line.

For CEAs where new plantations are established on land that has been non-forested in the seven years prior to project application, the baseline is assumed to be zero.

The Determination requires accounting for carbon stock changes in trees, debris, and harvested forest products.

The Determination accounts for carbon stock changes and emissions due to the following activities:

- forest growth;
- natural disturbance (including fire);
- harvesting;
- other silvicultural activities such as thinning, pruning and fertilising; and
- fossil fuel emissions due to plantation management, including forest product harvesting.

Division 1—Preliminary

33 Operation of this Part

Section 33 provides that the carbon dioxide equivalent net abatement amount for the project in relation to a reporting period for the project is taken to be equal to the amount ascertained using the method specified in Part 4.

34 Overview of gases accounted for in abatement calculations

Section 34 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, debris and harvested forest product carbon pools and greenhouse gas emissions from fuel use. The harvested forest product carbon pool includes products in service but not in landfill. The greenhouse gas assessment boundary also includes emissions from fires (controlled burns and natural disturbances), fertilising activities, non-fire disturbances (for instance windthrow, insect attack) and other management actions (for instance thinning, clearfell, weed control).

Table 1. Gases accounted for in the abatement calculations

Greenhouse gases and emissions sources		
	Emissions source	Greenhouse gas
Carbon Pool or emissions source	Live above ground biomass	Carbon dioxide (CO ₂)
	Live below ground biomass	Carbon dioxide (CO ₂)
	Debris	Carbon dioxide (CO ₂)
	Forest products	Carbon dioxide (CO ₂)
	Fuel use	Carbon dioxide (CO ₂) Methane (CH ₄) Nitrous oxide (N ₂ O)
Action or event	Fire—controlled burn and natural disturbance	Methane (CH ₄) Nitrous oxide (N ₂ O)
	Fertilisation	Nitrous oxide (N ₂ O)
	Non-fire disturbances	Carbon dioxide (CO ₂)
	Management actions other than controlled burn and fertilisation	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 fuel use associated with harvesting are excluded where the project activity is conversion from short-rotation to long-rotation plantations, as it is assumed that the fuel use will be similar between the baseline and project scenarios, and thus be immaterial; and
- baseline emissions for new plantations, where the baseline scenario is agriculture (exclusion of agricultural emissions in the baseline is a conservative assumption).

Division 2—FullCAM Modelling

Subdivision 1—General

35 Modelling scenarios in FullCAM

Section 35 provides that the proponent must use FullCAM to model the project scenario and long-term project scenario for each CEA existing at the end of the reporting period. The project scenario is simulated up to the end of a reporting period (see section 37). The long-term project scenario is simulated over a 100-year modelling period (see section 38).

For CEAs where a short-rotation plantation is converted to a long-rotation plantation, the baseline will be non-zero and the proponent must use FullCAM to model a baseline scenario.

FullCAM outputs are used when calculating abatement in accordance with Division 3.

In choosing the tree species for modelling, the closest available matching species must be chosen for the FullCAM management schedule. Schedules 1 and 2 in the Determination list the species a project may contain under the Determination rules. If the tree species in the project is available in the FullCAM management schedule, then that species must be chosen. If the tree species in the project is not available in the FullCAM management schedule, then any species which has the same genus can be chosen in FullCAM. If FullCAM has no species with the same genus, then the ‘mixed species environmental planting’ setting must be chosen.

Modelling of the baseline and project scenarios must be conducted in accordance with the FullCAM guidelines as published on the Department’s website. To ensure that the most recent version of FullCAM and associated input data is used, FullCAM modelling must be conducted within 90 days before the offsets report is submitted. 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.

36 Meaning of *relevant* management actions, disturbance events and natural disturbances

Section 36 defines relevant management actions, disturbance events and natural disturbances as being those that occurred during the reporting period. This definition is applied in sections 37 and 39. In particular for section 39, this definition means that disturbance events are included in the baseline scenario at the time that they occur but are not repeated for future rotations.

