Improved Native Forest Management in Multiple-use Public Native Forests Method Proposal

A method proposal under the *Carbon Credits (Carbon Farming Initiative) Act 2011* (Cwlth)

Design Outline

February 2025

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1. Introduction

This document contains a design outline of the *Improved Native Forest Management in Multiple-use Public Native Forests Method* (INFM method), which has been proposed by the New South Wales (NSW) Government under the Australian carbon credit unit (ACCU) scheme's proponent-led method development process.[1] The NSW Government is represented in the process by the NSW National Parks and Wildlife Service, an agency within the Department of Climate Change, Energy, the Environment and Water.

The remainder of this document is set out as follows.

Section 2 provides legislative context and an overview of the method, including a summary table on the key elements of the method (Table 2) and the mitigants in the method to address integrity risks (Table 3).

Sections 3 contains guidance on the key components of the method, using the item structure from Table 2. In this section, the proposed method requirements are in black font, while the rationale for and guidance on the requirements are in dark blue font.

[1] The ACCU scheme operates under the Carbon Credits (Carbon Farming Initiative) Act 2011 (Cwlth) (CFI Act).

2. Overview

The INFM method will provide ACCUs to projects that increase carbon stocks in forest-related carbon pools, and avoid greenhouse gas emissions from these pools, by stopping or delaying harvesting in multiple-use public native forests. Relevant forest-related carbon pools are:

- live biomass, dead organic matter (fine and coarse woody debris) and soil organic carbon in multiple-use public native forests;
- harvested wood products (HWP) derived from the forests that are in service; and
- HWP deposited in landfills.

The cessation and deferral of harvesting generates abatement via three main pathways.

(a) Forest harvesting results in the release of the carbon stored in forest carbon pools to the atmosphere as carbon dioxide (CO_2). Post-harvest burns result in methane (CH_4) and nitrous oxide (N_2O) emissions. Stopping or deferring harvesting avoids these emissions.

(b) Secondary native forests are generally harvested when they are between 40-80 years of age, when they are still growing and sequestering significant amounts of carbon. Allowing the forests to grow beyond their standard harvest age results in additional carbon sequestration in forest-related carbon pools.

(c) Fossil fuels are used in the harvesting, haulage and processing of logs. When harvesting is stopped or deferred, these fossil energy-related emissions are avoided.

The abatement generated through these pathways over a given period can be reduced by related processes, including:

- the storage of carbon in HWP in the baseline scenario, where harvesting is assumed to continue in accordance with business-as-usual practices;
- direct and indirect leakage of emissions that is caused by the cessation or deferral of harvesting in the project area; and
- natural disturbances, particularly bushfires.

For ACCU methods to be made, they must satisfy six offset integrity standards (Table 1). These standards are intended to ensure that ACCUs are only issued where there is high confidence they represent real, additional and permanent abatement that can be used to meet Australia's international climate change mitigation obligations.

Table 1. Offset integrity standards

Standard (CFI Act reference)	Standard
Additionality s 133(1)(a)	The application of the requirements set out in, and the method specified in, or ascertained in accordance with, a methodology determination, in relation to projects of the kind specified in the determination, should result in carbon abatement that is unlikely to occur in the ordinary course of events (disregarding the effect of this Act)
Measurement s 133(1)(b)	To the extent to which a method specified in, or ascertained in accordance with, a methodology determination in accordance with paragraph 106(1)(c) involves ascertaining any of the following: (i) the removal of one or more greenhouse gases from the atmosphere; (ii) the reduction of emissions of one or more greenhouse gases into the atmosphere; (iii) the emission of one or more greenhouse gases into the atmosphere; the removal, reduction or emission, as the case may be, should be: (iv) measurable; and (v) capable of being verified.
Ineligible abatement s 133(1)(c) s 5	A method specified in, or ascertained in accordance with, a methodology determination in accordance with paragraph 106(1)(c) should provide that carbon abatement used in ascertaining the carbon dioxide equivalent net abatement amount for a project must be eligible carbon abatement from the project. 'Eligible carbon abatement' is carbon abatement that results from the carrying out of the project that is able to be used to meet Australia's climate change targets under the Kyoto Protocol or an international agreement (if any) that is the successor (whether immediate or otherwise) to the Kyoto Protocol.
Clear and convincing evidence s 133(1)(d)	A method specified in, or ascertained in accordance with, a methodology determination in accordance with paragraph 106(1)(c) should be supported by clear and convincing evidence.
Project emissions s 133(1)(e)	A method specified in, or ascertained in accordance with, a methodology determination in accordance with paragraph 106(1)(c) should provide that, in ascertaining the carbon dioxide equivalent net abatement amount for a project, there is to be a deduction of the carbon dioxide equivalent of any amounts of greenhouse gases that: (i) are emitted as a direct consequence of carrying out the project; and (ii) under the determination, are taken to be material amounts.
Conservatism s 133(1)(g)	To the extent to which a method specified in, or ascertained in accordance with, a methodology determination in accordance with paragraph 106(1)(c) involves an estimate, projection or assumption – the estimate, projection or assumption should be conservative.

Source: *Carbon Credits (Carbon Farming Initiative) Act 2011* (Cwlth) (CFI Act), s 133(1).

Compliance with the offset integrity standards is assessed by the Emissions Reduction Assurance Committee (ERAC).[2] The Minister cannot make an ACCU method if the ERAC advises that it does not meet the offset integrity standards.[3] The Minister must also have regard to whether a proposed method complies with the offset integrity standards in deciding whether to make it.[4]

The most material integrity risks associated with the INFM method relate to:

[2] CFI Act, s 123A.
[3] CFI Act, s 106(4B).
[4] CFI Act, s 106(4).

(a) **additionality** – most notably, the risk that, in the absence of the incentive associated with the ACCU scheme, there could be policy or other changes that would result in a comparable decline in native forest harvesting to what is credited under the method; and

(b) **leakage** – particularly the risk that a decline in harvesting in multiple-use public native forests could trigger an increase in harvesting in private native forests.

Other relevant integrity risks include the potential for over crediting as a result of inaccurate measurement of carbon stocks or emissions, and for credited increases in forest carbon stocks to subsequently be lost as a consequence of future events (e.g. increases in natural disturbance or a resumption of past harvesting practices).

The INFM method has been designed to account for the abatement pathways and counteracting factors, while mitigating relevant integrity risks. Table 2 summarises the key elements of the INFM method. Table 3 summarises the mitigants included to address integrity risks related to additionality, leakage, measurement error and permanence.

Table 2. Key elements of the INFM method

No.	Topic	Component
1	**Eligibility**	Projects must satisfy the following eligibility requirements. (a) Projects must be located on Crown lands containing native forests that are designated for commercial forestry use. 'Native forests' are defined for these purposes as self-regenerating ecosystems where ecological processes dominate. (b) Prior to project registration, a decision must not have been made to stop native forest harvesting on the land, unless the decision was made conditional on the commencement of an offsets project under the ACCU scheme. (c) At a minimum, the boundaries of a project must incorporate at least one whole forest region. For these purposes, forest regions are defined as regional forest agreement (RFA) regions or equivalent regions designated under state processes, as at 1 July 2024. (d) Projects must be located on Crown lands for which a sustainable yield estimate has been prepared and published in the 10 years prior to 30 June 2024 that sets a sustainable yield for each year of the 15-year period from project registration. A 'sustainable yield' is defined as an estimate of the long-term wood yield from forests that can be maintained from a given region in perpetuity under a given management strategy and suite of sustainable use objectives.
2	**Project activities**	Eligible activities under the INFM method are: (a) the cessation of harvesting; and (b) the deferral of harvesting. Other complementary management activities can be undertaken in the project area. However, their effects on carbon stocks and emissions are not credited under the method [see item 4].
3	**Coverage of carbon pools and emission sources**	The carbon pools and emission sources included within the scope of the method are confined to: (a) above- and below-ground live biomass; (b) dead organic matter (dead wood and litter); (c) harvested wood products (HWP) in service; (d) HWP in landfills; (e) emissions associated with prescribed burning, including post-harvest (slash) burns; (f) emissions associated with wildfires; and (g) emissions from the combustion of fossil fuels associated with harvesting and haulage, including roading. Covered greenhouse gases are as follows • For the carbon pools in (a)-(d), carbon dioxide (CO_2). • For prescribed burns and wildfires, methane (CH_4) and nitrous oxide (N_2O). • For combustion of fossil fuels, CO_2, CH_4 and N_2O. For the avoidance of doubt, the abatement calculations exclude: (i) soil organic carbon; (ii) emissions from the combustion of fossil fuels associated with forest management (other than harvest and haulage); and

		(iii) emissions from the combustion of fossil fuels associated with the processing of harvested logs, production of woodchips and manufacture of solid wood products. The exclusion of (i) and (iii) promotes conservatism. The exclusion of emissions from the combustion of fossil fuels associated with forest management is based on the assumption they are likely to be the same in both scenarios, or higher in the baseline than the project scenario.
4	**Calculation of net abatement**	Net abatement is calculated as the difference between the net carbon stock change in the project and baseline scenarios, minus the leakage deduction. This is reflected in equation 1 below. $NAi = (\Delta CSpi - \Delta CSbi) - (ESpi - ESbi) - LDi$ [**Equation 1**] Where: NA_i is the net abatement amount for reporting period *i*. ΔCS_{pi} is the carbon stock change in included carbon pools in the project scenario over reporting period *i*. ΔCS_{bi} is the carbon stock change in included carbon pools in the baseline scenario over reporting period *i*. ES_{pi} is the emissions from included sources in the project scenario over reporting period *i*, calculated in accordance with equation 2. ES_{bi} is the emissions from included sources in the baseline scenario over reporting period *i*, calculated in accordance with equation 3. LD_i is the leakage deduction for reporting period *i* calculated in accordance with equation 4. Note: The abatement calculations will account for the situation where there is negative abatement (e.g. due to wildfires) by requiring a negative carryover into the abatement calculations for the following reporting period. Emissions from included sources in the project scenario over reporting period *i* (ES_{pi}) are calculated as: $ESpi = EPBpi + EWFpi + EFFpi$ [**Equation 2**] Where: ES_{pi} is the emissions from included sources in the project scenario over reporting period *i*. EPB_{pi} is the emissions from prescribed burns over reporting period *i* in the project scenario. EWF_{pi} is the emissions from wildfires over reporting period *i* in the project scenario. EFF_{pi} is the emissions from the combustion of fossil fuels associated with harvesting and haulage over reporting period *i* in the project scenario. Emissions from included sources in the baseline scenario over reporting period *i* (ES_{bi}) are calculated as: $ESbi = EPBbi + EWFbi + EFFbi$ [**Equation 3**] Where: ES_{bi} is the emissions from included sources in the baseline scenario over reporting period *i*. EPB_{bi} is the emissions from prescribed burns over reporting period *i* in the baseline scenario. EWF_{bi} is the emissions from wildfires over reporting period *i* in the baseline scenario. EFF_{bi} is the emissions from the combustion of fossil fuels associated with harvesting and haulage over reporting period *i* in the baseline scenario.

