Analysis of Brack report on Human Induced Regeneration Gateway Regeneration Checks

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Dr Cris Brack, an honorary Associate Professor at The Australian National University (ANU), was commissioned by the Clean Energy Regulator to undertake a review of the 'gateway checks' done on human-induced regeneration (HIR) projects under the Australian carbon credit unit (ACCU) scheme.[1]

The Minister for Climate and Energy and the Carbon Market Institute have cited Dr Brack's report as a basis for refuting findings in a paper we published in a *Nature* journal concerning the underperformance of HIR projects.[2]

Dr Brack's report does not provide any basis for refuting the findings in our report. There are six reasons for this.

1. Dr Brack's review was undertaken for a different purpose and did not have the same scope as our analysis. The Brack report reviewed stratification and gateway checks for just 25 projects (there are 468 registered HIR projects) conducted by the Regulator to assess compliance with its interpretation of the HIR method. Our analysis quantitatively assessed the performance of 182 HIR projects based on the extent of increases in woody cover in credited areas ('carbon estimation areas', CEAs) and the extent to which changes in woody cover in CEAs have mirrored trends in paired controls for each project, comprised of 3 km wide buffer areas outside the project boundaries that exclude areas in other HIR projects ('comparison areas').
2. Dr Brack's review did not quantitatively assess the 'performance' of HIR projects. To do this, at a minimum, it would need to have included a quantitative assessment of the trends in canopy cover in the CEAs of a representative sample of HIR projects. Dr Brack's report does not include this analysis. His report quantitatively assessed whether a sample of 25 projects met the gateway requirements at some point over the period 2020-2022, based on average levels of canopy cover in approximately 19 250m x 250m (6.25 hectare) 'cells' within the CEAs of each the sampled projects. For these purposes, Dr Brack's report used the maximum levels of canopy cover in the sample cells, as estimated by Australia's Environment Explorer (AEX), over the period 2020-2022. Dr Brack's report does not disclose any timeseries data on canopy cover trends, which is the issue of greatest relevance for evaluating the performance of HIR projects, in terms of actual outcomes. It also does not disclose what year was selected as the assessment year for maximum canopy cover for the sample cells (2020, 2021 or 2022).

[1] Brack, C. (2023) Gateway Regeneration Checks for Human Induced Regeneration projects. Clean Energy Regulator, Canberra.

[2] Macintosh, A. et al. (2024) Australian human-induced native forest regeneration carbon offset projects have limited impact on changes in woody vegetation cover and carbon removals. Communications Earth & Environment 5, 149 (2024). https://doi.org/10.1038/s43247-024-01313-x. See: https://www.abc.net.au/listen/programs/radionational-breakfast/fuel-efficiency-standards-watered-down/103637736 (27 March 2024); and Carbon Market Institute (2024) Carbon credit analysis needs to draw on relevant data, recognise Chubb Review advances. Media release. Carbon Market Institute, Melbourne.

3. The assessment of canopy cover in the sample of projects in Dr Brack's report is not likely to be representative of all HIR projects. This is because the number of projects in his sample was small (25), he only sampled approximately 19 250m x 250m (6.25 hectare) cells within the CEAs of each project (2,981 hectares from within the CEAs of sampled projects, or ~119 hectares per project), and the sampled projects appear to consist primarily of projects that were backdated to commence in 2010, meaning most of them are likely to have been registered in 2014 and 2015. By comparison, we analysed trends in woody cover across all land included in the CEAs of the 182 analysed projects, an area of 3.4 million hectares (an average of 18,831 hectares per project), and the projects were registered over the period 11 December 2013 to 30 November 2018. If the sample in Dr Brack's report is not representative, the results will not provide reliable insights on the performance of the portfolio of HIR projects.
4. Dr Brack's report does not disclose how the sampled projects, or sample cells within the projects, were selected, raising further questions about the representativeness of the results.
5. Dr Brack's report provides no details on the sampled projects or their CEAs, meaning the methods cannot be independently tested and results cannot be replicated.
6. The results presented in Dr Brack's report are consistent with our findings and do not demonstrate that the projects are effective in generating additional, permanent forest cover as they are required to. Dr Bracks report shows that:
    a. maximum canopy cover in most of the sample cells was ≤12.5%, yet after 10-12 years, canopy cover across all cells within these CEAs should be near, at or above the forest cover threshold (≥20%); and
    b. canopy cover increases and decreases over time in response to drought and wet years, consistent with our finding that most of the observed changes in canopy cover are attributable to factors other than the project activities, most likely rainfall.

