Carbon Credits (Carbon Farming Initiative) (Avoided Re-clearing and Native Reforestation) Methodology Determination 2025

Workflow associated with ARNR projects

Case Study on Hypothetical ARNR project in Queensland

Prepared by The Australian National University on behalf of Queensland Department of the Environment, Tourism, Science and Innovation

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Contents

1. Introduction

This document illustrates the workflow associated with the proposed *Carbon Credits (Carbon Farming Initiative) (Avoided Re-clearing and Native Reforestation) Methodology Determination 2025* (ARNR method), using a hypothetical case study based in the Fitzroy Natural Resource Management (NRM) region in Central Queensland.

The case study is not factual and is for illustrative purposes only. The data presented in the case study are not factual and should not be relied upon for any purpose, other than to gain a greater understanding of the workflow associated with a project under the ARNR method.

2. Case study facts – hypothetical

The Johnsons own a 750-ha property in the Fitzroy NRM region, parts of which were comprehensively cleared for cropping and grazing in 2005 (Figure 1). Since then, substantial sections of the cleared areas have regenerated, while others remain in productive use with little or no regeneration. Remnant vegetation on parts of the property was also cleared in 2017 and has since regenerated, in full or in part.

Figure 1. The Johnsons' property in 2026

The Johnsons are interested in registering a project under the ARNR method that protects and restores regenerating native forest and sub-forest areas on their property and reforests areas where there is little or no regeneration. Figure 2 shows a time series of the land they want to include in the project (from 2008, 2013, 2017 and 2026). The land includes areas that have not been cleared since at least 2008 and others that were re-cleared as recently as 2017. As of 1 January 2027 when the application is made for the registration of the project, the land is in a mix of starting states:

- areas of native forest cover;
- areas of native regeneration, but the regeneration is in a sub-forest state; and
- areas largely devoid of regeneration and will require plantings to restore native forest cover.

Project land in 2008

Project land in 2013

Project land in 2017

Project land in 2026

Figure 2. Prospective areas for ARNR project

3. Regulatory workflow

Note: In the discussion below, text that is italicised describes the applicable method rules. Text that is not italicised discusses the application of the rules to the facts in the hypothetical case study. Bolding is used for emphasis. Sections or sub-sections referred to

in the text (e.g. "s 7(1)" are referring to the relevant sections/sub-sections in the draft method.

Step 1: Is the project an eligible project type?

The ARNR method applies to projects that (s 7(1)):

*(a) establish a native forest on land that has previously been comprehensively cleared for agriculture: (i) exclusively or predominately through permanent plantings; (ii) exclusively or predominately through natural regeneration; or (iii) through a mix of permanent plantings and natural regeneration (a **native reforestation project**);*

*(b) the avoidance of re-clearing of secondary native forest that has regenerated after being comprehensively cleared for agriculture (an **avoided forest re-clearing project**);*

*(c) the avoidance of re-clearing of native woody vegetation that has regenerated after being comprehensively cleared for agriculture and that, on the eligibility date, has forest potential but does not have native forest cover (an **avoided sub-forest re-clearing project**); or*

*(d) a combination of two or more of (a), (b) and (c) (a **native reforestation and avoided re-clearing project**).*

Is the project eligible? Yes. The prospective project areas comply with the above eligible project types. The Johnsons intend to do the following:

- Establish a native forest through a mix of plantings and natural regeneration in the areas shown in Figure 3, which have previously been comprehensively cleared for grazing (paragraph (a)).

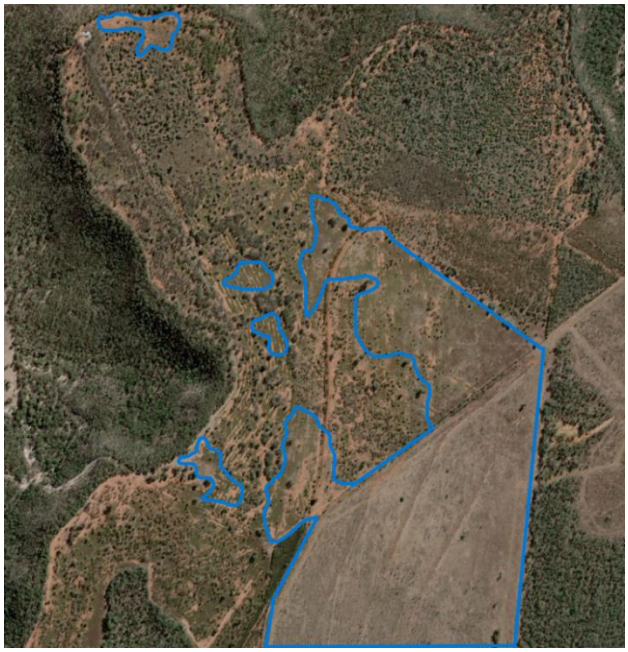


Figure 3. Prospective native reforestation areas

- Stop re-clearing areas of native regeneration that had native forest cover at the date of the application for registration (shown in Figure 4). This generates abatement (avoided emissions and increased sequestration) by allowing the forest to mature (paragraph (b)).

Figure 4. Prospective avoided forest re-clearing areas

- Stop re-clearing areas containing regenerating native trees and shrubs that provide >10% crown cover at the date of the application but where crown cover from native trees ≥2 m in height is <20% (avoided sub-forest re-clearing areas) (shown in Figure 5). This will generate abatement (avoided emissions and increased sequestration) by allowing the native vegetation to achieve forest cover and then mature (paragraph (c)).

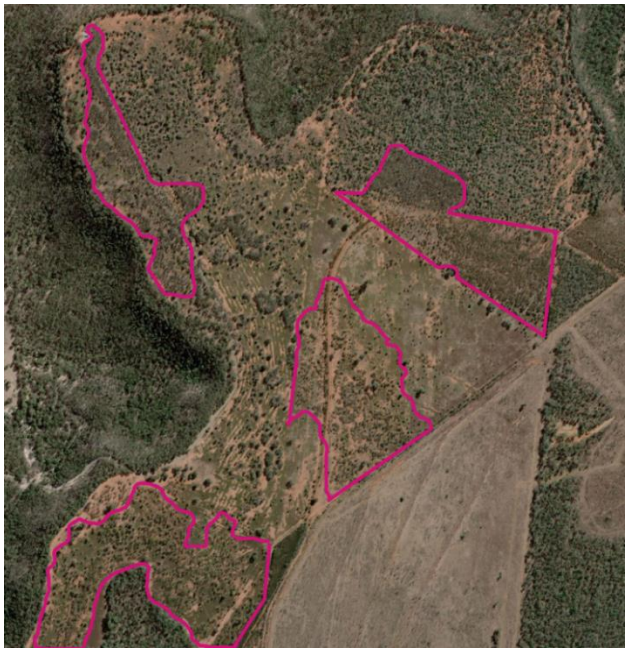


Figure 5. Prospective avoided sub-forest re-clearing areas

Because the project involves a combination of (a), (b) and (c), it is a **native reforestation and avoided re-clearing project** (s 7(5)).

Step 2: Project activity requirements

The ARNR method provides for three types of carbon estimation areas (CEAs) (Figure 6):

- ***native reforestation CEAs***, which can be either ***plantings CEAs***, ***natural regeneration CEAs*** or ***mixed plantings and natural regeneration CEAs***;
- ***avoided forest re-clearing CEAs***; and
- ***avoided sub-forest re-clearing CEAs***.

The sub-types of native reforestation CEAs allow proponents to have CEAs that combine plantings and natural regeneration, thereby reducing establishment costs and maximising the chances of successful project outcomes.

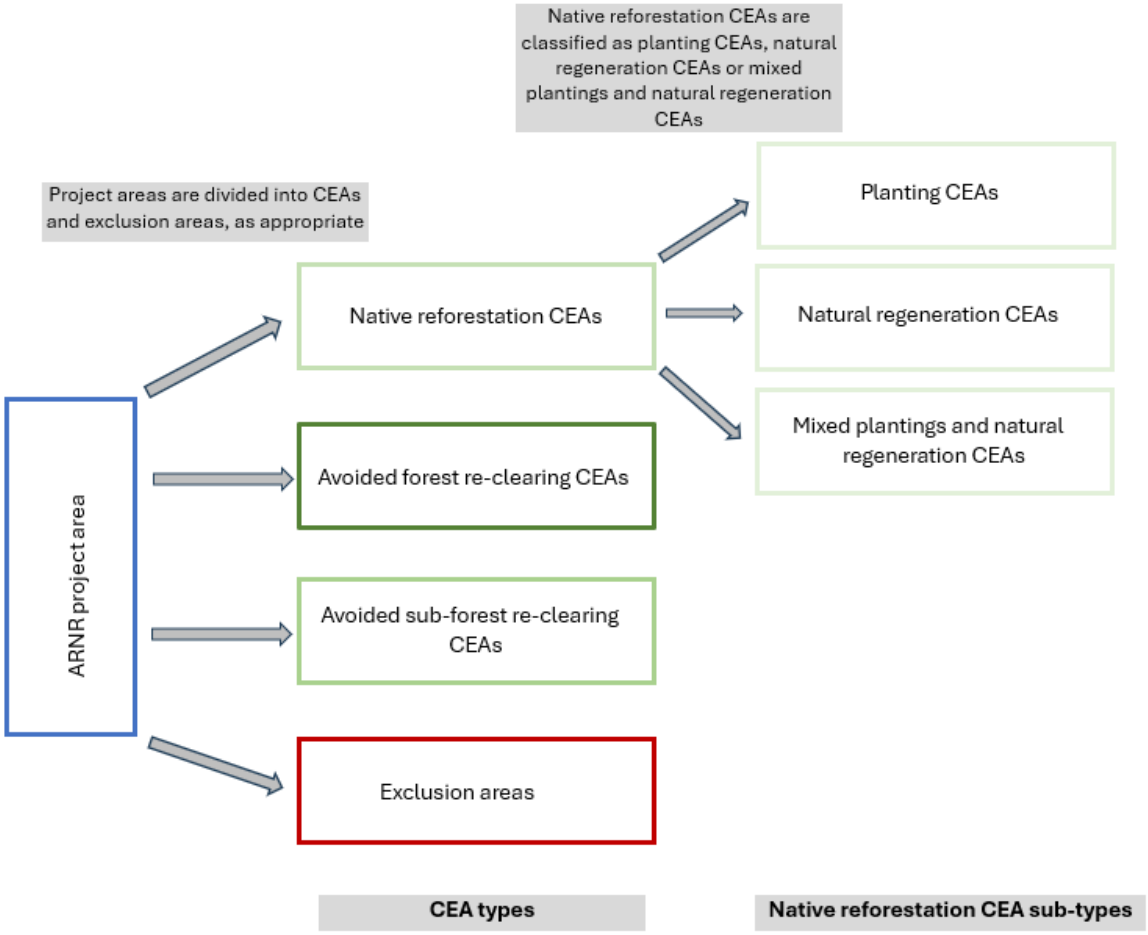


Figure 6. Types of carbon estimation areas (CEAs) under the ARNR method

There are different project activity requirements depending on the project type and accompanying CEA type. The requirements that apply to native reforestation and avoided re-clearing projects depend on the types of CEAs they have.

2.1 Native reforestation CEA project requirements

For native reforestation CEAs that form part of a native reforestation and avoided re-clearing project, the proponent must establish a native forest (s 11(4)(a)):

(a) on land that:

(i) has previously been comprehensively cleared for agriculture;

(ii) is eligible land for inclusion in a native reforestation CEA; and

(iii) is eligible land for inclusion in a plantings CEA, natural regeneration CEA or a mixed plantings and natural regeneration CEA; and

(b) through:

(i) exclusively or predominately permanent plantings (plantings CEA);

(ii) exclusively or predominately natural regeneration (natural regeneration CEA); or

(iii) a mix of permanent plantings and natural regeneration (mixed plantings and natural regeneration CEA); and

(c) *that consists of a mixture of trees that are native to the local area in which the land is located.*

Does the project meet the requirements? Yes. The Johnsons intend to re-establish a native forest on these areas through plantings and natural regeneration.

The prospective native reforestation areas shown in Figure 3 have all previously been comprehensively cleared for grazing. For these purposes, land is considered to have been **comprehensively cleared** if it has been (s 5):

> *… cleared by mechanical or chemical means such that, immediately after the event, the canopy of any remaining trees that survive the event cover no more than 10% of the land, defined at a scale no larger than 30m x 30m.*[1]

The Johnsons intend to re-establish a native forest using a mix of trees that are native to the local area. For these purposes, **native to the local area** means (s 5):

> *… a tree species that forms part of the land's reference ecosystem*[2] *or is native to the IBRA subregion in which the land is located.*

Whether the land is eligible land for the purpose of being included in a native reforestation CEA and a plantings CEA, natural regeneration CEA or a mixed plantings and natural regeneration CEA is addressed below.