		The leakage deduction for reporting period *i* is calculated as: $$LDi = DLDi + PNFLDi + ILDi$$ [**Equation 4**] Where: LD_i is the leakage deduction for reporting period *i*. DLD_i is the direct leakage deduction for reporting period *i* (if applicable) determined in accordance with Item 11. $PNFLD_i$ is the private native forests leakage deduction for reporting period *i* (if applicable) determined in accordance with Item 11. ILD_i is the indirect leakage deduction for reporting period *i* determined in accordance with Item 11.
5	**Crediting period**	Projects have 15-year crediting periods.
6	**Modelled events in baseline scenario**	In the baseline scenario, the following events are modelled. (a) Harvesting – based on counterfactual baseline harvest levels. (b) Other anthropogenic disturbances to forest carbon stocks that are related to timber production and forest management – based on actual events. (c) Prescribed burn – based on actual events. (d) Wildfire – based on actual events. (e) Other natural disturbances – based on actual events. (f) Fossil fuel combustion for harvest and haulage – based on counterfactual baseline harvest levels, but using project scenario emission intensity. Anthropogenic disturbances to forest carbon stocks that are unrelated to timber production or forest management are excluded from the baseline scenario. This does not include clearing and other disturbances that are related to fire and emergency management, which are treated as (b).
7	**Modelled events in project scenario**	In the project scenario, the following events are modelled. (a) Harvesting – based on actual events. (b) Other anthropogenic disturbances to forest carbon stocks that are related to timber production and forest management – based on actual events. (c) Anthropogenic disturbances to forest carbon stocks that are unrelated to timber production or forest management – based on actual events. (d) Prescribed burn – based on actual events. (e) Wildfire – based on actual events. (f) Other natural disturbances – based on actual events. (g) Fossil fuel combustion for harvest and haulage – based on actual events.
8	**Baseline harvest levels**	Harvesting levels in the baseline scenario are calculated as the lower of the following. (a) The latest applicable modified sustainable yield estimate, calculated as:

		i. for projects where there is a sufficient correlation between the sustainable yield and log production during the baseline period ($R^2 \geq 0.7$), the estimated sustainable yield multiplied by the average log production to sustainable yield ratio over the baseline period; and ii. for projects where there is not a sufficient correlation between the sustainable yield and log production during the baseline period ($R^2 < 0.7$), either: A. if the log production to sustainable yield ratio over the baseline period was ≥0.8 in all years, the estimated sustainable yield multiplied by 80%; or B. if the log production to sustainable yield ratio over the baseline period was <0.8 in any year, the estimated sustainable yield multiplied by the lower of the average log production to sustainable yield ratio over the baseline period or 60%. (b) The last sustainable yield estimate published by the responsible government agency prior to 1 July 2024. The 'baseline period' is defined as the 10-year period prior to the end of the financial year prior to the date of project commencement (e.g. if the project is registered on 10 December, the baseline period is the 10 year period to 30 June in the same year). If, during this 10-year period, ≥25% of the net harvestable area in the project area is affected by wildfire in a single financial year, that financial year and the two subsequent years may be excluded from the baseline period. The sustainable yield that is used for these purposes must be confined to the applicable estimate of the wood yield of sawlogs (high and low quality sawlogs, veneer/peeler logs, and logs used to produce poles, piles and girders) and pulplogs only, excluding residues (e.g. firewood). For the avoidance of doubt, to the extent that the volume of wood extracted from an area is used to calculate net abatement during the project period (including leakage requirements) or relinquishment requirements during the permanence period, it must include all wood extracted from the forest area, including residues. Where a state government has already announced it will cease or reduce harvesting in multiple-use public native forests, the modified sustainable yield estimate must account for the announcement, unless it was made conditional on the commencement of an offsets project. Modified sustainable yield estimates must be recalculated at project commencement, at the 5^{th} and 10^{th} year of the project, and following major disturbance events. 'Major disturbance events' are provisionally defined as events that are likely to reduce carbon stocks by more than 15% across more than 20% of the net harvestable area in the project area. For the avoidance of doubt, the log production to sustainable yield correlations and ratios that are used for these purposes must be taken from the baseline period, not the 10-year period prior to the recalculation. The modified sustainable yield estimates must be prepared in accordance with the INFM Sustainable Yield Protocol and verified by an independent qualified assessor contracted by the Clean Energy Regulator. The INFM Sustainable Yield Protocol will be an incorporated document containing the rules governing the preparation of modified sustainable yield estimates. All data relied on in the preparation of sustainable yield estimates must be published.
9	**Measurement**	Forest carbon stocks are modelled using the Full Carbon Accounting Model (FullCAM). In the baseline scenario, forest carbon stocks are modelled using representative model plots that reflect the forest types and silvicultural practices from the 5-year period prior to project commencement. Forest types must be classified at the National Vegetation Information System (NVIS) Major Vegetation Group (MVGs) level. In the project scenario: (a) subject to (c), the same model plots must be used to model the effects of harvesting and other forest management activities as in the baseline scenario;

		(b) the proportion of the harvest area allocated to each model harvest plot must be the same as in the baseline scenario (i.e. the modelling assumes the same harvest practices in the same forest types as in the baseline scenario); (c) clearing for roading and firebreaks must be modelled using the same model plots as in the baseline scenario, or in the absence of equivalent events in the 5-year period, modelled using representative plots; (d) anthropogenic disturbances to forest carbon stocks that are unrelated to timber production or forest management must be modelled using representative plots; and (e) the effects of other disturbance events, including wildfires and non-harvest related prescribed burns, must be modelled using the same model plots and same areas as in the baseline scenario. Proponents must conduct an inventory of carbon stocks in accordance with the INFM Carbon Inventory Protocol at project commencement. The INFM Carbon Inventory Protocol will be an incorporated document containing the rules governing the conduct of forest carbon stock inventories. The inventory is used to calibrate the FullCAM model plots and the associated FullCAM model estate and to prepare the modified sustainable yield estimate. Inventories must be conducted again at the 5th and 10th year of the project and following major disturbance events. Carbon stock changes and CH_4 and N_2O emissions associated with prescribed burning and wildfires are modelled using FullCAM and the representative model plots. The same model plots must be used to estimate fire emissions in both the project and baseline scenarios, except for post-harvest (slash) burns and, in other prescribed burns, the age of the forests at the time of the fire event. The area affected by wildfires and non-harvest related prescribed burns must be the same in both scenarios. Similarly, the proportion of the area affected by wildfires and non-harvest related prescribed burns that is allocated to each forest type (and corresponding representative model plots) must be the same in both scenarios. Carbon stocks in the HWP pool are modelled using FullCAM or a modified form of the Australian Government's HWP-Landfill model. In the baseline scenario, the log inputs to the HWP model are those generated by the representative FullCAM model plots. In the project scenario, the log inputs must be the actual logs harvested over the reporting period. If FullCAM is used, this will require the use of separate model plots to model carbon stocks in HWP in the project scenario. To promote conservatism and avoid crediting ineligible abatement, pulplogs are assumed to be instantly oxidised following harvest in the project scenario. In the project scenario, CO_2, CH_4 and N_2O emissions from fossil fuel combustion are calculated in accordance with section 2.41 (method 1) of the *National Greenhouse and Energy Reporting (Measurement) Determination 2008*. In the baseline scenario, CO_2, CH_4 and N_2O emissions from fossil fuel combustion are modelled using emission factors (emissions per m^3 of logs harvested) derived from the project scenario. This ensures that changes in the emission-intensity of harvest and haulage operations do not contribute to credited abatement.
10	**Hurdle requirement**	Projects are only eligible to receive ACCUs if both the levels of harvesting in the project area, and the volume of wood extracted from the project area, are ≥20% below the levels in the baseline scenario, both in the reporting year and on average since project commencement.
11	**Leakage deductions**	**Direct leakage deduction (DLD)** During the crediting period, proponents must apply a direct leakage deduction if the volume of wood extracted from the excluded sections of the proponent's native forest estate exceeds the direct leakage baseline harvest levels. The direct leakage baseline harvest levels are the lower of: (a) the average volume of wood extracted from the excluded sections of the estate over the baseline period; and

		(b) the modified sustainable yield associated with the excluded sections of the estate, calculated in accordance with the procedures in item 8. As with the process for determining the baseline harvest levels (item 8): (a) the baseline period is defined for these purposes as the 10-year period prior to the end of the financial year prior to the date of project commencement; and (b) if, during this 10-year period , ≥25% of the net harvestable area in the excluded sections of the proponent's native forest estate are affected by wildfire in a single financial year, that financial year and the two subsequent years may be excluded from the baseline period for the purpose of calculating the direct leakage baseline harvest level. The direct leakage deduction is calculated using a FullCAM model harvest plot that represents the average emissions-intensity of harvesting from the project area, calculated over 5 years. The exceedance volume is converted to a harvest area using the representative model harvest plot. The area harvested is then modelled in the project scenario, while a no-harvest version of the same model plot is included in the baseline scenario. **PNF leakage deduction (PNFLD)** During the crediting period, proponents must apply PNF leakage deduction if the volume of wood extracted from the jurisdiction's private native forests exceeds the PNF leakage baseline harvest levels. The PNF leakage baseline harvest level is the average volume of wood extracted from private native forests in the state in which the project is located over the baseline period. The baseline period is defined for these purposes as the 10-year period prior to the end of the financial year prior to the date of project commencement. Consideration is being given to whether years affected by major wildfire events should be excluded from the baseline period when calculating the PNF leakage baseline harvest level and, if so, how this can be done robustly given data limitations. The PNF leakage deduction is calculated using a FullCAM model harvest plot that represents the average emissions-intensity of harvesting from the project area, calculated over 5 years. The PNF exceedance volume is converted to a harvest area using the representative model harvest plot. The area harvested is then modelled in the project scenario, while a no-harvest version of the same model plot is included in the baseline scenario. **Indirect leakage deduction (ILD)** An indirect leakage deduction must be applied in the calculation of net abatement. The indirect leakage deduction is 5% and is applied to the credited difference between the net carbon stock change in the project and baseline scenarios in the relevant reporting period, minus the direct and PNF leakage deductions (if any), as per equation 5: $ILDi = \left((\Delta CSpi - \Delta CSbi) - DLDi - PNFLDi\right) * 0.05$ [**Equation 5**] Where: ILD_i is the indirect leakage deduction for reporting period *i*. ΔCS_{pi} is the carbon stock change in included carbon pools in the project scenario over reporting period *i*. ΔCS_{bi} is the carbon stock change in included carbon pools in the baseline scenario over reporting period *i*. DLD_i is the direct leakage deduction for reporting period *i*. $PNFLD_i$ is the private native forests leakage deduction for reporting period *i*.
11	**Permanence periods**	INFM projects must have 100-year permanence periods.

12	**Additional permanence obligations**	During the period after the end of the crediting period but prior to the end of the permanence period, proponents must relinquish ACCUs if: (a) the volume of wood extracted from the project area exceeds the levels in the project baseline; or (b) the volume of wood extracted from the excluded sections of the proponent's native forest estate exceeds the direct leakage baseline harvest levels. The relinquishment obligation is calculated using a FullCAM model harvest plot that represents the average emissions-intensity of harvesting from the project area, calculated over 5 years. The exceedance volume is converted to a harvest area using the representative model harvest plot. The area harvested is then modelled in a 10-year quasi-project scenario, while a no-harvest version of the same model plot is included in a de facto 10-year quasi-baseline scenario. The relinquishment obligation is calculated as the difference between net carbon stock change in the quasi-project scenario and net carbon stock change in the quasi-baseline scenario. The 10-year model scenario is used because it provides a conservative way of estimating of the relinquishment obligation.

