Ministry for Primary Industries
Manatū Ahu Matua

Emissions Trading Scheme forestry accounting proposals

Regulatory Impact Assessment

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Publications Logistics Officer
Ministry for Primary Industries
PO Box 2526
WELLINGTON 6140

Email: brand@mpi.govt.nz
Telephone: 0800 00 83 33
Facsimile: 04-894 0300

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CONTENTS

Coversheet: Emissions Trading Scheme forestry accounting proposals

Advising agencies	Ministry for Primary Industries, Ministry for the Environment
Decision sought	Approval to implement ETS forestry accounting improvements as part of the ETS forestry package
Proposing Ministers	Minister of Forestry, Minister for Climate Change

Summary: Problem Definition

Problem Definition

What problem or opportunity does this proposal seek to address? Why is Government intervention required?

The New Zealand Emissions Trading Scheme ('ETS' or 'the scheme') forestry accounting rules are failing to maximise incentives to establish new forests.

The scheme aims to encourage its participants to store carbon in forests by providing tradeable New Zealand Units ('NZUs' or 'units'). Under current rules, ETS forestry participants (participants) must repay most of their NZUs every time they harvest forests, which causes significant financial risk and high compliance effort. Therefore, this requirement reduces the incentive to enter forests into the ETS and establish new forests. As newly established forests make a significant contribution to climate change mitigation by increasing the size of New Zealand's carbon sink, it is vital to address this issue.

Furthermore, the present ETS forestry accounting rules could undermine the scheme's ability to drive domestic mitigation effort in line with the difficulty of New Zealand's international climate change targets. This is because from 2021, the accounting approach for New Zealand's target will record the average amount of carbon stored in New Zealand's forests established after 1989. ETS forestry accounting, on the other hand, allocates NZUs to participants based on actual carbon storage changes as they occur, even if they are only temporary. This misalignment can result in quantities of NZUs being supplied to the market and an associated NZU price signal that does not encourage the required mitigation to reach New Zealand's international climate change targets.

Section A: Proposed Approach

Proposed Approach

How will Government intervention work to bring about the desired change? How is this the best option?

A set of proposals have been developed to address the ETS forestry accounting issues. They have been assessed against a series of high level objectives and underlying criteria developed by officials. The ETS forestry objectives and criteria are outlined below.

Increase the ability of the ETS for forestry to help New Zealand cost-effectively meet its international climate change targets by:

- increasing the incentive to store carbon in forests and harvested wood products; and
- allocating obligations and entitlements to support alignment with international climate change targets.

Improve ETS forestry operations by:

- improving ease of compliance for participants; and
- administrative efficiency and effectiveness for regulators.

Support New Zealand's broader climate change programme by:

- being consistent with wider climate change and wellbeing priorities;
- providing durable regulatory certainty and predictability; and
- avoiding unintended consequences.

These objectives and criteria align with the purpose of the ETS (as set out by the Climate Change Response Act 2002 (CCRA)): to support and encourage global efforts to reduce the emission of greenhouse gases by assisting New Zealand to meet its international obligations.

Averaging accounting proposals

The proposals for this Regulatory Impact Assessment (RIA) are outlined below, along with descriptions of how they best meet these criteria.

Require ETS participants to use averaging accounting for post-1989 forests registered after 31 December 2020.

Applying New Zealand's international climate change forestry "averaging" accounting approach in the ETS for forestry is expected to increase scheme participation and afforestation. This is because only providing NZUs to participants for the average amount of carbon in their forests over their lives would:

- enable participants to sell more units without the need to repay them at harvest, and
- reduce accounting rule complexity and ongoing reporting requirements.

It would also:

- align ETS forestry NZU allocations with the forestry sector's contribution to New Zealand's international climate change targets, and
- support New Zealand's wider climate change and wellbeing priorities.

ETS participants have a one-way choice to use averaging or carbon stock change accounting for their existing post-1989 forests, which can be made in any Mandatory Emissions Return from 31 December 2020.

Giving participants an option to move their existing registered forests to averaging accounting is expected to achieve some of the same benefits of using it for new forests, such as:

- improved alignment of ETS forestry NZU allocations and forestry's international contribution to climate change targets; and
- the option for participants to have reduced ETS forestry accounting complexity and ongoing reporting requirements.

It will also support wider ETS changes aimed at improving regulatory certainty and boosting sector confidence in the scheme. Participants who would not benefit from moving their existing forests to averaging accounting will be able to retain the current accounting approach, under which they registered their forest.

ETS participants using averaging accounting can transition their forest to a permanent post-1989 forest category, but must repay the NZUs earned between the carbon stock at the time of transition and their forest's long-term average carbon stock.

Giving participants using averaging accounting the option to transition their forest to a permanent category will increase land use flexibility. Rules around repaying NZUs previously earned will allow the transition to occur quickly and prevent unintentional double crediting NZUs.

Detailed design features to support averaging accounting

Many of the current ETS forestry settings can remain the same, such as determining NZU entitlements every 5 years based on CCRA regulations processes and measuring carbon storage change. But officials recommend that the design settings below are changed under averaging accounting.

ETS participants using averaging accounting will:

- **receive NZUs for normal forest growth until each forest reaches its long-term average carbon storage amount – determined by forest ages within bands** (with different bands for forest types and rotation lengths)**; AND**
- **no longer be required to undertake detailed reporting, instead they will only need to confirm continued forest management (or undertake detailed reporting if their forest moves into a new age band).**

These settings will ensure participant effort is reduced compared to the status quo, while still maintaining ETS incentives to store carbon in forests (i.e. by extending forest rotation length).

Complementary ETS forestry accounting improvements

MPI recommends that the improvements below are also made to the ETS forestry accounting settings, as they complement the averaging proposal.

ETS participants will not have a temporary adverse event liability for their forests using averaging accounting, and can continue to earn NZUs once the carbon storage of the affected forest is re-established.

This could further encourage ETS participation and afforestation as it will reduce the financial risk of entering forests into the ETS (as participants will not be required to repay NZUs they have received if their forest emits carbon as a result of a temporary adverse event).

Enabling participants to earn NZUs once the forest is re-established also incentivises quick re-establishment of damaged forest area.

ETS participants can offset their deforestation liability for their plantation forests using averaging accounting (by establishing a carbon equivalent forest in another location)**.**

This could further encourage ETS participation and afforestation as it will reduce the financial risk associated with registering forests in the ETS (as participants can avoid having to repay NZUs received if deforesting an area of land).

It also supports New Zealand's wider climate change and wellbeing priorities as it would improve land-use flexibility, which could:

- prevent reduced contribution to climate change targets from deforestation (by making it easier to retain forest cover when changing land use);
- support New Zealand's transition to a low-emissions economy at low cost (as it would remove barriers to economic and Māori development);
- support the One Billion Trees programme (as current forest land counts towards the target).

Extending the deforestation NZU liability exemption provisions in section 60 of the CCRA to post-1989 forests in the ETS.

This could further encourage ETS participation and afforestation as it will reduce financial risk associated with registering forests in the ETS (as participants can avoid having to repay all NZUs received if they need to deforest for the public interest).

Introducing a time limit for re-entering forest land into the ETS that has been deforested.

This will address the concern of an increased incentive to deforest under averaging accounting. The detailed design for this time limit, including the length of the time before forest can be re-entered into the ETS or earn NZUs, can be decided during the ETS forestry package regulations process in late 2019.