2.2 Avoided forest re-clearing CEA project requirements

For avoided forest re-clearing CEAs that form part of a native reforestation and avoided re-clearing project, the proponent must prevent the native trees on land from being cleared and manage the land so the native forest matures (s 11(4)(b)).

[1] 'Clearing' is defined in the method as the 'deliberate removal, killing or damaging of trees by mechanical or chemical means' (s 5). Prescribed burns that remove, kill or damage trees do not constitute clearing for these purposes, unless they are used in conjunction with mechanical or chemical ways of removing, killing or damaging trees.

[2] 'Reference ecosystem' means the native ecosystem type or types that were most likely to be present on the land prior to it being cleared or pre-1750 (whichever is later), having regard to the biophysical characteristics of the land and the type of ecosystem it is currently likely to support (s 12(7)). Information on reference ecosystems can be obtained at: www.planr.gov.au.

Does the project meet the requirements? Yes. The Johnsons intend to stop re-clearing the prospective avoided forest re-clearing areas shown in Figure 4 to allow the native forest to mature.

2.3 Avoided sub-forest re-clearing CEA project requirements

For avoided sub-forest re-clearing CEAs that form part of a native reforestation and avoided re-clearing project, the proponent must prevent the native trees on land included in relevant CEAs from being cleared and manage the land so it achieves native forest cover and the native forest then matures (s 11(4)(c)).

Does the project meet the requirements? Yes. The Johnsons intend to stop re-clearing the prospective avoided sub-forest re-clearing areas shown in Figure 5 to allow the areas to achieve native forest cover and then to continue maturing.

2.4 Permanent plantings requirement

Section 11(5) requires that any plantings established in native reforestation CEAs, avoided forest re-clearing CEAs and avoided sub-forest re-clearing CEAs be permanent plantings.

A **permanent planting** is defined for these purposes as a planting (s 5):

- *that is not cleared, harvested or thinned (other than ecological thinning carried out in accordance with the requirements in the method in ss 21, 24 or 27); and*
- *that is not a 'landscape planting' – being a planting in an urban centre or locality that is: in a residential place (for example, in a backyard, park or on a nature strip); on the grounds of a sporting facility, factory or other commercial facility; on the grounds of a hospital, school or other institution; or in a carpark or cemetery.*

For avoided forest re-clearing and avoided sub-forest re-clearing CEAs, this provision ensures that any remedial plantings that might be established to address unintended loss of forest cover must be permanent (i.e. they cannot subsequently be cleared, unless the clearing is authorised ecological thinning).

Does the project meet the requirements? Yes. The Johnsons intend for all plantings to be permanent plantings and to prevent clearing across the areas shown in Figures 3, 4 and 5 for the duration of the permanence period.

Step 3: Is the project land eligible land?

There are separate land eligibility requirements for each CEA type.

3.1 Eligible land for native reforestation CEAs

Land is eligible for inclusion in a native reforestation CEA if it satisfies the following requirements (s 12).

1. ***The land must be within the native reforestation eligible region, meaning it must be in an IBRA subregion listed in Schedule 1 (Figure 7) (s 12(1)(a)).***

Figure 7. Native reforestation eligible region

Does the land meet the requirements? Yes. The land proposed to be included in native reforestation CEAs is located wholly within the Brigalow Belt North Isaac-Comet Downs IBRA subregion, which is within the native reforestation eligible region specified in Schedule 1 to the method.

2. The land must have previously been comprehensively cleared for agriculture (s 12(1)(b)).

Much of the land that is proposed for inclusion in a native reforestation CEA was cleared before the 1990s, which can make it difficult to prove that the land was comprehensively cleared for agriculture. To accommodate the inclusion of this land, the method includes a provision that deems land to have been comprehensively cleared for agriculture if the following conditions are satisfied (s 12(3)).

- *There is evidence it has been used for an agricultural purpose at any time in the 50 years prior to the eligibility date.*[3]
- *The **reference ecosystem** for the land has trees that are generally at least 5 metres in height and that provide crown cover of at least 25%.*
- *The land has not been subject to a natural disturbance event in the 10 years prior to the eligibility date that could reasonably explain the relative absence of native trees.*

[3] The eligibility date for land is the date of the section 22 application (for registration of the project) or section 29 application (to vary the project declaration) for the land to be included in the CEA (s 5).

Evidence that can be used to demonstrate the land has been used for an agricultural purpose includes land use maps prepared by an agency of the Commonwealth or a State or Territory Government.

The concept of a '**reference ecosystem**' is used in the ARNR method to assess land eligibility. A reference ecosystem is defined for these purposes as (s 12(6)):

> *... the native ecosystem type or types that were most likely to be present on the land prior to it being cleared or pre-1750 (whichever is later), having regard to the biophysical characteristics of the land and the type of ecosystem it is currently likely to support.*

Under the method, ecosystems must be identified and described in accordance with the National Vegetation Inventory System (NVIS) at the association (Level 5) or sub-association (Level 6) level.

Consideration is being given to requiring reference ecosystems to be identified and described in accordance with the most up-to-date of either: (a) NVIS, at Level 5 or 6; or (b) the applicable state or territory vegetation classification system in which the project is being undertaken, at the level equivalent to NVIS Level 5 or 6.

Information on the reference ecosystem for a specific area of land can be obtained at: www.planr.gov.au.

Does the land meet the requirements? Yes. The land proposed to be included in the native reforestation CEAs has been comprehensively cleared for grazing through mechanical means. The Johnsons choose not to rely on the deeming provisions in section 12(3) and instead provide evidence that the land was previously forested and then was comprehensively cleared for grazing. The evidence includes historic aerial photos and satellite imagery showing that the areas originally had native forest cover that was subsequently cleared (Figure 8), and that the land has been used for grazing since the clearing occurred.

1965	2009
	

Figure 8. Imagery of project area, 1965 (before first comprehensive clearing event) and in 2009 (after substantial parts were comprehensively cleared for agriculture).

3. ***The land must form part of a 10m x 10m cell, delineated under s 9(4), that had crown cover from native trees that was less than 10% at the eligibility date (s 12(1)(c)).***

Section 9(1) requires an application for project registration to include specific information. For a proposed native reforestation CEA, this includes (s 9(1)(e)):

- *an estimate of the crown cover provided by native trees on the land proposed to be included in the CEA at the eligibility date, defined at 0.01-hectare scale, in accordance with subsection 9(4); and*
- *an estimate of the crown cover provided by native trees across 0.2-hectare aggregations of relevant land at the eligibility date in accordance with subsection 9(5).*

Subsection 9(4) requires the land proposed to be included in the CEA to be divided into 10m x 10m square cells. Crown cover provided by native trees in each cell must then be determined by estimating the proportion of the cell covered by the vertical projection of the crowns of native trees. If an area of land does not cover the entirety of a 10m x 10m cell, it must be mapped in accordance with the CFI Mapping Guidelines and treated it as if it was a 10m x 10m cell, including by estimating the proportion of the mapped area covered by the vertical projection of the crowns of native trees.

Subsection 9(5) requires the proponent to create 0.2-hectare aggregations of contiguous 10m x 10m cells from inside or outside the proposed CEA and for crown cover provided by native trees to be assessed in each 0.2-hectare aggregation. All of the 10m x 10m cells for the CEA from subsection 9(4) must be included in a 0.2-hectare aggregation and cells from outside the proposed CEA can only be included in a 0.2-hectare aggregation if they are contiguous with a 10m x 10m cell from inside the proposed CEA from the same aggregation. Notably, a 0.2-hectare aggregation can share 10m x 10m cells from inside and outside of the proposed CEA with another 0.2-hectare aggregation. However, each 0.2 ha aggregation must have at least five 10m x 10m cells from inside the proposed CEA that are not shared with another 0.2-hectare aggregation.

The mapped 10m x 10m cells and 0.2-hectare aggregations are fixed throughout the life of the project and are used to assess whether land has the potential to achieve native forest cover (crown cover ≥20% from native trees that are ≥2 m in height, at 0.2 ha scale) and whether land meets the "gateway requirements" (see Step 8). The gateway requirements ensure that the reforestation in CEAs is progressing in line with how it is modelled and credited. If an area of land does not meet the gateway requirements, it must be re-stratified and crediting is paused until the gateway requirement is satisfied. Areas that fail to satisfy the gateway requirements can also be required to be removed from the CEA completely, potentially triggering a requirement to relinquish credits that have been issued in relation to the removed land.

In mapping the 0.2-hectare aggregations, proponents need to be aware that, where 0.2-hectare aggregations include 10m x 10m cells from outside of the CEA, the native forest potential and gateway requirements must be met for both the 0.2-hectare aggregation and the inside cells. Similarly, where 0.2-hectare aggregations include 10m x 10m cells that are shared with other 0.2-hectare aggregations, the native forest potential and gateway requirements must be met for both the 0.2-hectare aggregation and the inside cells that are not shared. If all of the

requirements are not met, all of the land in the 0.2-hectare aggregation is ineligible (i.e. no native forest potential) or fails the gateway.

Does the land meet the requirements? Yes.

Figure 9 illustrates the application of the stratification approach, where a 10m x 10m grid is overlaid over the land proposed to be included in a native reforestation CEA. The cells containing all or substantial parts of the crowns of native trees will be ineligible on the basis crown cover >10%. Only cells with minimal (<10%) crown cover from native trees are eligible for inclusion in native reforestation CEAs.

Here, mature trees within the mapped native reforestation CEA are excluded and mapped as exclusion areas (marked in red), leaving several partial 10m x 10m cells. The same eligibility rules apply to these partial cells as full 10m x 10m cells. The use of this approach to stratification ensures FullCAM is only applied to land that it is calibrated for.

Figure 10 illustrates how the 0.2-hectare aggregations could be constructed for the same area shown in Figure 9. Five aggregations are formed (A1, A2, A3, A4 and A5), covering all the land in the native reforestation CEA. All of the aggregations in this case include cells that are outside of the CEA and/or that are shared with other aggregations from the same CEA. As noted above, this has important implications for how the gateways apply to the aggregations.

Figure 9. Illustrative stratification of native reforestation CEA (blue polygon), with exclusion areas (red polygons)

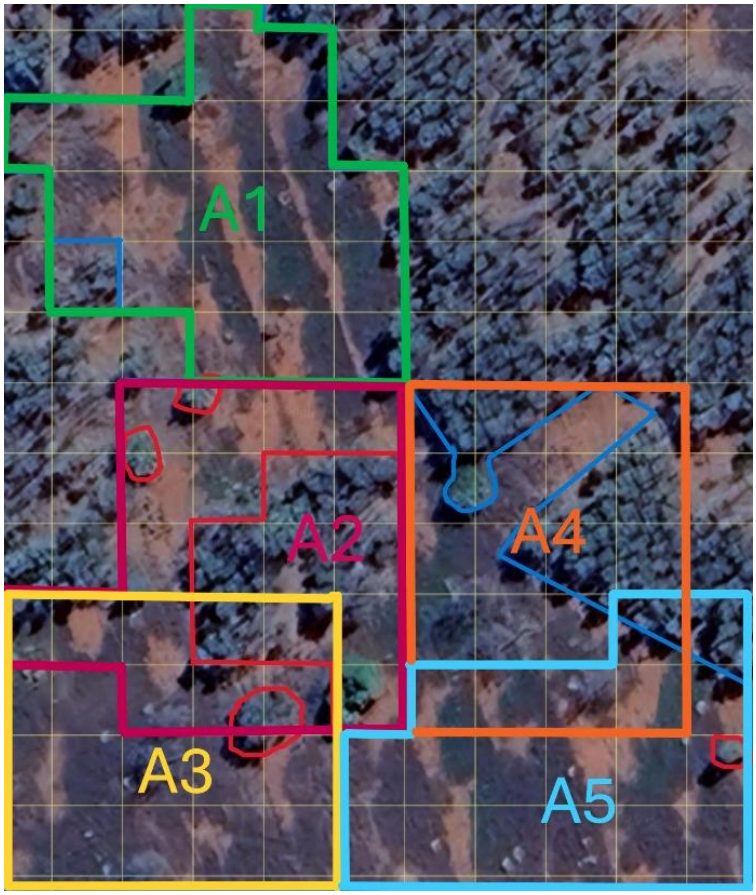


Figure 10. Illustrative construction of 0.2-hectare aggregations of 10m x 10m cells (A1, A2, A3, A4 and A5)

4. ***Native trees on the land must not have been cleared for at least 7 years before the eligibility date (s 12(1)(d)).***

Does the land meet the requirements? Yes.

