



**DRAFT GUIDELINE:
ACCOUNTING FOR CARBON
REMOVALS FROM TREE
PLANTINGS**

December 2023

ABOUT THIS DOCUMENT

This Accounting for Carbon Removals from Tree Plantings Guideline (guideline) is for entities seeking to include carbon removals from tree plantings within a Climate Active carbon account. The full requirements are provided in Appendix A.

A carbon account typically measures *sources* of greenhouse gas emissions only; this guideline explains how an entity can also measure carbon *removals* from sequestration activities within their emissions boundary, without the creation of offset units, a process known as insetting.

Only carbon removals from trees and shrubs can be accounted for under Climate Active at this time. This guideline can be used for both organisation and product Climate Active certifications.

This guideline explains the 5 broad steps to achieving Climate Active carbon neutral certification – measure, reduce, offset, validate and report – and outlines the requirements at each step to include carbon removals within a carbon account. These steps are:

1. Measure – prepare the carbon account
2. Reduce – develop and implement an emissions reduction strategy
3. Offset – retire eligible offset units
4. Verify – arrange an independent validation
5. Disclose – publish a Public Disclosure Statement of the carbon neutral claim

This guideline is supplementary to the relevant Climate Active Carbon Neutral Standard (the Standard). If there are any conflicts, the Standard should be relied upon.

Entities seeking to account for carbon removals from tree plantings using this guideline must also account for any land use and land use change emissions. The Climate Active Land and Agricultural Emissions Guideline details how to account for emissions from land and agricultural based activities. These guidelines must be used together to account for both carbon removals and emission sources.

Development

This guideline was developed by Integrity Ag in collaboration with the Australian Government Department of Climate Change, Energy, the Environment and Water (the Department), with input from a working group. Public consultation and engagement was completed in late 2022 and early 2023 and the input from many organisations is acknowledged.

This guideline may be revised from time to time with policy, technical or other updates.

ACCOUNTING FOR EMISSIONS REMOVALS

A Climate Active carbon account typically measures emissions sources. Examples include fuels that are used for stationary energy and transport purposes and electricity that is consumed.

In contrast, carbon sequestration from tree plantings is a form of emissions removal. The plantings remove carbon dioxide from the atmosphere and store it in biomass, which can counterbalance the emissions sources in an entity's emissions boundary. The inseting guideline expands the carbon account so both emissions sources and emissions removals are accounted for. This results in a net emission reduction from the entity or supply chain.



Eligibility

Entities can only include emissions removals within their carbon account when all of the following conditions are met (full requirements outlined in Appendix A):

- The trees and shrubs must be planted in an area that falls under the operational control or supply chain of the entity and must meet the association test (defined below);
- The planting event must have occurred in or after 1990;
- The area must be located in Australia in an area where FullCAM (Full Carbon Accounting Model) coverage exists;
- The area must have been free of forest cover before the trees are planted;

- Emissions from any clearance in the area during the previous 10 years must be accounted for consistently with the Climate Active Land and Agricultural Emissions Guideline.
- The entity must plant species that have the potential to be at least 2 metres tall and reach a crown cover of at least 20% of the planting area, and either:
 1. Consists of species native to the local area, and may be a mix of trees, shrubs and understory species that reflect the structure and composition of the local native vegetation community, and is planted at a minimum of 200 stems per hectare (or higher if using specific calibrations);
 2. Is a plantation species planted consistently with local commercial plantations, or
 3. Is a species-specific planting that matches the species, geometry and density conditions set out in the Australian Carbon Credit Unit (ACCU) scheme environmental planting FullCAM guidelines.
 4. Is a planting which is able to be modelled satisfactorily under a Climate Active approved direct measurement approach.
- The planting must not be part of an ACCU scheme project or any other carbon offset program.
- The planting must not be for forestry purposes, i.e. involving subsequent clearing of the planting.

If any emissions removals are claimed in a Climate Active carbon account, emissions sources from land use and land use change activities must also be accounted for consistently with the requirements of the Climate Active Land and Agricultural Emissions Guideline.

Association test

In addition to meeting all the above conditions, the potential emissions removal must also pass an 'association test'. This is designed to ensure that there is a reasonable association between the insetting sequestration and the certification by justifying that the removal occurs as part of the system boundary and exists within the same carbon account. The association test is subject to a technical assessment or third party verification. Stakeholder expectations and one of either Proximity or Ability to influence must be met:

Stakeholder expectations: Stakeholders would accept that there is a reasonable association between the organisation or product being certified and the insetting activity. For example, for organisations, this could include considering whether the insetting activity is within the operational control of the organisation. For products, this could include considering whether there is a causal link between the production of the product and the insetting activity.

And either of:

- **Proximity:** The inseting area must be located in close proximity to the organisation or the location of activities within a product supply chain. This is typically met when the inseting activity is located on the same parcel of land on which the organisation operates or that produces the product, or:
- **Ability to influence:** The organisation either directly controls or has a large degree of influence over decisions made about the inseting project area.

Entities must seek approval from Climate Active regarding the association between the inseting sequestration and the certification prior to applying for certification or including emissions removals in a carbon account. Climate Active may not approve an application for certification or inclusion of emissions removals in a carbon account where Climate Active, at its absolute discretion, considers the association test has not been satisfied. Entities must publish their justification against the association test in the Public Disclosure Statement for the reporting year.

Measure: prepare the carbon account

Step 1: establish the emissions boundary

The process for setting an emissions boundary depends on the type of Climate Active carbon neutral certification. Carbon removals from tree plantings can fall within the boundary of both organisations and products.

Organisations set emissions boundaries by assessing the emissions that arise as a consequence of their business operations. This includes all emissions under an organisation's control and all other indirect emissions assessed as relevant. Tree plantings can be included in an organisation's certification emissions boundary where it meets all eligibility conditions and other requirements described in this guideline.

For products, the emissions boundary is set through the particular functional unit (such as the finished product at a point of sale). This is achieved by considering all the services, materials and energy flows that become, make and carry a product through its life cycle. Eligible tree plantings from entities within a product supply chain, such as on a farm supplying an agricultural product to a wholesaler, can be included in the emissions boundary.

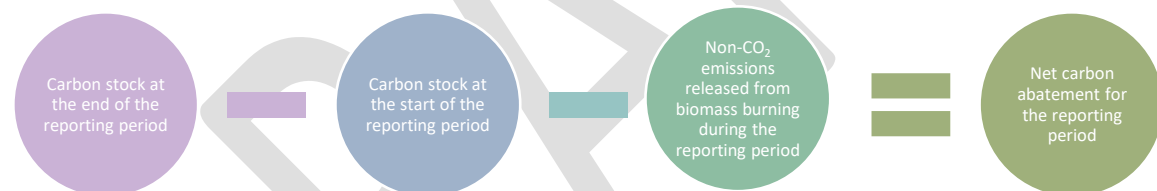
Once plantings are included in the emissions boundary, they must always be included for the purposes of Climate Active certification, even in a situation where there is a break in certification.

Step 2: collect data on emissions and removals, and calculate the carbon account

Entities must calculate all relevant and attributable emissions consistent with the Carbon Neutral Standard and the Climate Active Land and Agricultural Emissions Guideline.

Entities account for carbon removals by modelling the carbon in the biomass of trees they have planted (as well as the coarse woody debris that has accumulated) over the reporting period. This is done through a computer modelling tool called FullCAM.

The net carbon abatement refers to the overall reduction in greenhouse gases as a result of carbon dioxide removals from tree plantings. This is calculated by working out the carbon stocks in the plantings at the start and end of a reporting period, minus any emissions from clearing (reversals). Only the carbon change during the specific reporting period can be included in the carbon account – carbon stored over the previous reporting periods from the planting event to the start of the current reporting period cannot be claimed in this reporting period's carbon account.



Reduce: develop and implement an emissions reduction strategy

Any entity seeking to become carbon neutral must develop and maintain an emissions reduction strategy. This outlines the measures that the entity will take to reduce emissions by a specified amount within a specified timeframe. The Climate Active Technical Guidance Manual lists the full requirements of the strategy.

Where appropriate, the emissions reduction strategy may include plans to maintain and/or improve the amount of carbon removals on land within an entity's operational control or supply chain where consistent with this guideline.

Offset: retire eligible offsets to compensate for remaining emissions

Where there are remaining emissions exceeding the removals from insets, entities must compensate for them by retiring eligible carbon offset units in accordance with the Climate Active Standard.

Validate: arrange an independent validation of the carbon neutral claim

Independent third-party validation ensures the accuracy and completeness of a carbon neutral claim, including the appropriateness of emissions boundaries, methodologies, and calculations.

Entities including carbon removals from tree plantings within their carbon account will also need to have these estimates verified by an appropriately qualified third party in the first year that emission removals are included in the carbon account.

There are simplified verification requirements when the total annual removals from all plantings in the emissions boundary is less than 1,000 t CO₂-e and represents less than 30% of the total carbon account. Full details are in Section 6 of Appendix A.

