Australian Government
Department of Climate Change, Energy, the Environment and Water

EMISSIONS REDUCTION ASSURANCE COMMITTEE

ACCU SCHEME
Expression of interest (EOI)

Improved Avoided Clearing of Native Regrowth (ACNR) Method

Queensland Department of Environment, Science and Innovation

July 2024

Section 1: Method developer contact details

1.1 Method developer contact details	
Title of proposed method/variation, 10 words:	Improved Avoided Clearing of Native Regrowth (ACNR) Method
Contact name:	Penny de Vine (method idea registered under Linda Lee)
Email:	Penny.deVine@des.qld.gov.au
Phone:	07 3199 7585 0499 743 507
Position:	Senior Program Officer, Natural Capital Research and Innovation
Organisation name:	Queensland Department of Environment, Science and Innovation
Organisation type:	State Government agency
Public facing name and contact details:	Queensland Land Restoration Fund Department of Environment, Science and Innovation CarbonFarming@des.qld.gov.au **Note: Only this email address to be published please, no phone number.**

Section 2: Eligibility

2.1 Registering your idea with the ERAC Secretariat

Have you registered your method idea on the Method Development Tracker?

☒ Yes – please provide details below.

Date of registration: 14 June 2024

Registration ID: 2024_17

2.2 Eligibility of proposed carbon abatement

Appendix A to the EOI Guide lists the categories for which greenhouse gas emissions and removals are included in Australia's National greenhouse gas inventory. Following consultation with the Secretariat, indicate which of the below is correct. If you have not consulted with the Secretariat, please mark as unconfirmed.

Is the abatement described in your method proposal eligible carbon abatement under the ACCU Scheme? Which categories will your proposal impact? Please refer to Section 2 of the EOI Guide.

Please note that if it becomes clear proposed abatement is not eligible abatement, the Secretariat may not assess the remainder of your proposal.

☒ Yes – the EOI Guide (Appendix A) and the ERAC Secretariat indicate the activity covered under the proposed method is likely to result in eligible carbon abatement.

All relevant emissions and removals under the proposed method can be used to meet Australia's climate change targets under the Paris Agreement. Accordingly, the abatement generated by projects under the method will be 'eligible carbon abatement' for the purposes of the *Carbon Credits (Carbon Farming Initiative) Act 2011* (Cth) (CFI Act)).

The proposal involves the variation of the *Carbon Credits (Carbon Farming Initiative—Avoided Clearing of Native Regrowth) Methodology Determination 2015* (ACNR method) to better incentivise the retention of regrowth native forests that are at high risk of re-clearing.

Consistent with the existing method, projects under the improved method will avoid emissions from, and sequester additional carbon in, the live biomass (live above- and below-ground biomass) and dead organic matter (fine and coarse woody debris) carbon pools associated with secondary native forests. Relevant greenhouse gases are confined to carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O), consistent with the existing method. ACNR projects are also likely to avoid emissions from, and increase sequestration in, soil organic carbon (SOC) stocks. Despite this, under the existing method, SOC is excluded from the abatement calculations. It is proposed that this approach be retained under the method variation because of the extent of natural variability in SOC and the uncertainties associated with the response of SOC to cyclical clearing events. Excluding SOC also helps ensure that calculations of abatement are likely to be conservative.

Emissions and removals associated with the live biomass and dead organic matter carbon pools in secondary native forests are accounted for under the Paris Agreement in the land use, land-use change and forestry (LULUCF) sector.

- Where re-clearing of secondary native forests occurs, the relevant emissions, and removals associated with any subsequent regrowth, are generally recorded in the 'land converted to grassland' LULUCF subcategory.
- Where the regrowth attains forest cover, the land unit is transferred to the 'land converted to forest' LULUCF subcategory.

Section 3: Experience and consultation

3.1 Your skills and expertise

Provide a description of your skills, expertise and experience and their relevance to the method proposal. Please list any organisations involved in/collaborating on development of the proposed method.

The Queensland Department of Environment, Science and Innovation's Land Restoration Fund (LRF) aims to leverage environmental markets to incentivise private land holders to voluntarily take action that delivers positive environmental, economic, and social outcomes for Queensland. Since 2018, the LRF has been supporting carbon market growth and maturation by directly valuing Queensland-based land sector carbon projects that also deliver environmental, socio-economic, and First Nations outcomes. The LRF has sought to drive the market towards supplying premium carbon offsets to domestic, and potentially international, markets. The premium nature of these carbon offsets is based on valuing and verifying the additional environmental and socio-economic outcomes that flow from the carbon offset projects, such as habitat restoration, repair of riparian zones, benefits to First Nations peoples, improved water quality, and employment benefits to regional economies. The LRF's vision is that the carbon market, and other environmental markets, provide landholders with incentives to adopt sustainable land management practices. The LRF's objectives include facilitating a pipeline of qualifying Queensland-based carbon offset projects as well as supporting research and development into carbon farming areas where Queensland has a comparative advantage to establish eligibility of high quality ACCUs.

Throughout its operation, and as a nation leader in carbon and co-benefits, the LRF has established strong credentials, experience and expertise in carbon farming methods and projects that deliver high integrity carbon abatement and co-benefits. This knowledge and experience encompasses strategy and policy, investor and industry engagement and capacity building, research and development, and implementation of the Land Restoration Fund itself to invest in

high quality carbon projects through three LRF Investment Rounds to date. The development and availability of carbon methods that deliver significant abatement, increase opportunities for market participation, generate genuine priority co-benefits and demonstrate high integrity is a priority of the LRF.

Through its Investment Rounds, stakeholder relationships, and market development initiatives, the LRF has gained a good understanding of the application and uptake of land sector carbon methods and the opportunities for new/amended methods to increase landholder uptake and deliver high integrity carbon and co-benefits.

The ACNR method improvement proposal has been prepared in collaboration with a research team at The Australian National University, led by Professors Andrew Macintosh and Don Butler.

Professor Macintosh Andrew is a leading expert in climate policy and environmental market design, with a particular emphasis on the land sector and forests. He is the Director of Research at the ANU Law School and has published extensively in world-leading journals on forest carbon and carbon offsets schemes, including on multiple occasions in *Nature* journals. Prof Macintosh has been a member of the National Greenhouse Gas Inventory User Reference Group since 2010, was awarded the Schlamadinger Prize for Climate Change Research in 2012 for work on LULUCF rules, and has led multiple forest carbon modelling projects, including for the Victorian and New South Wales Governments.

In collaboration with the Department of Agriculture, Water and the Environment, Profs Macintosh and Butler led the design and development of the Australian Government's Agriculture Biodiversity Stewardship Program. Prof Macintosh was a member of the ERF Expert Committee in 2013-14, Chaired the Emissions Reduction Assurance Committee from 2014 until 2020, was an Associate Member of the Climate Change Authority in 2015-16, and was a member of the King Review into Additional Source of Low Cost Abatement in 2019-20.

Professor Butler is a vegetation ecologist and biogeographer with extensive experience in natural capital measurement and management, particularly the nexus between vegetation, biodiversity and carbon. Don was a Queensland Government scientist for more than twenty years before joining the Australian National University in 2021. Don led the Queensland Herbarium's ecosystem survey and mapping team and has maintained a focus on land sector carbon management since 2011. He developed the method for Native Forests from Managed Regrowth under Australia's carbon credit market. As chief scientist in Queensland's Land Restoration Fund (LRF), he delivered the LRF's co-benefit standard for carbon projects, and wrote key foundational methods for Accounting for Nature. In 2021, he led establishment of a natural capital sciences unit within Queensland's Department of Environment and Science, to integrate the State's science capacity across disciplines such as vegetation mapping, remote sensing, and soil sciences, to inform natural capital management, including land sector carbon.

The CVs of the members of the ANU research team are provided in confidential **Attachment A**.

3.2 Expert consultation

Provide names and organisations of experts consulted in developing this EOI. You must have consent from them to include their names prior to submitting this proposal.

Name	Organisation	Will you continue to engage with this expert if your proposal is progressed to be

		developed into a method?
Don Butler	Australian National University	Yes
Andrew Macintosh	Australian National University	Yes
Doug Mohr	Integrity Ag	Yes
Diane Allen	Queensland Department of Environment, Science and Innovation	Yes
Tom Orton	Queensland Department of Environment, Science and Innovation	Yes
Emma Comerford	Queensland Department of Environment, Science and Innovation	Yes

3.3 Community, organisations, and individuals

Please provide the names, communities, and organisations you have included, or engaged with on the development of this EOI including Aboriginal and Torres Strait Islander peoples and communities. You must have permission from the individual or organisation to include their names prior to submitting this proposal.

Name	Organisation	Will you continue to engage with this person or organisation if your proposal is progressed? If yes, what role will they play in the method development process?
Elizabeth O'Leary	Australian Climate and Biodiversity Foundation Board	Yes
Hugh Possingham	University of Queensland	Yes
Tim Reed	Australian Climate and Biodiversity Foundation Board /Potentia Cap	Yes
James Schultz	Green Collar	Yes
Jenny Sinclair	Green Collar	Yes
Felicity Wade	Labor Environment Action Network	Yes
Jaden Harris	Labor Environment Action Network	Yes

3.3.1 First Nations opportunities

Does the proposed method idea apply to areas with a recognised Aboriginal or Torres Strait Islander peoples' rights or interests including Native Title interests or claims? What opportunities have you identified for Aboriginal or Torres Strait Islander participation? This includes during the method development process (such as recognition of Traditional ecological knowledge), at the project-level (through First Nations-led projects), or benefit sharing.

The proposed method will increase opportunities for First Nations peoples to develop or participate in projects avoiding clearing of native regrowth forests. This includes opportunities on lands with declared native title as well as claims.