In addition to these issues, there are three peculiarities with the method described in Dr Brack's report:

- the analysis does not appear to have been done at the scale required under the rules governing the initial stratification and gateway checks;
- compliance was assessed based on average canopy cover across the sampled cells rather than on a cell-by-cell basis as required under the rules; and
- the assessment was based on maximum canopy cover levels over the period 2020-2022 rather than canopy cover in the most recent applicable dataset immediately prior to the submission of the relevant offset report, as required under the rules.

These peculiarities mean the report cannot serve its intended purpose – to provide assurance the Regulator is conducting the stratification and gateway checks in a robust manner.

Further details on these issues are provided below.

1. Difference purpose and scope

1.1 What was the purpose of our study?

The purpose of our study was to assess whether, and the extent to which, HIR projects are resulting in increases in woody cover that are attributable to the project activities and would not otherwise have occurred. We used two metrics for these purposes:

- the extent of the increase in forest cover and 'woody cover' (areas with either forest or sparse woody cover) in the credited areas of HIR projects; and
- the extent to which changes in forest and woody cover in the credited areas of HIR projects have mirrored trends in paired controls for each project, comprising 3 km wide buffer areas outside the project boundaries that exclude areas in other HIR projects ('comparison areas').

We analysed 182 projects.

The 182 projects comprised all HIR projects whose CEA location data were published as of 22 June 2023 and that were registered in or before 2018 (providing at least four data points in the National Forest & Sparse Woody (NFWS) time series post registration), except where they were completely surrounded by other projects (because it was not possible to create valid comparison areas for these projects) or the published spatial files were corrupt.

The 182 projects covered a combined area of 9.5 million hectares, with their CEAs covering 3.4 million hectares.

Our study was subject to two rounds of double-blinded voluntary peer review by three international subject matter experts.

1.2 What was the purpose of the Brack review?

Dr Brack was commissioned to review the process and outcomes of the initial stratification and gateway checks conducted by the Regulator. His report analysed the checks conducted by the Regulator for just 25 HIR projects (there are 468 registered HIR projects).

The checks are conducted against guidelines developed by the Regulator to assess compliance with its interpretation of the method. Details of the checks are provided in Appendix A.

Dr Brack's report assessed compliance with these requirements using canopy cover data from ~600 sampled 'cells' from across the sampled projects, with 477 of the cells inside the projects' CEAs.

The sample cells appear to be 250m x 250m (6.25 hectare) pixels taken from Australia's Environment Explorer (AEX). Based on this, it appears that the total area analysed by Dr Brack was approximately 3,750 hectares, of which 2,981 hectares was from areas included in CEAs. This equates to 150 hectares for each sampled project, with 119 hectares from the CEAs of these projects.

Dr Brack based his conclusions on the projects' compliance with the gateway requirements on the *average* canopy cover across the sample cells of each project. For these purposes, Dr Brack's report used the maximum levels of canopy cover, as estimated by AEX, over the period 2020-2022.

Dr Brack's report does not appear to have been subject to any independent peer review.

Relevant differences in the purpose and scope of the studies are summarised in Table 1. These differences mean Dr Brack report does not, and cannot, provide a valid basis for refuting the findings in our paper.