Entities including carbon removals from tree plantings within their carbon account will also need to meet all requirements regarding technical assessments set by Climate Active and available online at the Department's website.

Report: publish a public statement of the carbon neutral claim

To meet the requirements of the relevant Climate Active carbon neutral standard, entities must publish a Public Disclosure Statement (PDS). The PDS explains how the entity has reached carbon neutrality, and how it is acting to reduce its emissions. For certified entities, this document is published on the Climate Active website.

The relevant Climate Active carbon neutral standard lists what must be included in the PDS. For the purposes of this guideline, carbon removals from tree plantings must be reported separately from gross emission sources.

FREQUENTLY ASKED QUESTIONS

What types of vegetation (species types) can be included in the carbon account?

- Any species available in the FullCAM model, which is the model utilised to determine vegetation carbon removals in the ACCU scheme. This ranges from vegetation that reflects the structure and composition of local vegetation through to plantation forestry species. It will exclude most horticultural trees and many ornamental trees because no agreed calculation method is currently available, other than if a direct measurement approach is approved by Climate Active.

Is there a discount applied to abatement modelled using FullCAM under this guideline?

- Abatement modelled using FullCAM under this guideline includes a discount to account for permanence and risk of reversal buffers. These discount values are set out in the answer to the question below.

Are there any permanence requirements for emissions removals?

- The permanence obligations depend on the total amount of removals in a Climate Active carbon account. Participants may fit into one of two removals thresholds: < 1,000 t CO₂-e (low threshold) and ≥ 1,000 t CO₂-e (high threshold), assessed as the total t CO₂-e inset across the Climate Active carbon account in the reporting year.
 - **Low threshold:**
 - Permanence is managed through on-going participation in the Climate Active program, whereby any reversals are accounted for as emissions sources in the carbon account. In addition, the responsible entity (independent of the land holder), must sign a statutory declaration committing that plantings will be protected from clearing or human induced degradation, and to make good or retire eligible offset units if trees are removed (other than by natural causes) at any stage 25 years from when they are first included in a Climate Active carbon account. This includes in the potential event that the Climate Active responsible entity is no longer a member of the Climate Active program.

A 30% discount rate applies to address risk of reversals.

Any proposals to make good must be approved by the Department.

- **High threshold** – the participant may elect either:
 - **25-year permanence:** A statutory declaration is required to be entered by the responsible entity, independent of the land holder, committing that the plantings will be protected from clearing or human induced degradation, and to retire eligible offset units if trees are removed (other than natural causes) at any stage 25 years from when they are first included in a Climate Active carbon account (including in the potential event that the Climate Active responsible entity is no longer a member of the Climate Active program).

A 25% (risk of reversal) discount rate applies.

- **In-perpetuity permanence:** A binding covenant on title (or other protection mechanism where approved by the Department) is required to be entered over the land covering the specific planting areas, protecting the planting areas in-perpetuity as conservation land.

A 5% discount rate applies.

Can I cut the trees down, or do I need to keep them forever/at least 25 years/100 years?

- Once plantings have been included in a carbon account, they must not be cut down. If the trees are cut down, you will either need to make good (for example plant new trees) or retire eligible offset units equivalent to the sum of all previously claimed removals (across all previous reporting years) from the cleared area. This is known as reversals accounting and is a core integrity requirement for insetting.

Once a tree planting has been included in a Climate Active carbon neutral certification, it must remain in the emissions boundary for the duration of certification, including in scenarios where certification is terminated and restarted in the future.

Trees must be maintained for a minimum of 25 years, or permanently (this is an option in the guideline). Some small-scale harvesting is permitted, as described in Section 4 of Appendix A.

Any proposals to make good must be approved by the Department.

What happens if the trees are burnt down, or die due to drought or pests?

- The effects of fires are modelled within FullCAM. Tree or shrub mortalities only become relevant if they stop a planting from having 'forest potential', i.e., the ability to grow at least 2 m tall and cover 20% of the plot area. Plots that fail the forest cover requirement can be included if a re-planting event takes place within the next two reporting periods. The approach to handling emissions when these events occur is outlined in the guidance.

What happens if the trees release more carbon dioxide than they store? Can I choose to not include them in my carbon account?

- Over a reporting period, trees may release more carbon than they store if they are subject to a disturbance, such as a fire or clearing event. If the disturbance event is due to natural causes or causes outside of the control of the landholders, carbon removals for the reporting period will be zero. Carbon removals will continue to be zero until the sum of the removals from the previous and current reporting periods is greater than zero. This has the effect of 'pausing' the inclusion of carbon removals in a carbon account, rather than adding to the emissions-side of the account. However, if the disturbance event is due to deliberate clearing, this has the effect of increasing emissions in the year the trees are cleared. Eligible offsets equivalent to any previously claimed removals (from all previous reporting years) from the affected area must be retired. Once trees have been included in the carbon account, they can't be removed because of a disturbance event. They must remain in the carbon account.

How large does the planting need to be? In what location? Does it have to look like a 'forest', or can it be spread out?

- The area must be at least 0.2 hectares.
- There must be FullCAM coverage for the site. This includes all of Australia (six states and three internal territories) but excludes external territories such as Christmas Island and Norfolk Island or the area must be able to be modelled under an approved direct measurement approach.
- The canopy of the planting must have the potential to cover 20% of the land area, and must be able to reach a height of at least 2m.

Do the plantings have to be new?

- No. Provided the planting is actively sequestering carbon, was planted after 1990, and is within the FullCAM parameters for maximum forest biomass for that species, it can be included in a Climate Active carbon account.

Why aren't landscape plantings allowed?

- Landscape plantings are not allowed because the density and positioning of the plantings don't match any of the FullCAM modelling options. It is also less likely the species composition of landscape plantings will match the modelling options in FullCAM.

Can I include plantings by other entities and on properties outside of my operational control?

- For organisation certifications, only plantings on land under your operational control can be included in the emissions boundary. For product certifications, plantings from entities within your direct supply chain can be included in the emissions boundary. All eligibility conditions must be met including the association test.

Can the removals from plantings in a Climate Active carbon neutral claim be counted by another entity?

- Removals from plantings can only be accounted for in a Climate Active carbon account if those plantings have not been included in any other carbon offset program (including the ACCU scheme) or any other public claim regarding carbon removals from that same area of land, to avoid double counting. Responsible entities are required to sign a statutory declaration confirming this is the case.
- Projects are required to supply spatial data showing where each inseting area is located. Climate Active will maintain a spatial database of all tree planting areas to facilitate monitoring and auditing.

How do I measure carbon removals?

- Carbon removals are estimated using the FullCAM model. FullCAM is free to [download](#). It requires an internet connection and Windows operating environment to run. The latest version of FullCAM is to be utilised for any modelling. Where a new version is released, all future modelling and abatement must be conducted on the newest version. Participants may also elect to use a direct measurement approach if approved by Climate Active.

Can I do these measurements myself, or do I need an expert?

- Users must have competence in the use of FullCAM, GIS and vegetation carbon assessment.

Do I need to measure this every year?

- Yes. The carbon account must be updated annually, as per the normal provisions of Climate Active reporting.

Is this the same as an ACCU scheme method?

- No. ACCU scheme methods have specific rules designed for carbon offset projects. There are methodological similarities between the guidelines for including carbon removals in a Climate Active carbon account and ACCU scheme methods with respect to verification of carbon sequestration rates. However, the most important contrasts are at the start and end of the methods – these guidelines don't require plantings to be new, and will not result in the generation of Australian Carbon Credit Units (ACCU) or any other tradeable carbon credit unit. This is because the purpose of insetting is different to offsetting. It is not designed to enable trading, it is designed to verify removals as part of a carbon account. This accounting approach is informed by the Greenhouse Gas (GHG) Protocol Land Sector Guidance.

Are carbon removals claimed under this guideline considered offsets?

- No, carbon removals from plantings that occur within an entity's operational control or supply chain are not offsets, as they do not meet various carbon offset eligibility criteria. No ACCUs or any other tradeable carbon credit unit will be issued for carbon removals from eligible plantings under this guideline.

Can I get ACCUs from plantings and also count the removals in a Climate Active carbon account?

- No. The same planting can't be included in both an ACCU scheme project and an insetting project.

Do I need to get an independent third party to verify that my measurements are correct?

- Yes, independent verification of the carbon neutral claim undertaken by a third party is required in the first year plantings are included in the emissions boundary. If additional plantings are added to the certification (after an initial verification) which result in more than a 10% change in the carbon account, the new plantings must be verified.

- Additionally, the inclusion of removals from plantings in a Climate Active account may be subject to Department funded audits of Climate Active member carbon neutral claims in subsequent years, even where a certification ceases.
- Entities will also need to meet all requirements regarding technical assessments set by Climate Active and available online at the Department's website.

Who can undertake the independent verification of the plantings?