Subdivision 2—Project scenario

37 Modelling project scenario

The ‘project scenario’ is the suite of management actions that have actually been applied (that is, in ‘real life’) to the plantation forest project. The project scenario is updated every reporting period, based on what actually occurred over the reporting period.

Section 37 sets out the rules for specifying the timing of project scenario management actions and disturbance events to be modelled in FullCAM, which is known as the ‘project scenario simulation’. Section 37 provides that the simulation must begin on the day before the plantation start date. In other determinations, this date is known as the ‘modelling

commencement date'. The plantation start date is defined according to the type of project activity (see section 5). The applicable starting date is that defined by subsection 24(6).

For example, a short-rotation *Eucalyptus globulus* plantation may be harvested two years before the project's eligibility date (the date when the project's application for declaration was made under section 22 of the Act). Then a year after the project commenced a long-rotation *Pinus radiata* plantation is established (so the project involves conversion of short-rotation to long-rotation plantations by planting a new species). In this scenario the modelling period would start the day before the *Pinus radiata* trees were planted.

If there was an eight year old *Eucalyptus globulus* on the land at the eligibility date, then the modelling period would commence on the day before the planting of the *Eucalyptus globulus*.

If there was no forest on the land on the eligibility date, and a short-rotation *Eucalyptus globulus* plantation is established six months after the eligibility date, then the project scenario modelling would commence on the day before the *Eucalyptus globulus* plantation is established.

Section 37 also provides that the project scenario simulation ends on the last day of the reporting period, and that all relevant management actions and disturbance events occurring in the CEA up to that day must be simulated.

Subdivision 3—Long-term project scenario

38 Modelling long-term project scenario

Section 38 provides the rules for the 'long-term project scenario simulation'. The long-term project scenario simulation is used to prevent over-crediting due to carbon stock fluctuations caused by management actions. In accordance with the requirements in section 47, proponents are not permitted to report project scenario carbon stocks that exceed those of the long-term project scenario.

The long-term project scenario simulation uses a 100-year modelling period. A 100-year period for modelling the long-term carbon stocks will normally ensure there are multiple rotations reflected in the simulation, and will adequately account for harvest events.

The long-term project scenario simulation must commence on the day before the plantation start date, as defined in section 5. It ends on the last day of the modelling period, which is the planting date plus 100 years.

The long-term project scenario simulation must account for the emissions associated with harvesting and the temporary loss of carbon stock on the land as a result of a harvest, and carbon sequestration associated with the subsequent regrowth.

Subparagraph 38(1)(c)(i) requires that for all time periods prior to the end of the reporting period, the long-term project scenario simulation must include all management actions and disturbance events in the management record, which covers the period since the plantation start date.

Subparagraph 38(1)(c)(ii) requires simulations covering the period from after the end of the reporting period to the end of the modelling period. It is assumed that the management of the

current rotation is representative of future management. If a rotation is not under way at the end of the reporting period, the simulation uses the default management actions, which are the management actions of the default management regime (see section 28). If a rotation is under way at the end of the reporting period, the management actions of the current management regime (see section 28) must be simulated for the remainder of the rotation, followed by the default management actions.

The note to section 38 explains that the simulation does not include natural disturbance events, nor management actions occurring between rotations, beyond the current reporting period.

Subsection 38(2) requires simulations to assume a period of 12 months between rotations, as this is considered to represent the average planting regime.

Subdivision 4—Baseline scenario

39 Modelling baseline scenario

Section 39 sets out the rules for the ‘baseline scenario simulation’. This is only required for CEAs in which a short-rotation plantation is converted to a long-rotation plantation, as the baseline emissions will be non-zero. The baseline represents the carbon stocks on the land had the project not been carried out. The results of the baseline scenario simulation are used to prevent crediting of business as usual abatement. That is, the average baseline carbon stock is deducted from the project carbon stock in section 47, to calculate the carbon stock change onsite for each reporting period.