Table 1. Comparison of purpose and scope of studies

	Our study	Brack report
Purpose	Assess whether, and the extent to which, HIR projects resulted in increases in woody cover that are attributable to the project activities and would not otherwise have occurred.	Review the process and outcomes of the initial stratification and gateway checks conducted by the Regulator.
Metrics used	1. Increase in forest and woody cover (forest cover and sparse woody cover), from date of project registration to 2022. 2. Extent to which changes in forest and woody cover mirror changes in comparison areas.	1. *Initial stratification*: whether periods before project commencement when canopy cover >1-2% and no periods when canopy cover >20%. 2. *Gateway requirements*: whether average canopy cover in sample cells in CEAs of projects ≥7.5%. Maximum canopy cover over the period 2020-2022 was used for these purposes.
Primary data source	NFSW dataset. NFSW dataset is a raster dataset, containing 25 m x 25m pixels, classified as non-woody (canopy cover <5%), sparse woody (canopy cover 5-19%) or forest (canopy cover ≥20% from trees ≥2m in height). Based on 30m x 30m resolution Landsat data, converted to 25m x 25m pixels.	Australia's Environment Explorer (AEX). AEX provides estimates of canopy cover derived from Woody Cover Fraction (WCF) dataset. AEX provides point data only at 250m x 250m (6.25 hectare) resolution. Point estates are the average from the 25m x 25m pixels within the selected 250m x 250m cell. WCF canopy cover estimates based on 30m x 30m resolution Landsat data, converted to 25m x 25m pixels.
Projects analysed	182	25
How were sampled projects selected	All HIR projects with published and uncorrupted CEA location data (as at 22 June 2023) that were registered in or before 2018, except projects completely surrounded by other projects.	Unknown.
Areas within sampled projects analysed	All 25m x 25m pixels within CEAs of sampled projects. Total analysed area within CEAs: 3.4 million hectares (average 18,831 hectares per project).	600 250m x 250m cells within project areas of sampled projects, 477 within CEAs of sampled projects. Total analysed area within CEAs: 2,981 hectares (average 119 hectares per project).
Data disclosure	Project numbers, jurisdiction, project areas, CEA area, proportion of CEA with forest/sparse woody/non-woody cover from 1988 to 2022, ACCU issuances by financial year and credited sequestration estimates. Graphs showing timeseries trends before and after project registration. All data published and available at https://www.nature.com/articles/s43247-024-01313-x#data-availability.	Two figures containing whiskers plot, histogram, and summary statistics of maximum canopy cover from 2020-2022 for cells within CEAs. Summary statistics comprised of average canopy cover for sampled projects, standard deviation, standard error of mean, and upper and lower 95% averages. No time series data on canopy cover, for cells or project averages. No project numbers, no information on the size of the project areas, no information on the size of the CEAs, no information on project locations, no information on ACCU issuances.
Review	Two rounds of double-blinded voluntary peer review by three international subject matter experts. The peer review report is available online : https://www.nature.com/articles/s43247-024-01313-x#peer-review	None.

2. Assessment of the 'performance' of HIR projects

To provide a basis to challenge our findings, at a minimum, Dr Brack's report would need to have included a quantitative assessment of the trends in canopy cover in the CEAs of a representative sample of HIR projects.

Dr Brack's report does not include this analysis.

The quantitative analysis in Dr Brack's report on the gateway requirements is limited to the maximum amount of canopy cover in the sample cells in the CEAs of the sampled projects over the period 2020-2022. He assessed compliance with the gateway requirements primarily by assessing whether the *average* canopy cover from approximately 19 sample cells within the CEAs of the 25 sampled projects were ≥7.5%, based on the maximums over the period 2020-2022.

The issue of greatest interest in this context is whether, and the extent to which, there is forest regeneration across the CEAs. In the relevant datasets, this equates to whether there is evidence of increasing canopy cover over time. If HIR projects were performing well, and in accordance with how they are credited, canopy cover would initially be low and then increase towards and then potentially beyond the forest cover threshold (areas were the crowns of trees ≥2m in height cover ≥20 per cent of the area).