- Verifications for plantings can be undertaken by entities with demonstrated experience in vegetation assessments who also meet either Type 1, 2 or 3 criteria in the Validation Schedule of the Climate Active Licence Agreement.

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CARBON ACCOUNT: WORKED EXAMPLE

A small Australian Capital Territory beef producer planted 2 hectares of a mixed environmental planting in 1990 (small planting). In the 2022 financial year, the plot sequestered 1 t of carbon in above- and below-ground tree biomass, and 0.4 t of carbon in debris, making a total of 1.4 t of carbon. This is equivalent to 5.1 t of carbon dioxide (t CO₂-e). The abatement, after applying a 30% discount factor, is 3.6 t CO₂-e. This last figure is included in the carbon account to 'inset' (rather than 'offset' via an external source of carbon credits) the supply chain emissions. A simplified example of the carbon account is provided below.

Table 1. Simplified example of a carbon account with carbon removals from tree plantings

Enteric Methane	150
Diesel Consumption, all supply chain	5
Fertiliser	4
Electricity Use, all supply chain	2
Total Transport and Freight	2
Purchased Feed	4
Manure emissions	15
Emissions sub-total	182
Tree planting removals	-3.6
Net inventory emissions for this reporting period	178.4

APPENDIX A: FULL REQUIREMENTS TO ACCOUNT FOR REMOVALS FROM TREE PLANTINGS

ABOUT THIS DOCUMENT

This document details the full requirements that must be met to add carbon removals by plantings to a Climate Active organisation or product carbon account. The requirements pertain to mass plantings, not to landscape plantings such as gardens, avenues or specimen trees.

Carbon removals is estimated by modelling carbon in the above and below ground tree and shrub biomass, and coarse woody debris, of plantings.

This document was developed with reference to the Carbon Credits (Carbon Farming Initiative) (Reforestation by Environmental or Mallee Plantings–FullCAM) Methodology Determination 2014. However, there are key distinctions between the requirements for a Climate Active project and an ACCU scheme project:

1. This Guideline applies for both organisation and product certifications. For product certifications, multiple entities may be assessed within one project; and
2. Vegetation planted after 1990 may be included within the assessment. This contrasts with the 'newness' requirements of ACCU scheme projects.

This Guideline is intended to complement the ACCU scheme, in particular by accounting for removals from plantings on a business carbon account that would not be eligible under the ACCU scheme, such as from existing plantings. Under this Guideline, removals are accounted differently to an offset: An offset accounts for abatement from a specific project activity which can be used to compensate for emissions from activities elsewhere in the economy. Under this Guideline, removals from plantings within an emissions boundary are accounted for as a removal within that same carbon account, and land managers are not issued with offset units for the removals that they achieve.

Type of projects to which this guideline applies

To utilise this guideline for measuring carbon footprints, an organisation must be able to obtain data from an entity or group of entities that are involved in the organisation's carbon footprint. For a product carbon footprint project, this guideline can be employed only if the planting of trees takes place within the emissions boundary of the product (which is determined by the association test).

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1. DEFINITIONS

In this Guideline:

above-ground biomass means all live material in a tree or shrub above the soil substrate and includes the stem and crown.

baseline period pertains to a plot, and means the period from planting until the start of the first reporting period for which carbon removals from the plot was included in a Climate Active account.

below-ground biomass means all live material in a tree or shrub below the soil substrate and includes the tap root or lignotuber, and the lateral roots.

plot means an area of land that is within a project area and that meets the requirements in Section 3.

carbon pool means a reservoir which has the capacity to accumulate or release carbon and includes above-ground biomass, below-ground biomass or debris.

carbon stock of an area of land, at a specified time, means the quantity of carbon held within the area at that time as:

- a) above-ground biomass;
- b) below-ground biomass; and
- c) debris.

carbon stock change means the change in the quantity of carbon stock over a specified time, expressed in units of mass.

CFI Mapping Guidelines means the guidelines of that name, as published from time to time on the Department of Climate Change, Energy, the Environment and Water website. 'CFI' is an abbreviation for 'Carbon Farming Initiative'.

CO₂-e means carbon dioxide equivalent.

crown cover means the area of land circumscribed by the outer limits of the crown (viewed as a horizontal cross-section) of a tree, or collection of trees.

debris means above-ground and below-ground dead plant material.

Department means the Australian Government Department of Climate Change, Energy, the Environment and Water, or its administrative successor.

disturbance event means an event, whether natural or caused by humans, that affects the accumulation or loss of carbon stock within the greenhouse gas assessment boundary.

Eligible offset unit means an offset unit listed as eligible in the Climate Active Carbon Neutral Standard..

emissions boundary identifies all emission sources being considered against the carbon neutral claim. It clearly depicts all emissions associated with the certification and how they are treated, such as quantified, non-quantified and excluded sources.

establishment means the act of establishing a mixed-species environmental planting or mallee planting and as a minimum involves the planting of species eligible under this Guideline.

forest means land of a minimum area of 0.2 of a hectare on which trees:

- a) have attained, or have the potential to attain, a crown cover of at least 20% across the area of land; and
- b) have reached, or have the potential to reach, a height of at least 2 metres.

forest cover—land has **forest cover** if the vegetation on the land includes trees that:

- a) are 2 metres or more in height; and
- b) provide crown cover of at least 20% of the land.

forest potential—land has **forest potential** if the vegetation on the land includes trees that have the potential:

- a) to reach 2 metres or more in height; and
- b) to provide crown cover of at least 20% of the land.

FullCAM means the latest version of the Full Carbon Accounting Model as released on the Department of Climate Change, Energy, the Environment and Water's website.

FullCAM Guidelines means the guidance for using FullCAM for ACCU scheme vegetation projects, as published from time to time on the Department of Climate Change, Energy, the Environment and Water's website.

initial carbon stock means carbon stock existing at the start of the reporting period.

insetting refers to activities that result in emissions removals within the emissions boundary of an organisation or product supply chain and which can be directly included within its carbon account, without the creation of offset units.

land management regime means the set of actions including:

- a) preparation prior to planting;
- b) planting;
- c) thinning;
- d) weed control treatment; and
- e) the application of fertiliser;

which are applied in a uniform or consistent manner to an area of land.

landscape planting means a planting in an urban centre or locality as follows:

- a) in a residential place (for example, in a backyard, park or on a nature strip);
- b) on the grounds of a sporting facility, factory or other commercial facility;
- c) on the grounds of a hospital, school or other institution;
- d) in a carpark or cemetery.

maintenance planting means a planting event within an already planted plot that doesn't change the modelling of removals using FullCAM (depending on the species or vegetation group planted) but may help to ensure the plot meets forest cover and forest potential requirements.

management event means a land management activity that can be modelled in FullCAM, such as a planting, thinning, harvest, or fire.

model point means a static location defined by latitude and longitude coordinates for each plot for the purpose of estimating carbon stocks using FullCAM.

NGER Measurement Determination means the applicable determination made under subsection 10(3) of the *National Greenhouse and Energy Reporting Act 2007*.

NGER Regulations means the *National Greenhouse and Energy Reporting Regulations 2008*.

planting means:

- a) as a verb, to put or set in the ground species that are eligible under this Guideline using:
 - a. propagated seedling stock; or
 - b. direct seeding, including in rows or broadcast;for the purposes of growing trees;
- b) as a noun, an area of trees established using direct seeding or propagated seedling stock.

planting date means for a plot, the date on which planting last occurred within the plot.

plot means a defined area of land where on-ground samples are collected or for which imagery is analysed.

project tree means a tree or shrub that has been established through undertaking the project mechanism.

project period means the entire period over which carbon removals from any plot is included in a Climate Active account.

project area means the land within the emissions boundary of the organisation or product, in which plots are located. For a product carbon footprint, separate

project areas may be included for each entity that operates within the emissions boundary.

replanting event means a planting event that occurs within a planted plot because canopy forest potential requirements were not initially met. The replanting event must take place within the first three reporting periods for a plot.

reporting period means the twelve month period covering the calendar year (i.e. 1 January to 31 December) or financial year (i.e. 1 July to 30 June) for which the Climate Active project reporting period corresponds.

Responsible entity means the person or organisation that has taken responsibility for seeking Climate Active carbon neutral certification (and who signs a Licence Agreement provided by Climate Active). The responsible entity should be clearly identified and must be able to meet the requirements of the Standard, including carbon accounting, regular reporting and purchasing of offset units as required to make the carbon neutral claim.

shrub means a perennial plant that has primary supporting structures consisting of secondary xylem and that does not have, or have the potential for its stem diameter to be measured at breast height (DBH), where DBH is defined as 130 centimetres above ground level.¹

stem means the ascending axis of a plant and the main structural component of the above-ground portion of trees and shrubs.²

stocking density means the number of live individual trees or shrubs per hectare in a plot and/or the number of live individual seedlings or seeds per hectare at establishment.

thinning means the selective removal of trees for ecological purposes, including to maintain species diversity or ground cover.³

tree means a perennial plant that has primary supporting structures consisting of secondary xylem and that has, or has the potential to for its stem diameter to be measured at 130 centimetres above ground level (i.e., DBH).

tree proportion means the proportion of individual live trees relative to the total of individual live trees and shrubs in a mixed-species environmental planting.