Table 3. Mitigants to address integrity risks related to additionality, leakage, measurement and permanence

Integrity risk	Mitigants
Additionality	**Risk:** The overarching additionality risk is that projects will be credited for emission reductions, or increases in removals, that would have happened anyway, without the incentive provided by the ACCU scheme. This can happen by crediting reductions in native forest harvesting that would have happened anyway. It can also happen if increases in forest carbon stocks, or reductions in emissions, that are due to other non-additional management activities are credited. **Mitigants:** Key mitigants included in the INFM method to address additionality risks are as follows. (a) Eligible activities are confined to the cessation or deferral of harvesting. The effects of other forest management activities that can potentially generate abatement (e.g. reduced impact logging, weed and pest control, enrichment plantings and prescribed burning) are excluded from the method. These activities can be undertaken in the project area, but the abatement effects are not credited. These other management activities are excluded because they carry significantly higher integrity risks than the cessation and deferral of harvesting, particularly in relation to additionality and confidence in generating abatement. There are multiple other drivers of the uptake of these activities (regulatory and market) and it is difficult to design robust processes to confine crediting to instances where uptake is genuinely additional. There is also considerable uncertainty about whether and when these activities can generate abatement. (b) The cessation or deferral of harvesting associated with projects must not be required under a law of the Commonwealth or a State. (c) The cessation or deferral of harvesting associated with projects must be 'new', meaning a decision must not have been made to stop or defer native forest harvesting in the project area, unless the decision was made conditional on the commencement of a project under the ACCU scheme. (d) Projects must be located on Crown lands containing native forests that are designated for commercial forestry use – the method excludes projects on private lands and other public lands, where it is difficult to have confidence in additionality. (e) Project areas must cover at least one whole forest region – by requiring project areas to cover whole forest regions, it increases confidence that forests in the region would be harvested in line with the baseline harvest levels. (f) Baseline harvest levels are derived using conservative sustainable yield estimates, equal to the lower of the modified sustainable yield estimate and the last sustainable yield estimate published prior to 1 July 2024. The modified sustainable yield estimates must be calculated at project commencement and then updated at years 5 and 10 and following major natural disturbances. The baseline harvest levels account for the risks that harvesting may decline anyway because the forest region has fewer timber resources than it previously had or there is a decline in demand for logs. (g) Projects have 15-year crediting periods, with credited abatement limited to the abatement generated over this period. Limiting crediting to 15 years mitigates the risk that there could be future declines in harvesting due to policy or other changes. (h) Projects are only eligible to receive ACCUs if both the levels of harvesting in the project area, and the volume of wood extracted from the project area, are ≥20% below the levels in the baseline scenario, both in the reporting year and on average since project commencement. This hurdle requirement mitigates the risk of crediting minor, short-term fluctuations in harvesting associated with market or other business-as-usual conditions. For credits to be issued, there must be a significant reduction in harvesting that goes beyond normal interannual variability. (i) Projects must have 100-year permanence periods. The combination of 100-year permanence periods and 15-year crediting periods provides a buffer against unforeseen additionality issues.

Leakage	**Risk:** The main leakage risks relate to the following. • Direct leakage through activity shifting – proponents being credited for reductions in harvesting in the project area but then increasing harvesting elsewhere in their native forest estate. • Direct leakage through cross-subsidisation – proponents being credited for reductions in harvesting in the project area but they then use the revenues from the sale of ACCUs to subsidise harvesting elsewhere in their native forest estate. • Indirect leakage to private native forests – proponents being credited for reductions in harvesting in the project area but the resulting emission reductions are offset by an increase in harvesting in private native forests in the same jurisdiction that is attributable to the project (i.e. via increased log prices and/or increased demand from mills for logs from private forests). • Indirect leakage to public native forests in other states – proponents being credited for reductions in harvesting in the project area but the resulting emission reductions are offset by an increase in harvesting in public native forests in other states that is attributable to the project (i.e. via increased log prices and/or increased demand from mills for logs from other public forests). • Indirect leakage into forests in other countries – proponents being credited for reductions in harvesting in the project area but the resulting emission reductions are offset by an increase in harvesting in forests in other countries that is attributable to the project (i.e. via increased global log prices). • Indirect leakage into more carbon-intensive products – proponents being credited for reductions in harvesting in the project area but the resulting emission reductions are offset by an increase in emissions associated with the production and consumption of carbon-intensive substitutes (e.g. cement, steel, aluminum) that is attributable to the project (i.e. via increased wood product prices). **Mitigants:** Key mitigants included in the INFM method to address leakage risks are as follows. (a) Project areas must cover at least one whole forest region – by requiring project areas to cover whole forest regions, it reduces the scope for direct leakage through activity shifting. (b) Proponents must apply a direct leakage deduction when calculating net abatement if the volume of wood extracted from the excluded sections of the proponent's native forest estate exceeds the direct leakage baseline harvest levels. If the leakage baseline is exceeded, the exceedance is deemed to be attributable to the project and credited abatement is reduced accordingly. (c) Projects are only eligible to receive ACCUs if both the levels of harvesting in the project area, and the volume of wood extracted from the project area, are ≥20% below the levels in the baseline scenario, both in the reporting year and on average since project commencement. This hurdle requirement mitigates the risk of leakage through cross-subsidisation by ensuring there is a structural shift in the native forest industry in the relevant region. (d) Proponents must apply a private native forests (PNF) leakage deduction when calculating net abatement if the volume of wood extracted from the state's private native forests exceeds the PNF leakage baseline harvest levels. If the leakage baseline is exceeded, the exceedance is deemed to be attributable to the project and credited abatement is reduced accordingly. (e) A 5% indirect leakage deduction must be when calculating net abatement. This accounts for the risk of leakage into native forests in other jurisdictions, and into emissions-intensive products like concrete and steel.
Measurement error	**Risk:** The main measurement-related integrity risk is that error in the estimation of relevant emissions and removals results in projects being over-credited.

	Mitigants: The risk of over-crediting due to measurement error is mitigated through the adoption of a conservative approach to the estimation of abatement, covering the construction of the baseline scenario, the estimation of emissions and removals in the project scenario, and the application of leakage discounts. Key mitigants included in the INFM method specifically designed to ensure conservativism in the estimation of relevant emissions and removals include the following. (a) The exclusion of the soil organic carbon pool from abatement calculations, even though the avoidance of harvesting is likely to increase soil organic carbon stocks. (b) The requirement for pulplogs to be instantly oxidised following harvest in the project scenario but not in the baseline scenario. This creates an intentional inconsistency in the scenarios, which promotes conservativism in the abatement estimates. (c) Like other sequestration methods, the INFM method relies on FullCAM to estimate relevant forest carbon stocks, and CH_4 and N_2O emissions associated with prescribed burning and wildfires. However, INFM projects must conduct an initial inventory of forest carbon stocks in the project area to calibrate FullCAM model plots and the associated FullCAM model estate. The inventory also provides the basis for the modified sustainable yield estimate. The field calibration increases confidence in the model outputs and in the robustness of the baseline harvest levels. (d) Forest carbon inventories must be conducted at the 5th and 10th year of the project and following major disturbance events. These inform mandatory revisions to the modified sustainable yield estimate in years 5 and 10, and following major disturbance events. (e) Carbon stocks in the HWP pool must be modelled using FullCAM, and CO_2, CH_4 and N_2O emissions from fossil fuel combustion must be calculated in accordance with NGERS methods. This ensures consistency in approach across projects and other relevant methods.
Permanence	**Risk:** The permanence risk associated with INFM projects is that the credited increases in forest carbon stocks could be lost through natural disturbances or subsequent changes in management practices. **Mitigants:** Key mitigants included in the INFM method to address leakage risks are as follows. (a) INFM projects must have 100-year permanence periods. The option of having 25-year permanence periods is not available under the INFM method. (b) Like all sequestration projects under the ACCU scheme, a 5% risk of reversal buffer discount is applied when calculating the unit entitlement. This is intended to insure the scheme against reversals that occur during the permanence period. (c) INFM projects are subject to the standard CFI Act obligations to protect and maintain the credited carbon stocks over the permanence period. In addition to this, under the INFM method, proponents are required to relinquish ACCUs if, during the period after the end of the crediting period but prior to the end of the permanence period: the volume of wood extracted from the project area exceeds the levels in the project baseline; or the volume of wood extracted from the excluded sections of the proponent's native forest estate exceeds the direct leakage baseline harvest levels. This enhances the security around permanence by clarifying the nature of the protected carbon stocks and ensuring they cover the forest carbon stocks across the proponent's entire native forest estate.

3. Guidance on key method components

Item 1. Eligibility

Projects must satisfy the following eligibility requirements.

(a) Projects must be located on Crown lands containing native forests that are designated for commercial forestry use. 'Native forests' are defined for these purposes as self-regenerating ecosystems where ecological processes dominate.

Rationale: To confine eligibility to multiple-use public native forests and exclude both private native forests and public land that is not designated for commercial forestry use. The exclusion of these lands reduces additionality risks.

(b) Prior to project registration, a decision must not have been made to stop native forest harvesting on the land, unless the decision was made conditional on the commencement of an offsets project under the ACCU scheme.

Rationale: This is intended to address the risk of crediting emission reductions attributable to reductions in harvesting that would have happened anyway (non-additionality). This may already be required under the 'newness requirement' (s 27(4A)(a)(i)). It is included to eliminate potential uncertainty about the scope of the exclusion.

(c) At a minimum, the boundaries of a project must incorporate at least one whole forest region. For these purposes, forest regions are defined as regional forest agreement (RFA) regions or equivalent regions designated under state processes, as at 1 July 2024.

Rationale: This is intended to address additionality and direct leakage risks. Mandating larger regions increases confidence in the likely baseline harvest levels. It also reduces the scope for activity shifting within public native forest estates. The proposed approach requires project boundaries to be set based on RFA regions in states with RFAs. For Queensland, where there are no RFAs, at a minimum, the minimum areas should reflect the supply zone regions described in the 2023 Summary Forest Management Plan.[5] Clarification is required on whether and where relevant regions are prescribed.

(d) Projects must be located on Crown lands for which a sustainable yield estimate has been prepared and published in the 10 years prior to 30 June 2024 that sets a sustainable yield for each year of the 15-year period from project registration. A 'sustainable yield' is defined as an estimate of the long-term wood yield from forests that can be maintained from a given region in perpetuity under a given management strategy and suite of sustainable use objectives.[6]

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[5] Available at: https://www.daf.qld.gov.au/__data/assets/pdf_file/0009/1456146/forest-management-plan-summary.pdf.

[6] NSW Department of Primary Industries (2018) Sustainable Yield in New South Wales Regional Forest Agreement regions. NSW Government, Sydney, at 10. Available at: https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0004/842098/sustainable-yield-in-NSW-RFA-

Rationale: This is intended to address additionality risks by ensuring there is a published sustainable yield estimate. The required historic sustainable yield estimate provides a basis for setting baseline harvest levels. Baseline harvest levels must be set as the lower of the modified sustainable yield estimate calculated under the method and the last sustainable yield estimate published by the responsible government agency prior to 1 July 2024.