The land proposed to be included in the native reforestation CEAs has not been cleared since 2017, which is 10 years prior to the project application submitted in January 2027. The Johnsons will be able to use satellite imagery to demonstrate that none of the land has been cleared since before January 2020.

5. ***Having regard to its reference ecosystem and the condition of the land, the land must have native forest potential (s 12(1)(e)).***

Under the ARNR method, land has ***native forest potential*** *if (s 5):*

- *the reference ecosystem for the land generally has native forest cover across its natural distribution; and*
- *having regard to its condition, slope and aspect, and the proposed project activities, there is a high likelihood it will support a native forest.*

Native forest is defined under the ARNR method as an area with crown cover ≥20% from native trees that are ≥2 m in height, defined at 0.2 ha scale. Consistent with this, the method requires that, for an area of land to have native forest potential, it must be at least 0.2 of a hectare and each 0.2 of a hectare of the area must satisfy the above requirements (i.e. that the reference

ecosystem generally has native forest cover and there is a high likelihood the land will support native forest). To assess compliance with these requirements, the proponent must use the 0.2-hectare aggregations of relevant land delineated under subsection 9(5). For land to meet the requirements, it must form part of an assessed 0.2-hectare aggregation of relevant land that has native forest potential. Further:

- *if a 0.2-hectare aggregation includes land that is outside of the CEA:*
    - *all groups of contiguous 10m x 10m cells from the aggregation that are inside the CEA must have native forest potential; and*
    - *all 10m x 10m cells from the aggregation that are inside the CEA that are not contiguous with other cells from inside the CEA must have native forest potential; and*
- *if the 0.2-hectare aggregation includes land in 10m x 10m cells that are shared with another 0.2-hectare aggregation:*
    - *all groups of contiguous 10m x 10m cells (delineated under subsection 9(4)) from the aggregation that are inside the CEA and that are not shared with another 0.2-hectare aggregation must have native forest potential; and*
    - *all 10m x 10m cells (delineated under subsection 9(4)) from the aggregation that are inside the CEA that are not contiguous with other cells from inside the CEA and that are not shared with another 0.2-hectare aggregation must have native forest potential.*

This means that, if a 0.2-hectare aggregation includes 10 x 10m cells from outside the CEA, all groups of contiguous 10 x 10m cells (or single non-contiguous 10x10m cells) that are inside the CEA must have forest potential. Similarly, if a 0.2-hectare aggregation includes 10 x 10m cells that are shared with another 0.2-hectare aggregation, all groups of contiguous 10 x 10m cells (or single non-contiguous 10x10m cells) that are not shared and are inside the CEA, must have forest potential.

For these purposes, native forest potential must be assessed across the relevant 10m x 10m cells in the 0.2-hectare aggregations as if the assessed area was 0.2 hectares (i.e. able to support native trees ≥2 m in height that provide crown cover of ≥20% across the assessed area).

Does the land meet the requirements? Yes.

In this case, there are two reference ecosystems in the area proposed for inclusion in CEAs:

- *Eucalyptus decorticans* and/or *Eucalyptus* spp., *Corymbia* spp., *Acacia* spp., *Lysicarpus angustifolius* woodland on Cainozoic lateritic duricrust (RE 11.7.4); and
- *Eucalyptus crebra* woodland on fine-grained sedimentary rocks (RE 11.9.9).

Note: Reference ecosystems must be identified and described in accordance with the National Vegetation Inventory System (NVIS) at the association (Level 5) or sub-association level (Level 6). Consideration is being given to requiring or allowing reference ecosystems to be defined using the applicable state or territory vegetation classification system. Under the Queensland vegetation classification system, regional ecosystems (REs) are the equivalent of NVIS associations or sub-associations. Other jurisdictions use different classifications and

terminology. For example, in New South Wales and Victoria, the equivalents are Plant Community Types and Ecological Vegetation Classes respectively.

Most of the area is RE 11.7.4, with a small patch of RE 11.9.9 on the eastern part of the site (Figure 11).

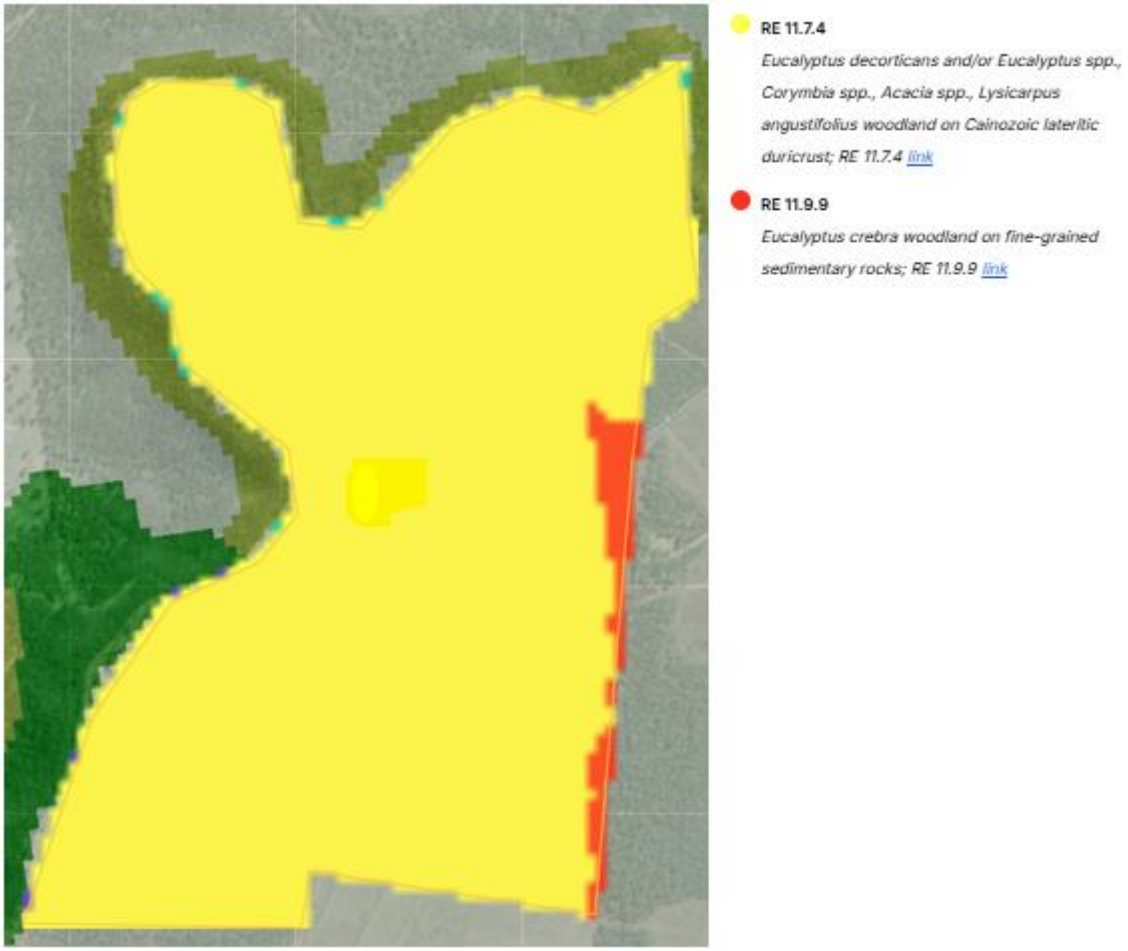


Figure 11. Reference ecosystems in land proposed to be included in CEAs

There are benchmark values for RE 11.7.4 and RE 11.9.9, which provide an estimate of the expected height and canopy cover provided by the trees in the canopy. In the case of RE 11.7.4, the benchmark height of canopy trees is 18 metres, while the benchmark canopy cover is 29%. For RE 11.9.9, the equivalent benchmark values are 18 metres and 20% canopy cover. These benchmark values, combined with the relatively good state of the land and the proposed plantings and careful management of regrowth, indicate that the land will support native forest. Further evidence to support this conclusion is provided by past aerial photography and satellite imagery showing the land supported native forest before originally being cleared and the nature of the regrowth that has occurred following past re-clearing events (Figure 12).

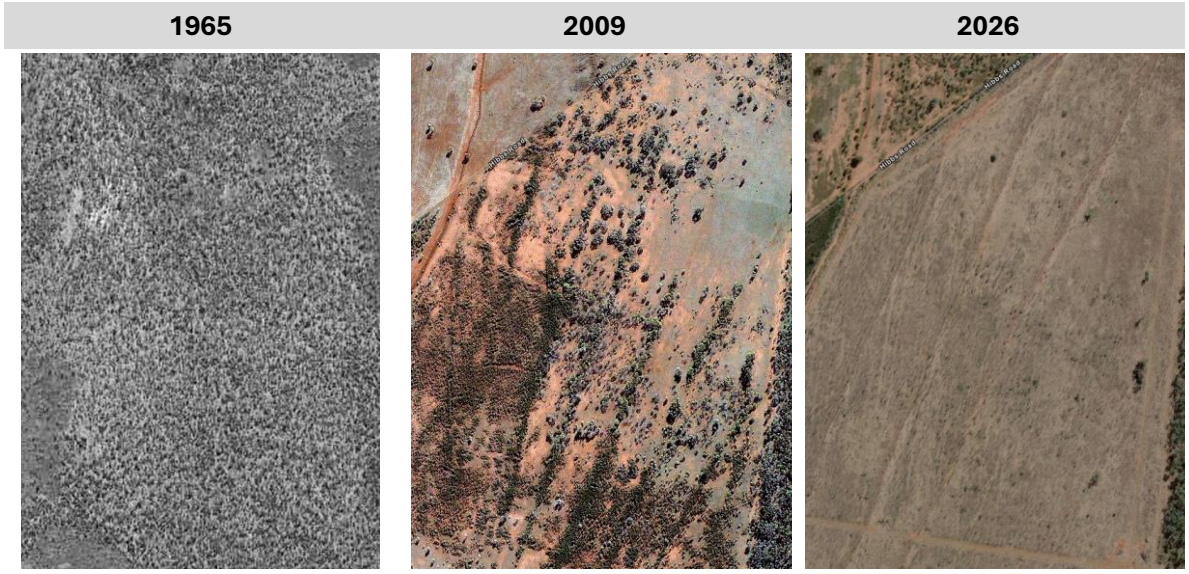
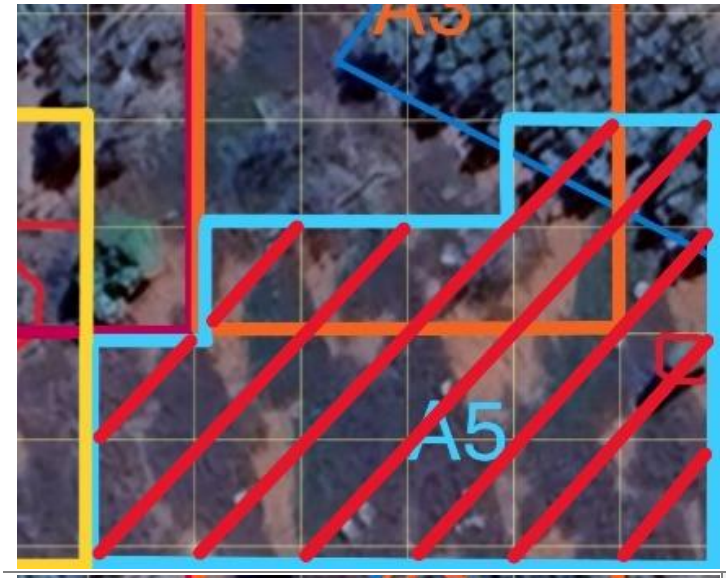
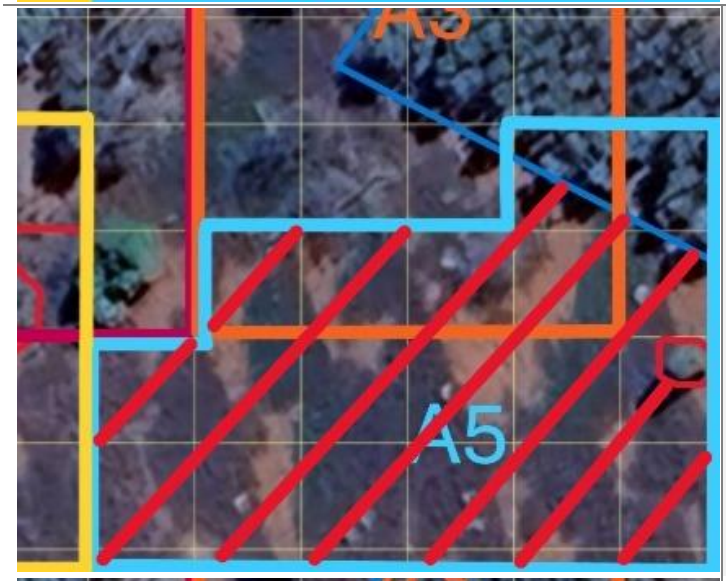


Figure 12. Part of native reforestation CEA showing land prior to clearing, regrowth after past re-clearing events, and the state of the land in 2026, further evidencing native forest potential.