¹ If the common growth habit of the plant precludes the possibility for a stem diameter measurement to be taken at breast height (130 cm), then the plant is treated as shrub.

² Multi-stemmed trees or shrubs are treated as a single plant for estimating stocking density.

³ The 'thinning' FullCAM event modelling option is also used to model vegetation mortality.

2. REQUIREMENTS FOR ELIGIBLE PLANTINGS AND LAND

ELIGIBLE PLANTINGS

- 1) The project must have established, or establish, by planting the following types of plantings:
 - a) a mixed-species environmental planting; and/or
 - b) a mallee planting; and/or
 - c) a planting of a tree species option available within FullCAM.⁴Any combination of (a), (b) and (c) within a plot should be treated as (a). If (b) or (c) are not a FullCAM modelling option for a model point location, then the plot should be treated as (a). Only one calibration may be applied to a plot in a reporting period.⁵
- 2) The plantings in (1) must comply with one of the following:
 - a) Native vegetation planted as a mix of trees, shrubs, and/or understorey species that reflects the structure and composition of the vegetation that is expected to occur naturally in that area.
 - b) A single mallee species that conforms with the latest version of the ACCU scheme Determination.⁶
 - c) The choice of other species planted must be consistent with the practices of commercial forestry operations in the area.⁷
- 3) The planting events in (1) must:

⁴ The guidelines permit the use of species modelled in FullCAM, which includes species relevant to ACCU scheme forestry methods. However, proponents should be aware that there may be contrasts between the methods in this guideline and other methods. Here, clearing (including harvesting or coppicing) will result in emissions equal to or greater than removals during previous reporting periods. Consequently, the methods used here may have implications for carbon accounts that contrast with other methods, despite making use of the same modelling tool.

⁵ A 'calibration' refers to the FullCAM parameters used to model a particular species or vegetation group. For example, under the Carbon Credits (Carbon Farming Initiative) (Reforestation by Environmental or Mallee Plantings—FullCAM) Methodology Determination 2014 the FullCAM modelling option 'mixed environmental plantings' applies a generic calibration, and particular combinations of planting geometry, plant spacing and stocking density/tree proportion may make mallee plantings eligible for specific calibrations.

⁶ Carbon Credits (Carbon Farming Initiative) (Reforestation by Environmental or Mallee Plantings—FullCAM) Methodology Determination 2014

⁷ A source to inform (a) is the Atlas of Living Australia (<https://bie.ala.org.au/>). Sources of information to inform (c) include the Carbon Credits (Carbon Farming Initiative—Plantation Forestry) Methodology Determination 2022, and the Australian Bureau of Agricultural and Resource Economics and Sciences' Australia's State of the Forests Report.

- a) Take place in or after the year 1990⁸; and
- b) The period between planting and the end of the current reporting period must be less than the upper age limits for which FullCAM can reliably return estimates of removals.⁹

Evidence to verify 3(a) including any of the following:

- i) during the baseline period – aerial or satellite images showing the presence of plantings at a time point up to 10 years after planting;
 - ii) during the project period – a date-stamped photograph taken no more than 12 months after planting from a known location and direction, in which plantings are visible;
 - iii) a date-stamped record of hiring contractors to assist with planting;
 - iv) a date-stamped record of plant or seed purchases;
 - v) during the project period – aerial or satellite images showing (1) no forest cover at a time point up to 18 months prior to planting, and (2) the presence of plantings at a time point up to 3 years after planting; or
 - vi) canopy area estimates obtained on a representative individual tree that is within $\pm 25\%$ of the canopy area expected for that combination of planting type, age and region.^{10, 11}
- 4) The practical minimum plot area is 0.2 ha.
 - 5) Evidence demonstrating the presence of plantings in each plot at the end of the reporting period must be provided, including:

⁸ The 1990 cut-off was chosen for pragmatic reasons. At the time of writing, the 1990 cut-off approximates the period over which FullCAM can reliably estimate removals – see Section 5). Satellite imagery used to verify planting dates is increasingly scarce for historical plantings and 1990 was seen as a practical cut-off for verification purposes.

⁹ The upper age limits referred to in (b) are defined in FullCAM Guidelines – Requirements for using the Full Carbon Accounting Model (FullCAM) in the ACCU scheme methodology determination: Carbon Credits (Carbon Farming Initiative-Plantation Forestry) Methodology Determination 2022 for plantation species, and in 'Paul K. I. & Roxburgh S. H., Predicting carbon removals of woody biomass following land restoration. *Forest Ecology and Management*, 460 (2020) 117838' for environmental and mallee plantings. In the former publication, the upper age limit is referred to as the 'age of maximum confidence', and in the latter publication, the upper age limit is 30 years. The latter upper age limit is expected to increase as observations on older plots are added to the data that supports FullCAM. The plantation forestry method referred to provides a method to replace the upper age limit with an upper biomass value in the advent of disturbance events – where applicable, this is an optional method under this guideline for all planting types. For those species not covered by the above references, the default age of maximum forest growth is 50 years.

¹⁰ Methods for and examples of high-quality photographic monitoring of vegetation can be found at the following websites: https://www.dpaw.wa.gov.au/images/documents/conservation-management/off-road-conservation/LFW/Photographic_Monitoring_of_Vegetation.pdf, <http://www.environment.nsw.gov.au/resources/nature/Factsheet9Photomonitoring.pdf>

¹¹ Potential sources of expected canopy size include regional relationships between species, age and canopy area, and determining such a relationship for local tree species, such as on-site trees of known age.

- a) a date-stamped remotely-sensed imagery, including indicators of vegetation cover (see Section 3.4) obtained within 12 months of the end of the reporting period, or
 - b) a date-stamped photograph obtained within 6 months of the end of the reporting period from a known location and direction.
- 6) Plantings must be able to attain and maintain forest potential:
- a) a height of 2 metres or more; and
 - b) a crown cover of at least 20% over the plot area;¹² and
 - c) a density of at least 200 stems per hectare.
- 7) Plantings must not be part of an ACCU scheme project or any other carbon offset program.
- 8) Plantings must not be for forestry purposes, i.e. involving subsequent clearing of the planting.

ELIGIBLE LAND

- 9) The land on which eligible plantings were or are to be established must be:
- a) within Australia, excluding external territories; and
 - b) in an area for which FullCAM data exists.
- 10) Each plot must have been clear of forest cover before the date of the first planting as demonstrated by any of the following evidence:
- a) aerial images, satellite images, or remote sensing products showing no forest cover prior to planting.
 - b) date-stamped photographs taken from a known location and direction, showing no forest cover prior to planting.¹³
- 11) Emissions from any clearance in the area during the previous 10 years must be accounted for consistently with the Climate Active Land and Agricultural Emissions Guideline.
- 12) The land must be within the emissions boundary of the organisation or product supply chain and pass an association test:

¹² The potential to attain the requirements in subsection (6) may be demonstrated by the anticipated height and crown cover across the area when trees are at maturity.

¹³ Evidence for (a) and (b) may be dated between 2 and 20 years prior to planting.

Association test

The potential emissions sink must pass an 'association test'. This is designed to ensure that there is a reasonable association between the insetting sequestration and the certification by justifying that the removal occurs as part of the system boundary and exists within the same carbon account. The association test is subject to a technical assessment or third party verification. Stakeholder expectations and one of either Proximity or Ability to influence must be met:

Stakeholder expectations: Stakeholders would accept that there is a reasonable association between the organisation or product being certified and the insetting activity. For example, for organisations, this could include considering whether the insetting activity is within the operational control of the organisation. For products, this could include considering whether there is a causal link between the production of the product and the insetting activity.

And either of:

- **Proximity:** The insetting area must be located in close proximity to the organisation or the location of activities within a product supply chain. This is typically met when the insetting activity is located on the same parcel of land on which the organisation operates or that produces the product, or:
- **Ability to influence:** The organisation either directly controls or has a large degree of influence over decisions made about the insetting project area.

Entities must seek approval from Climate Active regarding the association between the insetting sequestration and the certification prior to applying for certification or including emissions removals in a carbon account. Climate Active may not approve an application for certification or inclusion of emissions removals in a carbon account where Climate Active, at its absolute discretion, considers the association test has not been satisfied.

3. IDENTIFICATION OF PLOTS WITHIN THE PROJECT AREA

IDENTIFICATION OF A PROJECT AREA

For an organisation's carbon footprint, the project area represents all land within the emissions boundary. For a product carbon footprint, the separate project areas are defined for each entity that operates within the emissions boundary.

The spatial boundaries of the project area must be delineated in accordance with the CFI Mapping Guidelines.