Should this method be prioritised for development, we intend to undertake a similar process to that which is outlined in the Indigenous Carbon Industry Network's report on "Mapping the Opportunities for Indigenous Carbon in Australia" to intersect eligible land.

Section 4: Similarity to existing or other proposed methods

EOIs should be drafted to be broadly applicable. EOIs that are substantially similar may be referred back to proponents, with a recommendation that a joint proposal be submitted instead. Registering your idea on the method development tracker will enable you to identify other, similar proposals under development, and help you to collaborate with proponents with similar ideas.

4.1 Similar methods under development

Are you aware of another method under development or method proposal which is similar to your proposal?

☒ There are no comparable methods under development.

Doug Mohr of IntegrityAg has submitted a method idea on the tracker which is similar, however Doug confirmed that he does not intend to proceed with the idea. We will continue to work with Doug on development of this method, should it be short-listed by ERAC.

4.2 Existing methods

Is this EOI adapting an existing ACCU method or method from another offsets scheme?

☒ Yes – please provide below:

- The name of the scheme in which the method exists

  ACCU scheme (CFI Act)
- Title/name of existing method

  Carbon Credits (Carbon Farming Initiative—Avoided Clearing of Native Regrowth) Methodology Determination 2015
- A reference/source for the existing method

  Carbon Credits (Carbon Farming Initiative—Avoided Clearing of Native Regrowth) Methodology Determination 2015 (see www.legislation.gov.au)
- Description of any major differences between this method proposal and the existing method.

  For secondary native forests to be eligible under the existing ACNR method, they must have been cleared on at least two previous occasions and the project must be registered within a 7-year window based on the age of the forest at the last clearing event. These

restrictive land eligibility requirements are likely to have significantly impeded project uptake.

The proposed improvement of the ACNR method will broaden the eligibility requirements, while managing the associated integrity risk of crediting secondary forests that were unlikely to be re-cleared in the absence of the incentive provided by the ACCU scheme (non-additionality). This will be achieved by limiting eligibility to:

- lands that have been comprehensively cleared within the last 8-25 years and currently support secondary native forest,
- where the landholder has the unrestricted legal freedom to comprehensively re-clear the land for agricultural purposes and there is limited risk of land degradation from clearing (e.g. low slope).

Minimum permanence is proposed to change from 25 to 50 years in order to reduce risks of gaming and ensure additional outcomes. The importance of longer permanence periods was highlighted in the review of the Carbon Credits Act by the Climate Change Authority.

Attachment B provides a summary of the main differences between the existing ACNR method and the proposed improved ACNR method, which will be applicable nationally.

Section 5: Activities and eligibility

5.1 Project activity

Describe the processes that would be involved in implementing the project activity/activities so it is possible to understand what would be required to conduct the applicable projects. Please identify whether projects using the proposed method would remove and/or avoid emissions. Provide supporting evidence when possible. (Note that details on how the baseline and project emissions are calculated are requested in Section 6.)

Eligible project activities will be confined to the avoidance of re-clearing of secondary native forests (not plantations or environmental plantings) on eligible lands.

Eligible lands will be defined as areas:

- that have previously been subject to human-induced conversion of native forest to a non-forest land use;
- that have native forest cover at the date of the application for project registration;
- that have not been cleared of native vegetation within 7 years of the date of the application for project registration, bolstering scheme-wide protections against the risk that land could be cleared in order to establish a carbon project;
- that were comprehensively cleared for agricultural purposes 8 to 25 years prior to the date of the application for project registration;
- where the landholder has the unrestricted legal freedom to comprehensively re-clear the land for agricultural purposes; and
- where there is limited risk of land degradation from re-clearing, so as to ensure projects do not credit avoided clearing where it was unlikely to occur anyway.

These new eligibility conditions will replace the existing requirements that are based on proponents being able to evidence two or more previous clearing events.

The avoidance of re-clearing of secondary native forests generates greenhouse gas abatement via two main pathways:

(a) Re-clearing of secondary native forests results in the release of the carbon stored in forest carbon pools (live biomass, dead biomass and SOC) to the atmosphere as CO_2. Post-harvest burns result in CH_4 and N_2O emissions. The retention of secondary forests that would otherwise have been cleared avoids these emissions.

(b) Re-clearing of secondary native forests in agricultural landscapes generally occurs when the regrowth is 5-30 years of age, when the forests are still growing and sequestering significant amounts of carbon (see **Attachment C**). Allowing the forests to continue to grow beyond the age at which they would otherwise be re-cleared ensures they will continue to sequester carbon, up until the point at which they reach their maximum carbon carrying capacity.

The abatement generated through these pathways can be reduced through wildfires, prescribed burning and non-fire related natural disturbances. The impacts of these events on credited carbon stocks and emissions will be accounted for in the calculation of the net abatement amount for projects with 50-year permanence periods.

5.2 Project eligibility requirements

Clearly set out the requirements for projects to be eligible. The proposed eligibility criteria must describe the circumstances and conditions in which a project would be allowed to occur. Requirements may relate to ensuring newness, baseline setting and project boundaries.

To be eligible, projects must retain secondary native forests (not plantations or environmental plantings) on eligible lands.

Eligible lands will be defined as areas:

(a) that have previously been subject to human-induced conversion of native forest to a non-forest land use;

(b) that have native forest cover at the date of the application for project registration;

(c) that have not been cleared of native vegetation within 7 years of the date of the application for project registration;

(d) that were comprehensively cleared for agricultural purposes 8 to 25 years prior to the date of the application for project registration;

(e) where the landholder has the unrestricted legal freedom to comprehensively re-clear the land for agricultural purposes; and

(f) where there is limited risk of land degradation from re-clearing.

These new eligibility conditions will replace the existing requirements that are based on proponents being able to evidence two or more previous clearing events.

The primary risk associated with ACNR projects is additionality: the risk of crediting projects for not clearing secondary forests that were unlikely to be cleared anyway (i.e. in the absence of the incentive provided by the scheme). The eligibility requirements are designed to mitigate this risk by confining eligible land to areas containing secondary native forests that are at high risk of being re-cleared. The requirements also facilitate a consistent and robust approach to the estimation of sequestration in regenerating native forests.

Requirement (a) is intended to ensure the secondary forests that are credited under the method have previously been deforested (human-induced conversion of native forest to a non-forest land use). This mitigates the risk of crediting forests that are regenerating following a natural disturbance (i.e. drought or wildfires) that would have regenerated anyway.

Requirement (b) confines the application of the method to areas that have achieved native forest cover following deforestation or a subsequent clearing event. '**Native forest cover'** will be defined for these purposes as:

> land dominated by trees that: (i) are located within their natural range; (ii) have not been planted; (iii) have attained a crown cover of at least 20% of the area of land, when defined at [100 or 625] m^2 scale; and (iv) have reached a height of at least 2 metres (adapted from ACNR method, s 5).

This approach aligns with the prohibition on the inclusion of lands that were recently cleared (i.e. requirement (c)) and prevents the inclusion of planted areas, where the risk of re-clearing is likely to be relatively low.

Requirement (c) mitigates the risk of gaming, whereby landholders clear regenerating forests to make them eligible under the ACNR method. This constitutes a tightening of the existing requirements, found in s 20AA(1)(e) of the *Carbon Credits (Carbon Farming Initiative) Rule 2015* (CFI Rule), that prohibit projects involving land that has been deforested ('clearing of a native forest') within 7 years (or 5 years if there was a change in ownership). This exclusion is not sufficiently restrictive because it only applies to land that has been deforested (i.e. the exclusion does not apply if the native vegetation does not meet the definition of forest: woody vegetation ≥2m in height that provides ≥20% crown cover) and the 5-year exclusion period for transferred land is too short.

Requirement (d) seeks to limit eligibility to lands where there is a high risk of comprehensive re-clearing, based on the fact the lands were cleared for agriculture in the past 8 to 25 years. The fact a landholder has comprehensively cleared the land in the past two and a half decades indicates there is likely to be an economic incentive for this to reoccur, either to improve production or increase land values. There are two operative parts of requirement (d): that there has been a re-clearing event in the past 8-25 years; and the re-clearing involved comprehensive clearing, as opposed to thinning or fodder harvesting. Confining clearing events to those involving comprehensive clearing is intended to mitigate additionality risks. Lands subject to partial clearing or harvesting events are often required by law to allow the vegetation to regenerate. Where fodder harvesting occurs, landholders also generally want the vegetation to regenerate so it can be re-harvested in the future to feed stock. Due to this, if lands subject to partial clearing or harvesting events were eligible, there would be a significant risk of crediting the retention of secondary native forests that were unlikely to be re-cleared in the foreseeable future (i.e. over-crediting, forward-crediting or both). Consistent with this, '**comprehensive clearing'** will be defined for these purposes as:

> the comprehensive removal of trees by mechanical or chemical means from at least 90% of the land, defined at [100 or 625] m^2 scale, other than small trees (i.e. less than ~5 cm diameter at breast height) that survive the clearing event by virtue of their size.

This definition is intended to require projects to divide the area of interest into 10m x 10m or 25m x 25m cells (or pixels) and to exclude cells where less than 90% of the area has been subject to clearing.

To minimise interpretation risks, the definition of comprehensive clearing should expressly exclude partial clearing or harvesting events such as thinning and fodder harvesting. This definition of comprehensive clearing should replace the existing definition of 'clearing events' to remove the potential for areas to be included in carbon estimation areas where they have only been partially cleared or harvested in the past. Note, however, that comprehensive clearing events do not have to be deforestation events (i.e. areas subject to comprehensive clearing do not have to have had forest cover).