In relation to the trends in canopy cover over time, Dr Brack's report states:

> Most projects started modelling in about 2010 after the millennium drought broke and regeneration started appearing. With the exception of a few cells that may approach forest levels of canopy cover (see 3.3 above), most CEA had 0 – 3% tree canopy cover before the drought broke and prior to modelling commencement.
>
> Many CEA cells increased canopy cover relatively rapidly after modelling started, but declined again after 2012-2013 as the new drought began to impact. Canopy cover appears to be recovering / regenerating quite strongly after 2019 and in many cases 2020-2022 has increased well above the thresholds required.[3]

Dr Brack's report does not disclose the timeseries data. The above extracts are the only information provided on the trends in canopy cover over the timeseries.

The absence of these data means there is no evidentiary basis to challenge our findings on the extent of increases in canopy cover in the CEAs of HIR projects. Further, unlike our paper, Dr Brack's report did not assess whether, and the extent to which, any observed changes in canopy cover were attributable to the project activities. This is because it was beyond the scope of the review.

3. Dr Brack's assessment of canopy cover is not likely to be representative of all HIR projects

Dr Brack's assessment of canopy cover is unlikely to be representative of all HIR projects. This is because of three main issues.

- The number of projects in his sample was small: 25 projects, out of 468 registered projects. By comparison, we analysed 182 projects.
- He analysed canopy cover in only approximately 19 sample cells within the CEAs of each the 25 sampled projects (477 sample locations). The sample cells appear to be

[3] Brack, C. (2023) Gateway Regeneration Checks for Human Induced Regeneration projects. Clean Energy Regulator, Canberra, p 9.

250m x 250m (6.25 hectare) pixels taken from AEX. Based on this, it appears Dr Brack analysed only 2,981 hectares from within the CEAs of sampled projects (119 hectares per project). By comparison, we analysed trends in forest and sparse woody cover across all land included in the CEAs of the 182 analysed projects, an area of 3.4 million hectares (on average, 18,831 hectares per project).

- The sampled projects appear to consist primarily of projects that were backdated to commence in 2010, meaning most of them are likely to have been registered in 2014 and 2015. By comparison, our study covered projects registered over the period 11 December 2013 to 30 November 2018.

Because the sample is not likely to be representative of all HIR projects, the results do not provide reliable insights on the performance of HIR projects.

4. How were projects and sample cells selected?

Dr Brack's report does not disclose how the sampled projects, or sample cells within the projects, were selected. In relation to project selection, Dr Brack's report merely states that:

> [t]hese projects were stratified to cover a range of project commencement dates; location; and agents working on behalf of the proponents.[4]

Later in the report, Dr Brack states that:

> [t]he 25 projects used in this review were objectively chosen to cover the range of projects, registration dates, methodologies and agents.[5]

No further details are provided in the report on how this was done.

Dr Brack's report provides no details or commentary on how the sample cells were selected.

The failure to provide information on project and area selection in Dr Brack's report raises further questions about the extent to which the results presented in the report on canopy cover are representative of those across all HIR projects.

5. Details on the sampled projects and their credited areas?

Dr Brack's report does not disclose any information on the sampled projects or the sample cells: no project numbers, no information on the size of the project areas, no information on the size of the CEAs, no information on their location; and no information ACCU issuances or credited sequestration. The report also does not disclose what year was selected as the assessment year for maximum canopy cover for the sample cells (2020, 2021 or 2022).

This lack of transparency means the methods cannot be independently tested and results cannot be replicated.