This RIA outlines proposals that have been developed based on a previous RIA, a discussion document, and feedback from public consultation.

Section B: Summary Impacts: Benefits and costs

Who are the main expected beneficiaries and what is the nature of the expected benefit?
ETS forestry participants using averaging accounting Participants registering newly established rotational forests will enjoy the greatest direct benefit. Under averaging accounting, they will be able to sell more of the NZUs allocated for forest growth at lower risk (around 300-500 extra low-risk NZUs per hectare). This will increase the financial return from establishing new rotational forests. This benefit would also extend to participants who choose to move existing rotational forests to averaging accounting, but it is unlikely to be to the same extent. Many of these participants would receive fewer additional low-risk NZUs for existing forests (if they were registered many years after they were established). ETS forestry participants that use averaging accounting will no longer be required to undertake detailed reporting over the life of their forests (as they will only receive NZUs until their forests have reached their long-term average carbon storage amount) or undertake complex harvest liability calculations. The financial risk of having to repay most NZUs if a forest is temporarily damaged and releases its carbon would be removed for participants with forests using averaging accounting (and it could also potentially reduce their forest insurance premiums). Likewise, the financial risk of deforestation would be lower for participants with forests using averaging accounting, as they would be able to offset their deforestation liabilities (by establishing a forest which stores an equivalent amount of carbon elsewhere) and they will be able to access a deforestation exemption in situations where it is in the public benefit. The exemption benefit also extends to participants with permanent post-1989 forests. Participants with forests using averaging accounting who transition to them to the permanent post-1989 category will continue to earn units, even after the forest reaches its long term average carbon storage amount (if their forest continues to store carbon after the transition). The Crown Applying averaging accounting to newly registered forests and existing registered forests moved over to averaging accounting improves the scheme's ability to send the right price signal to drive mitigation effort in line with New Zealand's international climate change targets. This lowers ongoing risk to the Crown of not reaching climate change targets (from providing a quantity of NZUs to the market that does not match forestry's mitigation contribution). If a target was not reached through mitigation effort, the Crown would face a fiscal risk if it chose to buy units in order to meet a target. Or it would have a reputational risk, if it chose to not to meet the emissions reduction shortfall. The increased incentive to afforest from averaging accounting for new forests is estimated to contribute an additional 89 million trees to the One Billion Trees programme. The offsetting proposal will reduce Crown risk from reduced mitigation contribution towards climate change targets as a result of deforestation emissions. Administrators Introducing averaging accounting could reduce some of Te Uru Rākau's ongoing administrative effort. Averaging accounting is a simpler approach to explain to participants and there will no longer be a need to assess accuracy of complex harvest liability calculations. There will also be a reduced need to monitor forest growth and process returns after forests reach their long-term average carbon storage amount.

Communities

The predicted increase to the rate of new forest establishment (from around 13,300 hectares per year to a gradual increase to around 23,000 hectares per year) is expected to provide forestry sector employment opportunities and could also boost investment in some regions (where there is potential for converting unproductive land to forestry).

Because sediment, nutrient and micro-bacterial contaminant leaching is lower under forests (both exotic and indigenous) relative to pastoral agriculture, increased forest establishment could improve water quality.

Forest planting offsets could assist participants to make good environmental decisions, as it makes it easier to move forests to other locations if the land is not suitable for forestry. Offsetting could also assist economic and Māori development as flexible use of land reduces barriers to investment and makes it easier to derive multiple revenue streams from commonly owned land.

Further information on these benefits are contained in the impact analysis, implementation, and cost benefit analysis sections of the RIA.

Where do the costs fall?

ETS forestry participants

Participants with existing forests in the ETS will face some short term disruption learning the new accounting approach and transitioning their existing forests to averaging accounting. However, they will be able to choose to move their existing forests to averaging accounting at any mandatory emissions return (which occur every 5 years). This means participants can choose to move their existing forests to averaging accounting when it suits them best, which would prevent bringing forward an NZU surrender liability for some participants (i.e. as they could transition their existing forests after harvest).

Participants choosing to retain the stock change approach for their existing registered forests may face slightly increased compliance costs if they register new forests. They will have to use both the averaging and stock change accounting rules across their forestry portfolio, which makes it more likely they will submit incorrect emissions returns.

People looking to buy forest land will need to undertake further due diligence to confirm what NZU economic return can be made from prospective land. They will need to work out whether stock change or averaging accounting rules apply, and there will be no date from which use of stock change accounting ends to provide a rule of thumb.

Participants with forests using averaging accounting who transition to them to the permanent post-1989 category could face a short-term financial cost during the transition, as they will be required to repay units earned for forest carbon stock not stored at the time of the transition.

There could be a “lock in” impact for some participants using averaging accounting. If a participant harvested a forest at a forest age that is older than commercially normal on one rotation, they (or a subsequent participant that owns the forest) may consider they must continue to retain that rotation length. This would prevent having to surrender NZUs for moving back to a commercially-normal rotation length.

Participants will need to undertake further reporting for temporary adverse events and to use offsetting or the section 60 exemption for post-1989 forests. However, they can decide whether the benefits outweigh the costs to access offsetting and the section 60 exemption. There will be a threshold to ensure they only need to report on temporary adverse events when the benefit of the reduced NZU liability outweighs the cost of reporting.

The Crown

Enabling participants to keep using stock change accounting for their existing registered forests maintains a degree of ongoing misalignment between ETS and international climate change accounting rules. This increases the Crown's risk of not reaching climate change targets. However, it is expected around 46 percent of participants will choose to move their existing forests to averaging accounting (for its reduced financial risk benefits).

Enabling participants to use averaging accounting for their existing registered forests is likely to create a short term increase in NZU supply to the market (of 21.6 million units over 2021-2030). That is because participants are more likely to trade NZUs previously received when their harvest liability is removed. This additional short term supply of units could reduce the price signal in the ETS for the 2030 target. Ways to mitigate this impact come at a cost to the Crown (i.e. reducing auction volume and/or buying NZUs).

The temporary adverse event proposal will result in a small increase to Crown risk because the event would be internationally recorded as a minor temporary decrease in forestry's contribution to climate change targets, but there would be no associated reduction in NZU allocations.

Offsetting will result in small short term increases to Crown costs. This is because when the forest is offset this is treated as reduced fiscal income to the Crown (as no NZUs would be surrendered upon deforestation). Offsetting costs are expected to be lower than the benefit to the Crown from increased mitigation from new forest planting.

Regulators/administrators

Te Uru Rākau will require additional budget appropriations to set up new systems and processes and assist participants to use averaging accounting. This includes a $3 million upfront IT build cost and a $2.1 million per annum cost as more participants are expected to enter the ETS. There will also be costs associated with transitioning existing forests to averaging accounting (just under $2 million per annum). However, most existing forest transitions are expected to occur by 2030. Enabling the use of two accounting approaches would require ongoing administrative effort and additional IT capability.

Local government/communities/iwi/the NZ public

Numbers of jobs associated with sheep and beef farms (or potentially other land uses) could reduce in some regions, particularly in cases where entire farms are converted to forestry. To ensure regions can adapt and still thrive, this will need to be carefully managed by communities. Because sediment is lost at harvest, and increased planting can reduce water availability in drier parts of the country, additional planting will also need to be supported by appropriate forest management.[1]

Further information on these costs are contained in the impact analysis, implementation, and cost benefit sections of the RIA.