Requirement (e) builds on requirement (d) by excluding lands where re-clearing is likely to be impeded by regulations (i.e. regulatory additionality risk). The requirement for the freedom to clear to be for agricultural purposes aligns with this intent, as most non-agricultural clearing of native vegetation is regulated under state/territory or federal laws and is generally subject to compensatory mitigation obligations (i.e. offsetting or similar). Consistent with this, '**unrestricted legal freedom'** will be defined for these purposes as:

> the legal entitlement to comprehensively re-clear the land for agricultural purposes, without needing government approval or having to comply with requirements to allow the cleared area to regenerate or to provide compensation of any kind to mitigate the environmental impacts of the clearing event, including by undertaking environmental offsets or setting aside other areas for conservation purposes.

Requirement (f) is intended to mitigate additionality risks by excluding lands where re-clearing is unlikely to occur because it is likely to cause land degradation. Areas with limited risk of land degradation from clearing will be defined using accessible and verifiable biogeographic markers. The initial proposal is to exclude land with a slope ≥10% on the premise that clearing steep country is likely to cause erosion and is therefore unlikely to occur, either because landholders are unlikely to want to degrade their land or it is likely to be subject to regulatory restrictions. Other similar restrictions may be added after further consideration and consultation. Priority will be given to biogeographic markers that can be assessed using published data, as slope can be with digital terrain models.

5.3 Potential for double counting

Is there a risk of double counting associated with the proposed method? Are relevant emissions counted in other contexts? Please describe how you propose to account for any potential for double counting in the method.

There are no double counting risks associated with the method.

Section 6: Calculating net abatement

6.1 Baseline scenario

Identify and describe the baseline scenario or scenarios for the proposed method.

Provide a description and evidence of current industry practice and how baseline emissions can be quantified and calculated. Provide supporting evidence.

Consistent with the approach in the ACNR method, in the baseline scenario, it will be assumed that the lands in the carbon estimation area will be subject to ongoing cycles of re-clearing, regrowth and re-clearing over the 100-year modelling period.

Net abatement amount

The net abatement amount will be calculated using one of two approaches.

- **Approach A (existing ACNR approach):** total net abatement is calculated as the difference between the project carbon stocks at the end of the crediting period and the long-term (100-year) average baseline carbon stocks, minus CH_4 and N_2O emissions from biomass burning. The credits representing this abatement are allocated at the end of each reporting period. The net abatement amount for the first reporting period is calculated as the difference between the project carbon stocks at that time and the long-term average baseline carbon stocks, minus CH_4 and N_2O emissions from biomass burning. In subsequent reporting periods, the net abatement amount is calculated as the stock

change since the end of the last period, minus CH_4 and N_2O emissions from biomass burning. This is represented by equation 9 in the existing ACNR method:

$$A = \Delta C_p \,.\frac{44}{12} - E_p$$

Where:

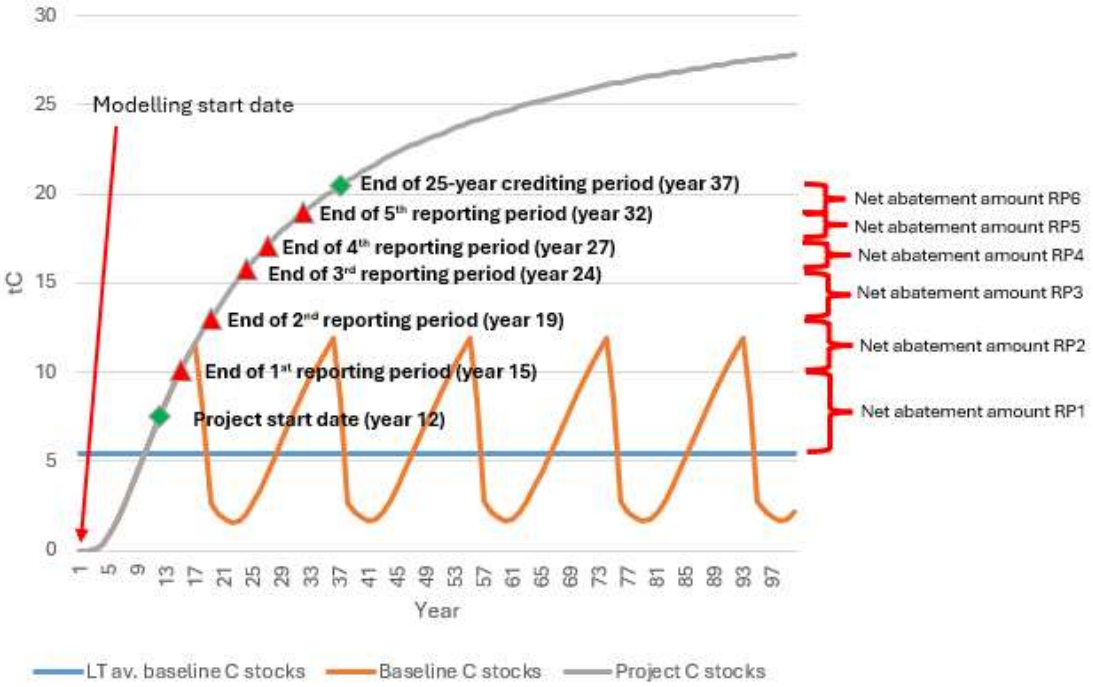
ΔC_p = carbon stock change onsite (in tonnes C) in the project area (i.e. the sum of the stock change in the carbon estimation areas) at the end of the reporting period.

44/12 = the ratio of the molecular mass of carbon dioxide (44 g/mol) to carbon (12 g/mol), which is used to convert the C stock change to CO_2.

E_p = total emissions from biomass burning (in tonnes CO_2-e) in the project area (i.e. the sum of the emissions from biomass burning in the carbon estimation areas) during the reporting period.

The approach is illustrated in the hypothetical shown in Figure 1, in which the ACNR project is initiated 12 years after the commencement of regeneration following the last clearing event. In the baseline scenario, re-clearing is assumed to occur 17 years after each regeneration event, with regeneration commencing two years after each clearing event. This pattern of regeneration and re-clearing produces the classic sawtooth shape baseline carbon stock curve (orange line). The long-term average baseline carbon stocks are roughly 5.5 tC (blue line). Under Approach A, the project's total net abatement amount is equal to the difference between in the carbon stocks at the end of the crediting period (roughly 20.5 tC, at year 37) and the long-term average baseline carbon stocks (5.5 tC); that is, approximately 15 tC (56 tCO_2). The credits representing this abatement are allocated at the end of each reporting period, with the amount allocated at the end of the first reporting period reflecting the difference between the stock at that time and the long-term average baseline stock, and for subsequent reporting periods reflecting the stock change since the end of the last period (all minus any emissions from biomass burning).

Figure 1. Hypothetical illustration of calculation of net abatement amount for reporting periods under Approach A (existing ACNR approach) for 1 hectare carbon estimation area, assuming no emissions from biomass burning*



* 'LT av. baseline C stocks' = 100-year average carbon stocks (live and dead biomass) in baseline scenario. 'Baseline C stocks' = annual carbon stocks (live and dead biomass) in baseline scenario. 'Project C stocks' = carbon stocks (live and dead biomass) in project scenario. 'RP' = reporting period.

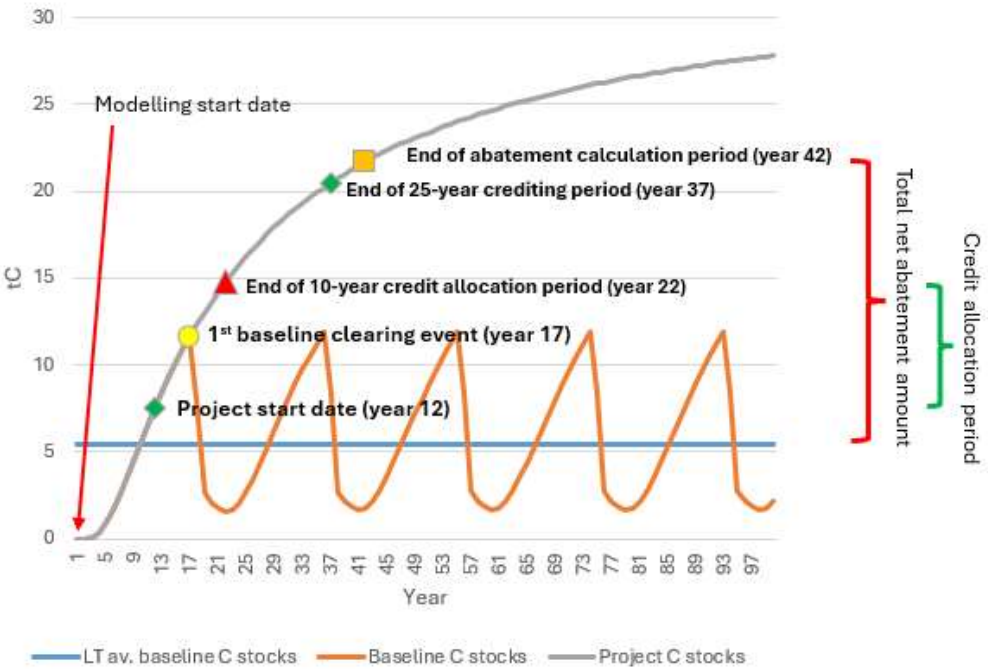
- **Approach B (new ACNR approach):** As illustrated in Figure 2, total net abatement is calculated as the difference between the project carbon stocks at the end of the 25th year after the first baseline clearing event and the long-term (100-year) average baseline carbon stocks. The ACCUs reflecting this abatement are allocated in equal instalments over the first 10 years of the project, less a 5% buffer that will be held back until year 11 pending the outcomes of the third measurement inventory (where relevant, see below).

  The approach is illustrated in the hypothetical shown in Figure 2. Again, the project is initiated 12 years after the commencement of regeneration following the last clearing event and, in the baseline scenario, re-clearing is assumed to occur 17 years after each regeneration event. The project's total net abatement amount under Approach B is equal to the difference between in the carbon stocks at the end of the abatement calculation period in the project scenario (i.e. 17 + 25 = year 42, when carbon stocks are roughly 22 tC) and the long-term average baseline carbon stocks (5.5 tC); that is, approximately 16.5 tC (60 tCO_2). The credits representing this abatement are allocated in equal instalments over the first 10 years of the project.