6. Data in Dr Brack's report align with our own findings

Dr Brack's report concludes that:

> On average, the sampled CEA had very low tree canopy cover at the beginning of their modelling periods (about 2010) and despite variation due to droughts and breaking droughts, they have achieved significant growth. The mean canopy cover over the full sample set 10 – 12 years after modelling commencement (2020 – 2022) was

[4] Brack, C. (2023) Gateway Regeneration Checks for Human Induced Regeneration projects. Clean Energy Regulator, Canberra, p 2.
[5] Brack, C. (2023) Gateway Regeneration Checks for Human Induced Regeneration projects. Clean Energy Regulator, Canberra, p 11.

significantly more (p=0.05) than 7.5%. Excluding the six identified projects above, raised the tree canopy cover to significantly more (p=0.05) than 10%. The 25 projects used in this review were objectively chosen to cover the range of projects, registration dates, methodologies and agents. I reasonably expect that the results of this review are representative of the HIR projects managed under CER.[6]

Despite being presented as positive, the results presented in Dr Brack's report tell the opposite story. Figure 6 in the report shows that the maximum canopy cover for most sample cells over the period 2020-2022 was ≤12.5% (circled in red in Figure 1 below - the bars in the histogram show the number of cells that have the level of canopy cover shown on the x-axis (horizontal)), and that a substantial proportion of sample cells had maximum canopy cover ≤7.5% (highlighted in yellow in Figure 1 below).

Dr Brack's report states that '[m]ost projects started modelling in about 2010'. This suggests that, by 2022, the sampled projects are likely to have modelled approximately 10-12 years of regeneration. By this point, canopy cover across all cells within the CEAs should be near, at or above the forest cover threshold (≥20%).[7]

If Dr Brack's report contained further information on the projects, like the number of credits they had received or the modelled levels of sequestration, this issue could be analysed more thoroughly. However, it did not. Notwithstanding this, the data presented in the report show that maximum canopy cover in a large proportion of the sample cells was well short of where it should be, based on the likely crediting levels.

Figure 1. Figure 6, modified to identify cells with ≤12.5% canopy cover (red circle) and ≤7.5% (highlighted in yellow)

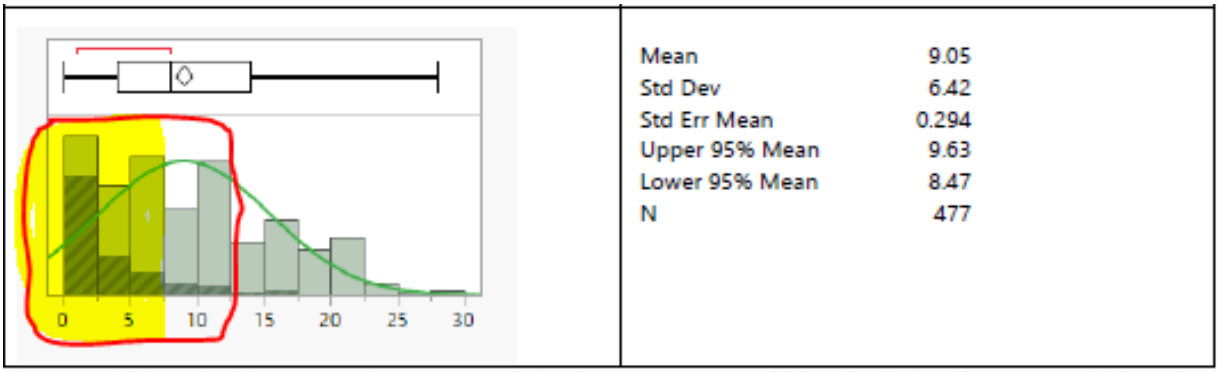

Figure 6: Whiskers plot, histogram and summary statistics of tree canopy cover (%) for all cells classified as CEA. Highlighted bars represent projects with mean significantly less than 7.5% [The box in the Whiskers plot contains 50% of the data – from the 25th percentile to the 75th percentile and is divided by a vertical line at the 50th percentile or median value. The diamond is centered on the mean with a width of ± standard error of the mean. The "whiskers" extend to the furthest observation that is not assumed to be an outlier]

In addition to this, Dr Brack's description of the ups and downs in canopy cover suggest that a significant proportion of any observed changes in cover are likely to be driven by factors other than the project activities. The extract below emphasises the point.