Total costs and benefits

The total monetised benefits are higher than the monetised costs:

Benefit: 2019-2050: $7.054 billion
Cost: 2019-2050: $1.401 billion-$1.403 billion

The total non-monetised benefits are also expected to outweigh the non-monetised costs.

Further information on these estimates and how the net present values (NPVs) were calculated are contained in the cost benefit analysis section of the RIA (section 5.2).

[1] The National Environmental Standards for Plantation Forestry places obligations on those undertaking forestry activities to manage the potential effects of their forestry operations. Council plans require appropriate water management.

What are the likely risks and unintended impacts, how significant are they, and how will they be minimised or mitigated?

Having options for eligibility to accounting approaches (averaging and stock change) requires new forms of ongoing administrative effort and creates a risk of participant confusion or compliance costs (which could impact attractiveness to enter the ETS).

To mitigate these risks we propose to ensure the new ETS forestry IT system (due to be replaced as it is currently not fit for purpose) and its associated processes have greater functionality to assist participants. Any new system must be able to undertake calculations and monitor compliance, and staff must be able to provide greater participant assistance when averaging accounting is introduced and on an ongoing basis.

Allowing participants to move existing forests to averaging accounting in any mandatory emissions return period is likely to result in increased NZU supply in the short term. This would drop demand pressure on the carbon price, which could lower the incentive to undertake mitigation effort towards New Zealand's current climate change target. Options to prevent this include reducing auction volume and/or buying NZUs, but these come at a fiscal cost to the Crown. It would also be possible for Government to consider additional measures to encourage participants to move to averaging accounting at a time that fits in with their fiscal constraints.

As there is some uncertainty around future carbon prices and other policy changes (for instance, agricultural climate change policies in New Zealand) it is possible that more or less afforestation or offsetting may result from the preferred proposals in this RIA than expected. In our modelling we have assumed an increasing carbon price to measure the impact this is likely to have on afforestation. This RIA also contains analysis on the possible flow on economic, environmental and social impacts to assist decisions makers.

There is a risk that some of the detail of the policies that will be determined in subsequent regulations and as part of the IT system upgrade will impact the costs and benefits of the ETS forestry accounting proposals. To mitigate this risk we have recommended that decisions on key aspects of the design settings for averaging accounting are made prior to that process. MPI will also continue to work closely with Te Uru Rākau to ensure the policy intent of the changes in this RIA are considered in further detailed design.

Identify any significant incompatibility with the Government's 'Expectations for the design of regulatory systems'.

There are no significant incompatibilities with the Government's 'Expectations for the design of regulatory systems'. The proposals will make some key design changes to the ETS, but this is to ensure that the ETS forestry accounting rules and related operational settings can more effectively meet the Climate Change Response Act 2002's purpose "to enable New Zealand to meet its international climate change obligations."

Section C: Evidence certainty and quality assurance

Agency rating of evidence certainty?
How confident are you of the evidence base?
This RIA includes MPI's analysis and conclusions formed through public consultation and consultation with interested stakeholders (including Government agencies and ETS forestry sector experts), research, and economic modelling. While this forms a strong set of evidence, these inputs are subject to a number of limitations which are noted where relevant. The research and modelling is particularly strong in regard to the case for introducing averaging accounting for new forests, and for the range of potential Crown impacts from moving existing forests to averaging accounting. That range is fairly broad as uptake for existing forests will depend on individuals' choices, which vary according to their business plans. The magnitude of the costs and benefits for the averaging accounting to permanent post-1989 category transition, temporary adverse event, offsetting and section 60 proposals is less clear. This is because there is uncertainty about the level of uptake for these policies. However, per annum uptake is expected to be fairly low. There is some uncertainty about the future carbon price and other changes to the climate change policy settings that create uncertainty about landowner behaviour, which could impact levels of predicted afforestation. There is also uncertainty about the magnitude of the flow on economic, environmental, and social impacts of the proposed changes. The administrative costs have been based on realistic assumptions given current costs and expected participant behaviour. These costs will need to be updated once decisions have been made around the ETS forestry IT system upgrade, and for changes to the ETS forestry regulations later in 2019.

Quality Assurance Reviewing Agency:
The Quality Assurance Panel, with representatives from the Regulatory Quality Team at the Treasury, the Ministry for the Environment, and the Ministry for Primary Industries, has reviewed this Regulatory Impact Assessment with the exception of Section E. A Quality Assurance Panel with representatives from the Ministry for Primary Industries has reviewed the updated Regulatory Impact Assessment 'Emissions Trading Scheme Forestry Accounting Proposals' (which includes section E) produced by Te Uru Rākau and dated June 2019.
Quality Assurance Assessment:
The Quality Assurance Panel considers that this meets the Quality Assurance criteria.
Reviewer Comments and Recommendations:
The problem is highly complex, however, it is clearly and thoroughly outlined. The RIA presents a sound evidence-based case, particularly in relation to the benefits of averaging accounting for ETS participants with rotational forests, who will benefit most from the changes proposed in this RIA. A strong case is also made to address the misalignment between ETS and international climate change accounting rules to help ensure the Crown is better able to meet its international climate change targets.

Close monitoring will be required because there is some uncertainty around how landowners will respond, which could impact the estimated increase in afforestation levels. Some ETS participants will have good business reasons to choose to remain on stock change accounting, and will continue to navigate some of the complexities of the existing ETS system. Ongoing monitoring can help identify if and how the changes impact on these ETS participants.

A new section E has been added to explain the impacts of removing a double counting loophole for forests that transition from averaging accounting to a permanent forest category. This section appropriately outlines the situation which creates this loophole. The proposed options will remove the risk of forest owners receiving duplicate carbon units for the same forest growth if they transfer from averaging accounting to permanent forests. These options are expected to impact on a comparatively small number of forest owners each year.

Responsible Manager
Charlotte Denny Acting Deputy Director General (DDG) Policy and Trade The Ministry for Primary Industries

Section 1: General Information

1.1. PURPOSE

1 This Regulatory Impact Assessment (RIA) provides the Government with analysis on a set of proposals to introduce a new forestry accounting approach called "averaging" into the New Zealand Emissions Trading Scheme (NZ ETS, hereafter 'ETS' or 'the scheme').

2 It includes options that would enable the Government to determine whether and how averaging accounting is introduced for existing and new forests established and registered in the ETS. It also recommends making decisions on key design features and proposals that complement averaging accounting.

3 The analysis in this RIA has been informed by a recent review of the ETS (which finished in 2017) and public consultation on ETS forestry accounting proposals in August and September 2018 (Appendix 4). It builds on the analysis produced in a draft RIA that was used to inform that consultation.[2]

4 This RIA supports the Government to make decisions that will enable officials to begin drafting legislative changes that would enact these decisions (through amendments to the Climate Change Response Act 2002 (CCRA) and subsequent changes through regulations). It will also support officials to draft supporting regulations.

5 Cabinet made a decision in March 2019 to require participants to use averaging accounting for forests registered in the ETS from 31 December 2020 and enable them to use it for forests registered from 1 January 2019. This decision was informed by a draft version of sections A, B and D of this RIA.