  The impacts of windrow burns can be modelled in the baseline scenario (where relevant).

  The impacts of natural disturbances on biomass carbon stocks and emissions are excluded, as are any emissions associated with prescribed burning.

Figure 2. Hypothetical illustration of calculation of net abatement amount under Approach B (end of the crediting period net stocks approach) for 1 hectare carbon estimation area*



* 'LT av. baseline C stocks' = 100-year average carbon stocks (live and dead biomass) in baseline scenario. 'Baseline C stocks' = annual carbon stocks (live and dead biomass) in baseline scenario. 'Project C stocks' = carbon stocks (live and dead biomass) in project scenario. 'RP' = reporting period.

The approach that applies to a project will be dictated by the length of its permanence period.

Under the proposed improved ACNR method, projects will have a choice of either a 50- or 100-year permanence period.

- Projects with **50-year permanence periods** will be required to use **Approach A**.
- Projects with **100-year permanence periods** will be able to use **either Approach A or B**.

A similar approach to Approach B is used to calculate the net abatement amount for ex-plantation (Schedule 4) projects under the *Carbon Credits (Carbon Farming Initiative—Plantation Forestry) Methodology Determination* 2022 (Plantation Method). There are three main differences.

1. For ex-plantation projects, credits are allocated over a 15-year period, based on the difference between the net project carbon stocks at the end of the crediting period and the baseline carbon stocks at the end of the crediting period. Approach B allocates credits over 10-years, unless proponents opt for direct measurement, in which case 5% of the credits will be held back until year 11 pending the outcomes of the third measurement inventory.
2. For ex-plantation projects, the net abatement amount is calculated using the net project carbon stocks at the end of the crediting period (NB: growth caps are applied to different plantation types to account for uncertainty in relevant FullCAM plantation calibrations). Under Approach B, the proposal is to use net project carbon stocks at the end of the 25th year after the first baseline clearing event. The benefit of Approach B is it means total net

abatement of a project is not contingent on the age of the regrowth when the project commences.

3. For ex-plantation projects, the net abatement amount is calculated using the baseline carbon stock at the end of the crediting period. Approach B uses the long-term average net baseline carbon stocks, the same as conversion (Schedule 2) and continuing (Schedule 3) plantation projects under the Plantation Method. The use of baseline carbon stocks at the end of the crediting period for ACNR projects is inappropriate as it would result in peculiar outcomes and incentivise gaming behaviours by making the total net abatement of a project contingent on the age of the regrowth at the end of the crediting period in the baseline scenario.

Frontloading crediting in 100-year ACNR projects will incentivise more uptake. It is justified because the risks associated with 100-year ACNR projects are low, with high confidence the abatement will be additional and not over-estimated. This approach also aligns with the recommendations of the Report of the Expert Panel Examining Additional Sources of Low Cost Abatement (King Review).

There is some evidence of the effectiveness of financial incentives in gaining commitments to 100-year permanence obligations through the Queensland Government's Land Restoration Fund (LRF) program. While only approximately 24% of current projects registered under the ERF have 100-year permanence obligations, approximately 41% of LRF-contracted projects are committed to 100-year permanence. The LRF signals a preference for 100-year permanence in its investment rounds, and provides front-loading of financial incentives in its contract structure.

Source:

- King, G., Smith, S., Parker, D., Macintosh, A. (2020). Report of the Expert Panel examining additional sources of low cost abatement. Department of the Environment and Energy, Canberra.

Baseline scenario

Regardless of the approach used for the calculation of the net abatement amount, carbon stocks in the baseline scenario will be modelled on the assumption there are a series of sequential regeneration events and clearing events in the carbon estimation areas over the 100-year modelling period. The first event in the baseline scenario will be the regeneration event following the most recent comprehensive clearing of the carbon estimation area. This will be followed by a baseline clearing event, which will be assumed to occur at a prescribed date after the initial regeneration event (known as the 'modelling start date') (see Figures 1 and 2 above). The date of the first baseline clearing event will be set using the following rules.

- Where there have been at least two past clearing events, the first baseline clearing event will be assumed to occur when the regenerating forest reaches the age when it was last cleared, plus two years (as per the existing ACNR method).
- Where the area has not been subject to two past clearing events, the first baseline clearing event will be assumed to occur 15 years after the modelling start date.

In the existing method, windrow burns are assumed to always occur in the baseline scenario after clearing events. This is not conservative because it reduces the baseline carbon stocks and windrow burns are not always used. To address this, the improved method will only allow windrow burns to be modelled in the baseline scenario where the proponent can demonstrate a windrow burn was undertaken after the last clearing event. This is similar to the approach that was used in the *Carbon Credits (Carbon Farming Initiative) (Native Forest from Managed Regrowth) Methodology Determination 2013* (which expired on 31 March 2024).

The events that are modelled in the baseline are assumed to occur at the same interval throughout the modelling period. For example, if the first baseline clearing event was assumed to occur 17 years after the modelling start date, and this is followed by a windrow burn 1 year after the first clearing event, regeneration will be assumed to occur 2 years after the first clearing event and then all subsequent events will be assumed to occur at the same intervals thereafter (i.e. 19 years between each occurrence of the same event) (as per the hypothetical examples in Figures 1 and 2).

The assumption of ongoing cycles of re-clearing, regrowth and re-clearing over the 100-year modelling period is conservative because, in practice, the extent of natural regeneration after comprehensive re-clearing events is likely to decline over time as native soil seed stocks diminish. The use of this conservative baseline assumption increases the baseline carbon stocks, reducing credited sequestration.

Treatment of natural disturbances

In the existing ACNR method, the baseline scenario does not include the effects of natural disturbances (e.g. wildfires) but they are required to be modelled in the project scenario. Under the improved ACNR method, for projects with 50-year permanence periods, it is proposed that natural disturbances be included in both the baseline and project scenarios as and when they occur. This is because the project activity (retention of the secondary forests) should not materially alter the risk of disturbances, meaning that, when they occur, they are also likely to have occurred in the baseline. This approach is also used for conversion projects under the Plantation Method.

For projects with 100-year permanence periods, it is proposed that natural disturbances be excluded from both the baseline and project scenarios. This is based on the premise that any reductions in biomass carbon stocks associated with natural disturbances are likely to be replenished over the permanence period, and the associated CH_4 and N_2O emissions are likely to be relatively small compared to the total sequestration generated by the projects.

Summary of modelled carbon pools, sources and events

The carbon pools and emissions sources that will be accounted for in the abatement calculations are summarised in Table 1. Note that emissions from fossil fuel use are omitted because they are likely to be immaterial and the same, if not lower, in the project scenario relative to the baseline scenario.

Table 1. 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	Above ground forest debris	Carbon dioxide (CO_2)
Carbon pool	Below ground forest debris	Carbon dioxide (CO_2)
Emission source NB: Except for projects with a 100-year permanence period	Biomass burning	Methane (CH_4) Nitrous oxide (N_2O)

The events that will be accounted for in the abatement calculations are summarised in Table 2.

Table 2. Events and associated type of greenhouse gas

Event	Greenhouse gas
Clearing	Carbon dioxide (CO_2)
Biomass burning (prescribed burning and wildfire) NB: Except for projects with a 100-year permanence period	Methane (CH_4) Nitrous oxide (N_2O)
Other natural disturbances NB: Except for projects with a 100-year permanence period	Carbon dioxide (CO_2)

Table 3 provides a summary of the coverage of relevant sinks and sources in the baseline and project scenarios.

Table 3. Coverage of relevant sinks and sources in the baseline and project scenarios

Scenario	Forest carbon	Biomass burning: projects with a 50-year permanence period	Biomass burning: projects with a 100-year permanence period
Baseline scenario	Carbon stock change in above- and below-ground live biomass and debris	CH_4 and N_2O emissions from post-clearing windrow burns (where applicable) and wildfires	Excluded
Project scenario	Carbon stock change in above- and below-ground live biomass and debris	CH_4 and N_2O emissions from prescribed burns and wildfires	Excluded

Soil organic carbon (SOC)

Soil organic carbon (SOC) levels are subject to high interannual and interdecadal variability due to the effects of rainfall and climate. This creates a material risk that, it the SOC pool is included in the abatement calculations, projects could be credited for increases in SOC that are attributable to factors other than the project activities (retention of secondary native forests). There is also significant uncertainty associated with the effects of re-clearing on SOC levels. Due to these issues, the SOC pool will be excluded from the abatement calculations, consistent with the current approach in the existing ACNR method. This promotes conservatism because, from first principles, the retention of secondary native forests should result in higher soil organic carbon stocks in the project areas relative to what they would have been had the forests been re-cleared.

Sources:

- Sanderman, J., Farquharson, R. & Baldock, J.A. (2009). Soil carbon sequestration potential: a review for Australian agriculture. CSIRO Land and Water, Canberra.
- Chan, K. et al. (2010) Soil carbon stocks under different pastures and pasture management in the higher rainfall areas of south-eastern Australia. Australian Journal of Soil Research 48, 7–15.
- Baldock, J.A., & Wilson, B. (2015) Quantifying temporal variability of soil carbon. CSIRO, Canberra.
- Conyers, M. et al. (2015) A review of organic carbon accumulation in soils within the agricultural context of southern New South Wales, Australia. Field Crops Research 184, 177-182.
- Mayer, M. et al. (2020) Influence of forest management activities on soil organic carbon stocks: A knowledge synthesis. Forest Ecology and Management 466, 118127.
- Dalal, R. et al. (2021) A study over 33 years shows that carbon and nitrogen stocks in a subtropical soil are increasing under native vegetation in a changing climate. Science of the Total Environment 772, 145019.
- Henry, B. (2023) Potential for soil carbon sequestration in Northern Australian grazing lands: A review of the evidence. Department of Agriculture and Fisheries, Queensland.