Item 2. Project activities

Eligible activities under the INFM method are:

(a) the cessation of harvesting; and

(b) the deferral of harvesting.

Other complementary management activities that have the potential to increase sequestration in relevant forest carbon stocks can be undertaken in the project area. However, the positive effects that these activities could have on abatement are required to be cancelled out through the abatement calculations.

Rationale: Confining eligible activities to the cessation and deferral of harvesting is intended to enhance integrity by excluding activities that carry higher risks, particularly in relation to additionality and confidence in generating abatement. To enable effective forest management and encourage adoption, the method must allow forest managers to undertake a wide range of activities in the project area. However, there are many forest management activities that are routinely practiced that can affect forest carbon stocks and emissions from relevant sources. These include reduced impact logging, weed and pest control, regeneration plantings and seeding, enrichment plantings and prescribed burning. Many of these management activities are legally mandated. Others are undertaken to maintain or improve the productivity of the forests, and to meet stakeholder expectations or certification requirements. The multiple drivers of these activities make it difficult to determine whether they would be undertaken in the absence of the incentive provided by the ACCU scheme. Due to this, if these activities were eligible under the method, it would give rise to a material adverse selection problem. Proponents are likely to claim credits for the impacts of management activities that they would have undertaken anyway, in the absence of the INFM project. There is also considerable uncertainty about whether and when a number of these activities can generate climate change benefits.

To be implementable and robust, the INFM method must balance these needs. It must allow forest managers to undertake a wide range of management activities, while ensuring non-existent and non-additional abatement is not credited. The method does this by allowing other management activities that affect forest carbon stocks and relevant emission sources to be undertaken in the project area but then preventing the associated effects on stocks and sources from being credited. This is achieved by largely requiring the same management activities to be modelled in both the baseline and project scenarios, except for the cessation and deferral of harvesting (see Item 9 for further details).

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regions.pdf#:~:text=Sustainable%20yield%20is%20a%20measure%20of%20how%20much,and%20meeting%20sustainable%20use%20objectives%20for%20the%20forest (20 January 2025).

Item 3. Coverage of carbon pools and emission sources

The carbon pools and emission sources included within the scope of the method are detailed in Table 4.

Table 4. Covered carbon pools and emissions sources

Carbon pool or source	Type	Greenhouse gas
Carbon pool	Live above-ground biomass	Carbon dioxide (CO_2)
Carbon pool	Live below-ground biomass	Carbon dioxide (CO_2)
Carbon pool	Dead organic matter (dead wood and litter)	Carbon dioxide (CO_2)
Carbon pool	Harvested wood products (HWP), in service and landfills	Carbon dioxide (CO_2)
Emission source	Biomass burning associated with prescribed burning, including post-harvest slash burns	Methane (CH_4) Nitrous oxide (N_2O)
Emission source	Biomass burning associated with wildfires	Methane (CH_4) Nitrous oxide (N_2O)
Emission source	Combustion of fossil fuels associated with harvesting and haulage	Carbon dioxide (CO_2) Methane (CH_4) Nitrous oxide (N_2O)

The following carbon pools and sources are excluded.

(a) Soil organic carbon.

(b) Emissions from the combustion of fossil fuels associated with forest management (other than harvest and haulage).

(c) Emissions from the combustion of fossil fuels associated with the processing of harvested logs, production of woodchips and manufacture of solid wood products.

Rationale: The included carbon pools and sources are intended to ensure conservative abatement estimates. All carbon pools and sources that are likely to reduce abatement estimates are included, including HWP. The inclusion of HWP in ACCU methods is problematic because of the way HWP are accounted for under the Paris Agreement GHG accounting rules. Under these rules, the HWP carbon pool includes all wood products in service in the relevant jurisdiction, regardless of origin (domestically produced or imported), and wood products in solid waste disposal sites (if material). This is reflected in Australia's National Inventory Report 2022, which states (Volume 1, p 389):

> Australia applies the stock-change approach for harvested wood products (HWP) in use and in solid waste disposal sites (SWDS). The carbon pool is therefore defined as the wood products in service life within Australia—that is, products consumed in Australia, including those imported and excluding those exported.

Due to this, the inclusion of the HWP pool in abatement calculations can lead to the crediting of ineligible abatement where the relevant forest products are exported (e.g. as occurs with most hardwood woodchips). Notwithstanding this, under the INFM method, it is proposed to include HWP products (in service and landfills) in both the baseline and project scenarios. This is because the exclusion of the HWP pool from the abatement calculations is likely to overstate the climate change mitigation benefits of the project activities. Including the HWP pool in both scenarios avoids this and promotes conservativism because carbon stocks in the HWP pool will always be lower in the project scenario relative to the baseline. To further promote conservatism and avoid the crediting of ineligible abatement, in the project scenario, carbon stored in pulplogs will be assumed to be instantly oxidised upon harvest, while in the baseline scenario the carbon stored in pulplogs will be modelled through their lifecycle, including in landfills.

The soil organic carbon (SOC) pool is excluded because of the risk of crediting increases in SOC levels that are attributable to factors other than the project activities (i.e. non-additionality). SOC stocks are subject to high natural variability, on annual and interdecadal timescales, driven by seasonal conditions (rainfall and temperatures). This makes it difficult to confidently attribute changes in SOC stocks to management interventions on project-relevant timescales. Excluding SOC stocks from the abatement calculations addresses the risk of crediting non-additional abatement. It also promotes conservatism because the cessation or deferral of harvesting is likely to increase SOC stocks.

Emissions from the combustion of fossil fuels that are associated with forest management (other than harvest and haulage) are excluded on the basis they are likely to be the same in both the project and baseline scenarios, or higher in the baseline than the project scenario. Their exclusion also assists with mitigating gaming risks.

The project activities are likely to decrease emissions from the combustion of fossil fuels associated with the processing of harvested logs, production of woodchips and manufacture of solid wood products. However, these manufacturing processes occur outside of the project area and are typically beyond the proponent's control. The exclusion of this source confines crediting to sources and sinks the proponents' control, while also promoting conservatism.

Item 4. Calculation of net abatement

Net abatement is calculated as the difference between the net carbon stock change in the project and baseline scenarios, minus the leakage deduction. This is reflected in equation 1 below.

$$NAi = (\Delta CSpi - \Delta CSbi) - (ESpi - ESbi) - LDi \qquad \textbf{[Equation 1]}$$

Where:

NA_i is the net abatement amount for reporting period *i*.

ΔCS_{pi} is the carbon stock change in included carbon pools in the project scenario over reporting period *i*.

ΔCS_{bi} is the carbon stock change in included carbon pools in the baseline scenario over reporting period *i*.

ES_{pi} is the emissions from included sources in the project scenario over reporting period *i*, calculated in accordance with equation 2.

ES_{bi} is the emissions from included sources in the baseline scenario over reporting period *i*, calculated in accordance with equation 3.

LD_i is the leakage deduction for reporting period *i* calculated in accordance with equation 4.

Note: The abatement calculations will account for the situation where there is negative abatement (e.g. due to wildfires) by requiring a negative carry over into the abatement calculations for the following reporting period.

Emissions from included sources in the project scenario over reporting period *i* (ES_{pi}) are calculated as:

$$ESpi = EPBpi + EWFpi + EFFpi \quad \text{[Equation 2]}$$

Where:

ES_{pi} is the emissions from included sources in the project scenario over reporting period *i*.

EPB_{pi} is the emissions from prescribed burns over reporting period *i* in the project scenario.

EWF_{pi} is the emissions from wildfires over reporting period *i* in the project scenario.

EFF_{pi} is the emissions from the combustion of fossil fuels associated with harvesting and haulage over reporting period *i* in the project scenario.

Emissions from included sources in the baseline scenario over reporting period *i* (ES_{bi}) are calculated as:

$$ESbi = EPBbi + EWFbi + EFFbi \quad \text{[Equation 3]}$$

Where:

ES_{bi} is the emissions from included sources in the baseline scenario over reporting period *i*.

EPB_{bi} is the emissions from prescribed burns over reporting period *i* in the baseline scenario.

EWF_{bi} is the emissions from wildfires over reporting period *i* in the baseline scenario.

EFF_{bi} is the emissions from the combustion of fossil fuels associated with harvesting and haulage over reporting period *i* in the baseline scenario.

The leakage deduction for reporting period *i* is calculated as:

$$LDi = DLDi + PNFLDi + ILDi \quad \text{[Equation 4]}$$

Where:

LD_i is the leakage deduction for reporting period *i*.

DLD_i is the direct leakage deduction for reporting period *i* (if applicable) determined in accordance with Item 11.

$PNFLD_i$ is the private native forests leakage deduction for reporting period *i* (if applicable) determined in accordance with Item 11.

ILD_i is the indirect leakage deduction for reporting period *i* determined in accordance with Item 11.

Rationale: There are three key aspects to the approach to calculating net abatement:

(a) it is based on the difference between the net carbon stock change in the project and baseline scenarios over the crediting period, minus the leakage deduction;

(b) net carbon stock change is calculated as the carbon stock change in included carbon pools, minus emissions from prescribed burns, wildfires and relevant fossil fuel combustion; and

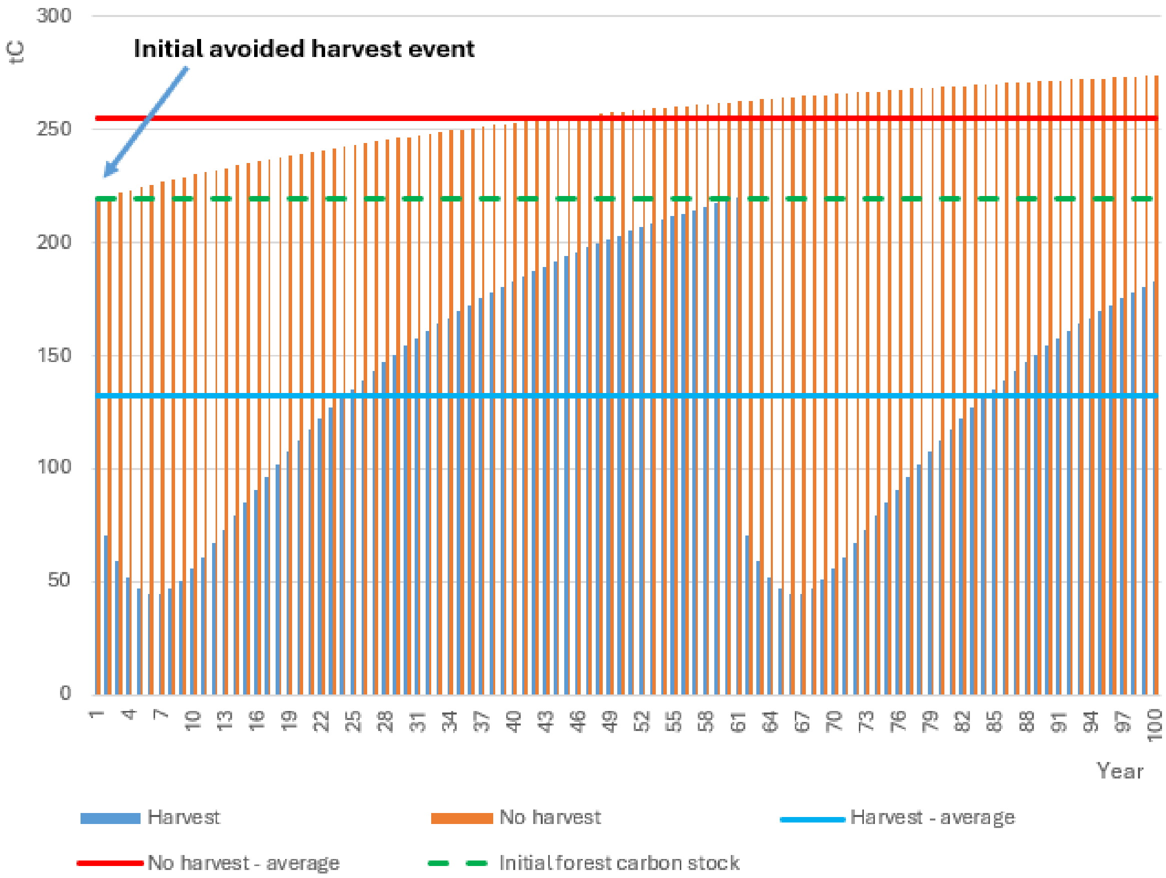
(c) the leakage deduction has three components, the direct leakage deduction, private native forests leakage deduction and the indirect leakage deduction, which are explained in Item 11.