6 The Minister of Forestry submitted policy options relating to sections F-M in this RIA for Cabinet consideration in May 2019. As decisions for existing forests (in sections B and C) have significant fiscal implications they were considered in June 2019 (after the Budget moratorium) alongside the decision related to policy options in section E.

7 The Ministry for Primary Industries (MPI) is the Government agency solely responsible for the analysis and advice provided in this RIA, except as otherwise explicitly indicated (i.e. Te Uru Rākau is responsible for the analysis on the section 60 exemption extension and the averaging accounting to permanent post-1989 forest category transition).

1.2 LIMITATIONS

8 This RIA includes MPI's analysis and conclusions formed through consultation with interested stakeholders and the public, research, and economic modelling. These inputs are subject to a number of limitations that are noted where relevant.

9 Officials' ability to evaluate the size of the impact of the proposals is constrained by ETS forestry participant behaviour (hereafter 'participant'), as well as a replacement to the ETS forestry IT system and associated processes that are still being developed (alongside the other ETS forestry package proposals).[3]

[2] Emissions Trading Scheme forestry package. Draft Regulatory Impact Assessment material August 2018: https//www.mpi.govt.nz/dmsdocument/30257

[3] The ETS forestry package includes additional operational improvements and a proposal to replace the PFSI with a permanent forest category within the ETS.

10 Likely uptake of the option to use averaging accounting for new and existing forests, and of the averaging accounting to permanent post-1989 forest category transition, offsetting, temporary adverse event and section 60 exemption proposals, is also difficult to measure. Current estimates are based on the economic advantage that participants could receive. But other factors can affect decision making, such as barriers to forest establishment (including access to suitable land and labour in time for the winter forest planting season in 2019) and level of compliance effort.

11 A number of assumptions underpin the analysis in this document. A detailed description of the model used (of ETS forestry emissions units flows and to determine forestry's likely contribution to New Zealand's international emission reduction targets)[4] is provided in Appendix 1. Assumptions used are based on a combination of external independent research, analysis, and expert opinion.

12 There is some uncertainty about future carbon prices and other climate change policies (i.e. in regard to the agricultural sector in New Zealand). Changes to these settings would impact our predictions for afforestation and uptake of the proposals.

13 The assessment of flow-on impacts for the economy, environment and communities (for example, environmental co-benefits from planting forests) are drawn from studies and information from sector experts that contain significant degrees of uncertainty, and are often not able to be quantified or monetised with strong confidence. Where quantified estimates are not available, statements providing a sense of the magnitude or direction of impacts are provided.

14 MPI developed the administrative costs with reference to current costs to administer the ETS for forestry and estimates Te Uru Rākau are working on for the ETS forestry IT system replacement. The business case and Cabinet decisions for the IT system replacement, and detailed regulations to support the introduction of averaging accounting, will not be completed until late in 2019. These costs will be updated at that point.

15 This RIA was developed under time constraints. Cabinet required material to support their decision to introduce averaging for new forests in March 2019. This decision was made early due to a risk that foresters would delay planting until 2020 without clarity around whether averaging accounting will apply to planting in 2019.[5]

16 The Minister for Climate Change intends to make the full suite of ETS forestry package changes to the New Zealand Emissions Trading Scheme through a Climate Change Response Amendment Bill in 2019 (CAB-17-MIN-0547.01 refers). Policy proposals in this RIA will then be reflected in the content of the Climate Change Response Amendment Bill (and in subsequent regulations).

1.3 SCOPE AND FOCUS OF PROPOSALS IN THIS RIA

17 The proposals set out in this in this RIA aim to do the following:

- increase participants' incentive to establish new forests;
- improve the ability of the ETS for forestry to help New Zealand cost-effectively meet its climate change targets; and
- improve ease of compliance for participants.

[4] This included using national estimates to project expected ETS participation rates; future new forest planting, species composition, deforestation and harvesting rates and ages and average forest carbon storage at different tree ages.

[5] Foresters need to make these decisions as early as possible in order to secure labour, undertake ground preparation work and make other commercial arrangements. An early announcement on averaging accounting avoided forest owners delaying planting to gain the benefits of averaging accounting. This announcement could incentivise an additional 3640 hectares (5 million trees) to be planted in 2019.

18 They were developed to address ETS forestry incentive issues identified as part of the 2015/2016 review of the ETS. Therefore, the RIA looks to alter the scheme's accounting rules under the Climate Change Response Act 2002 and associated regulations.

19 The proposals apply to forests first established after 1989 (post-1989 forests). The focus is on newly established forests because these forests can grow the size of New Zealand's carbon 'sink' and, importantly, contribute to international emission reduction targets.

20 The aim is to help drive mitigation effort in line with the difficulty of New Zealand's climate change targets by ensuring ETS entitlements are provided for carbon storage that is internationally recognised.

21 Because some of the additional land suitable for forestry is expected to be in smaller blocks, there is specific focus in this document on making the settings work for new small forestry participants.

22 The proposals also consider the need to support the Government's climate change agenda. This includes:

- the target to reduce domestic emissions to 30 percent below 2005 levels by 2030; and
- the Climate Change Response (Zero Carbon) Bill, to establish a new emissions target in legislation and institutions to provide certainty about New Zealand's long-term emissions goals (i.e. out to 2050).

23 The proposals are designed to work alongside the other ETS forestry package changes to improve the operational settings and incentives for permanent forests in the ETS agreed to by Cabinet in December 2018 and March 2019 (CAB-19-MIN-0197 and CAB 18 Min 0606 refers).

24 They also complement work led by the Ministry for the Environment (MfE) to improve the ability of the ETS to cost-effectively help New Zealand reach its climate change targets and to provide regulatory certainty. This activity includes improving the unit supply framework, market governance, and the compliance regime (CAB-18-MIN-0606.01 refers).

25 The proposals also aim to be consistent with the Government's related environmental and economic and cultural priorities, such as:

- a comprehensive programme to plant one billion trees over the next ten years;
- successful implementation of the National Environmental Standards for Plantation Forestry to maintain or improve the environmental outcomes associated with plantation forestry activities;
- developing thriving regions, with a particular focus on improving employment opportunities;
- improving biodiversity outcomes, including developing healthy soils; and
- Māori development and being a responsible Treaty partner.

Out of Scope

26 This RIA does not consider non regulatory measures for improving incentives to establish new forests. Other Government work programmes are developing related non-regulatory proposals. For example, the One Billion Trees programme is implementing options such as grants, partnerships and joint ventures to incentivise afforestation.

Section 2: Problem definition and objectives

2.1 CONTEXT AND REGULATORY SETTINGS

2.1.1 Climate change agenda

27 New Zealand has committed to reducing greenhouse gas emissions to 30 percent below 2005 levels by 2030 as part of its Nationally Determined Contribution (NDC) to the Paris Agreement on Climate Change. To support this and other environmental goals, such as improved water quality and biodiversity, the Government has set up a programme to plant one billion trees over the next 10 years.

28 In May 2019 the Government also introduced the Climate Change Response (Zero Carbon) Bill to set New Zealand's long term commitment to a low-emissions, climate resilient economy.

29 These commitments support the international effort to prevent the potential catastrophic environmental effects of increasing global average temperatures.