Direct measurement (measure-model-measure)

Carbon stocks in live and dead biomass, and CH_4 and N_2O emissions from biomass burning, will be modelled in both the baseline and project scenarios using the Full Carbon Accounting Model (FullCAM), as they are in the existing ACNR method. However, the proposed improved ACNR method will give projects a 'direct measurement' option. Projects that opt for direct measurement will be required to undertake an initial inventory at the start of the project, involving the estimation of above-ground live tree biomass through sampling and direct measurement. The results from the initial inventory will be used to recalibrate the FullCAM forest plots that are used to model forest carbon stocks in the baseline and project scenarios. The FullCAM forest plots will be recalibrated by adjusting the estimate of maximum biomass (*M*), based on the age of the regrowth on the date of the inventory. To ensure conservativism, there will be a maximum limit on upward revisions in *M*, provisionally set at 25% above the applicable average M across the carbon estimation areas of the project. Carbon stocks in above-ground live tree biomass will also be required to be re-measured in years five and 10 of the project (i.e. the 2nd and 3rd measurement inventories), effectively measure – model – measure.

6.2 Baseline scenario over time

Please indicate whether, and to what extent, the baselines should change over time. This may help ensure the activities under the proposed method remain additional. Provide supporting evidence.

For projects with 50-year permanence periods, baseline carbon stocks will be required to be calculated at the end of each reporting period.

For projects with 100-year permanence periods, baseline carbon stocks will be calculated at project commencement under average climate conditions.

Projects that opt for direct measurement will be required to remeasure live tree biomass in years five and 10 of the project.

6.3 Project activity emissions

Describe how you will calculate remaining emissions (in the project boundary) once the project has been carried out. This should include accounting for new emissions that may result from carrying out activities. Provide supporting evidence when possible.

See description in section 6.1.

6.4 Account for periodic variation

Describe how the method proposal would account for periodic variations that may occur in the amount of carbon stored or avoided (if applicable). Provide supporting evidence when possible.

Natural variability in forest carbon stocks can occur through three main pathways:

- climate related variability in carbon stocks in live and dead biomass;
- climate related variability in SOC levels; and
- natural disturbances.

Details of how the method addresses the variability associated with these pathways are provided below.

Climate related variability in carbon stocks in live and dead biomass

The extent to which the method addresses climate related variability in carbon stocks in live and dead biomass will depend on whether projects opt for a 50- or 100-year permanence period.

- For projects with a 50-year permanence period, which use Approach A to calculate net abatement (the existing ACNR method), the effects of seasonal variability will be captured in the FullCAM estimates of the carbon stocks at the end of each reporting period.
- For projects with a 100-year permanence period, which use Approach B to calculate net abatement (the new ACNR method), the effects of seasonal variability will not be directly captured in the abatement estimates. Abatement will be based on projected carbon stocks under average climate conditions. However, because the projects have a 100-year permanence period, the abatement estimates will still be conservative because projects will only be credited for approximately 70%-75% of the total additional sequestration in biomass generated by the project over the permanence period. The exclusion of SOC adds further conservatism, as does the baseline assumption of ongoing regrowth and re-clearing over the 100-year modelling period when re-clearing will often actually result in 'clean' pasture at some point, without regeneration (and therefore likely lower baselines and more credited abatement).

Projects will be required to use the most up-to-date version of FullCAM available at the end of the reporting period.

Climate related variability in SOC levels

The exclusion of SOC stocks from the abatement calculations will prevent projects from being credited for fluctuations in SOC stocks that are due to seasonable variability.

Natural disturbances

For projects with 50-year permanence periods, the carbon stock changes and emissions associated with natural disturbances must be included in both the baseline and project scenarios as and when they occur. The same approach is used for conversion projects under the Plantation Method. The inclusion of natural disturbances in both the project and baseline scenarios will mean that, to some extent, the effects cancel each other out. However, including natural disturbances in both scenarios will reduce over-crediting risks by ensuring projects account for the magnitude and timing of emissions from relevant pools (e.g. higher emissions from debris in the project scenario).

For projects with 100-year permanence periods, the carbon stock changes and emissions associated with natural disturbances are excluded from both the baseline and project scenarios. This is based on the premise that any reductions in biomass carbon stocks associated with natural disturbances are likely to be replenished over the permanence period, and the associated CH_4 and N_2O emissions are likely to be relatively small compared to the total sequestration generated by the projects.

6.5 Account for carbon leakage

Provide detail on whether – and to what extent – the proposed method may result in carbon leakage and how that has been or could be accounted for in the proposed method's design. Provide supporting evidence when possible.

Leakage comes in two main forms: direct and indirect. Direct leakage, also known as activity shifting, refers to instances where the project proponent physically moves the emitting activity to another location, while claiming credits for the reduction in emissions at the initial site of the activity. Indirect leakage refers to instances where the benefits of the abatement within the project boundary are negated by market-induced increases in emissions or reductions in removals outside of the project boundary.

Indirect leakage

The risk of ACNR projects triggering an increase in land clearing domestically via indirect means is low. This is because any reduction in red meat and fibre production that is associated with the projects is unlikely to impact relevant prices. The primary markets—in meat and fibre from cattle, sheep and goats—are competitive and trade exposed. The likely eligible areas are also responsible for a small proportion of production in relevant domestic and international markets. Due to these factors, market prices are unlikely to be affected by any decrease in production that arises from the projects. In the absence of a change in market prices, there is no economic incentive for landholders to try to increase production by clearing additional land.

Source:

- Whittle, B., Berry, P., Heyhoe, E. (2013) Leakage from avoided clearing and harvesting of native forests under the CFI: A quantitative assessment. ABARES, Canberra.

Direct leakage

The risk of ACNR projects triggering direct leakage—where the project proponent protects one area but then clears another instead—is more material. This is because one of the barriers that landholders face in considering clearing native vegetation to increase production or land values is their willingness and ability to access capital to fund the activity. Graziers in Australia tend to have relatively low debt levels, reflecting landholders' reluctance to borrow due to the fear of being unable to meet debt servicing commitments during hard times (e.g. drought and periods of low commodity prices). The cash income of grazing businesses is also often relatively modest, including in the regions where ACNR projects are most likely to be initiated. The reluctance to borrow and relatively low surplus cash levels can impede the ability of landholders to finance clearing activities, even where they are likely to be profitable. ACNR projects could alleviate this barrier by providing landholders with additional cash resources, which could then be used to fund vegetation clearing.

The risk of this type of direct leakage is not unique to avoided clearing projects; it is associated with all agricultural-related carbon projects, particularly those involving grazing lands. To date, it is unclear whether existing carbon projects have triggered material direct leakage. There is some

anecdotal evidence of it being associated with human-induced regeneration and avoided deforestation projects in western New South Wales and Queensland. However, the issue has not been properly analysed.

A leakage discount could be applied to avoided clearing projects to address the risk. However, it is illogical to only apply it to ACNR projects. If a discount is applied, it should be applied across all relevant methods and project types. To provide an evidence base for this decision, further research should be undertaken on the extent of any direct leakage associated with existing human-induced regeneration and avoided deforestation projects.

Sources:

- Department of Agriculture, Fisheries and Forestry (2023) Trends in farm debt: Agricultural lending data 2022–23. Commonwealth of Australia, Canberra. Available at: https://www.agriculture.gov.au/abares/research-topics/surveys/farm-debt (18 June 2024).
- Department of Agriculture, Fisheries and Forestry (2024) 'Farm Data Portal - Beta'. Available at: https://www.agriculture.gov.au/abares/data/farm-data-portal (18 June 2024).
- Thompson, G. (2021) 'Boom time in carbon farming country', ABC Radio National Background Briefing. ABC, Sydney. Available at: https://www.abc.net.au/radionational/programs/backgroundbriefing/boom-time-in-carbon-farming-country/13637436 (18 June 2024).

6.6 Calculating net abatement

Describe how the net abatement will be calculated and how the uncertainty of the net abatement will be calculated. Provide supporting evidence.

You are encouraged to provide a diagram which clearly shows the baseline relative to the proposed abatement over the life of projects conducted under the proposed method.

As detailed in section 6.1, the net abatement amount will be calculated using one of two approaches.

- **Projects with 50-year permanence periods will be required to use Approach A (existing ACNR approach)**, where total net abatement is calculated as the difference between the project carbon stocks at the end of the crediting period and the long-term (100-year) average baseline carbon stocks, minus CH_4 and N_2O emissions from biomass burning. The credits representing this abatement are allocated at the end of each reporting period. The net abatement amount for the first reporting period is calculated as the difference between the project carbon stocks at that time and the long-term average baseline carbon stocks, minus CH_4 and N_2O emissions from biomass burning. In subsequent reporting periods, the net abatement amount is calculated as the stock change since the end of the last period, minus CH_4 and N_2O emissions from biomass burning.
- **Projects with 100-year permanence periods will be able to use either Approach A or Approach B (new ACNR approach)**, where total net abatement is calculated as the difference between the project carbon stocks at the end of the 25th year after the first baseline clearing event and the long-term (100-year) average baseline carbon stocks. The ACCUs reflecting this abatement are allocated in equal instalments over the first 10 years of the project, less a 5% buffer that will be held back until year 11 pending the outcomes of the third measurement inventory (where relevant).

The rationale for the use of Approach B for 100-year ACNR projects is provided in section 6.1.

Section 7: Offsets Integrity Standards

The Offsets Integrity Standards are legislated in section 133 of the *Carbon Credits (Carbon Farming Initiative) Act 2011* that methods must meet.