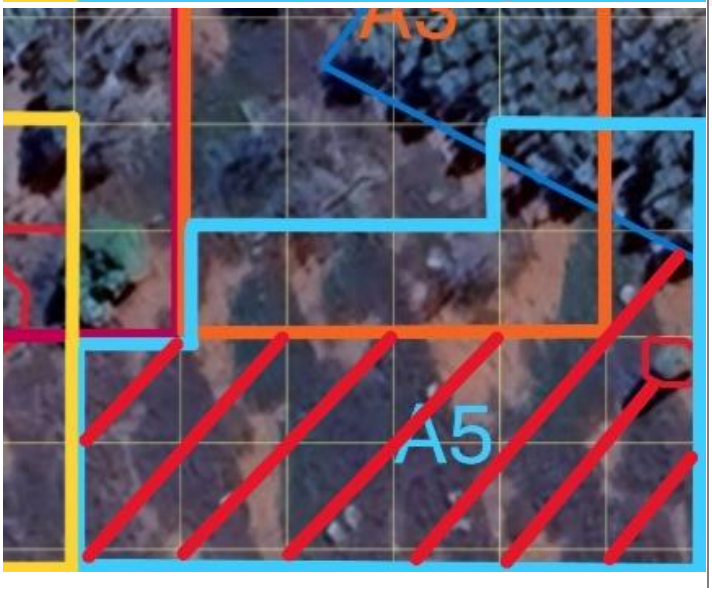
While the data show the land generally meets the requirement, the Johnsons will need to demonstrate that each of the 0.2-hectare aggregations have native forest potential, and that both the "inside cells" and "inside unshared cells" have native forest potential. Figure 13 illustrates how these three levels of assessment of native forest potential must be conducted, using aggregation A5 from Figure 10.



(a) Assessment of whole 0.2-aggregation.
Ignores whether land is inside or outside of the proposed CEA.
Ignores whether cells are shared with other 0.2-hectare aggregations.



(b) Assessment of native forest potential of "inside" cells.
Exclude all land in 0.2-aggregation that is outside of the proposed CEA.
If the inside cells are contiguous, assess native forest potential across all the land in the contiguous cells.
Non-contiguous cells must be assessed individually.



(c) Assessment of native forest potential of contiguous and non-contiguous "inside" cells that are not shared with any other aggregation.
Exclude all land in 0.2-aggregation that is outside of the proposed CEA.
Exclude all land in 0.2-hectare aggregation that is shared with another aggregation.
If the inside unshared cells are contiguous, assess native forest potential across all the land in the contiguous cells.
Non-contiguous cells must be assessed individually.

Figure 13. A5 aggregation – assessment of forest potential at the three levels: (a) 0.2-hectare aggregation as a whole; (b) "inside" cells within 0.2-hectare aggregation; and (c) "inside unshared" cells within 0.2-hectare aggregation (red striped area shows area assessed in A5 aggregation in each instance).

3.2 Eligible land for avoided forest re-clearing CEAs

Land is eligible for inclusion in an avoided forest re-clearing CEA if it satisfies the following requirements (s 13).

1. ***The land must be within Australia, excluding external territories (s 13(1)(a))***

Does the land meet the requirements? Yes. The land proposed to be included in native reforestation CEAs is located wholly within the Brigalow Belt North Isaac-Comet Downs IBRA subregion in Queensland.

2. ***The land must be in an area for which FullCAM data exist (s 13(1)(b))***

Does the land meet the requirements? Yes. There are FullCAM data available for the whole of the Brigalow Belt North Isaac-Comet Downs IBRA subregion.

3. ***The land must form part of a 10m x 10m cell, delineated under subsection 9(6), that had crown cover from native trees that have naturally regenerated after the last comprehensive clearing event and that were 2 or more metres in height that was equal to or greater than 20% at the eligibility date (s 13(1)(c))***

The 10m x 10m cell and 0.2-hectare aggregation requirements mirror those that apply to native reforestation CEAs, excepting that the crown cover assessments are confined to the cover provided by native trees that have naturally regenerated after the last comprehensive clearing event and that are 2 or more metres in height at the eligibility date.

Subsection 9(1) requires an application for project registration to include specific information. For a proposed avoided forest re-clearing CEA, this includes (s 9(1)(f)):

- *an estimate of the crown cover provided by native trees on the land proposed to be included in the CEA that have naturally regenerated after the last comprehensive clearing event and that are 2 or more metres in height at the eligibility date, defined at 0.01-hectare scale, in accordance with subsection 9(6); and*
- *an estimate of the crown cover provided by native trees that have naturally regenerated after the last comprehensive clearing event and that are 2 or more metres in height across 0.2-hectare aggregations of relevant land at the eligibility date in accordance with subsection 9(7).*

Subsection 9(6) requires the land proposed to be included in the CEA to be divided into 10m x 10m square cells (or partial cells). Crown cover provided by native trees that have naturally regenerated after the last clearing event and that are 2 or more metres in height must be assessed in each cell by estimating the proportion of the cell covered by the vertical projection of the crowns of relevant native trees.

Subsection 9(7) requires the proponent to create 0.2-hectare aggregations of contiguous 10m x 10m cells from inside or outside the proposed CEA and for crown cover provided by native trees that have naturally regenerated after the last clearing event and that are 2 or more metres in height at the eligibility date to be assessed in each 0.2-hectare aggregation. Again:

- *all of the 10m x 10m cells for the CEA from subsection 9(6) must be included in a 0.2-hectare aggregation and cells from outside the proposed CEA can only be included in a*

0.2-hectare aggregation if they are contiguous with a 10m x 10m cell from inside the proposed CEA from the same aggregation;

- *a 0.2-hectare aggregation can share 10m x 10m cells from inside and outside of the proposed CEA with another 0.2-hectare aggregation; and*
- *each 0.2 ha aggregation must have at least five 10m x 10m cells from inside the proposed CEA that are not shared with another 0.2-hectare aggregation.*

The mapped 10m x 10m cells and 0.2-hectare aggregations are fixed throughout the life of the project and are used to assess whether land meets the "gateway requirements" (see Step 8). For avoided forest re-clearing CEAs, the gateway requirements ensure that native forest cover is maintained. If an area of land does not meet the gateway requirements, it must be re-stratified and crediting is paused until the gateway requirement is satisfied. Proponents must take remedial action to restore native forest cover (e.g. by establishing plantings or facilitating natural regeneration). Areas that fail to satisfy the gateway requirements can be required to be removed from the CEA completely, potentially triggering a requirement to relinquish credits that have been issued in relation to the removed land.

In mapping the 0.2-hectare aggregations, proponents need to be aware that, where 0.2-hectare aggregations include 10m x 10m cells from outside of the CEA, the gateway requirement must be met for both the 0.2-hectare aggregation and the inside cells. Similarly, where 0.2-hectare aggregations include 10m x 10m cells that are shared with other 0.2-hectare aggregations, the gateway requirement must be met for both the 0.2-hectare aggregation and the inside cells that are not shared. If all of the requirements are not met, all of the land in the 0.2-hectare aggregation fails the gateway.

Does the land meet the requirements? Yes. For further details, see Figure 3 above concerning the land proposed to be included in the native reforestation CEAs.

4. ***The land must form part of a 0.2-hectare aggregation of relevant land, delineated under subsection 9(7), that had crown cover from native trees that have naturally regenerated after the last comprehensive clearing event and that were 2 or more metres in height that was equal to or greater than 20% at the eligibility date (s 13(1)(d))***

Does the land meet the requirements? Yes. See part 3.1 (5) above for details on the formation of 0.2-hectare aggregations and the use of outside and shared 10m x 10m cells.

5. ***The land must have been comprehensively cleared for agriculture prior to 1 January 2025 and no more than 25 years prior to the date of the section 22 application (s 13(1)(e))***

To determine whether an area of land satisfies this requirement, the land must be divided into square cells of a standard size that are no larger than 30m x 30m and each cell must be individually assessed against the requirements. Where an area of land does not cover the entirety of a cell, it must be assessed and treated as if it was a full cell. For land to be eligible, it must form part of an assessed cell that satisfies the requirement.

This requirement is essential to the additionality of the project activity – the avoidance of re-clearing. The eligibility of avoided re-clearing areas is based on the premise that, if land has

been comprehensively cleared in the 25 years prior to the registration application, there is a high probability it will be re-cleared again. Conversely, the method assumes that, if land was last comprehensively cleared more than 25 years ago, the risk of it not being re-cleared is too high to warrant the provision of ACCUs to incentivise the protection of the secondary native forest.

Proponents are given the flexibility to construct assessment cells of any standard size up to 30m x 30m. For convenience, many proponents will use the same 10m x 10m cells that are delineated under section 9(6). However, larger 30m x 30m cells are allowable to enable the use of older Landsat data to demonstrate eligibility. The use of coarser imagery creates a risk that land will be included in CEAs containing mature trees that were not cleared in the last comprehensive clearing event (and may never have been cleared). The method has two measures to address this risk:

- *the requirement in s 13(1)(c) that eligible land must form part of a 10m x 10m cell that had crown cover from native trees that have naturally regenerated after the last comprehensive clearing event and that were 2 or more metres in height that was equal to or greater than 20% at the eligibility date (see above); and*
- *the requirement that eligible land not be covered by the crowns of native trees that are likely to be more than 35 years old at the date of the section 22 application (see below).*

Does the land meet the requirements? Yes.

The land proposed to be included in the avoided forest re-clearing CEAs was comprehensively cleared for grazing over 2005-2008 and has not been re-cleared since.

In this case, the Johnsons choose to conduct the clearing assessments using 10m x 10m assessment cells, thereby ensuring consistency in the cells used in the evaluation of land eligibility. Here, this approach is made possible by the availability of higher resolution imagery throughout the relevant timeseries.

6. ***The land must not be covered by the crowns of native trees that are likely to be more than 35 years old at the date of the section 22 application (s 13(1)(f))***

Does the land meet the requirements? Yes.

This provision requires the Johnsons to exclude all land covered by the crowns of older trees (>35 years old) that were not cleared in the last comprehensive clearing event. This requirement ensures FullCAM is only applied to land for which it is calibrated and that projects are not credited for the avoidance of clearing trees that are unlikely to have been cleared and for sequestration in young regenerating forests when the relevant trees are already mature.

Figure 14 illustrates this step in the process using an area proposed to be included in an avoided forest re-clearing CEA. The images show the area both immediately after the last comprehensive clearing event in 2005 and then in late 2026. The older, mature trees that are onsite in late 2026 are evident in the 2005 image, and their size indicates that they are likely to be more than 35 years old. In practice, this would be confirmed through an on-ground assessment.

Immediately after 2005 clearing	Late 2026
	
Excluded old trees – in 2005	**Excluded old trees – in 2026 image**
	

Figure 14. Area proposed for inclusion in avoided forest re-clearing CEA (2005 and 2025) – exclusion of mature trees that were not cleared in the last comprehensive clearing event

7. ***Native trees on the land must have not been cleared since 1 January 2025 (s 13(1)(g))***

This provision is intended to reduce the risk of land being cleared for the purposes of making it eligible for an avoided forest re-clearing CEA.

Does the land meet the requirements? Yes. None of the land proposed to be included in the avoided forest re-clearing CEAs has been cleared since 1 January 2025.

8. ***At the eligibility date, the native trees on the land must have been able to be comprehensively cleared for an agricultural purpose without legal restriction (s 13(1)(h))***

This provision performs a critical integrity function under the method by ensuring land is only included in an avoided forest re-clearing CEA where there are no legal impediments it being re-

cleared. This helps ensure additionality of the credited abatement (i.e. there is a high probability the land will be re-cleared in the absence of the incentive provided by the ACCU Scheme).

To satisfy this requirement, the owner of the land must have a legal entitlement to comprehensively clear the native trees on the land for an agricultural purpose without having to:

- *obtain a government approval (however described) under a law of the Commonwealth, a State or a Territory;*
- *comply with a requirement under a law of the Commonwealth, a State or a Territory to allow the cleared area to regenerate;*
- *retain trees on the land with prescribed characteristics (e.g. species, height or diameter at a specific height) under a law of the Commonwealth, a State or a Territory; or*
- *provide compensation of any kind to mitigate the environmental impacts of the clearing event, including by undertaking or acquiring environmental offsets or setting aside other areas for conservation purposes, under a law of the Commonwealth, a State or a Territory.*

Subsection (4) clarifies that a requirement to notify a government agency under a law of the Commonwealth, a State or a Territory of an intention to clear or of a past clearing event does not, on its own, constitute a relevant legal restriction on an entitlement to comprehensively clear native trees.