> Most projects started modelling in about 2010 **after the millennium drought broke and regeneration started appearing**. With the exception of a few cells that may approach forest levels of canopy cover (see 3.3 above), most CEA had 0 – 3% tree canopy cover

[6] Brack, C. (2023) Gateway Regeneration Checks for Human Induced Regeneration projects. Clean Energy Regulator, Canberra, p 11.
[7] Larmour, J. et al. Relating canopy cover and average height to the biomass of the stand. Report for the Department of the Environment and Energy. (CSIRO, Canberra, 2019).

> before the drought broke and prior to modelling commencement. **Many CEA cells increased canopy cover relatively rapidly after modelling started, but declined again after 2012-2013 as the new drought began to impact**. Canopy cover appears to be recovering / regenerating quite strongly **after 2019** and in many cases 2020-2022 has increased well above the thresholds required.[8] [emphasis added]

This is consistent with the findings in our paper. Rangeland ecosystems are characterised by 'booms and busts', driven by rainfall. Trees can die on mass in dry times, and regenerate extensively following rains. Fluctuations in plant water availability can also result in the expansion and contraction of the canopy of existing trees and increases and decreases in leaf density within the canopy of existing trees.[9] Our analysis shows that these natural fluctuations are likely responsible for most of the observed changes in canopy cover, not the project activities.

7. Other peculiarities in Dr Brack's assessment

The initial stratification and gateway checks are meant to be done at a defined scale. At the initial stratification, the scale is 200 to 1000-hectares, depending on the year the project's first offset report was submitted. At gateway 1, the scale is 100 hectares. At gateway 2, it is 10 hectares. By law, at year 15, the forest cover assessment is required to be done at the 0.2-hectare scale (see Appendix A for further details).

In practical terms, the scale requirements mean that each CEA should be divided up into gridded cells: 200-1000 hectares for initial stratification; then 100 ha for the first gateway check; then 10 hectares for the 2nd gateway check; then 0.2 hectares for the forest cover assessment. Each one of these cells is meant to be assessed against the relevant stratification and gateway requirements. If the cell meets one of the requirements, it is deemed compliant. If it does not meet any of the requirements, corrective action is supposed to be taken, which should usually involve the exclusion of the cell from the CEA. Where approved change detection products or remote sensing analysis are used for these purposes, it must be based on the most recent data (either in the form of approved change detection products or imagery used in remote sensing analysis).[10]

There are three relevant aspects of this process for current purposes:

- scale – ensuring the cells that are assessed are the correct size;
- comprehensiveness – ensuring that each cell is assessed for compliance, on a cell-by-cell basis; and
- timeliness – ensuring that, where approved change detection products or remote sensing analysis are used, the analysis is based on the most recent data.

The assessment in Dr Brack's report does not comply with these requirements.

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[8] Brack, C. (2023) Gateway Regeneration Checks for Human Induced Regeneration projects. Clean Energy Regulator, Canberra, p 9.

[9] Crowley, G., Murphy, S. (2023) Carbon-dioxide-driven increase in foliage projective cover is not the same as increased woody plant density: lessons from an Australian tropical savanna. The Rangeland Journal 45(2), 81–95. doi:10.1071/RJ23001.

[10] Clean Energy Regulator (2019) Guidelines on stratification, evidence and records: For projects under the Human-Induced Regeneration of a Permanent Even-Aged Native Forest and Native Forest from Managed Regrowth methods. Commonwealth of Australia, Canberra, p 29. Available at: https://cleanenergyregulator.gov.au/node/3783 (28 March 2024).

- The sample cells appear to be 250m x 250m (6.25 hectare) pixels taken from AEX rather than 200 to 1000-hectare cells for initial stratification and 100-hectare and 10-hectare cells for the 1st and 2nd gateways.
- The analysis and conclusions in Dr Brack's report are based on the average levels of canopy cover across the sampled 'cells'. For the purposes of his review, it appears Dr Brack used non-contiguous 250m x 250m cells and then averaged the results across the sample cells in each project. This conflicts with how the gateway checks are supposed to be undertaken. It even conflicts with Dr Bracks' description of the approach taken by the Regulator, particularly where his report states:

  > PG [Persistent Green] cells within 100 ha blocks were overlaid with the CEA to estimate average canopy cover at the 100-ha scale. The regeneration check was generally approved by CER when all blocks exceeded 7.5% – minor exceptions around the boundaries are ignored.[11]

  Importantly, because the cells in each project that Dr Brack used do not appear to be contiguous, the averages provided in his report provide no relevant information on the extent to which the cells within the CEAs are compliant with the gateways.