IDENTIFICATION OF PLOTS

Requirements for a plot

- 1) A plot must:
 - a) consist of land on which the project mechanism is implemented;
 - b) be planted with the same vegetation group or individual tree species; and
 - c) be established and managed under the same land management regime, including in relation to:
 - i) preparation prior to planting;
 - ii) planting;
 - iii) thinning;
 - iv) weed control treatment; and
 - v) the application of fertiliser.¹⁴

Plot boundaries

- 2) The boundaries of each plot must be defined in accordance with the CFI Mapping Guidelines using at least one of the following:
 - a) field surveys;
 - b) aerial photographs;
 - c) date-stamped, geo-referenced remotely-sensed imagery, including indicators of vegetation cover data;

¹⁴ The maximum range in planting dates within a plot is 12 months. FullCAM can only include one weed control treatment and up to two fertiliser treatments.

- d) soil, vegetation or landform maps.¹⁵
- 3) Plots may consist of 'split' plots, as described in the CFI Mapping Guidelines. The applicable radius for split plots is 5 km.¹⁶

Maximum permitted plot width

The maximum permitted width for a plot must be in accordance with the requirements of an ACCU scheme vegetation method that includes the tree species or vegetation group that comprises the planting.¹⁷

Modification of a plot boundary

- 4) A plot must be modified if one or more of the following occurs:
 - a) the site characteristics in the area are no longer uniform;
 - b) the land management regime or a management event (e.g., weed control or fertiliser application) ceases to be uniform across the area;
 - c) parts of a planting within the area fail to achieve forest potential;
 - d) a different calibration is to be applied to part of an existing plot.
- 5) If a plot boundary is modified, the new boundaries must be identified in the next reporting year to Climate Active.

¹⁵ Indicators of vegetation cover means satellite or aerial imagery that has been processed to indicate vegetation cover or other relevant vegetation attributes.

¹⁶ The CFI Mapping Guidelines require that each carbon estimation area be represented by a model point location. Under this guideline, a single latitude and longitude representing the approximate mid-point of the project area can be applied to all plots. If the most spatially distant plots are greater than 10 km apart, additional representative model point locations are required. Where multiple model point locations are defined, the coordinates of the closest one must be applied to a plot.

¹⁷ The maximum width is important for row plantings, where edge effects increase removals by reducing competition for light, water and nutrients.

4. PERMITTED ACTIVITIES

GENERAL

Activities undertaken in accordance with this Section do not require monitoring, record keeping, or consideration when calculating the net abatement amount.

HARVESTING

Up to 10% of fallen timber may be removed from a plot in a calendar year for personal use. Removals below this threshold do not need to be modelled. Removals above this threshold should be modelled as the harvest of fallen timber (see Section 7).¹⁸

OTHER PERMITTED REMOVALS

- 1) Biomass may be removed:
 - a) for thinning for ecological purposes; or
 - b) to remove debris for fire management; or
 - c) to provide a safe working environment; or
 - d) to minimise risk of damage to infrastructure; or
 - e) to repair infrastructure; or
 - f) to maintain vehicular access; or
 - g) to maintain pedestrian access for people or animals; or
 - h) to remove seeds for personal use, sale, donation or exchange
 - i) to remove fruits, nuts, or material used for fencing or as craft materials, if those things are not removed for sale, donation or exchange; or
 - j) in accordance with traditional Indigenous practices or native title rights.

GRAZING

- 2) If grazing occurs in a plot:
 - a) the grazing must not affect the achievement or maintenance of forest cover in the area; and
 - b) Climate Active may request evidence that demonstrates that the grazing has not prevented:
 - i) the achievement or maintenance of forest cover; or

¹⁸ Personal use of fallen timber means use that does not involve the sale, donation or exchange of the timber.

- ii) compliance requirements for stocking density and/or tree proportion pertaining to the vegetation group or tree species planted.¹⁹

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¹⁹ Evidence may include date-stamped, geo-referenced, or remotely-sensed imagery.

5. MAINTENANCE PLANTINGS

- 1) A maintenance planting event within an already planted plot is a permitted activity. The purpose of this activity is to replace trees that have died because of poor establishment or drought, with the purpose of ensuring the plot achieves forest potential. This activity does not:
 - a) Change the planting date of a plot (unless the new plantings are within 12 months of existing plantings – see Section 3);²⁰
 - b) Change the age at which the vegetation in a plot reaches maximum forest growth (see Section 7); or
 - c) Change the boundary of a plot.
- 2) A planting event within an already planted plot can be used to meet the requirements of Section 2 relating to forest height and canopy cover.
- 3) If the species or vegetation group planted in an already planted plot does not match that of the existing planting, the planting must be modelled as a mixed environmental planting.²¹

²⁰ For clarity, a maintenance planting event cannot change the planting date of a plot that was planted before 1990, even if the new plantings are within 12 months of existing plantings. A planting that occurred before 1990 is an ineligible planting.

²¹ The key difference between a maintenance planting event and a re-planting event is forest cover potential. A maintenance planting event may take place in a plot with forest potential. A re-planting event takes place in a plot that did not satisfy the forest potential requirements in a previous reporting period, to ensure these requirements can be met.

6. CALCULATING REVERSALS (CLEARING)

- 1) If a plot, or a portion of a plot, included in a Climate Active carbon account is subsequently cleared at any point, the emissions associated with clearing the plot, or the portion of the plot, will be deemed to be equivalent to the total carbon removals claimed from the plot, or the portion of the plot, across all reporting years from that plot in a Climate Active carbon account.²²
- 2) In the event that a plot is taken out of a Climate Active certification (for example, if a farm ceases supply to a Climate Active certified product), no further sequestration (removals) from that plot can be accounted for. Monitoring of this plot must continue to ensure reversals do not occur within the 25 year period. If reversals are observed, and the responsible entity remains a Climate Active member, they must be included in the carbon account in the year the reversal is observed. If reversals are observed, and the responsible entity no longer remains a Climate Active member, the responsible entity must make good or retire eligible offsets to compensate for the reversal. Any proposals to make good must be approved by the Department.
- 3) If it is no longer possible to monitor a plot, it must be treated as a reversal in that year consistent with point 1 of this section. i.e. It is proposed that if the responsible entity can maintain traceability of the carbon pool (i.e. maintain GIS traceability), the responsible entity is not required to account for the net carbon stock losses of previously reported removals unless they are, in fact, lost through a land use or a land use change event. GIS traceability can fulfill the reversals accounting requirement and monitor the “permanence” of the carbon pool. However, if the responsible entity loses the ability to monitor carbon stocks associated with previously reported removals, the responsible entity must assume previously reported removals are emitted and report reversals.
- 4) If any emissions removals are claimed in a Climate Active carbon account, emissions sources from land use and land use change activities must also be accounted for consistently with the requirements of the Climate Active Land and Agricultural Emissions Guideline. Any clearing that occurs outside of the planting area used to model sequestration, within the emissions boundary of the certification, must be accounted for consistent with the Climate Active Land and Agricultural Emissions Guideline. This prevents emissions leakage.

²² The carbon removals referred to here must be the sum of A_{calc} (see Equation 17 in Section 7), not A_{rep} , for the full period the plot was included in a Climate Active account. This is because the effect of clearing is certain (to the degree that the model achieves) – the ‘risk of reversal’ buffer and a discount due to permanence do not apply.

- 5) Human induced degradation can be a form of clearing. This occurs where forest is degraded as a result of human activity and may include a lack of maintenance of a planting. Where a plantation is degraded to the point where it no longer achieves forest cover, it must be replanted, or treated as a clearing event.

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7. CALCULATING REMOVALS

The carbon dioxide equivalent removals amount in relation to a reporting period for the project is taken to be the change in total carbon stock for all the plots within all project areas, less emissions resulting from fire and clearing events.

CALCULATIONS—PRELIMINARY

Greenhouse gas assessment boundary

When making calculations:

- 1) The carbon pools and emission sources and the corresponding greenhouse gases in Table 1 must be taken into account; and
- 2) All other emission sources (i.e., not related to carbon removals in vegetation as a result of planting events) must be taken into account under the Climate Active GHG emission account. No other carbon pools may be taken into account.

Table 1: Gases accounted for in the removal calculations

Carbon pool	Greenhouse gas
Live above-ground biomass	Carbon dioxide (CO ₂)
Live below-ground biomass	Carbon dioxide (CO ₂)
Debris	Carbon dioxide (CO ₂)
Emission source	Greenhouse gas
Clearing	Carbon dioxide (CO ₂)
Fire—planned and unplanned	Methane (CH ₄)
	Nitrous oxide (N ₂ O)
	Carbon dioxide (CO ₂)

FullCAM modelling

This section deals with the modelling using FullCAM outputs (excluding direct measurement).