For CEAs where new plantations are established on land that has been non-forested in the seven years prior to a project application, the baseline is assumed to be zero and section 39 need not be considered.

Subsection 39(1) provides that the baseline scenario simulation is run at the plantation start date and the end of each reporting period.

Paragraph 39(1)(a) provides that the baseline scenario simulation date must commence on the day before the plantation start date, as defined in section 5. That is, the same day on which the simulation of the long-term project scenario commences.

Paragraph 39(1)(b) provides that the baseline scenario simulation must end on the last day of the modelling period, which is the planting date plus 100 years.

Paragraph 39(1)(c) provides that the management actions of the default baseline management regime planned according to section 30 are to be simulated on a recurring basis, with a 12-month gap between each harvest and plantation re-establishment. Any natural disturbance that has occurred at the time of the simulation is also to be included.

The first note to subsection 39(1) explains that, as with the long-term project scenario simulation, management actions between rotations are not included in the baseline scenario simulation. The second note explains that natural disturbances are only simulated to occur at the times they actually occurred, and are not simulated as recurring in future rotations. This allows for the baseline scenario to continue to represent a combination of actual management

and disturbances and the future management actions that would have occurred in the absence of a project to convert a short-rotation plantation to a long-rotation plantation.

There may be circumstances where a rotation would end early as a consequence of a natural disturbance. Subsection 39(2) provides for the simulation to include that early end. As explained in the note to subsection 39(2), the simulation to end a rotation in these circumstances can only include a thinning without harvest, and not a salvage harvest.

Division 3—Calculations

Subdivision 1—Preliminary

40 Operation of Division

Division 3 details the procedure to calculate the net abatement amount in a reporting period for a project.

Subdivision 2—Baseline net carbon stock—conversion CEAs

41 Baseline carbon stock and baseline emissions in a conversion CEA

Section 41 is used to calculate the long-term (100-year or 1,200-month) average baseline carbon stock and emissions for a CEA. For projects in which new plantation forests are established on areas that are eligible for plantation, the baseline carbon stock and emissions are assumed to be zero.

For projects where a short-rotation plantation forest is converted to a long-rotation plantation forest, Equations 1 and 2 are used to calculate the long-term average baseline carbon stock and emissions for a CEA. These calculations are repeated separately for each CEA. They are re-calculated for each offsets report, and can change to reflect the effects of any disturbance events occurring between simulations.

Equation 1 calculates the long-term average baseline carbon stock for a CEA. The expression 44/12 converts the mass of carbon sequestered in tonnes calculated in FullCAM into tonnes of carbon dioxide.

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 in trees is: ‘Whole / Plant / C mass of trees’.

For $C_{FP,B,i,k}$ the FullCAM output for C mass in forest products is: ‘Whole / Plant / C mass of forest products’. This is the C mass in forest products (in tonnes C per hectare) for the i^{th} CEA in the k^{th} month since the modelling start date—from the baseline scenario simulation.

Because the outputs of all plot-based modelling in FullCAM are expressed on a per-hectare basis, the FullCAM outputs must be multiplied by the area of the CEA to calculate the values for the whole CEA.

Equation 2 calculates methane and nitrous oxide emissions from fire. Fire emissions are calculated on a per hectare basis; note that only the area affected by fire need be included, which may not be the entire CEA. The global warming potentials for each gas account for the fact that a single methane and nitrous oxide molecules have a larger greenhouse gas effect than has a carbon dioxide molecule. The conversion factors account for the fact that FullCAM calculates methane emissions in tonnes per hectare and nitrous oxide emissions in kilograms per hectare.

Figure 8 shows an example of the long-term average baseline carbon stock as the sum of $C_{BD,i,k}$, $C_{BT,i,k}$ and $C_{FP,B,i,k}$ averaged over the 100-year (1,200-month) modelling period.