The calculation of net abatement based on the difference in net carbon stock change over the crediting period is different from the approach used in the ACCU scheme's plantation method. Under the plantation method, net abatement is calculated as the difference between long-term (100-year) average net project carbon stocks and long-term average baseline carbon stocks.[7] This approach illustrated in Figure 1, using a hypothetical 1 hectare Eucalypt open forest plot with a maximum above-ground biomass (M) of 385 dry metric tonnes (dmt). In the hypothetical, the 100-year average carbon stock in above- and below-ground live biomass and debris in the project scenario, where there is no harvest, is 255 tonnes of carbon (tC). In the baseline, where harvesting occurs on 60-year rotations, the 100-year average carbon stock is 133 tC, meaning the difference between the long-term average stocks in the two scenarios is 122 tC (448 tCO_2).

Harvesting of native forests results in an initial pulse of emissions that tail off over ~20 years. However, soon after harvest, the forest managers will seek to regenerate the forest to initiate another harvest rotation. After approximately 3-6 years, the removals associated with regeneration will typically exceed the tailing emissions from the harvest event. Because young regenerating forests grow and sequester carbon at a higher annual rate than mature forests, there is a point at which the annual net carbon stock change in the baseline (harvest) scenario will exceed the net carbon stock change in the project (no harvest) scenario. In other words, when analysed at the plot (or coup) level, avoiding harvesting results in an initial period of 'positive abatement' (where net carbon stock change in the project scenario exceeds the net carbon stock change in the baseline scenario), followed by a period of 'negative abatement' (where the annual net carbon stock change in the baseline scenario exceeds the net carbon stock change in the project scenario).

[7] *Carbon Credits (Carbon Farming Initiative—Plantation Forestry) Methodology Determination 2022*.

Figure 1. Calculating abatement using 100-year average carbon stocks, hypothetical 1-hectare Eucalypt open forest plot, baseline (harvest - clearfell) vs project (no harvest) scenario



The temporal profile of the abatement associated with avoiding harvesting creates a challenge in determining how best to calculate net abatement for crediting purposes. There are multiple different ways of calculating net abatement, each producing different answers, none of which are strictly 'right' or 'wrong'. For these purposes, four different approaches were compared using the hypothetical 1-hectare plot in Figure 1:

(a) 5**-year net carbon stock change**, where net abatement is calculated as the difference between net carbon stock change in the project and baseline scenarios over the 5-years following the avoidance of the initial counterfactual harvest event;

(b) **15-year net carbon stock change**, where net abatement is calculated as the difference between net carbon stock change in the project and baseline scenarios over the 15-years following the avoidance of the initial counterfactual harvest event;

(c) **25-year net carbon stock change**, where net abatement is calculated as the difference between net carbon stock change in the project and baseline scenarios over the 25-years following the avoidance of the initial counterfactual harvest event; and

(d) **100-year average carbon stock difference**, where net abatement is calculated as the difference between long-term (100-year) average net project carbon stocks and long-term average baseline carbon stocks.

The plot level results are summarised in Table 5.

Table 5. Alternative approaches to calculating abatement, hypothetical 1-hectare Eucalypt open forest plot, baseline (harvest - clearfell) vs project (no harvest) scenario

Approach	Total abatement (tCO_2)	Comprised of	
		Negative carbon stock change in the baseline scenario (tCO_2)	Positive carbon stock change in the project scenario (tCO_2)
5-year net carbon stock change	665	643	22
15-year net carbon stock change	532	472	60
25-year net carbon stock change	383	294	89
100-year average carbon stock difference	448	NA	NA

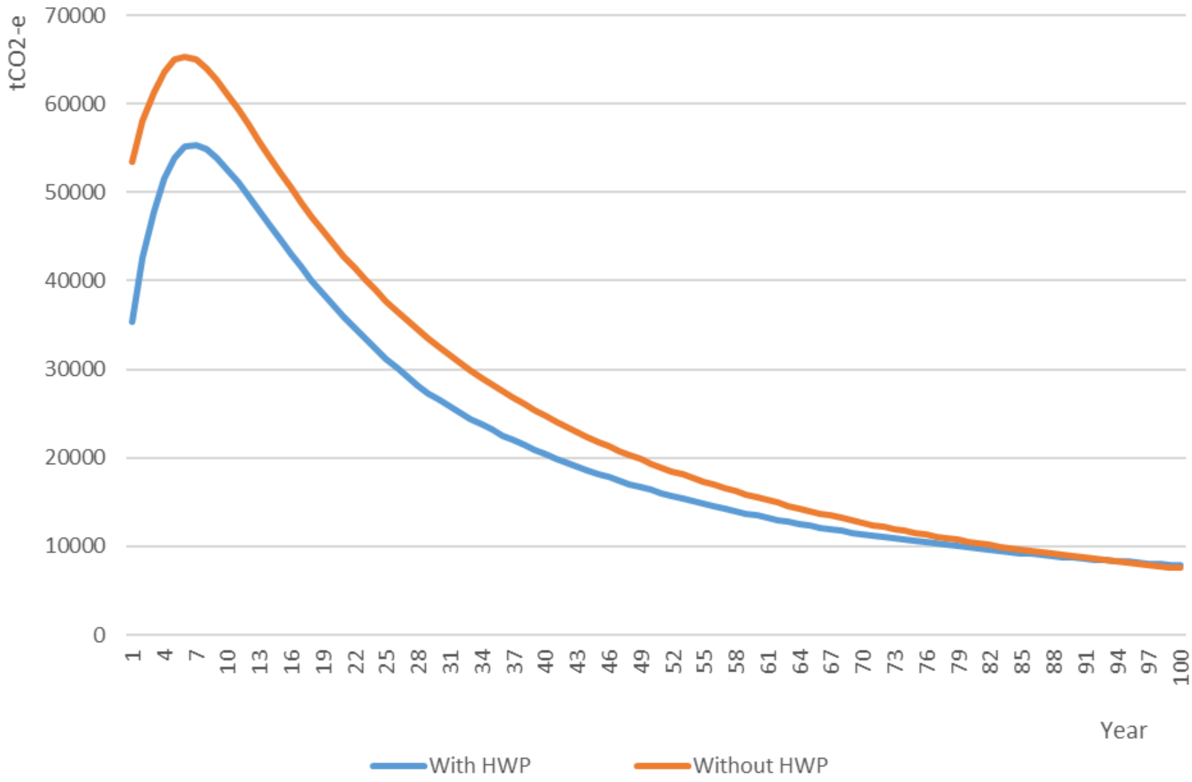
As Table 5 shows, if outcomes are analysed at the single plot level, generally, if a net carbon stock change approach is used, longer calculation periods will result in lower abatement estimates relative to shorter calculation periods. This is a product of the fact that, after approximately 3-6 years, longer calculation periods will result in lower negative carbon stock change in the baseline scenario than shorter periods because of the additional sequestration associated with the regenerating forest, which 'offsets' the initial emissions associated with harvest. There will also be additional sequestration in the project scenario that adds to the total abatement generated by the project but the rate of sequestration in the older, unharvested forest will be significantly lower than the rate in the young forest regenerating after the harvest.

This conclusion does not hold when outcomes are analysed at the forest estate level, at least over project-relevant timeframes. At the forest estate level that applies to INFM projects, stopping harvesting is likely to lead to positive abatement for many decades and, in some cases, more than 100 years, depending on the size of the forest estate and baseline assumptions. This is due to the fact that, with whole forest estates, there will be multiple avoided harvest events (individual plots) each year, year-on-year. This means that, every year for an extended period, there will be ongoing avoided harvest events, which generate positive abatement. As the scenario progresses, the positive abatement generated by the new avoided harvest events will be partially offset by the negative abatement associated with earlier harvest events. However, the positive abatement associated with the newer avoided harvest events will typically exceed the negative abatement associated with earlier avoided harvest events for an extended period.

To illustrate, a modelling exercise was undertaken using the Eucalypt open forest plot shown in Figure 1 and a hypothetical 6,000-hectare forest estate, all of which is harvestable. In the baseline, 100 hectares of the estate is scheduled to be harvested each year, and harvesting occurs on 60-year rotations. In the project scenario, harvesting stops immediately, meaning none of the 6,000-hectare estate is harvested. For simplicity, the included carbon pools and sources were confined to above- and below-ground live biomass, dead organic matter and HWP in service and in landfills. The modelling assumed 80% of harvested stemwood is extracted for products, with the remaining 20% left as slash. Logs were assumed to be 50% sawlogs and 50% pulplogs and methane recovery in landfills was assumed to be 75%.

As shown in Figure 2, over the 100 years following the cessation of harvesting, abatement remains positive (for information purposes, the results are shown both with and without the inclusion of the HWP). The positive abatement profile over the century is attributable to the assumption of ongoing harvesting.

Figure 2. Abatement profile associated with hypothetical 6,000-hectare Eucalypt open forest avoided harvest INFM project, assuming 100 hectares of avoided harvest annually (with and without inclusion of HWP pool)



Noting the above, the decision on which approach to calculating net abatement should be used in the INFM method needs to account for these dynamics and have regard to three main issues.

- The need for alignment between credited abatement and the emissions and removals that are recorded in Australia's greenhouse accounts.
- The need for conceptual consistency in the treatment of additionality and permanence risks.
- The need for conservatism in abatement estimates.

Alignment with Australia's greenhouse accounts

Emissions and removals associated with multiple-use public native forests are recorded in the 'forest land remaining forest land' component of Australia's National Inventory Report, using methods consistent with a net carbon stock change approach. The accounts seek to record all emissions and removals associated with forest carbon pools that are attributable to anthropogenic factors as and when they occur, and factor out non-anthropogenic impacts on relevant carbon stocks and sources.

The 100-year average carbon stock difference approach used in the plantations method does not accord with the approach used in the National Inventory Report. This means its use in INFM would result in an inconsistency between credited abatement and what is recorded in the National Inventory Report and counted towards Australia's international climate change obligations.