7.1 How will your proposed method be additional to business-as-usual practice?

Provide supporting evidence when possible.

The main integrity risks associated with the proposed improved ACNR method is non-additionality; that a significant proportion of the secondary forests that are retained through ACNR projects would not have been cleared anyway.

There are a number of reasons why areas that have previously been cleared may not be re-cleared in the foreseeable future, including:

- existing regulatory restrictions;
- the potential to cause land degradation;
- future changes in government regulations that prohibit or restrict re-clearing;
- low or negative returns from re-clearing (e.g. due to low commodity prices or the re-clearing not materially increasing production or land values);
- market access requirements (e.g. concerning 'net zero' or 'deforestation-free'); and
- stakeholder expectations, including from banks and other financiers.

The proposed improved ACNR method has been designed to mitigate these additionality risks.

Regulatory additionality

The risk of crediting abatement that is required by law is addressed by the regulatory additionality requirement in s 27(4A) and the proposed method eligibility requirements that:

- the landholder must have the unrestricted legal freedom to comprehensively re-clear the land for agricultural purposes; and
- there must be limited risk of land degradation from re-clearing.

Unrestricted legal freedom to clear is defined broadly to ensure it captures any regulatory requirement that could impede re-clearing, including requirements to obtain government approvals, to provide set-asides or offsets, and to allow cleared areas to regenerate.

Non-additionality because re-clearing could cause land degradation

This risk is addressed through the eligibility requirement that there must be limited risk of land degradation from re-clearing. As noted in section 5.2, areas with limited risk of land degradation from clearing will be defined using accessible and verifiable biogeographic markers. The initial proposal is to exclude land with a slope ≥10% on the premise that clearing steep country is likely to cause erosion and is therefore unlikely to occur, either because landholders are unlikely to want to degrade their land or it is likely to be subject to regulatory restrictions. Other similar restrictions may be added after further consideration and consultation.

Non-additionality because of future changes in government regulations

Historically, the risk of future policy change has not been treated as a relevant consideration in the development of ACCU methods. The first time it has been explicitly considered is in the recently released DCCEEW reform paper on the ACCU scheme's landfill gas methods. In this context, DCCEEW's approach was to rely on the testimony of state government representatives about the prospects of relevant future policy changes. Even where these representatives indicated reforms were likely to be a priority, no measures were proposed in the landfill method to mitigate the risk posed by future reforms. In this regard, the DCCEEW reform paper states:

> Except for New South Wales, TWG state government representatives indicated introducing more stringent regulation of methane capture at landfills was unlikely to be a future reform priority. Future reforms instead related to waste sector regulatory frameworks to promote resource recovery. The TWG noted commitments to net zero in the sector should complement and foster activities under the ACCU Scheme but not be considered equivalent to regulation that would affect calculation of a regulatory baseline.

- Source: DCCEEW (2024) Reform options for ACCU Scheme landfill gas methods: Implementing recommendation 10 of the ACCU Review. Commonwealth of Australia, Canberra, p 22.

While noting this, conceptually, the risk of future government policy change should be a relevant consideration in method development. However, the approach to this risk needs to be guided by a coherent set of principles and applied consistently across all methods and project types. Taken to extremes, the risk of future policy change could be used to exclude all project types from the ACCU scheme. Ultimately, governments could potentially use other policy instruments to mandate or incentivise the realisation of all abatement opportunities. Hence, there is a need for principles that require the risk of future government policy change to be considered but without unnecessarily excluding abatement opportunities that are well-suited to being realised through the ACCU scheme.

When considering the risk of future policy changes in the context of the proposed improved ACNR method, the approach should be guided by three issues:

- How likely is it that a relevant government will make a policy decision to regulate the clearing of secondary forests that have been re-cleared in the past 25-years, where relevant landholders currently have an unrestricted legal freedom to re-clear?
- If a relevant government decides to regulate this re-clearing, how likely is it that it will be able to give effect to the decision by enacting and implementing relevant laws and policies?
- If a relevant government is able to give effect to a decision to regulate this re-clearing, how likely is it that the policy change will persist?

Having regard to these issues, the integrity risks posed by future policy changes are very low. Current federal and state policy settings concerning re-clearing of agricultural lands are based on the notion that, where the clearing is unregulated, re-clearing forms part of the existing use of the land. A shift in these settings would be considered by relevant agricultural landholders to constitute an acquisition of a 'property right' and be strongly opposed, and no relevant governments are currently considering such a change. An expert panel examining vegetation clearing in Queensland (Possingham et al. 2023) recommended regulatory stability to reduce volatility in clearing rates, and enhancement of carbon market opportunities for regrowth vegetation where it is open to clearing.

Source:

- Possingham, H. et al. (2023) Native Vegetation Scientific Expert Panel Report. Office of the Queensland Chief Scientist. Queensland Government, Brisbane.

Non-additionality because re-clearing is uneconomic

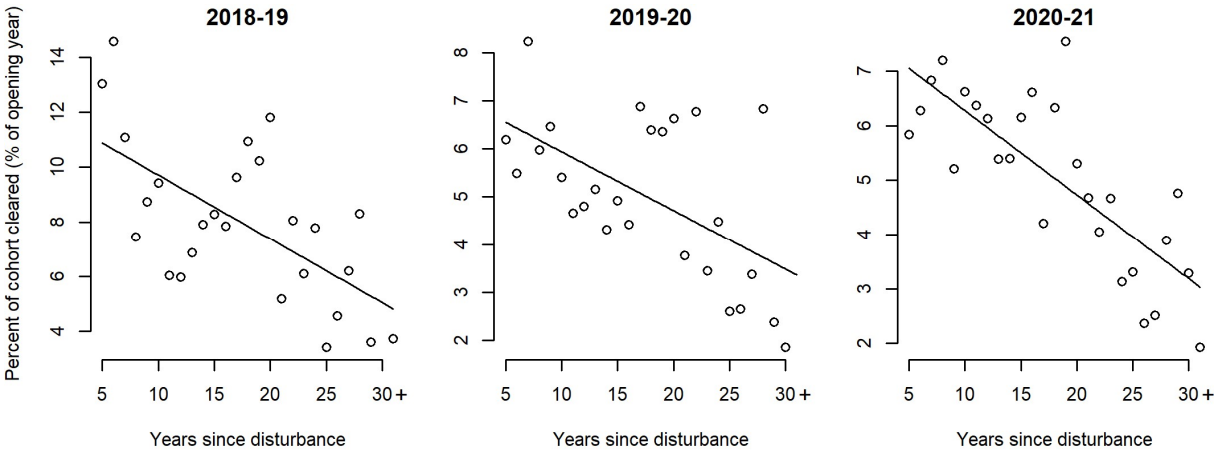
This risk is addressed through the eligibility requirements that:

- the land must have been comprehensively cleared for agricultural purposes 8 to 25 years prior to the date of the application for project registration; and
- where there is limited risk of land degradation from re-clearing.

The logic is that, if the lands were comprehensively cleared for agricultural purposes within the last 25-years, and re-clearing is unlikely to cause material land degradation, there is likely to be a material economic incentive for the land to be kept in a non-forest state through re-clearing. While market and climatic drivers of re-clearing may change over time, there is a high probability that areas that meet these requirements will be re-cleared, unless the re-clearing is prevented or impeded by regulations.

Limiting the eligibility window to areas cleared within 8-25 years of the date of the application for project registration is a key aspect of the method design, which is intended to serve as a key mitigant of additionality risk. This is because the probability of re-clearing declines with the time since last clearing – in other words, the older the re-growth, the less likely it is to be re-cleared. This is illustrated in Figure 3, which shows the proportion of each age cohort of category X forests in Queensland cleared each year in 2018-19, 2019-20 and 2020-21. The data show that the proportion of each age cohort cleared each year declines with cohort age from around 5 or 6 years since disturbance onward. Yearly risk of clearing roughly halves between category X forest on more recently disturbed land (5-6 years of age) and long uncleared category X forest (+25 years). Before 5 years, clearing rates are highly variable year-to-year, and generally lower than from 5 years on.

Figure 3. Proportions of regrowth cohorts (age since last disturbance) cleared in the three most recent years for which clearing data are published. Lines are linear fits to the data in each plot, Pearson's correlation coefficients were -0.63, -0.47 and -0.77 (from left to right).



Source: Queensland Government (2023) Statewide Landcover and Trees Study.

Sources:

- Butler, D., Halford, J. (2016) Vegetation clearing in Category X Queensland: where to next? Queensland Department of Science, Information Technology and Innovation, Brisbane.
- Queensland Government (2023) Statewide Landcover and Trees Study.

- **Attachment** C - Butler et al. 2024 *Improved Avoided Clearing of Native Regrowth (ACNR) Method: Abatement Analysis.* Australian National University, Canberra.

Although younger regrowth is at far greater risk of re-clearing, significant re-clearing occurs in secondary forests that are more than 25 years of age, which supports the need to exclude the option of projects having 25-year permanence periods. Adverse selection will inherently drive projects towards secondary forests that were more likely to be cleared when they are older. Requiring projects to have either 50- or 100-year permanence periods will ensure that, where this occurs, there is still additionality in the retention of the forests. That is, the forests will still be at material risk of being re-cleared, only the clearing may have occurred later than when it is credited (i.e. there will be forward crediting rather than over-crediting).