- Dr Brack's report used the maximum levels of canopy cover in each sampled cell, as estimated by AEX, over the period 2020-2022. Under the rules that apply to gateway checks, the analysis is supposed to be based on the most recent data available immediately prior to the submission of the relevant offset report.

The failure to apply the scale, comprehensiveness and timeliness requirements means the Brack report cannot serve its intended purpose – to provide assurance the Regulator is conducting the assessments in a robust manner.

[11] Brack, C. (2023) Gateway Regeneration Checks for Human Induced Regeneration projects. Clean Energy Regulator, Canberra, p 8.

Appendix A. Initial stratification and gateway checks

The initial stratification and gateway checks involve assessments of HIR projects against guidelines developed by the Regulator to evaluate compliance with its interpretation of the method.[12] Under the guidelines, the CEAs of HIR projects are required to be assessed against prescribed rules concerning the mapping of their boundaries (initial stratification), and then against 'gateway requirements' after 5 years (gateway 1) and 10 years (gateway 2). The gateway requirements are summarised in Table A1. The gateway requirements do not have the force of law. The law is set out in the HIR method and the *Carbon Credits (Carbon Farming Initiative) Rule 2015* (CFI Rule), both of which are legislative instruments.

Table A1. Gateway requirements

Gateway	Requirement
Gateway 1 requirements (CEAs covered in an offsets reports submitted from year six until year 10)	In each CEA, forest cover must have reached: • 7.5% or more in canopy cover of vegetation over two metres in height at the 100-hectare scale; or • 5% increase in canopy cover of vegetation over two metres in height over five years; or • sufficient trees and saplings on ground to achieve forest cover.
Gateway 2 requirements (CEAs covered in an offsets reports submitted from year 10 until forest cover assessment date)	In each CEA, forest cover must have reached: • 10% or more canopy cover of vegetation over two metres in height at 10-hectare scale; or • 5% or more increase to canopy cover of vegetation over two metres in height over five years at the 10-hectare scale.

Source: Clean Energy Regulator (2019) Guidelines on stratification, evidence and records: For projects under the Human-Induced Regeneration of a Permanent Even-Aged Native Forest and Native Forest from Managed Regrowth methods. Commonwealth of Australia, Canberra. Available at: https://cleanenergyregulator.gov.au/node/3783 (28 March 2024).

The idea behind the gateways is that they are meant to ensure the areas within CEAs are progressing toward forest cover, with the ultimate aim of meeting the statutory requirements.[13] Under the CFI Rule, at least 90% of the areas in CEAs must have forest cover at the 'forest cover assessment date', defined at 0.2 hectare scale.[14] The forest cover assessment date is generally

[12] Clean Energy Regulator (2019) Guidelines on stratification, evidence and records: For projects under the Human-Induced Regeneration of a Permanent Even-Aged Native Forest and Native Forest from Managed Regrowth methods. Commonwealth of Australia, Canberra. Available at: https://cleanenergyregulator.gov.au/node/3783 (28 March 2024).

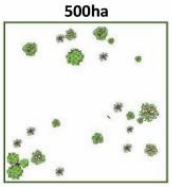
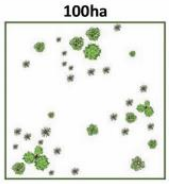
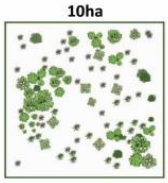
[13] Clean Energy Regulator (2019) Guidelines on stratification, evidence and records: For projects under the Human-Induced Regeneration of a Permanent Even-Aged Native Forest and Native Forest from Managed Regrowth methods. Commonwealth of Australia, Canberra, p 29. Available at: https://cleanenergyregulator.gov.au/node/3783 (28 March 2024).