Conceptual consistency in treatment of additionality and permanence risks

From a climate science perspective, for the abatement associated with sequestration projects to offset fossil emissions, the credited sequestration must permanent for all time. As Broekhoff et al. (2019) state:

> One common misunderstanding is that – for carbon offsets – "permanent" means something less than hundreds or thousands of years. A standard convention, for example, is that carbon only needs to be kept out of the atmosphere for 100 years (or less, in some cases) to be considered "permanent". Such compromises are frequently made in the context of carbon offset programs seeking to balance technical requirements with the practical constraints of insuring against reversals. But, scientifically, anything less than a full guarantee against reversals into the indefinite future is not "permanent".[8]

The abatement generated by sequestration projects can be thought of as analogous to filling a glass of water, where the climate benefit is derived from filling a glass that would otherwise be empty. For the climate benefit to endure, the water must remain in the glass. If the glass is emptied, the climate benefit is lost. Storing water in a glass temporarily provides only a temporary climate benefit, which is not equivalent to the warming associated with a pulse of fossil emissions, whose climate effects last for thousands of years.[9]

Equally, if the abatement associated with a sequestration project would occur anyway, only later, the project will provide a temporary climate benefit only. The project will have brought the filling of the glass forward, but not filled a glass that would have remained empty for all time in the absence of the incentive provided by the scheme. The short-term nature of the climate benefit associated with projects whose additionality is temporary is the same as that associated with a sequestration project whose credited carbon stocks are subsequently lost.

Under the ACCU scheme, permanence risks are addressed through three mechanisms.

(a) <u>Permanence period requirements</u>. The carbon stored and credited by a sequestration project must be maintained **for the duration of the permanence period**. Proponents have a choice of the length of their permanence period: either 25 or 100 years. If the carbon stocks are lost during the permanence period, the proponent must restore the stocks or relinquish ACCUs to account for the losses. Failing this, the Regulator can impose a carbon maintenance obligation on the land, which prevents actions being taken that further erode the carbon stocks. The Regulator can also seek to recover any liabilities associated with the failure to relinquish credits as a debt.

(b) <u>Risk of reversal buffer</u>. The risk of reversal buffer is a discount applied when calculating the 'unit entitlement' (entitlement to ACCUs) of sequestration projects that is supposed to insure the scheme against reversals (losses of carbon stored in live biomass, dead organic matter and soils) that occur **during the permanence period of registered projects**. The

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[8] Broekhoff, D., Gillenwater, M., Colbert-Sangree, T., and Cage, P. (2019) Securing Climate Benefit: A Guide to Using Carbon Offsets. Stockholm Environment Institute & Greenhouse Gas Management Institute, at 26.

[9] Archer D, Eby M, Brovkin V et al. (2009) Atmospheric lifetime of fossil fuel carbon dioxide. Annual Review of Earth & Planetary Sciences 37, 117–134.

buffer is currently set at five per cent of the net abatement number for all sequestration projects, although it can be altered under the legislative rules.

(c) Permanence period discount. Sequestration projects with 25-year permanence periods are required to apply a permanence period discount when calculating their unit entitlement. This discount is intended to account for the risk of reversals occurring after the completion of the permanence period, when proponents are under no obligation to maintain the relevant carbon stocks. The permanence discount is generally 20 per cent of the net abatement number but, as with the risk of reversal buffer, it can be altered under the legislative rules.

Through these mechanisms, the ACCU scheme treats permanence risks as financial risks. This is evident in the finite and relatively short permanence periods and the permanence period discount. The permanence period discount was designed to mitigate the financial risk to the Australian Government associated with reversal events that occur after the end of 25-year permanence periods. Conceptually, the 20% discount is supposed to ensure the present value of the foregone credits over the crediting and permanence periods is equal to or greater than the present value of the cost of purchasing replacement abatement when post-permanence period reversal events occur.[10]

In contrast, the ACCU scheme currently purports to treat additionality risks strictly as climate risks. That is, despite additionality and permanence risks being conceptual twins for sequestration projects, they are treated differently. Better policy outcomes would be achieved by treating both risks consistently.

For the INFM method, net abatement is proposed to be calculated using a net carbon stock change approach that treats additionality as a financial risk, thereby ensuring conceptual consistency with the approach taken to permanence. Under this approach, the positive and negative abatement that occurs at different time periods with INFM projects are converted into present value equivalents. Robust outcomes are then achieved by adopting a method of calculating net abatement that ensures the present value of the positive and negative abatement generated by INFM projects is equal to or greater than the present value of the credits issued to proponents. Adopting this consistent framing to additionality and permanence allows for the recognition of both:

- the benefit from bringing forward sequestration that could potentially, but is unlikely to, occur in the foreseeable future (with confidence around additionality inherently declining over time); and
- the benefit of storing carbon in forest carbon sinks in the near-term, even if it is not possible to guarantee the credited stocks will be maintained indefinitely.[11]

Notably, calculating net abatement using a net carbon stock change difference method allows for the recognition of the positive abatement that avoiding harvest events bring in the near-term, while accounting for the negative abatement that can arise in the longer-term if additionality is temporary.

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[10] Macintosh, A. (2013) The Carbon Farming Initiative: removing the obstacles to its success. Carbon Management 4(2), 185–202, at 192-195.

[11] The risks to the climate that are associated with this approach are addressed by the Australian Government's international climate change mitigation obligations, which place limits on net emissions from Australia over prescribed periods. The existence of these commitments means that, when reversal events occur in offset projects, the Australian Government has an obligation to source substitute abatement.

Under the INFM method, conservatism is promoted by combining the use of the net carbon stock change approach with a shortened 15-year crediting period and mandatory 100-year permanence periods.

A key factor in assessing the robustness of the alternative options to calculating abatement using this framing is the likely extent and duration of forest harvesting in the counterfactual. If the relevant forest estate would be harvested indefinitely in the absence of the incentive provided by the ACCU scheme, the net carbon stock change approach is highly conservative, particularly in comparison to the 100-year average carbon stock difference approach. The approach gets less conservative the shorter the period the avoidance of harvesting is brought forward.

To illustrate, the hypothetical Eucalypt open forest avoided harvest INFM project shown in Figure 2 was used. The estate-based net carbon stock change approach was initially used to calculate abatement, under the assumption harvesting continues indefinitely in the baseline. The difference between net carbon stock change in the project and baseline scenarios, calculated at the estate level, over 100-years was 2.21 million (M) tCO_2.[12] Using the 100-year average carbon stock difference approach, total credited abatement was 1.40 $MtCO_2$. The net carbon stock change difference over 15-years, calculated at the estate level, was 0.74 $MtCO_2$.

Using financial metrics to compare the options over a 50-year modelling period provided the following.[13]

- The present value of the positive and negative abatement generated by the project was $38.6 million.
- The present value of the credits issued using the 100-year average carbon stock difference approach, assuming a 15-year issuance period, was $43.4 million.
- The present value of the credits issued using the net carbon stock change difference over 15-years, calculated at the estate level, was $22.9 million.

The net carbon stock change approach, calculated at the estate level over 15 years, was then compared to a scenario where, in the baseline, harvesting was assumed to cease after 25-years. That is, 2,500 hectares is harvested (100 hectares per year) over 25 years, and then it is assumed that harvesting stops in the estate and the harvested forests are allowed to regenerate. This assumption – that the project activities are assumed to be additional for the duration of the 25-year crediting period – is applied in all existing ACCU sequestration methods. Under all ACCU sequestration methods it is assumed that, in the absence of the incentive provided by the scheme, the relevant project activities and associated sequestration events would not occur for at least 25 years.[14]

Under this scenario, the 100-year average carbon stock difference was 0.64 $MtCO_2$. The difference between net carbon stock change in the project and baseline scenarios over 100-years was only 0.25 $MtCO_2$. However, the present value of the positive and negative abatement generated by the project was $23.8 million, comparable with the estimate derived using the 15-year net carbon stock change approach. This is attributable to the fact that, in this scenario, the positive abatement occurs over

[12] The abatement estimates cover above- and below-ground live biomass, dead organic matter and HWP in service and in landfills.
[13] Modelling assumed an ACCU price starting at $37.50 in 2025 (project commencement), increasing at 4% nominal over the 50-year projection period, and a nominal discount rate of 7%.
[14] Under the plantation method, projects are assumed to be additional and permanent for 100-years, even when they have 25-year permanence periods.

the initial 25 years, while the negative abatement occurs later in the century and is reduced, in present value terms, by discounting.

This case study illustrates the logic and robustness of using a net carbon stock change approach that calculates abatement at the estate level over 15 years. This approach aligns with the way relevant emissions and removals are accounted for in the National Inventory Report, it provides conceptual consistency in the treatment of permanence and additionality risks, and it ensures conservatism in the crediting of abatement.

Item 5. Crediting period

Projects have 15-year crediting periods.

Rationale: Having 15-year crediting periods mitigates the temporal additionality risks associated with INFM projects. This is an extra integrity measure that is not applied in other sequestration projects.

Items 6 & 7. Modelled events in the baseline and project scenario

The events that are required to be modelled in the baseline and project scenarios are detailed in Table 6.

Table 6. Events required to be modelled in the baseline and project scenarios and associated greenhouse gas

Baseline scenario		Project scenario	
Event	**Basis**	**Event**	**Basis**
Harvesting	Counterfactual baseline harvesting level	Harvesting	Actual events in reporting period
Other anthropogenic disturbances to forest carbon stocks that are related to timber production and forest management	Actual events in reporting period	Other anthropogenic disturbances to forest carbon stocks that are related to timber production and forest management	Actual events in reporting period
Anthropogenic disturbances to forest carbon stocks that are unrelated to timber production or forest management*	Excluded	Anthropogenic disturbances to forest carbon stocks that are unrelated to timber production or forest management*	Actual events in reporting period
Prescribed burn	Actual events in reporting period	Prescribed burn	Actual events in reporting period
Wildfire	Actual events in reporting period	Wildfire	Actual events in reporting period
Other natural disturbances	Actual events in reporting period	Other natural disturbances	Actual events in reporting period
Fossil fuel combustion for harvest and haulage	Counterfactual baseline harvesting level	Fossil fuel combustion for harvest and haulage	Actual events in reporting period

* This does not include clearing and other disturbances that are related to fire and emergency management.

Rationale: The modelled events are intended to ensure comprehensive coverage of the events that affect the included carbon pools and emission sources. The events will be required to be modelled in accordance with the prescriptions in the method and FullCAM guidelines, consistent with the approach in other sequestration methods.

Notable in the included events is anthropogenic disturbances to forest carbon stocks that are unrelated to timber production or forest management. These events are included in the project scenario and excluded from the baseline scenario. This is conservative and ensures project proponents are incentivised to protect credited carbon stocks.

Item 8. Baseline harvest levels

Harvesting levels in the baseline scenario are calculated as the lower of the following.

(a) The latest applicable **modified sustainable yield** estimate, calculated as:

i. for projects where there is a sufficient correlation between the sustainable yield and log production during the **baseline period** ($R^2 \geq 0.7$), the estimated sustainable yield multiplied by the average log production to sustainable yield ratio over the baseline period; and

ii. for projects where there is not a sufficient correlation between the sustainable yield and log production during the baseline period ($R^2 < 0.7$), either:

A. if the log production to sustainable yield ratio over the baseline period was ≥0.8 in all years, the estimated sustainable yield multiplied by 80%; or

B. if the log production to sustainable yield ratio over the baseline period was <0.8 in any year, the estimated sustainable yield multiplied by the lower of the average log production to sustainable yield ratio over the baseline period or 60%.