Non-additionality because of emerging market access and changing stakeholder expectations

There is the potential for emerging market access and changing stakeholder expectations to deter the clearing of secondary forests. However, the risk of these factors materially reducing the probability re-clearing secondary forests that are eligible under the proposed improved ACNR method is low. This is because the key eligibility requirements, particularly that the included lands have been re-cleared in the past 25 years and that subsequent re-clearing is unregulated, indicate there is a strong economic driver for re-clearing and an expectation the land will continue to be managed through cycles of regrowth and re-clearing into the future. Policymakers, landholders and agricultural investors are also aware there can be a significant opportunity costs associated with retaining secondary forests on these types of productive lands, in the form of foregone operating returns and adverse impacts on land values. This reduces the likelihood of market access and stakeholder requirements targeting lands that are proposed to be eligible under the method. It also reduces the likelihood of landholders being responsive to these types of requirements, where they have alternative markets to supply to and alternative sources of capital. The available evidence suggests these alternatives will be available into the foreseeable future, which will blunt the capacity of market access and stakeholder requirements to materially alter the incentives faced by relevant landholders.

7.2 How will your proposed method be measurable and verifiable?

Provide supporting evidence when possible.

Robust and conservative measurement will be assured through the proposed approaches to calculating the net abatement amount. The following issues are of note.

- Live and dead biomass, and CH_4 and N_2O emissions from biomass burning, will be modelled in FullCAM, consistent with the approach in the National Inventory Report and other ACCU vegetation methods.
- Proponents will have the option of directly measuring carbon stocks in live tree biomass in the project area to calibrate FullCAM plots. Projects that opt for direct measurement will not be able to transfer to a fully modelled approach after project registration. They will also be required to re-measure carbon stocks in live tree biomass in years 5 and 10 (the 2nd and 3rd measurement inventories). For 100-year projects that opt to calculate the net abatement amount using Approach B, 5% of ACCUs will be held back until year 11 of the project pending the outcomes of the third measurement inventory.
- The SOC pool will be excluded from the abatement calculations.
- Projects will be required to have either a 50- or 100-year permanence period. The requirement for projects to have a 50- or 100-year permanence period means projects will

only be credited for approximately 50%-75% of the total additional sequestration in biomass generated by the project over the permanence period. An additional permanence period discount of ~3-5% could also be applied to projects with 50-year permanence periods, if this was considered necessary.

- The assumption of ongoing cycles of re-clearing, regrowth and re-clearing in the baseline scenario is conservative because, in practice, the extent of natural regeneration after comprehensive re-clearing events is likely to decline over time as native soil seed stocks diminish.
- In the existing method, windrow burns are assumed to always occur in the baseline scenario after clearing events. This is not conservative because it reduces the baseline carbon stocks and windrow burns are not always used. To address this, the improved method will only allow windrow burns to be included in the baseline scenario where the proponent can demonstrate a windrow burn was undertaken after the last clearing event.
- Currently, the baseline scenario does not include the effects of natural disturbances (e.g. wildfires) but they are required to be modelled in the project scenario. Under the improved ACNR method, it is proposed that:
    - for projects with 50-year permanence periods, natural disturbances be included in both the baseline and project scenarios as and when they occur; and
    - for projects with 100-year permanence periods, the carbon stock changes and emissions associated with natural disturbances be excluded from both the baseline and project scenarios.

7.3 What evidence will your proposed method be based on?

Provide a summary of the type of evidence your method proposal draws on and describe any uncertainties or limitations associated with it.

There is clear and compelling evidence that re-clearing of secondary native forests results in greenhouse gas emissions and foregone removals and is a significant source of net emissions in Australia. Over the past decade, re-clearing of secondary forests averaged almost 350,000 hectares per year ($ha.yr^{-1}$). Direct emissions from this re-clearing averaged 11 million tonnes of CO_2-e yr^{-1}, with additional emissions stemming from the decomposition of biomass and soil emissions after clearing events. The vast majority of re-clearing is for agriculture, principally grazing, and most of the re-clearing occurs in Queensland and New South Wales (the two jurisdictions accounted for 67% and 17% respectively of secondary forest clearing over the period 2013-2022).

Sources:

- Australia's National Greenhouse Accounts, Activity tables 1990-2022 – LULUCF. Available at: https://www.greenhouseaccounts.climatechange.gov.au/.
- Queensland Department of Environment and Science (2023) Landcover replacement class of woody vegetation change in 2019-20, by remnant and non-remnant areas. Available at: https://www.data.qld.gov.au/dataset/2019-20-slats-report (8 June 2023).

Despite the levels of re-clearing and the abatement opportunities they present, there has been few projects registered under the existing ACNR method. At the time of writing, there were only 14 registered projects, which had received 516,398 ACCUs. The low levels of uptake are likely to be due to the overly restrictive eligibility requirements, particularly the requirement for eligible land to have been cleared on at least two previous occasions and for the project to be registered within a 7-year window based on the age of the forest at the last clearing event.

Source:

- Clean Energy Regulator (2024) ERF project register. Commonwealth of Australia, Canberra. Available at: https://cer.gov.au/markets/reports-and-data/accu-project-and-contract-register?view=Projects (19 June 2024).

These facts provide the evidence base for the improvement of the method.

The evidence to support the proposed improvement is derived from the following key sources.

- Evidence on the robustness of the approach to measurement (FullCAM and related measurement approaches) is detailed in Australia's National Inventory Report.

- The evidence of the robustness of the approach to addressing additionality risks is detailed in 7.1, which relies particularly on data from the Queensland Statewide Landcover and Trees Study.

- The evidence of the robustness of the approach to addressing leakage risks is detailed in section 6.5.

The most material risk associated with the ACNR is additionality; the risk of crediting the retention of secondary forests that were unlikely to be re-cleared anyway. Multiple mitigants are proposed to address this risk, detailed in section 7.1.

The effectiveness of the improved ACNR method in incentivising abatement would be enhanced by including the capacity for projects to include environmental plantings and assisted natural regeneration in areas that have previously been comprehensively cleared. Landholders interested in undertaking ACNR projects will generally have properties comprised of:

(a) deforested areas that have regrown and achieved forest cover (secondary forest) and that are at high risk of re-clearing and meet the proposed ACNR eligibility requirements;

(b) deforested areas with no or little regrowth that require plantings if they are to be reforested;

(c) deforested areas with young regrowth that has the potential to achieve forest cover if it is not re-cleared; and

(d) other areas (e.g. remnant vegetation and secondary forests that are not eligible under the ACNR method).

The lowest risk, highest integrity sequestration opportunities are associated with (a) (ACNR projects) and the reforestation of cleared areas through environmental plantings in (b) and assisted natural regeneration, or a combination of environmental plantings and assisted natural regeneration, in (c).

However, there is currently no ACCU method for assisted natural regeneration. Further, neither the existing nor the proposed new environmental planting method allow assisted natural regeneration. This means that, even if an assisted natural regeneration on cleared lands method is made, a landholder with (a), (b) and (c) on their land would need to register 3 separate ACCU projects to realise the associated opportunities. This would result in the landholder incurring the additional transaction costs and complexity associated with registering and undertaking three separate projects rather than having them integrated within one project. Further details on the potential to integrate avoided clearing, environmental plantings and assisted natural regeneration into a single method are

provided in **Attachment D**. We are willing to proceed with development of this method and/or the IACNR method, subject to the views and decisions of the ERAC.

7.4 How will your proposed method be conservative?

Provide supporting evidence when possible.

Measures in the proposed ACNR method to ensure conservatism include the following.

a. Stringent land eligibility requirements that mitigate additionality and measurement risks by confining the application of the method to areas that have forest cover at project commencement and are at high risk of re-clearing.
b. Mandatory 50- or 100-year permanence periods.
c. The exclusion of the SOC pool from abatement calculations.
d. Using an approach to the calculation of net abatement that will ensure projects are only credited for approximately 50%-75% of the total additional sequestration in biomass generated by the project over the permanence period.
e. The use of a baseline scenario that assumes ongoing cycles of re-clearing, regrowth and re-clearing, when in reality the extent of natural regeneration after comprehensive re-clearing events is likely to decline over time as native soil seed stocks diminish.
f. The inclusion of a requirement for projects to evidence windrow burns in the last comprehensive clearing event if they want to include windrow burns in the baseline scenario.
g. Including the effects of natural disturbances in both the baseline and project scenarios as and when they occur for projects with 50-year permanence periods.

Section 8: Method proposal triage criteria

In addition to considering whether a method proposal has the potential to meet the legislated Offsets Integrity Standards, the ERAC assesses method proposals against the triaging criteria.

8.1 Total abatement potential, including likely uptake

Describe the possible total abatement potential of the proposed method, including:

- Likely uptake, including justification and evidence for your estimate and factors likely to influence the uptake.
- Possible locations of projects (i.e. particular regions/jurisdictions).
- Accessibility of the proposed method to all stakeholders.
- Given the above, the likely abatement in the short and longer-term from the method.

Provide supporting evidence when possible.

To assess the potential for the improved ACNR method to generate abatement, modelling was undertaken using three scenarios for reductions in secondary forest re-clearing in Queensland: 10%, 25% and 50% reductions in re-clearing of regrowth aged between 10 and 25 years, relative to 2020-21 levels. The modelling suggests abatement from Queensland alone could range between 0.38 MtCO2-e yr^{-1} and 2.38 MtCO2-e yr^{-1} over 10 years (0.26-1.9 MtCO2-e yr^{-1} over 25 years), depending on the extent of uptake. The number of associated ACCUs was estimated at 0.3 to 1.8 million yr^{-1} over 10 years, with 25-year averages ranging from 0.22 to 1.4 million ACCUs.

Data limitations prevented a more thorough analysis of other jurisdictions. However, based on the data that are available, it is estimated that new ACNR projects in New South Wales could generate

75,000 to 440,000 ACCUs per year over 10 years (95,000-595,000 tCO_2-e yr^{-1} of abatement). The remaining jurisdictions could provide in the order of 5-10% of the estimated potential for Queensland (maximum of 177,000 ACCUs per year, or abatement of 240,000 tCO_2-e yr^{-1}).

These estimates assume the net abatement amount is calculated in accordance with the existing ACNR approach (Approach A), where total net abatement is calculated as the difference between the project carbon stocks at the end of the crediting period and the long-term (100-year) average baseline carbon stocks, minus net emissions from biomass burning.