Does the land meet the requirements? Yes.

All of the land on the Johnsons' Queensland property that is slated for inclusion in avoided re-clearing CEAs is mapped as Category X land under the *Vegetation Management Act 1999* (Qld) (Figure 15). As Category X land, the native vegetation on the land can be cleared without restriction under the *Vegetation Management Act 1999* and *Planning Act 2016* (Qld). There are no other restrictions on re-clearing the land that apply under other Queensland laws (e.g. the local planning scheme under the *Planning Act 2016* or the *Nature Conservation Act 1992* (Qld)). The clearing of the native vegetation is also not likely to have a significant impact on a matter protected under Part 3 of the federal *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

Note: The legislative requirements concerning the rights and freedoms to clear native vegetation differ between the states and territories. For example, in New South Wales, land will typically be able to be comprehensively re-cleared for an agricultural purpose without legal restriction if it is mapped as 'category 1-exempt land' on the native vegetation regulatory map prepared under the Local Land Services Act 2013 (NSW). Land mapped as 'category 2-regulated land' under the Local Land Services Act 2013 (NSW) may also be able to be re-cleared without applicable legal restrictions if it is covered by the continuing use provisions in Part 4, Division 1 of the Land Management (Native Vegetation) Code 2018. Proponents must consider the applicable state and territory laws to determine eligibility. Consideration should also be given to whether the clearing of the vegetation could trigger the federal Environment Protection and Biodiversity Conservation Act 1999 (Cth).

Figure 15. Category X land (coloured in white) on areas proposed for inclusion in project CEAs

3.3 Eligible land for avoided sub-forest re-clearing CEAs

Land is eligible for inclusion in an avoided forest re-clearing CEA if it satisfies the following requirements (s 14).

1. ***The land must be within Australia, excluding external territories (s 14(1)(a))***

Does the land meet the requirements? Yes. See above.

2. ***The land must be in an area for which FullCAM data exist (s 14(1)(b))***

Does the land meet the requirements? Yes. See above.

3. ***The land must form part of a 10m x 10m cell, delineated under subsection 9(4), that had crown cover from native trees that was equal to or greater than 10% at eligibility date (s 14(1)(c))***

The 10m x 10m cell and 0.2-hectare aggregation requirements are similar to those that apply to native reforestation CEAs and avoided forest re-clearing CEAs.

Subsection 9(1) requires an application for project registration to include specific information. For a proposed avoided sub-forest re-clearing CEA, this includes (s 9(1)(g)):

- *an estimate of the crown cover provided by native trees on the land proposed to be included in the CEA at the eligibility date, defined at 0.01-hectare scale, in accordance with subsection 9(4); and*

- *an estimate of the crown cover provided by native trees that have naturally regenerated after the last comprehensive clearing event and that are 2 or more metres in height across 0.2-hectare aggregations of relevant land at the eligibility date in accordance with subsection (7).*

As with native reforestation CEAs, subsection 9(4) requires the land proposed to be included in the CEA to be divided into 10m x 10m square cells (or partial cells). Crown cover provided by native trees must then be assessed in each cell by estimating the proportion of the cell covered by the vertical projection of the crowns of relevant native trees.

As with avoided forest re-clearing CEAs, subsection 9(7) requires the proponent to create 0.2-hectare aggregations of contiguous 10m x 10m cells from inside or outside the proposed CEA and for crown cover provided by native trees that have naturally regenerated after the last clearing event and that are 2 or more metres in height at the eligibility date to be assessed in each 0.2-hectare aggregation. Again:

- *all of the 10m x 10m cells for the CEA from subsection 9(4) must be included in a 0.2-hectare aggregation and cells from outside the proposed CEA can only be included in a 0.2-hectare aggregation if they are contiguous with a 10m x 10m cell from inside the proposed CEA from the same aggregation;*
- *a 0.2-hectare aggregation can share 10m x 10m cells from inside and outside of the proposed CEA with another 0.2-hectare aggregation; and*
- *each 0.2 ha aggregation must have at least five 10m x 10m cells from inside the proposed CEA that are not shared with another 0.2-hectare aggregation.*

The mapped 10m x 10m cells and 0.2-hectare aggregations are fixed throughout the life of the project and are used to assess whether land has the potential to achieve native forest cover (crown cover ≥20% from native trees that are ≥2 m in height, at 0.2 ha scale) and whether land meets the "gateway requirements" (see in Step 8). The gateway requirements ensure that the regrowth is progressing in line with how it is modelled and credited. If an area of land does not meet the gateway requirements, it must be re-stratified and crediting is paused until the gateway requirement is satisfied. Areas that fail to satisfy the gateway requirements can also be required to be removed from the CEA completely, potentially triggering a requirement to relinquish credits that have been issued in relation to that land.

In mapping the 0.2-hectare aggregations, proponents need to be aware that, where 0.2-hectare aggregations include 10m x 10m cells from outside of the CEA, the native forest potential and gateway requirements must be met for both the 0.2-hectare aggregation and the inside cells. Similarly, where 0.2-hectare aggregations include 10m x 10m cells that are shared with other 0.2-hectare aggregations, the native forest potential and gateway requirements must be met for both the 0.2-hectare aggregation and the inside cells that are not shared. If all of the requirements are not met, all of the land in the 0.2-hectare aggregation is ineligible (i.e. no native forest potential) or fails the gateway.

Does the land meet the requirements? Yes. For further details, see the illustration above concerning the land proposed to be included in the native reforestation CEAs.

4. ***The land must form part of a 0.2-hectare aggregation of relevant land, delineated under subsection 9(7), that had crown cover from native trees that have naturally regenerated after the last comprehensive clearing event and that were 2 or more metres in height that was less than 20% at the eligibility date (s 14(1)(d))***

Avoided sub-forest re-clearing CEAs capture land that has too much regrowth to qualify for inclusion in a native reforestation CEA, but too little to qualify for inclusion in an avoided forest re-clearing CEA (i.e. the regeneration has not yet attained native forest cover). The combination of ss 14(1)(c) and (d) reflect this by ensuring land is only included in an avoided sub-forest re-clearing CEA where the status of the regeneration on the land falls between the two other CEA types.

Does the land meet the requirements? Yes. See above for details on the formation of 0.2-hectare aggregations and the use of outside and shared 10m x 10m cells.

5. ***The land must have been comprehensively cleared for agriculture prior to 1 January 2025 and no more than 25 years prior to the date of the section 22 application (s 14(1)(e))***

The requirements that apply under and in relation to s 14(1)(e) are the same as those under s 13(1)(e) – e.g. the assessments of past comprehensive clearing for agriculture can be done at scales of up to 30m x 30m and each cell must be individually assessed against the requirements (see above).

Does the land meet the requirements? Yes.

The land proposed to be included in the avoided forest re-clearing CEAs was comprehensively cleared for grazing in either 2008 or 2017 and has not been re-cleared since.

6. ***The land must not be covered by the crowns of native trees that are likely to be more than 35 years old at the date of the section 22 application (s 14(1)(f))***

Does the land meet the requirements? Yes. This requirement is the same as that contained in s 13(1)(f) for avoided forest re-clearing CEAs. See above for further details.

7. ***Native trees on the land must have not been cleared since 1 January 2025 (s 14(1)(g))***

This provision is intended to reduce the risk of land being cleared for the purposes of making it eligible for an avoided sub-forest re-clearing CEA.

Does the land meet the requirements? Yes. None of the land proposed to be included in the avoided sub-forest re-clearing CEAs has been cleared since 1 January 2025.

8. ***At the eligibility date, the native trees on the land must have been able to be comprehensively cleared for an agricultural purpose without legal restriction (s 14(1)(h))***

Does the land meet the requirements? Yes. This requirement is the same as that contained in s 13(1)(h) for avoided forest re-clearing CEAs. See above for further details.

9. ***Having regard to its reference ecosystem and the condition of the land, the land must have native forest potential (s 14(1)(i)).***

Does the land meet the requirements? Yes. This requirement is the same as that contained in s 12(1)(e) for native reforestation CEAs. See above for further details.

Step 4: Project registration requirements

4.1 Information required with application for registration

Section 9(1) requires an application for project registration under the ARNR method to include prescribed information. As detailed above, this includes estimates of crown cover from native trees on land proposed to be included in CEAs, defined using 10m x 10m cells (or parts of cells), and of crown cover from native trees across 0.2-hectare aggregations of relevant land. In addition to these requirements, the application must also:

- *identify the proposed boundaries of the project area;*
- *specify the areas of land in the proposed project area that are proposed to be included in CEAs;*
- *specify whether the designated CEAs are native reforestation CEAs, avoided forest re-clearing CEAs or avoided sub-forest re-clearing CEAs;*
- *for native reforestation CEAs, specify whether the CEAs are plantings CEAs, natural regeneration CEAs or mixed plantings and natural regeneration CEAs;*
- *provide evidence that each area of land identified for inclusion in a CEA is eligible land for the specified CEA type;*
- *provide an up-to-date copy of the project plan prepared in accordance with Division 6 (see below); and*
- *specify whether the proponent opts to undertake biomass surveys for avoided forest re-clearing CEAs and avoided sub-forest re-clearing CEAs.*

The ARNR method allows proponents to undertake biomass surveys for avoided forest re-clearing CEAs and avoided sub-forest re-clearing CEAs. This allows for proponents to modify the parameters in FullCAM to better reflect the carbon stocks and sequestration associated with the regeneration on the land. The choice to undertake biomass surveys is binary, meaning that, if a proponent opts to undertake biomass surveys, it must be conducted for all avoided forest re-clearing CEAs and avoided sub-forest re-clearing CEAs in the project. Also, a decision to opt to undertake biomass surveys for avoided forest re-clearing CEAs and avoided sub-forest re-clearing CEAs is final and cannot subsequently be changed.

Does the project meet the requirements? Yes. For simplicity, in this case, it is assumed that the Johnsons opt not to undertake biomass surveys.

4.2 Project plan

Section 31 requires the proponent to prepare a project plan and provide it with the application for registration. The plan must include:

- *comprehensive details of the proposed CEAs (e.g. boundaries, reference ecosystems, tree species found in the reference ecosystems, reforestation start dates, details of the number and species of trees to be planted or naturally regenerating, estimated height*

and crown cover of the native forest to be regenerated, details of weed species and location of 10m x 10m cells and 0.2-hectare aggregations);

- *details of how biosecurity risks that are, or could reasonably be, associated with the land in the project area will be managed to:*
    - *limit risks to the environment, human health and the interests of surrounding landholders;*
    - *satisfy obligations under applicable Commonwealth, State or Territory laws (if any) to manage biosecurity risks; and*
    - *ensure alignment with the objectives and requirements of plans prepared under Commonwealth, State or Territory laws (if any) concerning the management of biosecurity risks in the region (or local government area) in which the project is located.*

*For these purposes, **biosecurity risks** means any adverse impacts on the environment, human health and interests of surrounding landholders associated with pests, weeds, pathogens and diseases (s 31(5)).*

The project plan can be amended at any time (s 32). Where the plan is amended, it must be submitted to the Regulator.

Importantly, section 33 requires the project to be conducted in accordance with the project plan. If a proponent fails to implement the project in accordance with the plan, the Regulator can unilaterally revoke the section 27 declaration for the project.

Does the project meet the requirements? Yes.

4.3 Permanence period

Section 15 of the ARNR method requires an avoided forest re-clearing project, avoided sub-forest re-clearing project or native reforestation and avoided re-clearing project to have a permanence period of at least 50 years. This means that projects with avoided forest re-clearing CEAs or avoided sub-forest re-clearing CEAs must have permanence periods of at least 50 years.

*This is given effect through the project registration process, where the proponent is required to nominate a permanence period (see s 23(1)(g) of the Carbon Credits (Carbon Farming Initiative) Act 2011 (Cth) (**CFI Act**)). At present, the CFI Act does not provide the option for a 50-year permanence period: only 25-year and 100-year permanence periods are available. Until there is a change in the legislation, ARNR projects with avoided forest re-clearing CEAs or avoided sub-forest re-clearing CEAs will need to request that their projects be treated as 100-year permanence period projects for the purposes of s 23(1)(g) of the Act.*

Is the project eligible? Yes. The Johnsons ask the Regulator to treat the project as a 100-year permanence period project.