(b) The last sustainable yield estimate published by the responsible government agency prior to 1 July 2024.

The '**baseline period**' is defined as the 10-year period prior to the end of the financial year prior to the date of project commencement (e.g. if the project is registered on 10 December, the baseline period is the 10 year period to 30 June in the same year). If, during this 10-year period , ≥25% of the net harvestable area in the project area is affected by wildfire in a single financial year, the financial year and the two subsequent years may be excluded from the baseline period.

The sustainable yield that is used for these purposes must be confined to the applicable estimate of the wood yield of sawlogs (high and low quality sawlogs, veneer/peeler logs, and logs used to produce poles, piles and girders) and pulplogs only, excluding residues (e.g. firewood). For the avoidance of doubt, to the extent that the volume of wood extracted from an area is used to calculate net abatement during the project period (including leakage requirements) or relinquishment requirements during the permanence period, it must include all wood extracted from the forest area, including residues.

Where a state government has already announced it will cease or reduce harvesting in multiple-use public native forests, the modified sustainable yield estimate must account for the announcement, unless it was made conditional on the commencement of an offsets project.

Modified sustainable yield estimates must be recalculated at project commencement, at the 5th and 10th year of the project, and following major disturbance events. '**Major disturbance events**' are provisionally defined as events that are likely to reduce carbon stocks by more than 15% across more than 20% of the net harvestable area in the project area. For the avoidance of doubt, the log production to sustainable yield correlations and ratios that are used for these purposes must be taken from the baseline period, not the 10-year period prior to the recalculation.

The modified sustainable yield estimates must be prepared in accordance with the INFM Sustainable Yield Protocol and verified by an independent qualified assessor contracted by the Clean Energy Regulator. The INFM Sustainable Yield Protocol will be an incorporated document containing the rules governing the preparation of modified sustainable yield estimates.

All data relied on in the preparation of sustainable yield estimates must be published.

Rationale: The baseline harvest level is a key driver of credited abatement. If it is overestimated, it will result in the crediting of non-additional abatement. Reflecting this, the requirements of the method are intentionally conservative and are intended to ensure the baseline harvest level is more likely to underestimate than overestimate the true level of harvesting in the project area in the absence of the incentive provided by the scheme.

The use of sustainable yield as the basis for setting the baseline harvest level is necessary to capture the effects of age class on harvesting. In simple terms, if a forest estate is dominated by young forests, there is likely to be less harvesting because many of the forests will not have reached the desired harvest age (i.e. generally 50-80 years), based on the targeted yield of sawlogs and pulplogs. The opposite applies to a forest estate that is dominated by forests that are at or above the desired harvest age – proportionally, there is likely to be more harvesting than if the age profile was appreciably younger. If sustainable yield is not used, there would be a risk of crediting increases in net carbon stocks that are attributable to reductions in harvesting that would have happened anyway, due to the relative absence of harvestable logs.

While the use of sustainable yield can capture the age class dynamics in forest estates, there are two challenges with its use for these purposes. The first stems from the fact that log production is frequently significantly below the published sustainable yield in multiple-use public native forests. This is likely to be attributable to a combination of error in the calculation of sustainable yields, economic factors that make harvesting to the sustainable yield unprofitable and the impacts of natural disturbance events like wildfires. The second is that the information asymmetry between state forest agencies and external parties creates opportunities for gaming, the most relevant being the deliberate inflation of baselines to generate credits that do not reflect genuine abatement.

The proposed approach addresses these issues through six design features.

(a) The requirement for sustainable yield estimates to be modified through the application of an adjustment factor, which reflects the log production to sustainable yield ratio over the baseline period. The adjustment factor is required to be less than 1, meaning it acts as a discount, reducing the baseline harvest level.

(b) The requirement for the adjustment factor to be calculated based on the strength of the correlation between log production and the sustainable yield over the baseline period. The weaker the correlation, the higher the effective discount on the baseline harvest level.

(c) The requirement for the modified sustainable yield to be verified by an independent qualified assessor contracted by the Clean Energy Regulator but paid for by the proponent. This is intended to reduce the risk of funding (sponsorship) bias – the tendency for the source of funding for research or analysis to influence the results.

(d) The requirement for the baseline harvest level to be calculated as the lower of the modified sustainable yield and the last sustainable yield estimate published by the responsible government agency prior to 1 July 2024. The rule means the historic sustainable yield serves as a maximum baseline harvest level.

(e) The requirement for transparency in the preparation of sustainable yield estimates. Ensuring the data relied on to prepare the modified sustainable yield are published increases the chances of detection of gaming, thereby disincentivising it.

(f) The requirement for announced reductions in harvesting to be reflected in the modified sustainable yield estimate, unless they were made conditional on the commencement of an offsets project.

In calculating the modified sustainable yield, the method allows proponents to exclude financial years from the baseline period if they were impacted by a major wildfire event, defined as a financial year where ≥25% of the net harvestable area in the project area is affected by wildfire and the two subsequent years. This provision is intended to allow for the exclusion of years that are not representative of normal operating conditions, where the relationship between log production and sustainable yield is more reflective of conditions other than natural disturbances (e.g. error and market influences). The inclusion of years impacted by major wildfire events in the calculations would mean the modified sustainable yield would incorporate the effects of these events, even though the method accounts for these impacts through the requirement for the sustainable yield to be recalculated following major disturbance events.

Item 9. Measurement

Forest carbon stocks are modelled using FullCAM.

In the baseline scenario, forest carbon stocks are modelled using representative model plots that reflect the forest types and silvicultural practices from the 5-year period prior to project commencement. Forest types must be classified at the National Vegetation Information System (NVIS) Major Vegetation Group (MVGs) level.

In the project scenario:

(a) subject to (c), the same model plots must be used to model the effects of harvesting and other forest management activities as in the baseline scenario;

(b) the proportion of the harvest area allocated to each model harvest plot must be the same as in the baseline scenario (i.e. the modelling assumes the same harvest practices in the same forest types as in the baseline scenario);

(c) clearing for roading and firebreaks must be modelled using the same model plots as in the baseline scenario, or in the absence of equivalent events in the 5-year period, modelled using representative plots;

(d) anthropogenic disturbances to forest carbon stocks that are unrelated to timber production or forest management must be modelled using representative plots; and

(e) the effects of other disturbance events, including wildfires and non-harvest related prescribed burns, must be modelled using the same model plots and same areas as in the baseline scenario.

Proponents must conduct an inventory of carbon stocks in accordance with the INFM Carbon Inventory Protocol at project commencement. The INFM Carbon Inventory Protocol will be an incorporated document containing the rules governing the conduct of forest carbon stock inventories. The inventory must be used to calibrate the FullCAM model plots and the associated FullCAM model estate and to prepare the modified sustainable yield estimate. Inventories must be conducted again at the 5th and 10th year of the project and following major disturbance events.

Carbon stock changes and CH_4 and N_2O emissions associated with prescribed burning and wildfires are modelled using FullCAM and the representative model plots. The same model plots must be used to estimate fire emissions in both the project and baseline scenarios, except for post-harvest (slash) burns and, in other prescribed burns, the age of the forests at the time of the fire event. The area affected by wildfires and non-harvest related prescribed burns must be the same in both scenarios. Similarly, the proportion of the area affected by wildfires and non-harvest related prescribed burns that is allocated to each forest type (and corresponding representative model plots) must be the same in both scenarios.

Carbon stocks in the HWP pool are modelled using FullCAM or a modified form of the Australian Government's HWP-Landfill model. In the baseline scenario, the log inputs to the HWP model are those generated by the representative FullCAM model plots. In the project scenario, the log inputs must be the actual logs harvested over the reporting period. If FullCAM is used, this will require the use of separate model plots to model carbon stocks in HWP in the project scenario. To promote conservatism and avoid crediting ineligible abatement, pulplogs are assumed to be instantly oxidised following harvest in the project scenario.

In the project scenario, CO_2, CH_4 and N_2O emissions from fossil fuel combustion are calculated in accordance with section 2.41 (method 1) of the *National Greenhouse and Energy Reporting (Measurement) Determination 2008*. In the baseline scenario, CO_2, CH_4 and N_2O emissions from fossil fuel combustion are modelled using emission factors (emissions per m^3 of logs harvested) derived from the project scenario. This ensures that changes in the emission-intensity of harvest and haulage operations do not contribute to credited abatement.

Rationale: The are six notable aspects of these requirements.

(a) The use of a 5-year 'baseline' period as the basis for the construction of the model plots for the baseline scenario.

The shortened 5-year baseline period is intended to ensure the data use to construct the model plots are representative. There have been material changes in silvicultural practices in multiple-use public native forests over the past decade. Consequently, using a longer baseline period risks constructing model plots using harvest practices that do not reflect those that are most likely to be used over the 15-year modelling period. The use of the 5-year baseline period should also ensure the data are accessible.

(b) The use of 'mirror' model plots in the baseline and project scenarios to model harvest and other forest management events.

The use of mirror plots in both scenarios to model harvest and other forest management events ensures the credited abatement reflects only the impacts of the cessation or deferral of harvesting. This is necessary to prevent other project activities, which carry significant integrity risks, from being credited under the method.

(c) The requirement for the proportion of the harvest area allocated to each model harvest plot to be the same as in the baseline scenario (i.e. the modelling assumes the same harvest practices in the same forest types as in the baseline scenario).

This requirement is intended to prevent gaming by altering the proportion of the harvest area allocated to different model plots. It is important also that the model allocations are based on harvest area rather than log production. This means that, in the project scenario, the modelled log outputs from FullCAM are unlikely to reflect the actual logs harvested. To address this, the method requires the use of actual logs harvested as the input to the HWP modelling.

(d) The requirement for anthropogenic disturbances to forest carbon stocks that are unrelated to timber production or forest management to be modelled in the project scenario using representative plots.

The inclusion of this modelling option is intended to address instances where part of the project area is cleared or otherwise disturbed for purposes unrelated to timber production or forest management. For example, where clearing is necessary to facilitate the construction of a road, a water or gas pipe, or telecommunications infrastructure. Given the size and nature of the project areas, it is necessary to allow for these types of activities. However, they need to be fully accounted for in the abatement calculations. This is achieved by requiring the events to be modelled in the project scenario using representative plots. The same events are not modelled in the baseline, meaning the associated emissions are deducted from the credited abatement.

To ensure projects are not over-credited, the abatement calculations require instances of negative abatement to be carried over into subsequent reporting periods. Where a negative abatement event occurs as consequence of actions that are unrelated to timber production or forest management, and the resulting emissions cannot be recouped from future reporting periods, the method could require projects to relinquish credits.

(e) The fire modelling requirements, particularly the mandatory use of mirror fire plots, fire effected area and plot allocations.

These requirements are intended to ensure the method does not issue credits, or deduct credits, based on the impacts of prescribed burns and wildfires, other than in relation to post-harvest (slash) burns and where the project activities are likely to directly result in higher emissions. The first reason for this design choice is to avoid crediting fire management activities, which carry significant integrity risks. The second reason is the desire to avoid disincentivising fire management activities – proponents should not be penalised for undertaking prescribed burning that is necessary to reduce hazards and manage cultural, ecological and forest values.