30 New Zealand's effort to transition to a low-emissions future will take time and depend on new technologies to reduce emissions. Forestry plays a critical role as a carbon sink, particularly to help New Zealand meet its short-term climate change targets.[6]

31 Increased forest planting is one of our most effective and economically efficient carbon reduction options. It can help remove carbon dioxide emissions from the atmosphere while generating revenue for New Zealand businesses and contributing to other positive environmental impacts (e.g. biodiversity, erosion control, and sediment loss).

2.1.2 New Zealand ETS for forestry

32 The ETS was introduced in 2008 as the main tool for reducing New Zealand's greenhouse gas emissions. It creates a market that puts a price on emissions by requiring local emitters to either reduce their emissions or purchase New Zealand Units (NZUs) from others (e.g. from foresters who have earned units for removing emissions) and surrender those NZUs to the Crown.[7]

33 The scheme encourages participants to establish forests by allowing them to earn NZUs as their trees grow and absorb carbon dioxide. Registering a forest into the ETS also provides an incentive to replant trees (to avoid having to repay NZUs for deforestation), and to undertake forest management practices that store more carbon.

34 ETS registration is voluntary for interested parties with eligible forests.[8] It involves active forest monitoring, ongoing reporting, and allocations and surrenders of NZUs to the Crown.

6 From recent reports from the Productivity Commission and GLOBE New Zealand, which are also consistent with modelling for the Zero Carbon Bill.

7 Unlike a carbon tax, the ETS uses a market based approach to set a price on emissions. This can be complemented by an overall emissions cap that can be used to limit emissions to a certain level, which can be reduced over time.

8 ETS participants can be forest owners or holders of a registered forestry right or lease. Full description of forest class rules can be found here: https://www.mpi.govt.nz/dmsdocument/4759/loggedIn

35 Ideally, the ETS rules used to determine forest carbon storage and associated NZU entitlements and obligations would mirror the international rules used to determine the contribution New Zealand's forests make to international emissions reduction targets. This helps to ensure participants are incentivised to undertake forestry activities that contribute to New Zealand's international climate change targets and that the forestry sector's mitigation effort reflects the level of ambition needed to meet each of these targets.

2.1.3 How forests are divided in the ETS and international accounting

36 The scheme was initially designed to help New Zealand reach its international emission reduction targets for the first commitment period under the Kyoto Protocol (which ended in 2012). Current ETS forestry accounting rules still largely reflect those international settings.

37 The Kyoto Protocol sets 1 January 1990 as the baseline from which climate change mitigation effort is recorded. For this reason, only forests established after 31 December 1989 can be registered in the ETS. Section 4 of the Climate Change Response Act 2002 has a number of tests to determine if scheme registrations qualify as post-1989 forest land (see appendix 2).

38 Owners of land (or people who have rights over the land) that had forest established on it before 1990 cannot claim NZUs. Instead they are required to surrender NZUs to the Crown upon deforestation of the forest (as the Crown must account for these deforestation emissions internationally). In the CCRA, this land is termed pre-1990 forest land. A range of measures, such as offset planting to avoid deforestation emissions, have been put in place to assist pre-1990 landowners with their deforestation obligations.

39 The range of eligible post-1989 forests includes exotic, indigenous, plantation, naturally established and permanent forests. People looking to earn NZUs for their permanent forests had the option to register in the Permanent Forest Sink Initiative (PFSI) under the Forests Act 1949. That policy has not been effective, so in December 2018 Cabinet decided to introduce a new approach, whereby permanent post-1989 forests can be entered into the ETS (under the CCRA). Landowners with forests in the ETS permanent forest category will receive NZUs they can sell at a premium in return for ensuring "permanent" carbon removals. Much like under the PFSI, they do this by agreeing to maintain forest, and not undertake clear-felling, for at least 50 years.

2.1.4 2015/16 ETS review

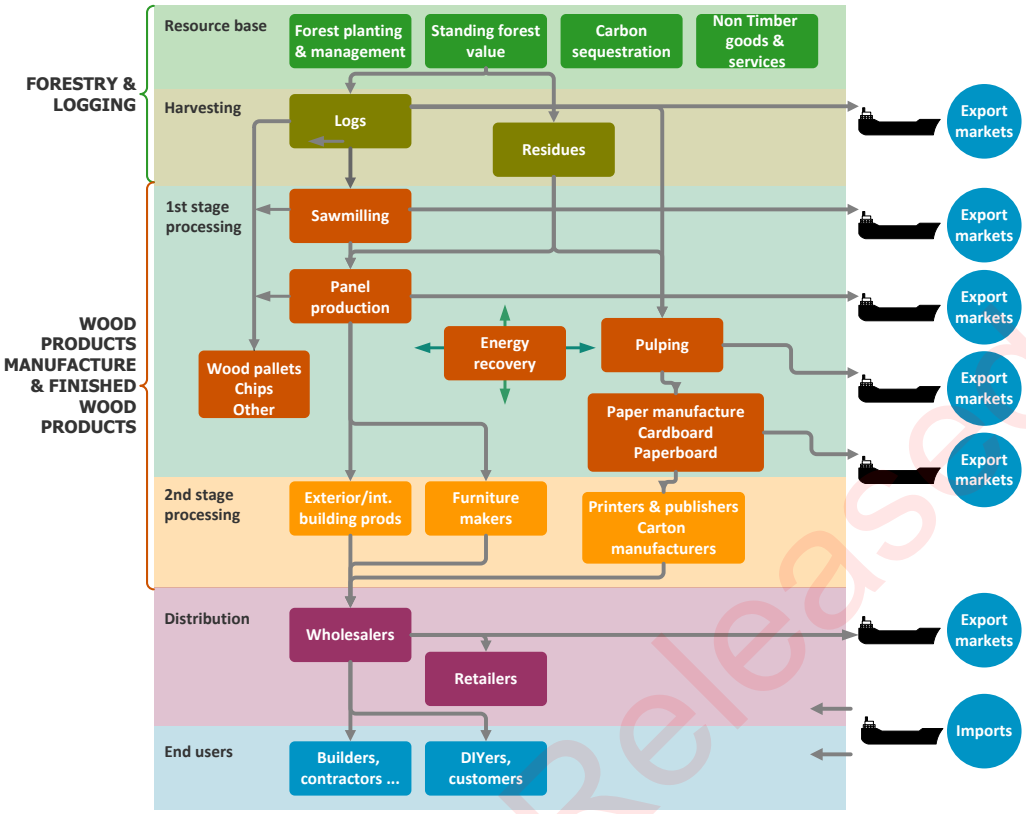
40 A review examining the effectiveness of the ETS in 2015/16 concluded that Government lacked sufficient tools to manage NZU supply. It found that current settings and oversight were seen to be creating significant regulatory uncertainty and operational and technical issues were causing inefficiencies. It also identified that the ETS forestry accounting settings were acting as barrier for participants to enter forests into the scheme, and therefore failing to maximise its ability to encourage afforestation.

2.1.5 New Zealand forestry sector

41 The forestry sector remains a significant domestic industry, making an annual contribution to GDP of around $3.7 billion (1.5 percent of GDP) and directly employing around 20,000 people.[9] It comprises forestry and logging with downstream impacts to wood processing and pulp and paper manufacture, represented by Figure 1 below.