[14] CFI Rule, s 9AA.

15-years from the date of project registration or the commencement of the modelling of forest regeneration.[15]

The logic is illustrated in Figure A1 below, which is taken directly from the Regulator's guidelines. For the purposes of the initial stratification, the gateway checks and the 15-year forest cover assessment, the areas in the CEAs are meant to be divided into cells. When the CEAs are initially stratified, the cells are meant to be at the 200 to 1000-hectare scale, and the cells get progressively smaller as the forest cover assessment date approaches. At the 1st gateway, the cells are 100 hectares; at the 2nd gateway, the cells are 10 hectares; and finally, at the forest cover assessment date, the cells are defined at the 0.2-hectare scale. At each of the 1st and 2nd gateways, and the forest cover assessment, each 'cell' (100 ha, 10ha, 0.2 ha) must meet the specified requirements.[16]

Figure A1. Scale of assessments of compliance, initial stratification, gateways and forest cover assessment

Evidence hierarchy	Initial stratification	Regeneration check (year 6)	Regeneration check (year 10)	Attainment of forest cover
Example CEA	500ha 	100ha 	10ha 	Whole CEA 
CER approved change detection analysis	N/A	• Average increase in woody vegetation at 100ha scale	• Average increase in woody vegetation over the previous 5 years at 10ha scale	N/A
CER approved remote sensing products	• Removal of existing forest at 0.2h scale, and • ≥5% canopy cover of vegetation ≥2m height, at 1000-200ha scale depending on the year of the initial offset report	• ≥7.5% canopy cover of vegetation ≥2m height, at 100ha scale, or • ≥5% increase to canopy cover of vegetation ≥2m height, over 5 years at 100ha scale	• ≥10% canopy cover of vegetation ≥2m height, at 10ha scale; or • ≥5% increase to canopy cover of vegetation ≥2m height, over 5 years at 10ha scale	• National Inventory Forest Extent Data, 90% of 0.2ha portions have achieved forest cover • Initial stratification data updated and processing repeated

Source: Clean Energy Regulator (2019) Guidelines on stratification, evidence and records: For projects under the Human-Induced Regeneration of a Permanent Even-Aged Native Forest and Native Forest from Managed Regrowth methods. Commonwealth of Australia, Canberra, Fig 4, p 21.

An initial point to note about the Regulator's gateway checks is how lax they are. Contrary to the stated purpose of gateway checks, proponents do not need to demonstrate forest regeneration to meet the gateway requirements. At both the 1st and 2nd gateways, cells within CEAs can meet the gateway requirements based purely on the amount of canopy cover, even if it was pre-existing.

Because the Regulator has allowed proponents to include uncleared areas in their CEAs that have a substantial number of pre-existing mature trees, many cells met the gateway

[15] CFI Rule, s 9AA(6). The different date of the forest cover assessment was part of a sweetheart deal given to 'existing' projects (defined as those registered before 15 August 2018) when the rule was introduced. The effect is to give these older projects more time to satisfy the forest cover attainment requirements.

[16] Clean Energy Regulator (2019) Guidelines on stratification, evidence and records: For projects under the Human-Induced Regeneration of a Permanent Even-Aged Native Forest and Native Forest from Managed Regrowth methods. Commonwealth of Australia, Canberra, p 29. See also Brack, C. (2023) Gateway Regeneration Checks for Human Induced Regeneration projects. Clean Energy Regulator, Canberra, p 8.

requirements, even the 10-year requirements, on the day they were registered (as reported in our study, almost 50% of the credited areas of the 182 projects we analysed had sparse woody or forest cover when the projects were registered). For the gateway requirements to serve a valid purpose (demonstrate regeneration of forest), they should focus primarily on the change in canopy cover over time, not the amount of canopy cover at a given point in time.