Further details of the method used to estimate abatement and ACCUs are provided in **Attachment C.**

The use of Approach B could significantly increase the number of ACCUs generated over the forward 10-year period, depending on the uptake of 100-year projects. To illustrate this, **Attachment E** provides a case study on Approach B and its effects on the present value of the revenues from the sale of ACCUs from a hypothetical ACNR project.

In terms of accessibility, the proposed method is comparable to other existing or proposed ACCU methods. An approach that combined the suggested improvements to ACNR outlined in this EOI within a more broadly scoped method that also enabled plantings and/or human assisted regeneration, as outlined in **Attachment D**, would maximise accessibility.

8.2 Proposal complexity

Describe the complexity of the method proposal, including how difficult it may be, and how much time it may take, to develop, maintain, and regulate.

Development of the proposed method could be completed relatively quickly (please refer to section 10 for more detail) and the primary remaining technical tasks associated with developing the proposed improved ACNR method involve:

(a) development of the forest inventory protocols that will govern the direct measurement of live tree biomass;

(b) settling the approach to the determination of permanence periods and the calculation of the net abatement amount; and

(c) determining whether any additional measures are required to address leakage risks – noting that, as discussed in section 6.5, if this is done, it should be done for all agricultural and vegetation methods.

The proposal for (a) is to build on the protocols developed for other ACCU methods, including the approaches used in the now repealed *Carbon Credits (Carbon Farming Initiative) (Avoided Deforestation) Methodology Determination 2013* and *Carbon Credits (Carbon Farming Initiative—Avoided Deforestation 1.1) Methodology Determination 2015*, and the existing *Carbon Credits (Carbon Farming Initiative) (Measurement Based Methods for New Farm Forestry Plantations) Methodology Determination 2014* and *Carbon Credits (Carbon Farming Initiative—Reforestation and Afforestation 2.0) Methodology Determination 2015*.

For (b) and (c), the approach will be guided by discussions with DCCEEW, ERAC and other relevant stakeholders.

In terms of any ongoing maintenance requirements, abatement and emissions will be modelled in FullCAM, an existing tool which is already supported and maintained, meaning no additional ongoing costs are involved.

8.3 Broader positive outcomes

Describe any positive environmental, economic, social and/or cultural outcomes and benefits, including for Aboriginal and Torres Strait Islander peoples, that might occur from the uptake of the proposed method. Provide a clear rationale for each proposed outcome, with supporting evidence where possible.

Reducing secondary forest clearing will contribute to biodiversity conservation and nature positive objectives. It also has the potential to generate significant social benefits in agricultural communities by enabling landholders to diversify income sources and integrate financially-viable conservation initiatives into farm businesses.

In support of the Australian Government's Nature Positive Plan, the method would lend itself to integration with the Nature Repair Market, due to the clear environmental benefits that can be gained from improved native vegetation management.

The method proposal also aligns strongly with Objective 8 of Australia's Strategy for Nature, by allowing more landholders to implement financially sustainable practices for the ecologically sustainable use of natural resources.

8.4 Innovation

Briefly describe how the method proposal could foster innovation in the relevant sectors.

The forest inventories undertaken as part of ACNR projects will increase the scientific understanding of Australia's forests and the carbon cycle in the forests and could help improve

the calibration of FullCAM for regrowth forests. Techniques used for forest inventories are a focus of innovation globally, with advances in satellite and airborne technologies offering potential to reduce the cost of monitoring projects.

The measure-model-measure approach could utilise technologies such as LiDAR, that can reduce project costs, improve the quality of data, and allow for the transfer of large quantities of data to national data sets. The approach would lend itself to the addition of new technologies over time (through 'modules' or simple method variations).

8.5 Preliminary risk assessment and any potential adverse impacts

Please indicate what, if any potential adverse or negative environmental, economic, social and/or cultural impacts could result from the method. Consider the circumstances under which the risks or outcomes might arise and any method requirements that could avoid or minimise the risks.

Overall, there are no material risks associated with the proposed method and the uptake of ACNR projects.

Should the EOI be short-listed, a comprehensive risk analysis will be undertaken and submitted. In the interim, the following high level risk analysis of the proposed method shows:

- *project and scheme level* – there are no foreseeable adverse or negative impacts at the project or scheme level, as the proposal aligns with existing methods.
- *social* – there are no adverse or negative impacts stemming from proposed activities, which aren't already currently being avoided or minimised under the existing ACNR method. Considerations in a more comprehensive risk analysis could include any implications for safe working conditions and labour practices.
- *economic* – there are no adverse or negative impacts which could arise, which aren't currently being avoided or minimised under the existing ACNR method. The improved method is likely to have positive implications for income diversification, and financial sustainability during natural disasters or other factors that can impact cashflows for agricultural enterprises.
- *environmental* – there are no adverse or negative impacts stemming from proposed activities, which aren't already currently being avoided or minimised under the existing ACNR method. The uptake of this method should deliver strong positive environmental outcomes.
- *cultural* - there are no adverse or negative impacts stemming from proposed activities, which aren't already currently being avoided or minimised under the existing ACNR method. As mentioned in section 3.3.1, should this method be prioritised for development, we intend to undertake a similar process to that which is outlined in the Indigenous Carbon Industry Network's report on "Mapping the Opportunities for Indigenous Carbon in Australia" to intersect eligible land. This would also help to better inform a comprehensive cultural risk analysis.

Section 9: Method tools

9.1 Method tools (optional)

If applicable, describe any tools that would be used as part of the method, for example to model or calculate abatement under the method. Please provide information outlined in the EOI Guide.

As detailed above (sections 6.1 and 7.2), carbon stocks in live and dead biomass, and CH_4 and N_2O emissions from biomass burning, will be modelled in FullCAM.

Section 10: Method Development Project Plan

10.1 Project plan for method development

Provide a high-level project plan for developing your proposal. The plan can take any form and be submitted as an **Attachment**. Please provide the information outlined in the EOI Guide.

The plan for the development of the proposal, after ERAC/DCCEEW endorsement, is as follows.

Within 2 months

- Technical workshop on ACNR variation proposal, focusing on evidence base for additionality, permanence periods, the calculation of the net abatement amount and protocols for direct measurement.
- Targeted consultation on the proposed approach, including with:
    - other jurisdictions to ensure the method is fit-for-purpose under differing regulatory regimes;
    - scientists (including CSIRO);
    - agricultural bodies (including National Farmers Federation and state bodies);
    - carbon industry (CMI, GreenCollar, CO2 Australia and others);
    - indigenous industry stakeholders (including the Indigenous Carbon Industry Network); and
    - environmental groups (including WWF, ACBF etc).

Within 4 months

- Finalise evidence base
- Finalise abatement calculations
- Finalise risk analysis against Offset Integrity Standards
- Draft Simple Method Guide
- Prepare plain English drafting instructions
- Submission of proposal, incorporating feedback from consultations, to DCCEEW and ERAC for approval.

Should the Integrated Reforestation and Avoided Re-clearing (IRAR) method proposal (see **Attachment D** for more detail) be prioritised, we believe that the next stage of method development, including consultation, expert workshops, abatement calculations, draft Simple Method Guide, and plain English drafting instructions could be completed within 6 months from an ERAC decision.

Given the method would largely draw from existing and recently-expired methods and modelling tools, the process should be relatively simple, when compared to methods that require 'ground-up' development.

We have confidence in this estimate given the resources that DESI and ANU have available for the process, along with the high-level of method development experience within the ANU and DESI teams.

Section 11: References

11.1 References

Provide a full citation for all reports, papers and journal articles cited in the method proposal.

King, G., Smith, S., Parker, D., Macintosh, A. (2020). Report of the Expert Panel examining additional sources of low cost abatement. Department of the Environment and Energy, Canberra.

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Dalal, R. et al. (2021) A study over 33 years shows that carbon and nitrogen stocks in a subtropical soil are increasing under native vegetation in a changing climate. Science of the Total Environment 772, 145019.

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Queensland Department of Environment and Science (2023) Landcover replacement class of woody vegetation change in 2019-20, by remnant and non-remnant areas. Available at: https://www.data.qld.gov.au/dataset/2019-20-slats-report (8 June 2023).

Clean Energy Regulator (2024) ERF project register. Commonwealth of Australia, Canberra. Available at: https://cer.gov.au/markets/reports-and-data/accu-project-and-contract-register?view=Projects (19 June 2024).

Section 12: Appendices

12.1 Appendices

List and attach all relevant documentation to support an assessment of the proposal including cited reports, papers and journal articles that are not publicly available.

Attachment A: CVs of ANU research team.

Attachment B: Summary table of main differences between existing ACNR method and proposed improved ACNR method.

Attachment C: IACNR Carbon Abatement and Carbon Credit Estimates.

Attachment D: Integrated Reforestation and Avoided Re-clearing (IRAR) method.

Attachment E: Case Study on the financial implications of different crediting approaches

Section 13: Declaration

This application must be signed by a duly authorised representative of the proponent. The person signing should read the following declaration and sign below.

Division 137 of the Criminal Code makes it an offence for a person to give information to a Commonwealth entity if the person providing the information knows that the information is false or misleading. The maximum penalty for such an offence is imprisonment up to 12 months.

By signing below, the signatory acknowledges that he or she is an authorised representative of the proponent, and that all of the information contained in this application is true and correct. The signatory warrants that they own or have a licence to use all of the relevant intellectual property rights in the application submitted. The signatory also warrants that they have read, and agreed to all information on the submission portal for this EOI, including the important information, privacy notice, public disclosure statement, intellectual property agreement, and declaration.

Full name of the person signing as representative of the proponent	Gillian Mayne		
Position	Director Natural Capital Strategy & Investment		
Signature		Date	12/07/2024