FullCAM modelling – project period

- 1) Throughout the reporting period, FullCAM must be used to model the following parameters for each plot in accordance with the latest version of the *FullCAM Guidelines – Requirements for using the Full Carbon Accounting Model (FullCAM) in the ACCU scheme methodology determination: Carbon Credits (Carbon Farming Initiative) (Reforestation by Environmental or Mallee Plantings–FullCAM) Methodology Determination 2014*:
 - a) carbon stock;
 - b) emissions resulting from disturbance; and
 - c) the effects of a management event.^{23, 24}

FullCAM modelling – baseline period

- 2) For the baseline period, FullCAM must be used to model the following parameters for each plot in accordance with the latest version of the *FullCAM Guidelines – Requirements for using the Full Carbon Accounting Model (FullCAM) in the ACCU scheme methodology determination: Carbon Credits (Carbon Farming Initiative) (Reforestation by Environmental or Mallee Plantings–FullCAM) Methodology Determination 2014*:
 - a) carbon stock.
- 3) For the baseline period, justification must be provided to model the following parameters for each plot:
 - a) emissions resulting from disturbance; and
 - b) the effects of a management event.Management events are those that can be modelled in FullCAM, such as a planting, thinning, harvest, and fire.

FullCAM modelling – re-planting

- 4) Plantings that do not fully satisfy the forest potential requirements of this guideline (Section 2) are to be modelled as a partially planted area. This may occur where tree survival was low, or if the original planting was at a very low density. The modelling must take place as described in above but the area of

²³ The following departures from the above-mentioned FullCAM guidelines are permitted. Under this guideline, the range of species permitted is more expansive, the modelled planting date of tubestock can be up to one year earlier than the planting date, and clearing events are permitted. Of these, the latter is more complex – guidance on including such ‘events’ can be obtained from the latest version of the Requirements for use of the FullCAM Guidelines Requirements for use of the Full Carbon Accounting Model (FullCAM) with the ACCU scheme methodology determination: Carbon Credits (Carbon Farming Initiative–Plantation Forestry) Methodology Determination 2022.

²⁴ After a clearing event, the carbon stock for a plot is reset to FullCAM defaults for that site, regardless of the continued presence of residues such as below-ground biomass and coarse woody debris.

the planting is set to zero until a re-planting event takes place. Once a re-planting event takes place, the following changes are made to the FullCAM simulation:

- a) The measured area of the planting is applied;
- b) For the Initial Conditions/Forest/Trees setting, the age of the oldest trees is set to the time between the initial and the re-planting events;
- c) For the Initial Conditions/Forest/Trees setting, the average age of the trees is half the time between the initial and the re-planting events, and;
- d) The modelled planting date will be the date that re-planting occurred.²⁵

FullCAM modelling – maximum forest growth

- 5) There are upper age limits on the duration FullCAM can reliably return estimates of removals. These upper age limits are defined in *FullCAM Guidelines – Requirements for using the Full Carbon Accounting Model (FullCAM) in the ACCU scheme methodology determination: Carbon Credits (Carbon Farming Initiative-Plantation Forestry) Methodology Determination 2022* for plantation species, and in 'Paul K. I. & Roxburgh S. H., Predicting carbon removals of woody biomass following land restoration. *Forest Ecology and Management*, 460 (2020) 117838' for environmental and mallee plantings. In the former publication, the upper age limit is referred to as the 'age of maximum confidence', and in the latter publication, the upper age limit is 30 years. The plantation forestry method referred to provides a method to replace the upper age limit with an upper biomass value in the advent of disturbance events – where applicable, this is an optional method under this guideline for all planting types. For those species not covered by the above references, the default age of maximum forest growth is 30 years, in line with the Paul & Roxburgh (2020) publication mentioned above.²⁶

FullCAM input data

- 6) For input to FullCAM, the following information must be collected or estimated for each plot:
 - a) the model point location (latitude and longitude);
 - b) the last planting date;
 - c) the species;
 - d) the stocking density of the trees and shrubs;
 - e) where applicable, the tree proportion;

²⁵The planted area referred to in this Section refers to the parameter a (with any subscript) in the equations provided below. This parameter can be set in FullCAM but is commonly applied during the post-processing of FullCAM data obtained on a per hectare basis.

²⁶ Plantings that have reached maximum forest growth must continue to meet the requirements of this guideline, including the monitoring and modelling of management and disturbance events.

- f) domain information to support the use of a given FullCAM calibration;
- g) where applicable, management event data;
- h) where applicable, disturbance event data, and;
- i) where applicable, the maximum and mean age of trees as required by Section 4.6.^{27, 28}

FullCAM outputs

- 7) The data specified in Table 2 and generated in accordance with the FullCAM Guidelines as outputs from FullCAM must be used when calculating abatement:

Table 2: FullCAM output required for calculating abatement²⁹

FullCAM Output	Units	Description	Form	Parameter and Equation
C mass of trees at the start of the reporting period	tonnes C per hectare	Carbon stock in above-ground and below ground tree biomass at the start of the reporting period	Time series - monthly (cumulative)	C_{tio} Equation 12a
C mass of forest debris at the start of the reporting period	tonnes C per hectare	Carbon stock in debris at the start of the reporting period	Time series - monthly (cumulative)	C_{dio} Equation 12a
C mass of trees at the end of the reporting period	tonnes C per hectare	Carbon stock in above-ground and below ground tree biomass at the end of the reporting period	Time series - monthly (cumulative)	C_{ti} Equation 12b
C mass of forest debris at the end of the reporting period	tonnes C per hectare	Carbon stock in debris at the end of the reporting period	Time series - monthly (cumulative)	C_{di} Equation 12b
C mass of forest debris and trees at the end of the reporting period in	tonnes C per hectare	Used to algebraically determine the contribution of clearing to project emissions	Time series - monthly (cumulative)	E_C Equation 16

²⁷ Tree mortality events resulting from events and processes such as storms, pests, diseases and drought, should be modelled in FullCAM as a thinning event according to the proportion of the plot affected, and the fate of the dead biomass (e.g., recovery of dead wood as timber according to Section 4).

²⁸ When modelling removals using FullCAM, the planting date of tubestock can be set one year prior to the actual planting date. However, carbon removals during this pre-planting year should only be included in the model if the production of the tubestock took place within the emissions boundary of the enterprise that planted the trees for at least the 12 months prior to planting. This note does not apply to the re-establishment of a planting from following coppicing.

²⁹ FullCAM outputs referred to in masses of carbon, methane or nitrous oxide per hectare are converted to tonnes of CO₂-e in the Equations in this Section. Biomass from the shrub component of a planting is incorporated in the FullCAM calibrations.

the absence of clearing events				
CH ₄ emitted due to fire	tonnes CH ₄ per hectare	Mass of CH ₄ emitted to the atmosphere due to fire during the reporting period	Time series monthly (non-cumulative)	E_{CH_4i} Equation 13
N ₂ O emitted due to fire	kg N ₂ O per hectare	Mass of N ₂ O emitted to the atmosphere due to fire during the reporting period	Time series – monthly (non-cumulative)	$E_{N_2O_i}$ Equation 14

- 8) Evidence of complying with this Section include FullCAM plot files (.plo) and/or the equivalent information supplied in other forms such as a database, and a copy of the associated output data in a spreadsheet file for each plot in the project area.

CALCULATION OF CARBON STOCK CHANGE

This section is relevant to plots that were not cleared during the reporting period.

Calculating project area carbon stock for project area at the start of a reporting period

- 9) The carbon stock for a project area at the start of a reporting period must be calculated using the following formula:

$C_{p0} = \sum_{i=1}^{n_a} C_{i0}$	Equation 11a
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Where:

C_{p0} =	carbon stock for the project area at the start of the reporting period (in tonnes C).
C_{i0} =	carbon stock for the i^{th} plot at the start of the reporting period (in tonnes C)—see Equation 12a.
n_a =	total number of plots in the project area at the start of the reporting period.
i =	i^{th} plot.

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

- 10) The carbon stock for a project area at the end of a reporting period must be calculated using the following formula:

$C_p = \sum_{i=1}^n C_i$	Equation 11b
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Where:

$C_p =$	carbon stock for the project area at the end of a reporting period (in tonnes CO ₂ -e).
$C_i =$	carbon stock for the i^{th} plot at the end of the current reporting period (in tonnes C)—see Equation 12b.
$n =$	total number of plots in the project area at the end of the current reporting period.
$i =$	i^{th} plot.

Calculating carbon stock for plot

- 11) The carbon stock at the start of a reporting period for a plot must be calculated as the sum of FullCAM outputs for carbon in the tree and debris pools, and must be calculated using the following formula:

$C_{i0} = (C_{d_{i0}} + C_{t_{i0}}) \times a_i$	Equation 12a
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Where:

$C_{i0} =$	carbon stock for the i^{th} plot at the start of the reporting period (in tonnes C).
$C_{d_{i0}} =$	carbon stock in debris for the i^{th} plot determined using FullCAM at the start of the reporting period (in tonnes C per hectare).
$C_{t_{i0}} =$	carbon stock in trees for the i^{th} plot determined using FullCAM at the start of the reporting period (in tonnes C per hectare).
$a_i =$	area of the i^{th} plot (in hectares).
$i =$	i^{th} plot.