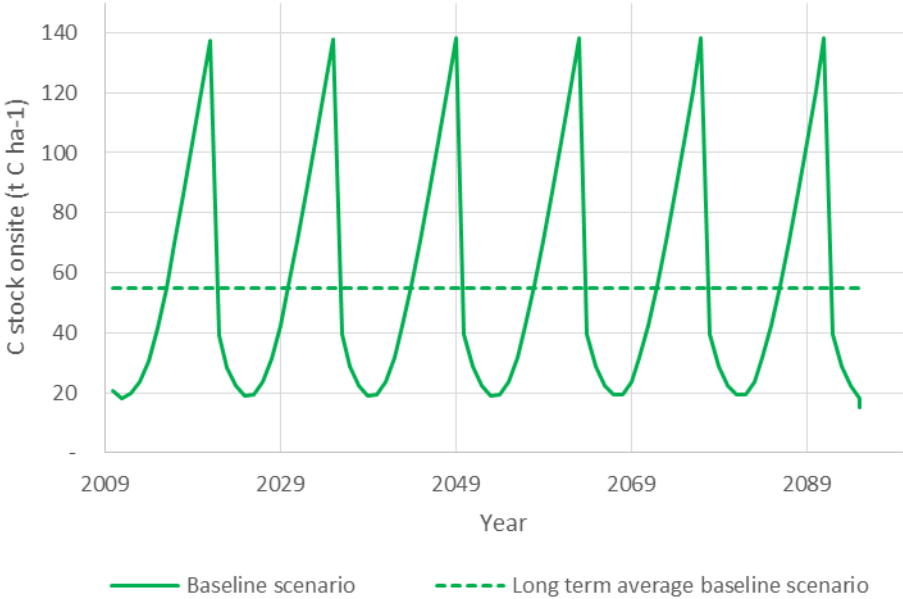


Figure 8. Long-term average baseline carbon stock.

42 Baseline net carbon stock for whole project

Section 42 provides that baseline net emissions for the project (Equation 3) are calculated by summing together the long-term baseline carbon stock (the carbon stock in trees, debris and forest products from Equation 1), subtracting emissions from fire (Equation 2), for each CEA.

Subdivision 3—Long-term average net carbon stock

43 Predicted long-term average carbon stock and project emissions in a CEA

Section 43 is used to calculate the long-term (100-year or 1,200-month) average carbon stock and project emissions for a CEA, which is effectively the maximum abatement that can be claimed by the proponent. This calculation applies regardless of the project type (new plantation, conversion of short rotation to long rotation, pre-existing). The long-term average carbon stock is also re-calculated for each offsets report and can change over time to reflect the effect of actual events.

Equation 4 is used to calculate the long-term average project emissions for a CEA. These calculations are repeated separately for each CEA.

The expression $44/12$ converts the mass of carbon sequestered in tonnes calculated in FullCAM into tonnes of carbon dioxide.

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

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

For $C_{FP,i,k}$ the FullCAM output for C mass in forest products is: ‘Whole / Plant / C mass of forest products’. This is the C mass in forest products (in tonnes C per hectare) for the i^{th} CEA in the k^{th} month since the modelling start date—from the long-term project scenario simulation.

Because the outputs of all plot-based modelling in FullCAM are expressed on a per-hectare basis, the FullCAM outputs must be multiplied by the area of the CEA to calculate the values for the whole CEA.

Equation 5 calculates methane and nitrous oxide emissions from fire. Fire emissions are calculated on a per hectare basis; note that only the area affected by fire need be included, which may not be the entire CEA. The global warming potentials for each gas account for the fact that a single methane and nitrous oxide molecules have a larger greenhouse gas effect than has a carbon dioxide molecule. The conversion factors account for the fact that FullCAM calculates methane emissions in tonnes per hectare and nitrous oxide emissions in kilograms per hectare.

Where the project involves conversion from short-rotation to long-rotation plantations, it is assumed that the fuel use will be similar between the baseline and project scenarios, and thus any change in emissions will be immaterial. Therefore emissions from fuel use are assumed to be zero for such projects.