[9] http://archive.stats.govt.nz/infoshare/ GrTable: Series, GDP (P), Nominal, Actual, ANZSIC06 detailed industry groups (Annual-Mar), https://www.mpi.govt.nz/news-and-resources/open-data-and-forecasting/forestry/

Figure 1: Connections within forestry sector



Source: New Zealand Institute of Economic Research (NZIER)

42 The sector contains a range of stakeholders, only a portion of whom are eligible to enter into the ETS or are currently registered in it.[10] Many forests in the ETS are owned by investors with diversified portfolios of different forest species and non-forestry investments.[11] Some 'carbon traders' have business models based on making returns from forest carbon storage.

43 The ETS contains a range of forestry participants with different ownership structures, sizes and forest types. Broadly (and for the purposes of this RIA) these can be split into two groupings to help distinguish how policy changes would affect different owner types:

a) Owners of large forests/forestry portfolios (the National Exotic Forest Description splits ownership by classes that are as large as 500-999 hectares, 1000-9999 hectares and 10,000+ hectares).[12,13] These participants aim to maximise returns from timber and carbon.

[10] In April 2019 there were around 2,081 participants who collectively have 323,875 hectares of post 1989 forest registered in the ETS, with a further 12,000 hectares registered in the ETS. There is estimated to be around 330,000 hectares of possible post-1989 forestry land not registered in the ETS (Based on the 2018 GHG Inventory submission estimates of total post-1989 forest).

[11] As at 2017, 92 percent of plantation forestry is privately owned, four percent is owned by a registered public company, two percent is owned by local government, one percent is owned by central government, and the remaining one percent is owned by state-owned enterprises. (https://www.nzfoa.org.nz/images/stories/pdfs/Facts_Figures_2016_%C6%92a_web_version_v3.pdf)

[12] https://www.mpi.govt.nz/dmsdocument/28461-nefd-2017-report-pdf

[13] These areas include all production forests in the portfolios, including pre-1990 forests, post-1989 forest outside the ETS and registered post-1989 forest.

b) Owners of small areas of forest (80 percent of participants own less than 100 hectares of forest).[14] In such cases where forestry is not a core business, complex rules add significantly to compliance costs.

44 Environmental groups and businesses are also investing in forestry, particularly permanent and indigenous forests. Māori and iwi have a large and increasing stake in the forestry sector, often through claims, settlements, and negotiations. Although for some iwi and hapū, significant proportions of their estate include pre-1990 forest land not directly affected by the proposals in this RIA. Some farmers have established small forests to make a return on land that is unsuitable for agricultural purposes.

45 The forestry sector includes both native and exotic tree species. A total of 6.4 million hectares of domestic land is covered in 'tall' native forest, of which 1.2 million hectares is privately owned,[15] and around 1.6 million hectares of regenerating native forest.[16] By comparison, only 1.7 million hectares are taken up by exotic plantation forestry, of which around 90 percent is radiata pine.[17] Of this plantation estate, approximately one million hectares is pre-1990 forest. The rest is post-1989 forest, of which 325,000 hectares are registered in the ETS and 330,000 hectares are not currently registered.[18]

46 Around 3.3 million hectares of land in New Zealand has been assessed through mapping analysis to fit criteria (such as slope, existing land-use, and grade of land) that make it suitable for new forest establishment.[19] Not all of this estimate is suitable for production forestry (e.g. land that is steep and/or erosion-prone), and is likely to be attractive to establish permanent forest on.

2.1.6 Agencies' interest in ETS forestry settings

47 Local authorities have a statutory interest in policy changes affecting the forestry sector. As implementers of the Resource Management Act 1991 (RMA), councils have a responsibility to regulate environmental outcomes in their jurisdictions. Increased planting of both rotational and permanent forest (driven by improved carbon incentives) would likely have impacts on priority environmental outcomes for councils like erosion control and freshwater management.

48 MPI is leading advice on the policy proposals to improve the forestry accounting settings in the ETS. Te Uru Rākau will be in charge of implementing the ETS forestry package changes, and monitoring their impacts.

49 MfE have overall responsibility for the policy settings ensuring the ETS works to meet its objectives under the CCRA and helps meet New Zealand's climate change targets. It leads work addressing non-forestry related issues identified in the 2015/16 ETS review. The Environmental Protection Authority (EPA) holds a further role in implementation and enforcement of the ETS. This includes management of rulings and the ETS register, and addressing non-complaint behaviour (which are they proposing to change through a new compliance and penalties regime).

[14] In contrast, 80 percent of forest land in the ETS is owned by participants with over 100 hectares.

[15] The balance, 5.2 million hectares, is protected on public conservation land.

[16] https://www.mpi.govt.nz/growing-and-harvesting/forestry/indigenous-forestry/

[17] https://www.nzfoa.org.nz/images/stories/pdfs/Facts_Figures_2016_%C6%92a_web_version_v3.pdf

[18] https://www.mpi.govt.nz/news-and-resources/open-data-and-forecasting/forestry/new-zealands-forests/

[19] Consisting of 2 million hectares of land suitable for planting permanent forest or production forest of various species, and a further 1.3 million hectares of land suitable for permanent forestry only, such as on steep and/or erosion-prone land. With a margin of error in the estimate of suitable land by plus/minus 25%.The estimate is based on the physical and climatic attributes of existing farmland, and excludes higher-producing land, existing forest, and land in other established uses including pastoral lease and conservation. It was generated in September 2018 for the One Billion Trees programme.

2.2 STATUS QUO

2.2.1 ETS forestry current carbon stock change accounting approach

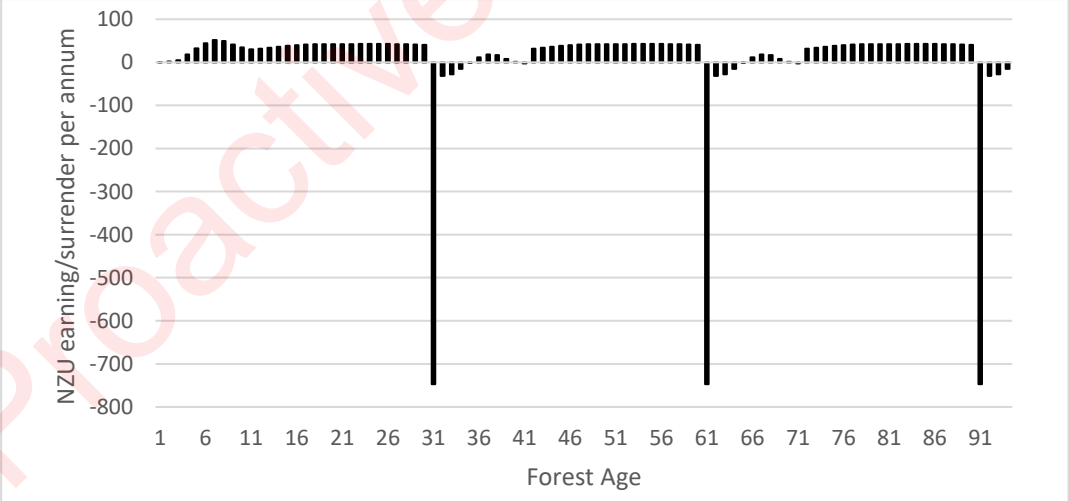
50 The current ETS forestry accounting approach reflects the Kyoto Protocol rules (in Commitment Period One: 2008-2012). Changes in carbon stored in forests are recognised as they occur, even if they are temporary. Participants receive NZUs as their trees grow (and therefore store additional carbon). But each time a temporary carbon loss event occurs, participants must repay a large proportion of those units. The RIA categorises this type of accounting as the 'carbon stock change' approach.