- 12) At the end of each reporting period, the carbon stock for a plot must be calculated as the sum of FullCAM outputs for carbon in the tree and debris pools, and must be calculated using the following formula:

$C_i = (C_{di} + C_{ti}) \times a_i$	Equation 12b
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Where:

$C_i =$	carbon stock for the i^{th} plot at the end of the reporting period (in tonnes C).
$C_{di} =$	carbon stock in debris for the i^{th} plot determined using FullCAM for the final month of the reporting period (in tonnes C per hectare).
$C_{ti} =$	carbon stock in trees for the i^{th} plot determined using FullCAM for the final month of the reporting period (in tonnes C per hectare).
$a_i =$	area of the i^{th} plot (in hectares).
$i =$	i^{th} plot.

CALCULATION OF PROJECT AREA EMISSIONS

Calculating emissions from biomass burning

- 13) For each reporting period, emissions of methane (CH₄) for the project area due to biomass burning in the reporting period must be calculated using the following formula:

$E_{BCH_4} = G_{CH_4} \times \sum_{i=1}^n (E_{CH_4i} \times a_{Bi})$	Equation 13
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Where:

$E_{BCH_4} =$	emissions of CH ₄ from biomass burning for the project area for a reporting period (in tonnes CO ₂ -e).
$E_{CH_4i} =$	mass of CH ₄ emitted during the reporting period due to biomass burning in the i^{th} plot determined using FullCAM (in tonnes per hectare).
$a_{Bi} =$	area burnt in the i^{th} plot during the reporting period (in hectares).

$G_{CH_4} =$	global warming potential of methane as specified in the NGER Regulations.
$n =$	total number of plots within the project area at the end of the reporting period.
$i =$	i^{th} plot.

- 14) For each reporting period, emissions of nitrous oxide (N₂O) due to biomass burning in the reporting period for the project area must be calculated using the following formula:

$E_{BN_2O} = \left(\frac{G_{N_2O}}{1000} \right) \times \sum_{i=1}^n (E_{N_2O_i} \times a_{Bi})$	Equation 14
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Where:

$E_{BN_2O} =$	emissions of N ₂ O from biomass burning for the project area for the reporting period (in tonnes CO ₂ -e).
$E_{N_2O_i} =$	mass of N ₂ O emitted during the reporting period due to biomass burning in the i^{th} plot determined using FullCAM (in kilograms per hectare).
$a_{Bi} =$	area burnt in the i^{th} plot during the reporting period (in hectares).
$G_{N_2O} =$	global warming potential of nitrous oxide as specified in the NGER Regulations.
$n =$	total number of plots within the project area at the end of the reporting period.

- 15) For each reporting period, total emissions due to biomass burning for the project area in the reporting period must be calculated using the following formula:

$E_B = E_{BCH_4} + E_{BN_2O}$	Equation 15
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Where:

$E_B =$	total emissions from biomass burning for the project area for the reporting period (in tonnes CO ₂ -e).
$E_{BCH_4} =$	emissions of CH ₄ from biomass burning for the project area for the reporting period (in tonnes CO ₂ -e) – see Equation 13.

$E_{BN_2O} =$	emissions of N ₂ O from biomass burning for the project area for the reporting period (in tonnes CO ₂ -e)–see Equation 14.
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CALCULATION OF THE CARBON DIOXIDE EQUIVALENT REMOVAL

Carbon dioxide equivalent removal for a project

16) For each reporting period, the carbon dioxide equivalent removal for a project area must be calculated using the following formula:

$A_{calc} = \frac{44}{12} (C_p - C_{p0}) - E_B + A'$	Equation 17
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Where:

$A_{calc} =$	calculated project area removal for the reporting period (in tonnes CO ₂ -e).
$C_p =$	carbon stock for the project area (in tonnes C)–see Equation 11b.
$C_{p0} =$	carbon stock for the project area (in tonnes C) at the start of the reporting period. a) if the first project area trees were planted within the reporting period, this value will be zero. b) for a later reporting period, this value may be obtained from the carbon stock for the project area at the end of the previous reporting period (C_p in that report, expressed in tonnes C).
$E_B =$	total project emissions from biomass burning for the project area (in tonnes of CO ₂ -e)–see Equation 15.
$A' =$	An adjustment (in tonnes CO ₂ -e) for the case where A_{calc} in the last reporting period was less than zero. This case may arise if emissions from fire (E_B) are large and the change in the carbon stock ($C_p - C_{p0}$) is small. If A_{calc} in the last reporting period was less than zero, then $A' = A_{calc}$ from the last reporting period; otherwise, $A' = 0$.

DETERMINATION OF THE REMOVAL AMOUNT TO BE REPORTED

What value to report as the removal amount for a project

17) A_{rep} is the removal amount (in tonnes CO₂-e) that is reported as carbon removals in a Climate Active report. A_{rep} is determined according to the following rules^{30, 31}:

If $A_{calc} \geq 0$, then $A_{rep} = A_{calc} \times (1 - d)$;

If $A_{calc} < 0$, then $A_{rep} = 0$.

Where d is defined by schedule 1:

Condition	d
1) Plantings on land that is formally managed to protect, preserve or enhance the natural, cultural or scientific values of land and have a formal covenant (or other protection mechanism where approved by the Department) in place.	5%
2) For large plantings, with ≥ 1000 t CO ₂ -e annual removals, that do not meet condition 1.	25%
3) For small plantings, with < 1000 t CO ₂ -e annual removals that do not meet condition 1.	30%

REVERSALS ACCOUNTING

What value to report as the emissions due to clearing for a project

³⁰ The effect of the above equations is to effectively pause the inclusion of carbon removals by plantings in a Climate Active report in response to events such as fire. Removals is included again once the cumulative removals across reporting periods is greater than zero.

³¹ For small plantings, the adjustment is more conservative than that applied to removals under ACCU scheme vegetation and soils projects.

- 18) The calculation of emissions due to clearing is described in Section 6. The calculated value shall be included in the emission inventory for the year that reversals from clearing occurred³² or where the ability to monitor plots was lost.

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³² This has the effect of reporting emissions due to clearing differently to emissions due to disturbance events such as fire. Emissions due to clearing are treated as a distinct line item in a carbon account, whereas emissions due to other disturbance events have the effect of lowering the net abatement amount.

8. VERIFICATION & REPORTING REQUIREMENTS

The emissions removals from plantings within a Climate Active carbon neutral claim must be independently verified by a third party in the first year plantings are included in the emissions boundary. Verifications for plantings can be undertaken by entities with demonstrated vegetation assessment experience also meeting either Type 1, 2 or 3 criteria in the Validation Schedule of the [Climate Active Licence Agreement](#).

Additional plantings added to the certification (after an initial verification) will need to be verified if the removals from the additional plantings decrease total certification emissions by more than 10%. The inclusion of removals from plantings in a Climate Active account may be subject to Department funded audits of Climate Active member carbon neutral claims in subsequent years, even where the certification ceases.

It is up to the discretion of the verifier to determine the appropriate level of sampling of plot data to give assurance over the removals estimates.

Responsible entities will also need to meet all requirements regarding technical assessments set by Climate Active and available online at the Department's website.

SIMPLIFIED REQUIREMENTS

The below simplified verification and reporting requirements may be used, in lieu of the full verification requirements where:

- removals from all plantings in the emissions boundary is less than 30% of the total annual carbon account; and
- removals from all plantings account for less than 1,000 t CO₂-e in the reporting period.

The above thresholds relate to the absolute value of removals (i.e., the non-negative quantity of removals).

Simplified procedures:

- 1) Provide evidence that the planting events took place in or after 1990 and that removals has not been credited for plantings that are beyond their age of maximum growth;
- 2) Provide evidence that plots had no forest cover prior to the planting event;
- 3) Provide evidence of the date of planting;
- 4) Provide evidence of the project area and plots (maps);
- 5) Provide evidence that modelling of removals was done using FullCAM or using Climate Active approved direct measurement³³;
- 6) Provide evidence that the plantings are a mixed-species environmental plantings, mallee plantings, or a plantation modelling option within FullCAM;
- 7) Provide evidence that each planting has forest potential – 2 m high and 20% canopy cover;
- 8) Provide evidence that each planting was present in the reporting period; and
- 9) Provide evidence that permanence and risk of reversal buffers (removals threshold and permanence based discounts on modelled removals) were applied.

FULL REQUIREMENTS

Where the above simplified verification and reporting thresholds are exceeded, the additional full requirements described below (for plantings; project and plot events; and removals modelling), along with the signed statutory declaration, must be provided.