For CEAs where a new plantation has been established on an area that is ‘eligible for plantation’, the fuel emissions from forest product harvesting associated with the long-term project scenario are calculated using Equation 6. This equation needs to include all harvest events occurring over the 100-year period.

In recognition of the difficulty of accounting for fuel emissions from this type of sequestration offsets project, and taking into consideration the relatively minor nature of these emissions, the Determination adopts simplified requirements for reporting fuel emissions. Tracking real-time emissions from projects under the Determination would not be appropriate, as emissions from fuel use will lower the long-term average abatement, and thus must be predicted. The predicted fuel emissions in carbon dioxide equivalent are calculated by applying an emissions factor of 0.035 (that is, 3.5 per cent) relative to the mass of forest products harvested from all CEAs in the project area over the entire modelling period (from Equation 7). The factor $C_{FP,i,k}$ is the same as used in Equation 5 but only the values from the periods immediately before and after the harvesting events are used. The emissions factor is based on figures published by May et al. (2012), which studied the fuel-based emissions and

fertiliser emissions associated with forest establishment, management, harvest and haulage, relative to the total harvested volume.

44 Predicted long-term average net carbon stock for whole project

The long-term average project carbon stock is calculated by applying Equation 8. This involves addition of the long-term average carbon stock (from Equation 4) minus emissions over the modelling period from fire and fuel use (Equations 5 and 6), of all CEAs.

Subdivision 4—Net carbon stock change in a reporting period

45 Calculating net carbon stock in CEA at the end of reporting period

Section 45 provides calculations for the carbon stock and project emissions in a CEA for a reporting period. The carbon stock calculations for new plantation CEA and maintenance CEAs differ from the carbon stock calculations for conversion CEAs, due to the differences between these types of projects.

Equation 9 is used to calculate carbon stock in each CEA for new plantation projects and maintenance projects at the end of each reporting period. The expression 44/12 converts the mass of carbon sequestered in tonnes calculated in FullCAM into tonnes of carbon dioxide.

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 in trees is: ‘Whole / Plant / C mass of trees’.

Because the outputs of all plot-based modelling in FullCAM are expressed on a per-hectare basis, the FullCAM outputs must be multiplied by the area of the CEA to calculate the values for the whole CEA.

Equation 10 is used to calculate the carbon stock in each CEA for conversion projects at the end of each reporting period. Equation 10 has the effect of taking the difference between the baseline carbon stock from Equation 1 and the predicted long-term average project carbon stock from Equation 4, and apportioning this amount as accumulating carbon stock in the given conversion CEA over 15 years.

To provide for consistency in crediting across conversion projects where a rotation was in progress on the eligibility date and those where no rotation was in progress, the carbon stock calculation yields a linear annual increase over 15 years from the start of the crediting period. The 15-year period takes into account the range of differences between the lengths of short and long-rotation plantations. The equation provides that changes to the predicted long-term average project carbon stock from Equation 4, or the baseline carbon stock from Equation 1, that occur after the first 15 years of the crediting period are also accounted for.

The note under subsection 45(2) explains that the amounts calculated are likely to vary slightly from one reporting period to the next, because the baseline carbon stock and long-term average project carbon stock are re-calculated for each reporting period, taking into account events occurring during the reporting period. Because of these recalculations, there may be some adjustments to carbon stock calculations after the 15-year period.

The calculation is conducted separately for each CEA. The results of Equations 5, 6 and either 9 or 10 as applicable are combined to determine the net emissions from each CEA, as carbon stocks minus emissions from fire and fuel use and then the results are summed across all CEAs to give the total project area emissions in the last month of the reporting period.

Equation 11 calculates methane and nitrous oxide emissions from fire. Fire emissions are calculated on a per hectare basis; note that only the area affected by fire need be included, which may not be the entire CEA. The global warming potentials for each gas account for the fact that a single methane and nitrous oxide molecules have a larger greenhouse gas effect than has a carbon dioxide molecule. The conversion factors account for the fact that FullCAM calculates methane emissions in tonnes per hectare and nitrous oxide emissions in kilograms per hectare.