4.4 Newness

Section 30 of the ARNR method contains an "in lieu" provision that displaces the standard newness requirement in section 27(4A)(a)(i) of the CFI Act. The substitute in lieu provision

provides that, for a project to be eligible, it must not have begun to be implemented, but in determining whether the project has been implemented, the following must be disregarded.

- *The preparation of a plan regarding the project activities before the registration application has been submitted.*
- *The purchase or lease of a tangible asset for the purposes of the project, or the conduct of project activities and activities undertaken to facilitate the project activities, when undertaken after the submission of the application for project registration to the Regulator (and before the registration date) (and the equivalent for a section 29 application concerning the variation of a project).*

Is the project eligible? Yes. The Johnsons owned the land throughout the relevant period and only prepared the project plan prior to the submission of the application for project registration to the Regulator.

Step 5: Stratification of CEAs

As detailed above, under the ARNR method, the project area must be divided into CEAs (where the project activities are undertaken in the project area) and exclusion areas (where project activities are not undertaken in the project area), and all areas included in CEAs must be classified as either native reforestation CEAs, avoided forest re-clearing CEAs and avoided sub-forest re-clearing CEAs. Any native reforestation CEAs also need to be subdivided into plantings CEAs, natural regeneration CEAs and mixed plantings and natural regeneration CEAs. The CEAs must be mapped at the time of project commencement and submitted with the application for project registration. This is different from other ACCU Scheme methods, where CEAs often only need to be stratified by the time of the submission of the first offsets report.

The requirements that govern the stratification of the different types of CEAs are detailed below.

5.1 Stratification of native reforestation CEAs

Native reforestation CEAs must (s 17(1)):

- *have an area of at least 0.2 hectares;*
- *consist exclusively of eligible land for native reforestation CEAs (see Step 3.1);*
- *consist exclusively of land on which the project activities are undertaken (see Step 2.1);*
- *have native forest potential or native forest cover throughout the permanence period, provided the native forest cover is achieved after the project is registered (see Step 3.1);*
- *not include land that has previously been included in a CEA; and*
- *be mapped in accordance with the CFI Mapping Guidelines.*

The 0.2-hectare aggregations of relevant land delineated under subsection 9(5) must be used to determine whether the land has native forest potential (or native forest cover).

Native reforestation CEAs must consist exclusively of either plantings, natural regeneration or mixed plantings and natural regeneration that have the same reforestation start date and are managed in a consistent manner. The reforestation start date for a native reforestation CEA is (s 17(4)):

- *if the CEA is a plantings CEA or mixed plantings and natural regeneration CEA – the date on which trees that are likely to form part of the dominant canopy layer were last planted in the CEA prior to the end of the first reporting period;*[4] *and*
- *if the CEA is a natural regeneration CEA – the latter of the project registration date and the date the CEA was included in the project.*

The boundaries of native reforestation CEAs (and internal exclusion areas) must follow the boundary of the cells (including partial cells) that were assessed as meeting the land eligibility requirements in Step 3.1(3).

Do the native reforestation CEAs meet these requirements? Yes. See above (Step 3).

5.2 Stratification of plantings CEAs, natural regeneration CEAs and mixed plantings and natural regeneration CEAs

In addition to mapping native reforestation CEAs, the proponent must also stratify the land in native reforestation CEAs into plantings CEAs, natural regeneration CEAs and mixed plantings and natural regeneration CEAs in accordance with sections 18, 19 and 20.

The requirements governing plantings CEAs, natural regeneration CEAs and mixed plantings and natural regeneration CEAs primarily turn on the number and types of plantings in the CEA.

***Plantings CEAs** must (s 18(2)):*

- *consist exclusively of eligible land for native reforestation CEAs;*
- *contain at least 400 planted trees per hectare across the CEA (assessed separately for each 1 hectare of land in the CEA or part thereof);*
- *have trees planted in each 10m x 10m cell in the CEA (using the cells from subsection 9(4)).*

In addition, the plantings and any natural regeneration in the CEA must consist of species that are native to the local area, and the plantings must be permanent plantings (s 18(2)).

***Natural regeneration CEAs** must (s 19(2)):*

- *consist exclusively of eligible land for native reforestation CEAs; and*
- *contain no more than 100 planted trees per hectare across the CEA (assessed separately for each 1 hectare of land in the CEA or part thereof).*

Again, the natural regeneration and any plantings in the CEA must consist of species that are native to the local area, and any plantings must be permanent plantings (s 19(2)).

Mixed plantings and natural regeneration CEAs must (s 20(2)):

- *consist exclusively of eligible land for native reforestation CEAs;*
- *contain no fewer than 100 planted trees and no more than 399 planted trees per hectare across the CEA; and*

[4] This means that mid-storey and ground layer plantings can be undertaken in the CEA without affecting the reforestation start date.

- *have trees planted in each 10m x 10m cell in the CEA (using the cells from subsection 9(4)).*

Again, the plantings and any natural regeneration in the CEA must consist of species that are native to the local area, and the plantings must be permanent plantings (s 20(2)).

Are these requirements satisfied? Yes. At the time of project registration, satisfaction of these requirements is evidenced through the submission of the project plan, which must contain the information related to the above requirements.

5.3 Stratification of avoided forest re-clearing CEAs

Avoided forest re-clearing CEAs must (s 23(1)):

- *have an area of at least 0.2 hectares;*
- *consist exclusively of eligible land for avoided forest re-clearing CEAs;*
- *consist exclusively of land on which the project activities are undertaken (see Step 2.2);*
- *consist exclusively of land that has native forest cover or, if native forest cover is lost after the project is registered because of a natural disturbance event, native forest potential, throughout the permanence period (see Step 3.2); and*
- *not include land that has previously been included in a CEA; and*
- *be mapped in accordance with the CFI Mapping Guidelines.*

The 0.2-hectare aggregations of relevant land delineated under subsection 9(7) must be used to determine whether the land has native forest cover (or native forest potential).

The boundaries of avoided forest re-clearing CEAs (and internal exclusion areas) must follow the boundary of the cells (including partial cells) that were assessed as meeting the land eligibility requirements in Step 3.2(3).

Are these requirements satisfied? Yes. At the time of project registration, satisfaction of these requirements is evidenced through the submission of the project plan, which must contain the information related to the above requirements.

5.3 Stratification of avoided sub-forest re-clearing CEAs

Avoided sub-forest re-clearing CEAs must (s 26):

- *have an area of at least 0.2 hectares;*
- *consist exclusively of eligible land for avoided sub-forest re-clearing CEAs;*
- *consist exclusively of land on which the project activities are undertaken (see Step 2.3); and*
- *consist exclusively of land that has native forest potential or native forest cover throughout the permanence period, provided the native forest cover is achieved after the project is registered (see Step 3.3(9));*
- *consist exclusively of land that is managed in a consistent manner;*
- *not include land that has previously been included in a CEA; and*

- *be mapped in accordance with the CFI Mapping Guidelines.*

The 0.2-hectare aggregations of relevant land delineated under subsection 9(7) must be used to determine whether the land has native forest potential (or native forest cover).

The boundaries of avoided sub-forest re-clearing CEAs (and internal exclusion areas) must follow the boundary of the cells (including partial cells) that were assessed as meeting the land eligibility requirements in Step 3.3(3).

Are these requirements satisfied? Yes. At the time of project registration, satisfaction of these requirements is evidenced through the submission of the project plan, which must contain the information related to the above requirements.

Step 6: Restrictions on activities in CEAs

The ARNR method imposes restrictions on the activities that can be undertaken in native reforestation CEAs, avoided forest re-clearing CEAs and avoided sub-forest re-clearing CEAs that could harm native plants or result in the spread of weeds. The restrictions are the same for all CEA types.

There are five relevant activity restrictions.

6.1 Planting of non-native species

Sections 21(1), 24(1) and 27(1) expressly prohibit the planting of species that are not native to the local area in native reforestation CEAs, avoided forest re-clearing CEAs and avoided sub-forest re-clearing CEAs (respectively).

6.2 Clearing or harming native trees (except ecological thinning)

Sections 21(2), 24(2) and 27(2) prohibit the clearing or harming of native trees, except for ecological thinning that meets the following requirements.

- *An area of land in an avoided forest re-clearing CEA may only be thinned once over the permanence period.*
- *Ecological thinning must not occur where crown cover from native trees is less than 30%.*
- *Ecological thinning must not reduce crown cover from native trees to less than 30%.*
- *Ecological thinning must not reduce crown cover from native trees by more than 20% (in absolute terms).*
- *Ecological thinning must not reduce crown cover from native trees to less than 75% of the expected crown cover from native trees in the reference ecosystem.*

If native trees in the CEA are cleared or otherwise deliberately damaged (other than for ecological thinning purposes that meets the above requirements), the land must be re-stratified and mapped as an exclusion area. Where this occurs, the affected land is not eligible for inclusion in a CEA and is deemed never to have been eligible for inclusion in a CEA, which can trigger a requirement to surrender the same number of ACCUs as were issued in relation to that land.

6.3 Management of grazing pressure and weeds

The land in CEAs must be managed to mitigate the risk of damage to the plantings, natural regeneration and native forest from livestock, feral animals and weeds (ss 21(3), 24(3) and 27(3)).

6.4 Removal of biomass (except in accordance with traditional Indigenous practices or native title rights and the removal of some seeds)

Biomass must not be removed from native reforestation CEAs, avoided forest re-clearing CEAs and avoided sub-forest re-clearing CEAs, except for (ss 21(4), 24(4) and 27(4)):

- *debris that is removed in accordance with traditional Indigenous practices or native title rights; and*
- *the removal of seeds, provided no more than 20% of the seeds from plants of any individual native species in the CEA are harvested in a calendar year (whether for personal or commercial use).*

6.5 Use of fertiliser (except for initial application with plantings)

The use of fertiliser is also prohibited, with the exception of fertiliser found in tubestock used for infill plantings or a single application added when planting seedlings as infill plantings (ss 21(5), 24(5) and 27(5)).

Are these requirements satisfied? Yes.

Step 7: Abatement calculations

The net abatement amount for a ARNR project is calculated as (s 53):

- ***the sum** of the abatement from native reforestation CEAs, avoided forest re-clearing CEAs and avoided sub-forest re-clearing CEAs in the project area;*
- ***minus** emissions from fossil fuel combustion in the project scenario.*

A six-step method is used for these purposes.

7.1 Develop representative FullCAM model plots

The Australian Government's Full Carbon Accounting Model (FullCAM) is used under the ARNR method to model (s 44):

- the carbon stock and carbon stock changes in included carbon pools in the project and baseline scenarios; and
- methane (CH_4) and nitrous oxide (N_2O) emissions from planned and unplanned fires in native reforestation CEAs.

To facilitate the modelling, representative FullCAM model plots must be developed for each native reforestation CEA, avoided forest re-clearing CEA and avoided sub-forest re-clearing CEA in the project area (s 46). The representative plots must (s 46(2)):

- simulate reforestation of 1 hectare of native forest;
- reforestation must be simulated using the appropriate calibration for the CEA type (see Table 1); and

- set the maximum live above-ground biomass in the plots (represented by the parameter *M* in FullCAM) as the average across the relevant CEA from the published *M*-layer.

Table 1. Calibrations for CEA types

CEA type	Age of maximum growth (parameter *G* in FullCAM)	Type 2 growth multiplier (parameter *y* in FullCAM)
Plantings CEAs	6.317 years	1
Natural regeneration CEAs	12.53 years	1
Mixed plantings and natural regeneration CEAs	9.4235 years	1
Avoided forest re-clearing CEAs	12.53 years	1
Avoided sub-forest re-clearing CEAs	12.53 years	1

The requirement in the ARNR method to set M in the plots as the average across the relevant CEA from the published *M*-layer is different from other ACCU Scheme methods that use FullCAM to estimate sequestration. In other methods, projects are required to use the *M*-value from a single point at or near the centre of the relevant CEA (i.e. a centroid). The requirement to use the average from every pixel in the CEA reduces the uncertainty associated with sequestration estimates and eliminates the opportunity for gaming in the selection of centroids.

7.2 Calculate net abatement for native reforestation CEAs

Having devised the representative model plots, proponents must calculate the net abatement from each CEA. Different methods are used for native reforestation CEAs vs avoided re-clearing CEAs.

For native reforestation CEAs, for the first reporting period, net abatement amount is calculated as:

- **the difference** between the carbon stock in the project scenario at the end of the reporting period and the carbon stock in the baseline scenario;
- **minus** CH_4 and N_2O emissions from planned and unplanned fires in the reporting period.

For native reforestation CEAs, the carbon stock in included carbon pools in the baseline scenario is zero. This assumes that, in the absence of the project, there would be no trees or debris in the CEA and that any trees and debris that were present on the site at project commencement would be cleared.