51 Key events where it is deemed forest carbon will be released to the atmosphere include harvest and deforestation. Although less frequent, temporary adverse events such as fire or wind throw are also included.

52 A large proportion of the domestic plantation forest estate is used for clear fell production. Based on cutting down all of the trees in an area, it features regular cycles of planting, growing, harvesting, and replanting.

53 Figure 2 below illustrates how a participant with a production forest is allocated and required to surrender NZUs under the existing stock change accounting approach.[20] The quantity of NZUs they receive is based on their forests' carbon storage change, which is determined every five years at the end of each mandatory emissions return period (MERP). This tends to remain fairly constant, but small changes can be observed, representing forest management practices. However, each time the forest is harvested, the participant needs to repay most of the NZUs they have received to the Crown. Some NZUs do not have to be repaid at this point as they relate to roots and branches which remain during harvest.[21] If the forest has been deforested, all the NZUs received must be returned to the Crown (excluding those already surrendered for previous harvests).

Figure 2: NZU allocations and surrenders under current ETS forestry accounting



Note 1: Generalised production forest carbon stock change accounting diagram. Shows the relationship between carbon dioxide removed from the atmosphere over time, the amount 'instantly emitted' upon harvest and the post-harvest residue left to decay over time. Illustrative example assumes 30 year rotation for a pine forest.

[20] Note that this graph is similar to but differs from the "saw tooth" diagram shown in the ETS forestry package consultation document. This diagram shows actual likely NZU allocations and surrenders, whereas the "saw tooth" diagram which appears later in the document is indicative and shows forest growth up to the "long-term average carbon stock" of a forest.

[21] These roots and branches slowly decay and are replaced with new planting.

2.2.2 Nationally Determined Contribution (NDC) accounting changes

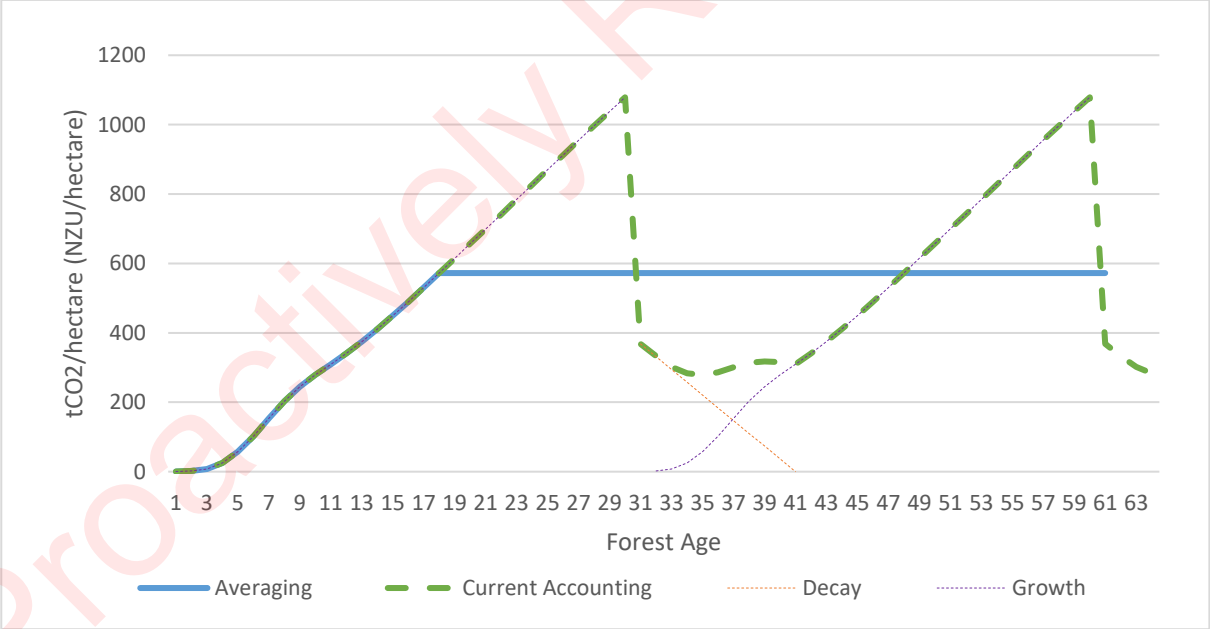
54 From 2021 onwards, countries will make climate change commitments (NDCs) under the Paris Agreement.[22] New Zealand has signalled its intention to use an averaging accounting approach to forestry for the 2021-2030 target as part of its NDC.

55 This means at an international reporting level, New Zealand's short term emissions and removals of carbon from the atmosphere will no longer be accounted for. Instead, our contribution to climate change targets will be based on the long-term average carbon stock of our post-1989 forests. In the case of post-1989 production forests this is based on the average amount of carbon stored over several harvest rotations. This is the net effect of emissions released at harvest and carbon stored as forests grow. Emissions from deforestation are still recorded as a total loss of carbon from the forest.

56 The modified approach better accommodates the cyclical nature of New Zealand's fast-growing production forests. Production forests make an important contribution to climate change targets, and around 90 percent of current ETS registered forest area relates to production forests. This modified approach aims to ensure only long-term permanent increases to our forest carbon sink count towards New Zealand's climate change targets.

57 Figure 3 below compares the way carbon storage was recorded per forest over the last climate change commitment period (2013-20), compared to the way carbon storage will be recorded for a forest under averaging accounting.

Figure 3: Recognised storage of carbon under different accounting approaches



[22] Each country in the Paris Agreement provides a nationally determined contribution (NDC) which outlines the effort by that country to reduction national emissions and adapt to the impacts of climate change.

2.3 PROBLEM DEFINITION

58 Since 2012, afforestation and ETS forestry participation rates have remained low. The 2015/16 ETS review found that contributing factors were likely to be financial risk and high compliance costs associated with the current ETS forestry accounting rules.[23]

59 In addition, from 2021, there is a significant risk that maintaining the current ETS forestry accounting approach could undermine the scheme's ability to assist New Zealand to meet its international climate change targets. This creates ongoing Crown fiscal and reputational risk.

60 These issues are explored in more detail below.

2.3.1 ETS participation and afforestation

61 Annual New Zealand afforestation rates increased between 2008 and 2011, when the ETS and the Afforestation Grant Scheme (AGS) were introduced. Since 2012, however, rates have reduced to pre-ETS levels. This is likely due to the relative profitability and attractiveness of other forms of land use, and, until recently, the low price of carbon in the ETS[24].

62 Since the end of 2012, under the current forestry accounting system, the number of registered post-1989 forestry participants has also declined.

2.3.2 Risky returns from ETS forestry participation

Harvest liability risk

63 Participants can face significant financial risk when selling NZUs. This is because they must surrender most or all of them to the Crown at harvest (the maximum they could keep for a 28 year rotation pine is around 300 NZUs out of 1100 NZUs per hectare).[25] If they do not have the units on hand, they must meet any shortfall, often by buying NZUs from the local carbon market where prices remain variable.

64 If the carbon price were to rise, participants who sell NZUs when the price is relatively low might need to spend significantly more buying units from the carbon market to fulfil their harvest obligation.