Where the project involves conversion from short-rotation to long-rotation plantations, it is assumed that the fuel use will be similar between the baseline and project scenarios, so any change in emissions will be immaterial. Emissions from fuel use are assumed to be zero for such projects.

For CEAs where a new plantation has been established on an area that is ‘eligible for plantation’, the fuel emissions from forest product harvesting associated with the long-term project scenario are calculated using Equation 12. This equation needs to include all harvest events occurring over the 100-year period.

Similarly to section 43, for simplicity the predicted fuel emissions are calculated by applying an emissions factor of 0.035 (that is, 3.5 per cent) relative to the mass of forest products harvested from all CEAs in the project area over the entire modelling period (from Equation 13). The factor $C_{FP,i,k}$ is the same as used in Equation 11 but only the values from the periods immediately before and after the harvesting events are used.

46 Net carbon stock at the end of the reporting period for whole project

The net carbon stock at the end of the reporting period for the whole project is calculated by applying Equation 14. This involves addition of the project carbon stock (from Equation 9 or 10 as appropriate) minus emissions over the modelling period from fire and fuel use (Equations 11 and 12), of all CEAs.

47 Deemed net carbon stock for project at end of reporting period

Section 47 provides guidance on the appropriate net emissions data to use when reporting the carbon stock in the project area at the end of the reporting period. The reported data may differ, depending on circumstances set out in the section.

Paragraph 47(a) specifies that the maximum net carbon stock permitted is the smaller of the long-term average net emissions for the project area (Equation 8), or the net emissions level at the end of the reporting period in the project scenario (Equation 14). This means that the long-term average net emissions for the project area acts as a cap for abatement claimed by the proponent. When the net emissions level at the end of the reporting period in the project scenario has not yet reached the long-term average, a project proponent may wish to report the project net emissions at the end of the reporting period in order to maximise the abatement claim.

Subparagraph 47(b)(i) permits reporting of a net emissions amount less than the maximum. Proponents might do this if they are uncertain about what their proposed management regime may be in future reporting periods, and don't want to risk restricting future management options by reaching the long-term average project carbon stock before it suits their long-term management intentions to do so.

Subparagraph 47(b)(ii) states that a value reported as less than the net emissions cannot be less than a value previously reported for the project. This ensures that proponents report their project's abatement as either increasing, remaining at its previously reported level, or at the maximum abatement that can be claimed, as determined by the long-term average.

48 Net carbon stock change for project in first reporting period under this determination

The net emissions change in the project area at the end of the first reporting period is calculated through application of Equation 15 (for new plantation or conversion projects) or 16 (for pre-existing projects). For Equation 15, this involves deducting the long-term average baseline net emissions for the project (result from Equation 3) from the nominated project net emissions at the end of the reporting period, after applying the decisions taken in accordance with section 47. For Equation 16, rather than long-term average baseline net emissions, the sum of carbon stocks reported for the pre-existing project under the former determination is deducted.

The net carbon stock change can be zero or less than zero, because it is a change relative to either the baseline carbon stock or the carbon stock at the end of the last reporting period under the former determination.

49 Net carbon stock change for project in later reporting periods

Calculation of net emissions change in the project area at the end of the second and subsequent reporting periods is calculated via application of Equation 17. There are two main components to Equation 17:

- the project net emissions change since the last reporting period; and
- the baseline net emissions change since the last reporting period.

Calculation of the project net emissions change since the last reporting period involves deducting net emissions reported in the previous reporting period (in accordance with section 48), from emissions reported at the end of the current reporting period. This is done so that only sequestration occurring since the last reporting period is claimed. Calculation of any changes in baseline net emissions since the last reporting period (the second component of the equation) involves deducting the long-term baseline net emissions (as calculated in the previous reporting period) from the long-term baseline net emissions (as calculated in the current reporting period). This means that any changes in the baseline values due to fire events, changes in FullCAM, or addition of CEAs can be adequately reflected in the abatement calculations.