The primary way projects could increase CH_4 and N_2O emissions from fires is by increasing the biomass that is available to burn in wildfires and non-harvested related prescribed burns. This is a product of the fact that unharvested forests continue to accumulate biomass, some of which is susceptible to burning in fires. To account for this, with the exception of post-harvest (slash) burns, the only difference allowed in the modelling is the age of the modelled forests at the date of the fire event. This approach is conservative as there is evidence that harvesting increases the risk of fire in native forests by increasing biomass in the debris pool and altering the structure of the forests.[15]

(f) The requirement for CO_2, CH_4 and N_2O emissions from fossil fuel combustion to be estimated in the project scenario using NGERS methods, and for this estimate to be used to calculate an emissions intensity-based emission factor, which must then be used to estimate fossil fuel emissions in the baseline.

These requirements are intended to ensure the method does not credit changes in forest management that are unrelated to the cessation or deferral of harvesting. This is because of the integrity risks associated with relevant activities; for example, the adoption of low emissions vehicles for harvesting or haulage.

Item 10. Hurdle requirement

Projects are only eligible to receive ACCUs if both the levels of harvesting in the project area, and the volume of wood extracted from the project area, are ≥20% below the levels in the baseline scenario, both in the reporting year and on average since project commencement.

Rationale: The hurdle requirement is intended to serve two functions.

(a) It mitigates the risk of crediting minor, short-term fluctuations in harvesting associated with market or other business-as-usual conditions (i.e. non-additionality). For credits to be issued,

[15] Lindenmayer, D. et al. (2009) Effects of logging on fire regimes in moist forests. Conservation Letters 2, 271–277; Taylor, C. et al (2014) Nonlinear Effects of Stand Age on Fire Severity. Conservation Letters 7(4), 355–370; Lindenmayer, D. et al. (2020) Recent Australian wildfires made worse by logging and associated forest management. Nature Ecology & Evolution 4, 898–900; Taylor, C. et al. (2021) What are the associations between thinning and fire severity? Austral Ecology 46, 1425–1439; Taylor, C. et al. (2020) Does forest thinning reduce fire severity in Australian eucalypt forests? Conservation Letters, e12766; Lindenmayer, D., Zylstra, P. (2023) Identifying and managing disturbance-stimulated flammability in woody ecosystems. Biological Reviews. doi: 10.1111/brv.13041.

there must be a significant reduction in harvesting that goes beyond normal interannual variability. This also acts to mitigate uncertainties associated with baseline harvest levels.

(b) There is the potential for INFM projects to result in leakage through cross-subsidisation, where the proponent stops or defers harvesting but then uses the ACCU revenues to subsidise harvesting in other parts of its estate, either now or in the future. The hurdle requirement mitigates this risk by ensuring there is a structural shift in the native forest industry in the relevant region.

Item 11. Leakage deductions

Direct leakage deduction (DLD)

During the crediting period, proponents must apply a direct leakage deduction if the volume of wood extracted from the excluded sections of the proponent's native forest estate exceeds the direct leakage baseline harvest levels.

The direct leakage baseline harvest levels are the lower of:

(a) the average volume of wood extracted from the excluded sections of the estate over the baseline period; and

(b) the modified sustainable yield associated with the excluded sections of the estate, calculated in accordance with the procedures in Item 8.

As with the process for determining the baseline harvest levels (item 8):

(a) the baseline period is defined for these purposes as the 10-year period prior to the end of the financial year prior to the date of project commencement; and

(b) if, during that 10-year period, ≥25% of the net harvestable area in the excluded sections of the proponent's native forest estate are affected by wildfire in a single financial year, the financial year and the two subsequent years may be excluded from the baseline period for the purpose of calculating the direct leakage baseline harvest level.

The direct leakage deduction is calculated using a FullCAM model harvest plot that represents the average emissions-intensity of harvesting from the project area, calculated over 5 years. The exceedance volume is converted to a harvest area using the representative model harvest plot. The area harvested is then modelled in the project scenario, while a no-harvest version of the same model plot is included in the baseline scenario.

Rationale: The DLD addresses the risk of proponents decreasing harvesting in one forest region (the project area) but offsetting the associated reduction in log production by increasing harvesting in another part of its estate. The DLD mitigates this risk by applying a deduction to credited abatement, using a conservative calculation method. The use of this conservative method incentivises the inclusion of whole estates within the project area, thereby potentially further mitigating the risk of activity shifting.

PNF leakage deduction (PNFLD)

During the crediting period, proponents must apply PNF leakage deduction if the volume of wood extracted from the jurisdiction's private native forests exceeds the PNF leakage baseline harvest levels.

The PNF leakage baseline harvest level is the average volume of wood extracted from private native forests in the state in which the project is located over the baseline period. The baseline period is defined for these purposes as the 10-year period prior to the end of the financial year prior to the date of project commencement. Consideration is being given to whether years affected by major wildfire events should be excluded from the baseline period when calculating the PNF leakage baseline harvest level and, if so, how this can be done robustly given data limitations.

The PNF leakage deduction is calculated using a FullCAM model harvest plot that represents the average emissions-intensity of harvesting from the project area, calculated over 5 years. The PNF exceedance volume is converted to a harvest area using the representative model harvest plot. The area harvested is then modelled in the project scenario, while a no-harvest version of the same model plot is included in the baseline scenario.

Rationale: One of the most material risks associated with INFM projects is that the abatement they generate could be negated by resulting increases in harvesting in private native forests in the same jurisdiction. The PNFLD addresses this risk using a similar method to that used for the DLD. This approach incentivises state governments to manage the risk of leakage into private native forests.

During consultation, stakeholder views will be sought on whether the PNF leakage baseline should be set at the regional level and, if so, how regions should be defined for these purposes. Stakeholder views will also be sought on whether years affected by major wildfire events should be excluded from the baseline period and how this might be done. The main challenges in dealing with wildfire events in the private native forest estate are the absence of sustainable yield estimates for most private native forests, higher levels of uncertainty in log production estimates, and high levels of uncertainty concerning how wildfire events affect harvesting activity and log production.

Indirect leakage deduction (ILD)

An indirect leakage deduction must be applied in the calculation of net abatement.

The indirect leakage deduction is 5% and is applied to the credited difference between the net carbon stock change in the project and baseline scenarios in the relevant reporting period, minus the direct and PNF leakage deductions (if any), as per equation 5:

$$ILDi = \left((\Delta CSpi - \Delta CSbi) - DLDi - PNFLDi\right) * 0.05 \qquad \textbf{[Equation 5]}$$

Where:

ILD_i is the indirect leakage deduction for reporting period *i*.

ΔCS_{pi} is the carbon stock change in included carbon pools in the project scenario over reporting period *i*.

ΔCS_{bi} is the carbon stock change in included carbon pools in the baseline scenario over reporting period *i*.

DLD_i is the direct leakage deduction for reporting period *i*.

$PNFLD_i$ is the private native forests leakage deduction for reporting period *i*.

Rationale: There is the potential for INFM projects to lead to indirect leakage into:

(a) private native forests in other Australian jurisdictions, public native forests in other Australian jurisdictions and non-wood products manufactured in Australia; and

(b) imported wood and non-wood products.

Three key facts are relevant to the consideration of responses to these leakage risks.

- The evidence associated with the decline in native forest harvesting in Australia over the past 15-20 years suggests the risk of material negative leakage is relatively low. Despite log production from native forests declining by approximately 70%, it has not triggered a significant increase in emissions from other sources. Most of the resulting substitution has come from domestic plantation softwoods in the sawnwood sector and plantation hardwood woodchips, domestic and foreign, particularly from Vietnam; not emissions-intensive wood and non-wood products.
- Leakage into other jurisdictions should not be considered in abatement calculations under the ACCU scheme. This is because any increase in net emissions that occurs overseas is not reflected in Australia's greenhouse gas accounts and is captured by the Nationally Determined Contribution of the receiving country. The focus on domestic abatement is reflected in the first object of the CFI Act, which is to promote removals and avoid emissions 'in order to meet Australia's [international climate change mitigation] obligations'. Australia's primary obligation under relevant international agreements is to reduce its jurisdictional emissions, consistent with its Nationally Determined Contribution. Consistent with this, no existing ACCU method considers international leakage risks.
- Leakage into facilities covered by the Safeguard Mechanism should not be considered in abatement calculations for ACCU projects. This is because emissions from covered facilities are subject to the emissions constraints that apply under the Safeguard Mechanism.

While noting these points, the method addresses the risk of indirect leakage by applying a prescribed discount, proposed to be a uniform 5%. When considered in the context of the other risk mitigants included in the method, the 5% ILD adequately mitigates the risks associated with indirect leakage.

An alternation option is to use a differentiated ILD depending on the jurisdiction in which the INFM project is located. The benefit of a differentiated ILD is that it could capture the differences in the profile of the industries in different jurisdictions (or even regions). The downside is the relative absence of information on which to base the differentiation and the unavoidable subjectivity in any such assessments.

Item 12. Permanence periods

INFM projects must have 100-year permanence periods.

Rationale: The requirement for all INFM projects to have 100-year permanence periods is necessary to guard against the risk of harvesting returning to business-as-usual levels after 25 years, if the option of 25-year permanence was allowed. Unlike some other types of sequestration projects (e.g. environmental plantings), the nature of native forestry means that, in the absence of mandatory 100-year permanence, there is a significant risk that harvesting levels could rapidly return to business-as-usual levels, thereby undermining the benefits of the projects.

The requirement for 100-year permanence periods is proposed to be given effect by prescribing a 95% permanence period discount number in the *Carbon Credits (Carbon Farming Initiative) Rules 2015* for INFM projects, in accordance with s 16(2) of the CFI Act.

Item 13. Additional permanence obligations

During the period after the end of the crediting period but prior to the end of the permanence period, proponents must relinquish ACCUs if:

(c) the volume of wood extracted from the project area exceeds the levels in the project baseline; or

(d) the volume of wood extracted from the excluded sections of the proponent’s native forest estate exceeds the direct leakage baseline harvest levels.

The relinquishment obligation is calculated using a FullCAM model harvest plot that represents the average emissions-intensity of harvesting from the project area, calculated over 5 years. The exceedance volume is converted to a harvest area using the representative model harvest plot. The area harvested is then modelled in a 10-year quasi-project scenario, while a no-harvest version of the same model plot is included in a de facto 10-year quasi-baseline scenario. The relinquishment obligation is calculated as the difference between net emissions in the quasi-project scenario and net emissions in the quasi-baseline scenario.

Rationale: The nature of the abatement associated with INFM projects and the fact they allow for continued harvesting in project areas complicates the application of the standard reversal provisions under the CFI Act (see ss 90, 91 and 97). The additional permanence obligations are designed to address this by imposing an explicit obligation on the proponent to relinquish ACCUs in the event log production in their estate increases above the prescribed baselines (project and direct leakage). The obligation is calculated in accordance with the method described above. This inclusion of this provision further enhances the integrity of the method and simplifies administration for the Clean Energy Regulator.

During consultation, stakeholder views will be sought on whether these obligations should be extended to include increases in log production from private native forests after the conclusion of the crediting period, above the PNF leakage baseline harvest level.