For subsequent reporting periods, net abatement must be calculated as:

- **the difference** between the carbon stock in included carbon pools in the project scenario at the end of the reporting period and the carbon stock in included carbon pools in the project scenario at the end of the previous reporting period;
- **minus** CH_4 and N_2O emissions from planned and unplanned fires in the reporting period.

The carbon stock in included carbon pools in the project scenario must be modelled using FullCAM and the representative model plot for the CEA, with a relevant reforestation event (plantings, natural regeneration or mixed plantings and natural regeneration) scheduled to occur in the representative plot on the CEA's reforestation start date. Fire events that occur during the reporting period must be modelled on the date they occur.

Figure 16 illustrates the approach to the calculation of credited sequestration in native reforestation CEAs, showing the difference between projects with <100-year permanence periods (and 25-year crediting periods) versus those with 100-year permanence periods (and 50-year crediting periods).

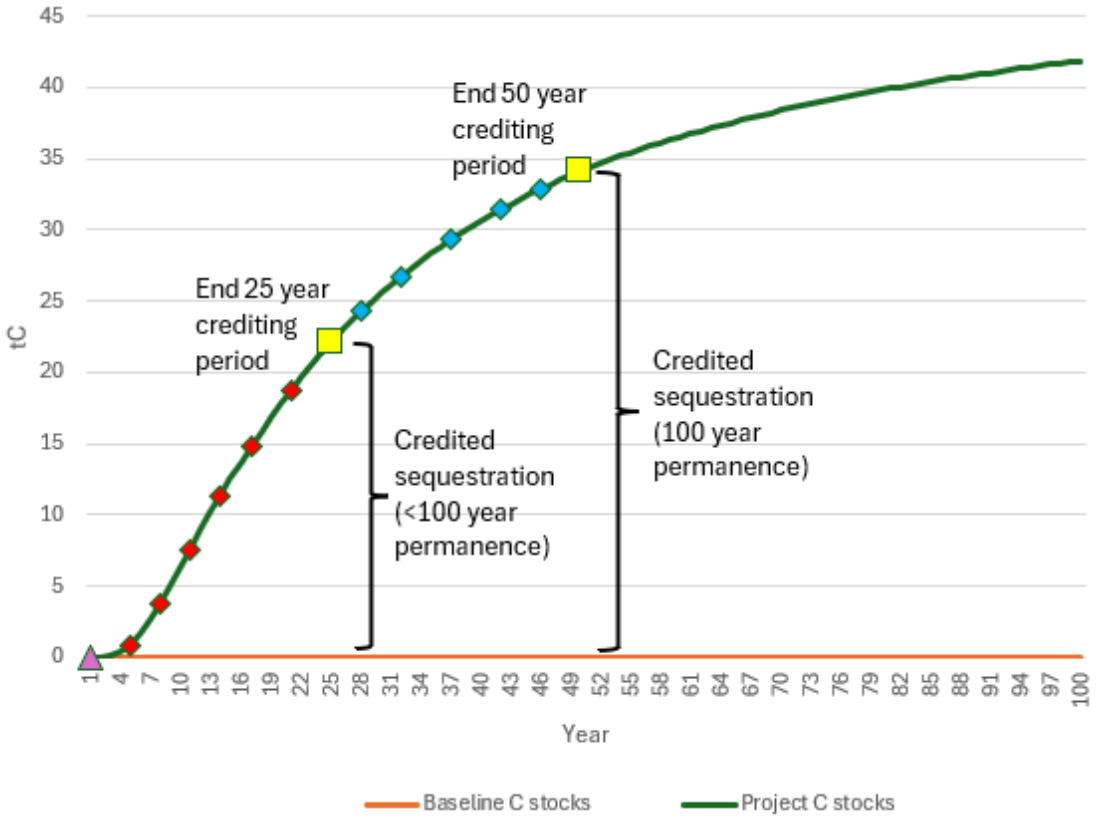


Figure 16. Illustration of calculation of credited sequestration in native reforestation CEAs. Orange line = baseline carbon stocks used to calculate net abatement. Green line = project carbon stocks used to calculate net abatement. Purple triangle shows start of credited sequestration. Red diamonds show reporting and crediting for years 0-25. Blue diamonds show reporting and crediting during years 26-50. Yellow squares show end of crediting periods (25 years or 50 years, depending on permanence period). Projects are credited for cumulative sequestration over crediting period.

7.3 Calculate net abatement for avoided forest re-clearing CEAs

For avoided forest re-clearing CEAs, for the first reporting period, net abatement amount is calculated as the difference between the carbon stock in the project scenario at the end of the reporting period and the carbon stock in the baseline scenario (CH_4 and N_2O emissions from fires are not modelled for avoided forest re-clearing CEAs). For subsequent reporting periods, net abatement is calculated as the difference between the carbon stock in included carbon pools in the project scenario at the end of the reporting period and the carbon stock in included carbon pools in the project scenario at the end of the previous reporting period.

The carbon stock in included carbon pools in the baseline scenario is calculated as the long-term average carbon stock in the CEA in a 100-year baseline scenario simulation. In the baseline scenario simulation, a natural regeneration event must be scheduled to occur in the representative model plot on day 1 of the simulation and a clearing event, followed by a natural regeneration event must be scheduled to occur every 15 years thereafter until the end of the 100-year simulation period. Each clearing event and subsequent natural regeneration event must be separated by a 12-month period, which is intended to reflect the time it takes for natural regeneration to emerge after a clearing event.

The carbon stock in included carbon pools in both the baseline and project scenario must be modelled using FullCAM and the representative model plot for the CEA.

Figure 17 illustrates the approach to the calculation of credited sequestration in avoided forest re-clearing CEAs, showing the difference between projects with <100-year permanence periods (and 25-year crediting periods) versus those with 100-year permanence periods (and 50-year crediting periods).

In projects that opt for field surveys, the carbon stock estimates in the baseline and project scenarios for each avoided forest re-clearing CEA in the project area are calculated by multiplying the FullCAM outputs by an adjustment factor. The adjustment factor is calculated as the ratio of the biomass survey estimate for aboveground biomass in the CEA (in tonnes of dry matter per hectare) to the model output for mass of aboveground tree components from the model in the year corresponding to the biomass survey.

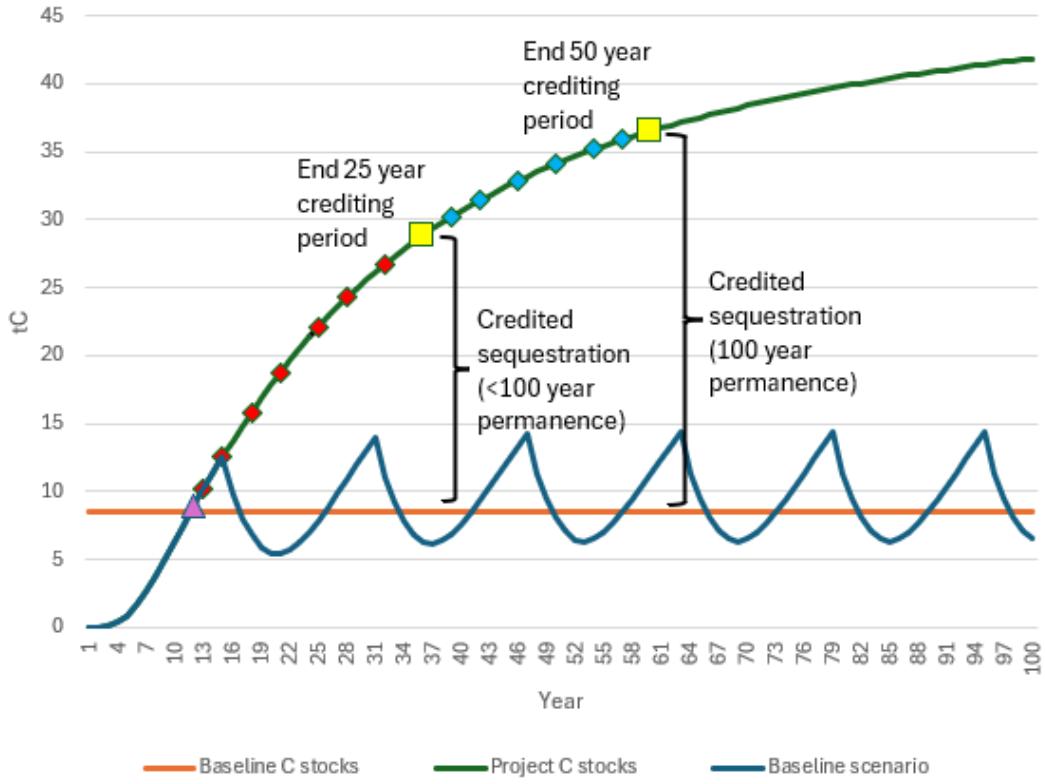


Figure 17. Illustration of calculation of credited sequestration in avoided forest re-clearing CEAs. Orange line = baseline carbon stocks used to calculate net abatement. Blue line = base scenario used to calculate baseline carbon stocks (100-year average). Green line = project carbon stocks used to calculate net abatement. Purple triangle shows start of credited sequestration. Red

diamonds show reporting and crediting for years 0-25. Blue diamonds show reporting and crediting during years 26-50. Yellow squares show end of crediting periods (25 years or 50 years, depending on permanence period). Projects are credited for cumulative sequestration over crediting period.

7.4 Calculate net abatement for avoided sub-forest re-clearing CEAs

The approached used to estimate the net abatement amount for avoided sub-forest re-clearing CEAs is the same as for avoided forest re-clearing CEAs (see above).

7.5 Calculate emissions from fossil fuel combustion

Having calculated the credited sequestration over the reporting period and subtracting fire emissions from native reforestation CEAs, proponents must estimate the emissions from fossil fuel combustion associated with the conduct of project activities in the project area.[5]

This requires the estimation of carbon dioxide (CO_2), CH_4 and N_2O emissions from the combustion of fossil fuels. Total fossil fuel emissions are calculated as the sum of each gas emitted from each fuel consumed (in tonnes of carbon dioxide equivalent (CO_2-e)), where the emissions of each gas from the consumption of each fuel is estimated using the equation (s 66(2)):

$$\mathrm{E_{f,k}} = \frac{Q_f \times EC_f \times EF_{f,k}}{1000}$$

Where:

$E_{f,k}$ is the emissions of greenhouse gas k (in tonnes CO2-e) from the combustion of fuel type f in the reporting period.

Q_f is the quantity of fuel type f combusted within the reporting period in relation to the timber harvesting and hauling operations in the project area (in kilolitres).

EC_f is the energy content factor of fuel type f, as prescribed in the NGER Measurement Determination (in gigajoules per kilolitre).

$F_{f,k}$ is the emission factor for fuel type f and greenhouse gas k, as prescribed in Schedule 1 to the NGER Measurement Determination (in kilograms CO_2-e per gigajoule).

7.6 Calculate project net abatement amount

The final step in the process is to derive the total net abatement amount for the project, which is calculated as the sum of the abatement from all native reforestation CEAs (Step 2), avoided forest re-clearing CEAs (Step 3) and avoided sub-forest re-clearing CEAs (Step 4), minus emissions from fossil fuel combustion associated with the conduct of the project activities (Step 5) (as per the equation below, from s 53).

$$\mathrm{NA} = \left(\sum_{x=1}^{n} \mathrm{ANF_x} + \sum_{y=1}^{n} \mathrm{AFR_y} + \sum_{z=1}^{n} \mathrm{ASR_z} \right) - \mathrm{EFF}$$

[5] It is conservatively assumed that there are no greenhouse gas emissions from fossil fuel combustion in the baseline scenario.

Where:

NA is the net abatement amount for the reporting period (in tonnes CO_2-e).

ANF_x is the abatement from x^{th} native reforestation CEA for the reporting period (in tonnes CO_2-e).

AFR_y is the abatement from the y^{th} avoided forest re-clearing CEA for the reporting period (in tonnes CO_2-e).

ASR_z is the abatement from the z^{th} avoided sub-forest re-clearing CEA for the reporting period (in tonnes CO_2-e).

EFF is the emissions of CO_2, CH_4 and N_2O (in tonnes CO_2-e) from the combustion of fossil fuels associated with the conduct of the project activities in the project area over reporting period in the project scenario.

Step 8: Gateway requirements

8.1 Determining whether land meets the gateway requirements

A risk with all vegetation-based ACCU Scheme projects is that the credited sequestration might not occur or the credited carbon stocks might be lost because of deliberate action or inaction on behalf of the proponent or another party (e.g. failure to establish the plantings or manage natural regeneration) or a natural disturbance (e.g. drought). To mitigate this risk and provide confidence that credited sequestration has occurred and remains intact, the ARNR method requires all CEAs to satisfy gateway requirements at prescribed time intervals. Different gateway requirements apply to the three different types of CEAs. These requirements are summarised in Table 2.