As noted for section 48, the net carbon stock change may be zero or less than zero. If this is the case, no abatement has occurred.

Subdivision 5—Calculation of the net abatement amount

50 Net abatement amount—general rule

Section 50 provides that Equation 18 must be used when calculating the carbon dioxide equivalent net abatement amount for the project if one of the following conditions is met:

- the reporting period is the first reporting period; or
- the net abatement amount for the previous reporting period was zero or greater than zero.

51 Net abatement amount—where previous net abatement amount negative

Section 51 provides that Equation 19 must be used to calculate the carbon dioxide equivalent net abatement amount for the project in relation to a reporting period if the net abatement amount for the previous reporting period was less than zero. The effect of this equation is that where a project reports a negative value in the previous offsets report, that negative value gets carried through subsequent reporting periods. This means that following a disturbance event, crediting will not commence until the emissions caused by the disturbance are accounted for. Note that in Equation 19, A_{RP-1} will be a negative number.

Part 5—Reporting, record-keeping and monitoring requirements

Division 1—Reporting requirements

52 Operation of this Division

Paragraph 106(3)(a) of the Act provides that a methodology determination may require the project proponent of an eligible offsets project to comply with specified 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 reporting and monitoring requirements specified in Part 5 of the Determination are in addition to any requirements specified in the rules made under the Act.

53 Information required in offsets reports

Subsection 53(1) requires the proponent to include a map showing each CEA in the project area with an offsets report. It also requires inclusion of management schedules for each CEA as at the end of the reporting period. In addition, for the first offsets report, the initial management schedule is required. For CEAs in a conversion project where the plantation start date was before the beginning of the crediting period, this will be the management schedule at the beginning of the crediting period. For other CEAs, it will be the plantation start date for the CEA.

Subsection 53(2) specifies that when reporting management actions and disturbance events which affect part of a CEA, the offsets report must describe how the portion was estimated.

In addition to reporting the management actions and disturbance events, the equivalent FullCAM event must also be reported. The FullCAM guidelines lists the management actions and disturbance events and their equivalent FullCAM events for this method.

Subsection 53(3) provides the reporting requirements when an offsets report's data does not refer to the most recently available parameter values, as provided in paragraph 6(2)(b).

Subsection 53(4) provides the reporting requirements for summarising the evidence for removing a CEA or part of a CEA from the project in accordance with section 23.

Division 2—Record-keeping requirements

54 Operation of this Division

Paragraph 106(3)(c) of the Act provides that a methodology determination may require the project proponent of an eligible offsets project to comply with specified record-keeping requirements.

55 Records relating to salvage harvesting

If salvage harvesting was undertaken in a CEA during a reporting period, the project proponent must make and keep records that evidence the salvage harvesting and any ensuing product recovery.

Sufficient evidence could include mill receipts displaying the volume and quantity of logs recovered for commercial use.

56 Records relating to monitoring of management actions, natural disturbances and forest development condition

Section 56 specifies that records of monitoring and evidence of management actions, natural disturbances and forest development must be kept. Subsections 56(2) and 56(3) specify the type of records required. Where ground-based photography is used, photographs should be date-stamped (either on the photo itself, or in the file properties or Exchangeable image file format (EXIF) data for the photograph) and geo-referenced by having spatial co-ordinates provided (usually in the EXIF data for smartphones and cameras with Global Positioning System capability).

Division 3—Monitoring requirements

57 Operation of this Division

Paragraph 106(3)(d) of the Act provides that a methodology determination may require the project proponent of an eligible offsets project to comply with specified monitoring requirements. Section 57 states that such requirements are set out in this Division.

58 Monitoring management actions

Section 58 provides that a project proponent must monitor management actions that have been implemented under the project.

59 Monitoring natural disturbances

Section 59 provides that the proponent must monitor the project area for natural disturbances. When a natural disturbance event occurs, the proponent must provide evidence that supports the estimation of the extent to which any CEA is affected. Note that this includes all categories of natural disturbance, including fire.