Planting events

- 10) Provide evidence that native vegetation reflects the structure and composition of the vegetation that is expected to occur naturally in that area, and that

³³ Registered consultants may propose direct measurement techniques to Climate Active prior to implementing these for an inseting project. These should be supported by sound methods, as applied in other systems such as the ACCU scheme and/or supported by robust scientific methods. These will be required to be submitted to Climate Active for approval by the organisation completing the verification. The final decision for acceptable direct measurement techniques will be made by Climate Active.

plantation species are consistent with local commercial forestry operations;
and

- 11) Provide evidence of the planting year and verify this took place in or after 1990 and that removals have not been calculated for plantings that are beyond their age of maximum growth; and
- 12) Provide evidence showing that each planting was present in the reporting period; and
- 13) Provide evidence each planting has forest potential – 2 m high and 20% canopy cover; and
- 14) Provide evidence that the project area is located on land for which FullCAM coverage exists; and

Project and plot areas

- 15) Provide evidence that plots had no forest cover prior to their planting event.
- 16) Provide evidence that for an organisation carbon footprint, the project area represents all land within the emissions boundary. For a product carbon footprint, verify that separate project areas are defined for each entity that operates within the emissions boundary.
- 17) Provide evidence that each plot is homogenous regarding species or vegetation group planted, management activities, and that all planting events within a plot took place within a 12-month period.
- 18) Provide evidence that the project area and plots were mapped, and that a rationale was provided for identifying the area of each plot and the grouping of any split plots.
- 19) Provide evidence that the type of model point location was described, either on a plot-by-plot basis, or using one or more model point locations for the project area as a whole.
- 20) Provide evidence that a rationale was provided for any changes to plot boundaries.
- 21) Provide evidence that activities in plots were consistent with restrictions relating to the harvesting of timber, permitted removals, grazing and maintenance plantings.
- 22) Provide evidence that clearing activities only took place within plots whose removals took place entirely within the project period and could be modelled using FullCAM.

Removals modelling

- 23) Provide evidence that modelling was done using FullCAM.
- 24) Provide evidence that modelling included above- and below-ground biomass, and debris, as well as disturbance events such as clearing and fire.
- 25) Provide evidence that results were provided on removals per plot, and that appropriate adjustments were applied for plots requiring re-planting,
- 26) Provide evidence that the correct permanence and risk of reversal discounts were applied.
- 27) Provide evidence that removals per plot was summed to determine the net abatement amount.
- 28) Provide evidence that emissions resulting from clearing (reversals) were reported as an emission source.
- 29) Provide evidence that removals was paused when the cumulative carbon balance (excluding changes due to clearing) across reporting periods when removals were negative.

Other verification requirements

- 30) The statutory declaration in Annex 1 must be completed and included in the verification documentation for each project area to which this Guideline applies.
- 31) The association test must be verified.
- 32) Monitoring of all plots must be maintained, including plots that have ceased to be in the emission boundary. If any plot is no longer able to be monitored, reversals accounting is required.

9. ANNEX 1

A.1 STATUTORY DECLARATION

A statutory declaration must be supplied with the Climate Active removals submission.

Commonwealth of Australia
STATUTORY DECLARATION
Statutory Declarations Act 1959

1 *Insert the name, address and occupation of person making the declaration*

I,¹

make the following declaration under the *Statutory Declarations Act 1959*:

2 *Set out matter declared to in numbered paragraphs*

2

With respect to the reporting period and the emissions boundary of the enterprise for the attached Climate Active report, I the undersigned, declare that:

- Carbon removals by trees on this property have not been used to generate:
 1. An assessment of carbon removals for another Climate Active carbon neutral report or for any other carbon abatement claim.
 2. Carbon credits under the ACCU scheme or other carbon credit scheme (e.g., Verra, Gold Standard).
- Since its first inclusion as an accounting item, carbon removals has been continuously included in the Climate Active report for this enterprise.
- Plantings will be protected from clearing or human induced degradation, and I, or the entity I am authorised to represent, will compensate for any removal of plantings (other than by natural causes) at any time 25 years from when they are first included in Climate Active carbon account by retiring equivalent eligible offset units (or by otherwise making good via a proposal accepted by the Department of Climate Change, Energy, the Environment and Water in writing).

I understand that a person who intentionally makes a false statement in a statutory declaration is guilty of an offence under section 11 of the *Statutory Declarations Act 1959*, and I believe that the statements in this declaration are true in every particular.

3 *Signature of person making the declaration*

3

4 *[Optional: email address*

4



and/or
telephone
number of
person
making the
declaration]

5 Place Declared at ⁵ on ⁶ of ⁷

6 Day

7 Month and
year

Before me,

8 Signature of
person
before
whom the
declaration
is made
(see over)

8

9 Full name,
qualification
and address
of person
before
whom the
declaration
is made (in
printed
letters)

9

10 [Optional:
email
address
and/or
telephone
number of
person
before
whom the
declaration
is made

10

Note 1 A person who intentionally makes a false statement in a statutory declaration is guilty of an offence, the punishment for which is imprisonment for a term of 4 years — see section 11 of the *Statutory Declarations Act 1959*.

Note 2 Chapter 2 of the *Criminal Code* applies to all offences against the *Statutory Declarations Act 1959* — see section 5A of the *Statutory Declarations Act 1959*.

A statutory declaration under the *Statutory Declarations Act 1959* may be made before—

(1) a person who is currently licensed or registered under a law to practise in one of the following occupations:

Architect	Chiropractor Dentist	
Financial adviser		Financial Planner Legal practitioner
Medical practitioner		Midwife
	Migration agent registered under Division 3 of Part 3 of the <i>Migration Act 1958</i>	
Nurse	Occupational therapist Optometrist	
Patent attorney		Pharmacist
	Physiotherapist	
Psychologist		Trade marks attorney Veterinary surgeon

(2) a person who is enrolled on the roll of the Supreme Court of a State or Territory, or the High Court of Australia, as a legal practitioner (however described); or

(3) a person who is in the following list:

Accountant who is:

- a) a fellow of the National Tax Accountants' Association; or
- b) a member of any of the following:
 - i. Chartered Accountants Australia and New Zealand;
 - ii. the Association of Taxation and Management Accountants;
 - iii. CPA Australia;
 - iv. the Institute of Public Accountants

Agent of the Australian Postal Corporation who is in charge of an office supplying postal services to the public

APS employee engaged on an ongoing basis with 5 or more years of continuous service who is not specified in another item in this list

Australian Consular Officer or Australian Diplomatic Officer (within the meaning of the *Consular Fees Act 1955*)

Bailiff

Bank officer with 5 or more continuous years of service

Building society officer with 5 or more years of continuous service

Chief executive officer of a Commonwealth court

Clerk of a court

Commissioner for Affidavits

Commissioner for Declarations

Credit union officer with 5 or more years of continuous service

Employee of a Commonwealth authority engaged on a permanent basis with 5 or more years of continuous service who is not specified in another

item in this list

Employee of the Australian Trade and Investment Commission who is:

- (a) in a country or place outside Australia; and
- (b) authorised under paragraph 3 (d) of the *Consular Fees Act 1955*; and
- (c) exercising the employee's function at that place

Employee of the Commonwealth who is:

- (a) at a place outside Australia; and
- (b) authorised under paragraph 3 (c) of the *Consular Fees Act 1955*; and
- (c) exercising the employee's function at that place

Engineer who is:

- a) a member of Engineers Australia, other than at the grade of student; or
- b) a Registered Professional Engineer of Professionals Australia; or
- c) registered as an engineer under a law of the Commonwealth, a State or Territory; or
- d) registered on the National Engineering Register by Engineers Australia

Finance company officer with 5 or more years of continuous service

Holder of a statutory office not specified in another item in this list

Judge

Justice of the Peace

Magistrate

Marriage celebrant registered under Subdivision C of Division 1 of Part IV of the *Marriage Act 1961*

Master of a court

Member of the Australian Defence Force who is:

- a) an officer
- b) a non-commissioned officer within the meaning of the *Defence Force Discipline Act 1982* with 5 or more years of continuous service
- c) a warrant officer within the meaning of that Act

Member of the Australasian Institute of Mining and Metallurgy

Member of the Governance Institute of Australia Ltd

Member of:

- a) the Parliament of the Commonwealth
- b) the Parliament of a State
- c) a Territory legislature
- d) a local government authority

Minister of religion registered under Subdivision A of Division 1 of Part IV of the *Marriage Act 1961*

Notary public, including a notary public (however described) exercising functions at a place outside

- a) the Commonwealth
- b) the external Territories of the Commonwealth

Permanent employee of the Australian Postal Corporation with 5 or more years of continuous service who is employed in an office providing postal services to the public

Permanent employee of

- a) a State or Territory or a State or Territory authority
- b) a local government authority

with 5 or more years of continuous service, other than such an employee who is specified in another item of this list

Person before whom a statutory declaration may be made under the law of the State or Territory in which the declaration is made

Police officer

Registrar, or Deputy Registrar, of a court

Senior executive employee of a Commonwealth authority

Senior executive employee of a State or Territory

SES employee of the Commonwealth

Sheriff

Sheriff's officer

Teacher employed on a permanent full-time or part-time basis at a school or tertiary education institution