The assessment of application of the gateway requirements must be done using the 10m x 10m cells (or part cells) and 0.2-hectare aggregations delineated under sections 9(4)-9(7). The general rule is that an area of land only satisfies the applicable gateway requirement if it forms part of an 0.2-hectare aggregation of relevant land that meets the following requirements.

- The 0.2-hectare aggregation must satisfy the relevant gateway condition (where it involves the area having native forest cover).
- If the 0.2-hectare aggregation includes land that is outside of the CEA:
    - all groups of contiguous 10m x 10m cells from the aggregation that are inside the CEA must satisfy the relevant gateway condition; and
    - all 10m x 10m cells from the aggregation that are inside the CEA that are not contiguous with other cells from inside the CEA must satisfy the relevant gateway condition.
- If the 0.2-hectare aggregation includes land in 10m x 10m cells that are shared with another 0.2-hectare aggregation:
    - all groups of contiguous 10m x 10m cells from the aggregation that are inside the CEA and that are not shared with another 0.2-hectare aggregation must satisfy the relevant gateway condition; and
    - all 10m x 10m cells from the aggregation that are inside the CEA that are not contiguous with other cells from inside the CEA and that are not shared with another 0.2-hectare aggregation must satisfy the relevant gateway condition.

Table 2. Gateway requirements

Name	Requirement	Timing
Native reforestation CEA gateway requirements		
First forest development condition	Crown cover provided by native trees must have increased, in absolute terms, by at least 5% above the level when the land was first included in the CEA.	Within 6-months of the 4th anniversary of when the land was first included in the CEA.
Second forest development condition	Crown cover provided by native trees on the land has increased, in absolute terms, by at least 10% above the level when the land was first included in the CEA.	Within 6-months of the 4th anniversary of when the land was assessed as meeting the first forest development condition.
Forest attainment condition	Land must have native forest cover.	Within 6-months of the 4th anniversary of when the land was assessed as meeting the second forest development condition.
Forest maintenance condition	Land must have native forest cover.	Both: • within 6-months of the 10th anniversary of when the land was assessed as meeting the forest attainment condition; and • within 6 months of the 10th anniversary of when the land was last assessed as meeting the forest maintenance condition through to the end of the permanence period.
Avoided forest re-clearing CEA gateway requirement		
Forest maintenance condition	Both: • land must have native forest cover native forest cover; and • crown cover provided by native trees must not be more than 5% below the level estimated when the land was first included in the CEA.	Both: • within 6-months of the 5th anniversary of when the land was first included in the CEA; and • within 6 months of the 10th anniversary of when the land was last assessed as meeting the forest maintenance condition through to the end of the permanence period.

Avoided sub-forest re-clearing CEA gateway requirements		
Forest development condition	Crown cover provided by native trees must have increased, in absolute terms, by at least 5% above the level when the land was first included in the CEA.	Within 6-months of the 5th anniversary of when the land was first included in the CEA.
Forest attainment condition	Land must have native forest cover.	Within 6-months of the 5th anniversary of when the land was assessed as meeting the forest development condition.
Forest maintenance condition	Land must have native forest cover.	Both: • within 6-months of the 5th anniversary of when the land was assessed as meeting the forest attainment condition; and • within 6 months of the 10th anniversary of when the land was last assessed as meeting the forest maintenance condition through to the end of the permanence period.

8.2 Consequences of failing to satisfy the gateway requirements

Land that does not satisfy a gateway requirement must be re-stratified by either:

- including the land in a new CEA; or
- defining and mapping the land as an exclusion area.

In addition to the re-stratification, the ARNR method requires the following.

- The proponent must take corrective action to address the causes of the failure to satisfy the applicable gateway requirement.
- The project plan must be updated to reflect the proposed corrective action.
- Carbon stocks on the land must be modelled as not increasing from the date the land was assessed as not satisfying the applicable requirement until the date the requirement is satisfied. The effect of this provision is to pause the credited sequestration on the curve until the requirement is satisfied, thereby reducing the credited sequestration over the crediting period (see Figure 18).

Land that does not satisfy the condition within a prescribed period (5 years or 12 years, depending on the condition) is deemed never to have been eligible for inclusion in the CEA, which can trigger a requirement to surrender the same number of ACCUs as were issued in relation to that land. Similarly, if the land is re-stratified and mapped into an exclusion area, it is deemed never to have been eligible for inclusion in a CEA.

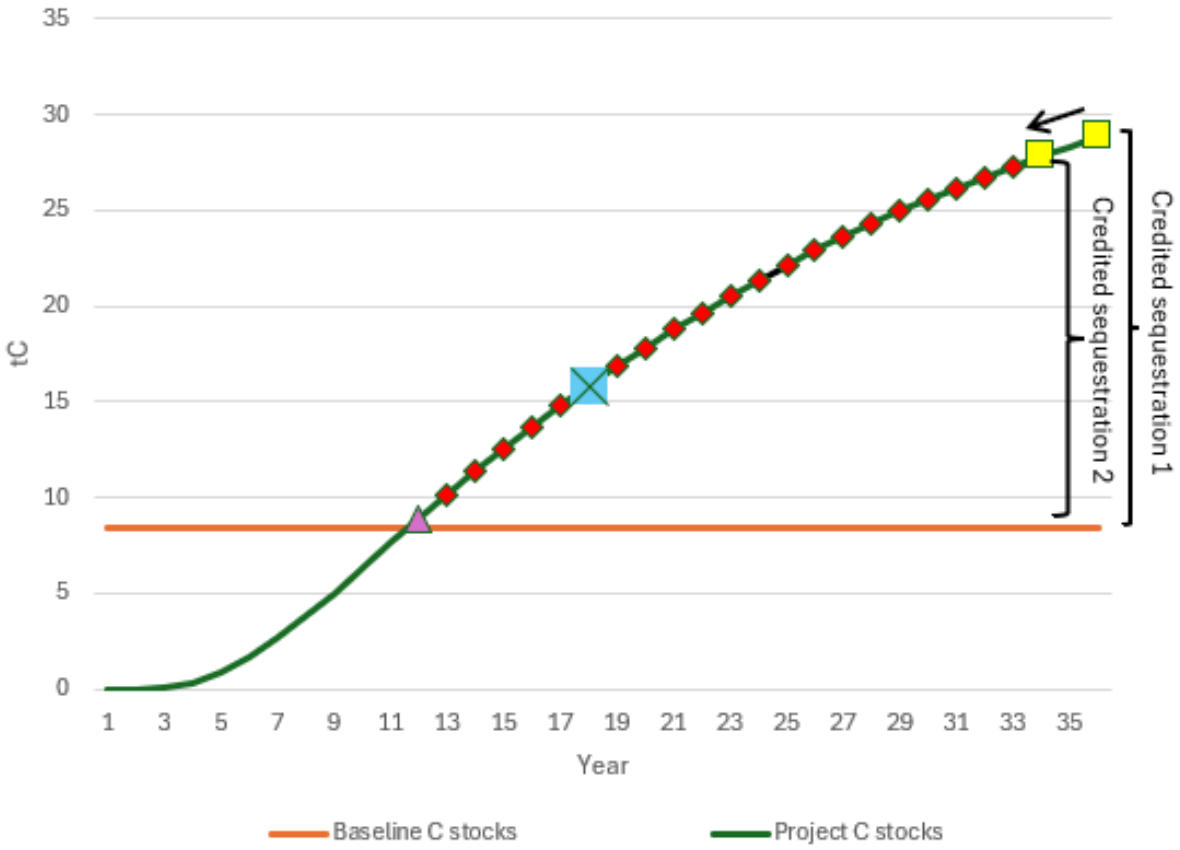


Figure 18. Illustration of effect of crediting pause if gateway condition is not satisfied in an avoided sub-forest re-clearing CEA. 25-year crediting period. Orange line = baseline carbon stocks used to calculate net abatement. Green line = project carbon stocks used to calculate net abatement. Purple triangle shows start of credited sequestration. Red diamonds show reporting and crediting for years 0-25. Yellow squares show end of credited sequestration. Blue square marks date when CEA fails the forest attainment gateway condition. It takes a further three years for the land in the CEA to satisfy the condition. Crediting is paused for the three years, but the crediting period continues to run. The effect is to shorten the segment of the sequestration curve that is credited. Initially, the proponent expected to be credited for credited sequestration 1. The crediting pause means the land is only credited for credited sequestration 2.

Step 9: Transparency requirements

The ARNR method seeks to promote integrity and confidence through additional transparency requirements. These include the following (ss 32 and 70):

- The proponent must ensure the current project plan is publicly available on the internet and ask the Regulator to publish the project plan on the Emissions Reduction Fund register kept and maintained under section 167 of the CFI Act (s 32).
- The proponent must ensure the following records are available on the internet (s 70(5)):
    - records concerning how the net abatement amount was calculated for each reporting period, including the FullCAM plots, input data and results for each applicable equation;
    - records concerning the assessment of compliance with the land eligibility requirements (Step 3) and gateway requirements (Step 8); and

- records concerning biomass surveys undertaken in avoided forest re-clearing CEAs and avoided sub-forest re-clearing CEAs (where relevant).

Step 10: Monitoring, record keeping, reporting and notifications

The ARNR method includes specific monitoring, record keeping, reporting and notification requirements. Table 3 provides a high-level summary of these requirements.

Table 3. Overview of monitoring, record keeping and reporting requirements

Topic	Requirement	Ref.
Monitoring		
Eligibility requirements	Must monitor compliance with eligibility requirements	s 69(a)
Crown cover provided by native trees and native forest cover	Must monitor crown cover provided by native trees and native forest cover in each CEAs to demonstrate compliance with the gateway requirements	s 69(b)
Management actions	Must monitor management actions that could have a significant impact on carbon stocks in plantings, natural regeneration and native forests	s 69(c)
Disturbance events	Must monitor disturbance events that could have a significant impact on carbon stocks in plantings, natural regeneration and native forests	s 69(d)
Weeds	Must monitor the presence of weeds that could affect the attainment or maintenance of native forest cover	s 69(e)
Record keeping		
Net abatement amount	Details on net abatement amount calculations, including the FullCAM plots, input data and results for all equations	s 70(1)(a)
Biomass surveys	Details of biomass surveys undertaken in avoided forest re-clearing CEAs and avoided sub-forest re-clearing CEAs, including all survey data and the data relied on to calculate the biomass adjustment factor	s 70(1)(b)
Monitoring	Details of required monitoring	s 70(1)(c)
Project plans	All project plans	s 70(1)(d)
Specifics on CEAs	Specified details required under ss 70(2), (3) and (4) for each CEA	s 70(1)(e)
Publication of records	Proponent must ensure specific records are published on the internet (see Step 9)	s 70(5)
Reporting		
Net abatement amount	Offsets report must include the net abatement amount for the reporting period	s 71(1)(a)
Carbon stock change	Offsets report must include the carbon stock change in eligible carbon pools for the reporting period	s 71(1)(b)
Baseline carbon stock	Offsets report must include the carbon stock in eligible carbon pools in the baseline scenario	s 71(1)(c)
Carbon stock at end of relevant reporting periods	Offsets report must include the carbon stock in eligible carbon pools at the end of the previous reporting period (if applicable) and end of the reporting period	s 71(1)(d) & (e)
Fire emissions	Offsets report must include the total emissions from biomass burning in the reporting period	s 71(1)(f)
Fuel use	Offsets report must include details of fuel use on project activities in the reporting period, by fuel type (in litres)	s 71(1)(g)
Fuel use emissions	Offsets report must include total fuel use emissions	s 71(1)(h)

Project area map	Offsets report must include a digital map of the project area showing CEAs and exclusion areas at the end of the reporting period	s 71(1)(i)
Changes in CEAs and exclusion areas	Offsets report must include details of any changes in the CEAs and exclusion areas	s 71(1)(j)
Alternative parameters used in calculations	Offsets report must include details of the factors or parameters used in calculations where it was not possible to use those in incorporated documents in force at the end of the reporting period	s 71(1)(k)
Specifics on CEAs	Offsets report must include details required under s 71(2) for each CEA	s 71(2)
Notifications		
Completion of gateway assessment	Proponent must provide written notice of the completion of gateway assessment for a CEA	s 73(1)(a)
Failure to conduct gateway assessment	Proponent must provide written notice of the failure to undertake a gateway assessment within required time period	s 73(1)(b)
Disturbance events	Proponent must provide written notice of a disturbance event that is likely to adversely affect the ability of a CEA to satisfy the gateway requirements	s 73(1)(c)