60 Monitoring forest development

Section 60 provides that a project proponent must monitor each CEA between planting and the point where the CEA achieves forest cover.

Part 6—Dividing a plantation forest project

61 No division of carbon estimation area

Subsection 77A(2) of the Act allows a methodology determination to make provisions for division of the overall project. That is, the Act permits proponents to report abatement for only part of the project.

Section 61 provides that proponents are not permitted to split a current or former CEA across different projects for reporting purposes.

It is not recommended that proponents undertake partial reporting. This is because project abatement is calculated at the project level and compared to what was previously reported. It also increases the chance that the abatement amount will be negative.

Schedule 1—Short-rotation plantation forests

Schedule 1 is a list of short-rotation plantation forests by species and national plantation inventory region. It is used to determine whether a plantation meets the eligibility criteria for conversion (section 14). Conversion projects can only be carried out where the short rotation species is listed in Schedule 1. ‘Maximum clearfell age’ sets out the maximum age at which a plantation can be clearfelled and still be considered a short-rotation plantation for the purposes of the Determination. ‘Clearfell age default’ is essentially a standard clearfell age for that region/species derived from industry research (ABARES 2016). The default is used for modelling purposes.

Schedule 1 is divided into two parts. Part 1 lists species in regions where it can be concluded, based on industry research (ABARES 2016), that more than 97 per cent of plantations are managed as short-rotation plantations.

Part 2 lists species in regions where the proportion managed as short-rotation plantations is below the threshold listed above. That is, where it is not possible to conclude based solely on species and region that the intention is to manage the plantation as a short-rotation plantation. If a conversion project falls under Part 2, the proponent must provide evidence of completion of at least one rotation that can be assessed against the maximum clearfell age to determine eligibility. Subsection 14(2) details the requirements for conversion projects, and the evidence requirements are listed in subsection 9(4).

The use of the clearfell age for each species and region is an example of why the determination is limited to plantations within national plantation inventory regions to assist the calculation of abatement under the determination.

Schedule 2—Specified long-rotation plantation forests

Schedule 2 provides a list of species, by national plantation inventory region, eligible to be established as a project activity that converts the plantation from a short rotation to a long rotation, in accordance with section 14. The softwood species included in Schedule 2 are known generally to be managed as long-rotation plantations. The hardwood species included in Schedule 2 are listed on the basis that from industry research (ABARES 2016) it can be concluded that greater than 97 per cent of plantations of these species are managed as long-rotation plantations. The intention is to provide proponents undertaking a new rotation with the flexibility to establish a plantation with species more suited to the production of clear timber sawlogs, based on historical evidence.

Schedule 2 is also used in preparing the management schedule (section 26) for all project types which use a species listed in the Schedule. It places an upper limit on rotation length for these species, irrespective of project type.

The use of the harvest upper age limit for each species and region is an example of why the Determination is limited to plantations within national plantation inventory regions to assist the calculation of abatement under the Determination.

Schedule 3—Excluded national plantation inventory regions for certain plantation types

Schedule 3 provides a list of species that are not eligible under the Determination. These are species where plantation establishment in the regions specified in the Table is considered likely in the business as usual scenario. Such plantations are unlikely to meet the additionality criteria and offsets integrity standard in paragraph 133(1)(a) of the Act. The plantation types and regions listed in Schedule 3 have been included based on industry research (Indufor Asia Pacific (Australia) Pty Ltd, 2014; ABARES 2017) and consultation with the ERAC and ABARES.

References

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Statement of Compatibility with Human Rights

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

The Carbon Credits (Carbon Farming Initiative—Plantation Forestry) Methodology Determination 2017

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—Plantation Forestry) Methodology Determination 2017* requires carbon stocks and fire emissions to be modelled using the Full Carbon Accounting Model (FullCAM). It clarifies arrangements for projects transferring from other determinations and negative abatement.

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.

Josh Frydenberg, Minister for the Environment and Energy