65 Participants who manage small areas of forest, or who operate small businesses, are the most financially vulnerable, as they are less likely to be able to hedge their NZU risk (i.e. across a portfolio of forests at different stages of growth) or to have the funds available to buy the units needed to cover their harvest obligations.[26]

[23] These issues were enhanced by volatile NZU price movements over this period, which exacerbated the uncertainty facing forest owners using the current accounting system.

[24] The price of carbon has risen to around $25 per NZU (measured in tonnes of carbon dioxide equivalent (CO2e)) from a low of around $1.60 in 2013.

[25] This would be lower if the participant entered their forest in the ETS after it was established. The total amount that can be received is dependent on Field Measurement Approach/lookup tables, species, management, rotation, and site productivity.

[26] This comment was made in Gibbons Holdings Limited's submission during the ETS review consultation (00130); New Zealand Forest Owners Association (00039) also made a similar submission.

66 As a result, many participants, particularly those with smaller forests, hold onto their NZUs to ensure they can cover their harvest liabilities, thereby reducing the revenue that could have been available to them from trading NZUs.[27]

Temporary adverse events liability risk

67 Participants with post-1989 forests are currently liable for emissions from temporary adverse events such as wind throw (trees uprooted or broken by wind). As a result, these participants either take on the financial risk of surrendering NZUs to the Crown or pay for adverse event insurance. This financial risk can discourage participation and reduce the ability of the ETS to encourage new forest planting.

Post-1989 forest land use change risk

68 Currently, post-1989 forest owners must surrender NZUs to the Crown when they deforest their ETS registered forests. This can discourage people from registering forests and dampen the afforestation incentive, as participants can feel locked into having their land in forestry in perpetuity. It can also prevent sensible management of registered forest land. Participants may choose not to deforest areas which are not suitable for forestry (i.e. that have low water availability), even if they could re-establish a similar forest in a more appropriate location.

Deforestation exemptions for post-1989 forests

69 Section 60 of the CCRA allows the Minister for Climate Change to recommend that the Governor-General grants exemptions from ETS liabilities to land owners if they deforest pre-1990 forest land or pre-1990 offsetting forest land, amongst other things. These exemptions are only granted where the public benefit exceeds the foregone revenue (in relation to the units the landowner would have to surrender) to the Crown.

70 However, it does not allow similar exemptions to apply to post-1989 forest land. Although it is voluntary for a forest owner to register for these activities, post-1989 forests may also be affected by the same unanticipated issues that require deforestation. The proposal would avoid these unintended financial consequences and the extra flexibility would make joining the ETS more attractive.

2.3.3 High complexity and reporting requirements

71 Accounting for harvest liabilities and recording other small fluctuations in carbon over the life of the forest (including temporary adverse events) imposes a high compliance burden. Participants are required to actively monitor forest growth and expected harvest liabilities, even when management practices have not changed. This includes accounting for changes in carbon storage every five years in a Mandatory Emissions Return (MER).

72 Te Uru Rākau puts significant effort into verifying the accuracy of returns and correcting them. In recent years, a significant portion of ETS forestry participants have failed to correctly follow the required carbon accounting methodologies and/or used the wrong inputs in their calculations. This would become a larger concern for participants if allowed to persist into the future, as the newly proposed penalties and compliance framework would impose penalties more often for this type of error.

[27] Provisional data from the EPA suggests that around 70 percent of all current post-1989 participants who own less than 50 hectares of forest land have transacted less than 25 percent of their units, compared to only around 20 percent of those that own 500 hectares or more forest land.

2.3.4 ETS forestry and international accounting misalignment from 2021

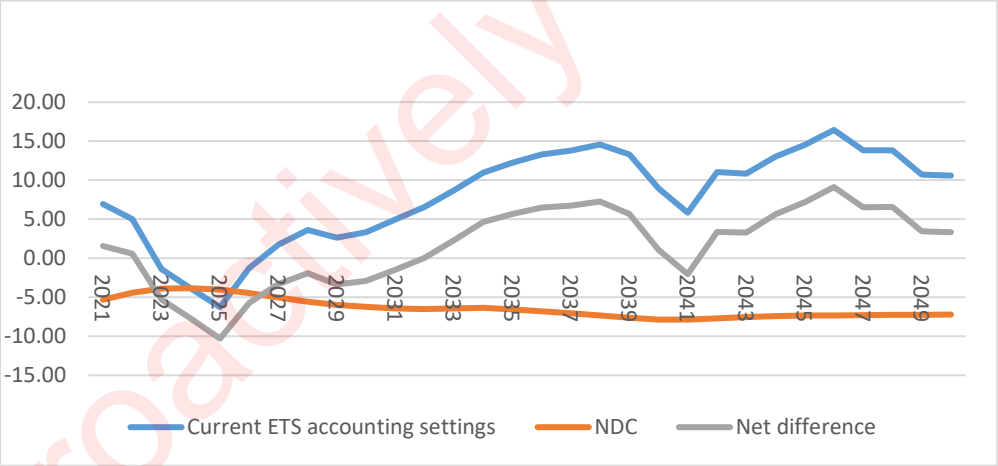
73 From 2021, there will be a significant misalignment between the ETS accounting approach (used for NZU allocations and surrenders) and the international accounting approach used to determine the contribution New Zealand forests make to climate change targets (called Nationally Determined Contributions).

74 This means allocations and surrenders of NZUs to participants will no longer reflect the level of effort New Zealand has to make to meet its international climate change targets. It could result in participants being provided with units in a period where they make no contribution to a climate change target. The supply of NZUs to the market could also become larger (or smaller) than the amount of CO2e internationally recognised as being removed from the atmosphere. These misalignments could undermine the scheme's ability to provide an NZU supply benefit (and corresponding carbon price) that incentivises mitigation from domestic emitting sectors, in line with international climate change targets.

75 The misalignment creates a continuing fiscal and reputation risk for the Crown, which could be difficult to manage. If there is any domestic shortfall, the Government may choose to purchase units to fulfil its commitment (at a direct fiscal cost). The Government could try to manage this risk through additional measures to reduce emissions in other emitting sectors – but that would come at a cost to those sectors and the New Zealand economy. Not meeting the commitment would pose a reputational risk to the Crown.

76 Figure 4 below is a time series graph that shows projected forestry emissions and removals under New Zealand's 2021-2030 NDC compared to ETS NZU flows.

Figure 4: Projected ETS unit flows and NDC forestry removals (millions of units)[28]



Note 1: NDC - negatives (-) indicate net removals from forestry within the NDC and from 2031-2050. New Zealand's NDC credits afforestation and reforestation up until the long-term average carbon stock is reached.
Note 2: Current ETS - negatives (-) represent net ETS revenue to the Crown; positives represent net ETS expense to the Crown.
Note 3: Includes forest emissions and emissions from the grants and joint ventures programmes.
Note 4: Includes existing post-1989 forests and projected afforestation (assume gradual afforestation increase to 13,300 hectares per year).

77 The impacts of this misalignment will vary over time. In the short term (2021-2030), many currently registered participants will be required to surrender NZUs as they harvest their forests under the current ETS accounting rules (the majority of current post-1989 forests were planted in the early to mid-1990s, and we expect much of this to be harvested around age 28 and 30). NZU supply will therefore be lower (and mitigation effort higher) for New Zealand to meet its current climate change target.

[28] The NDC line includes non-registered forests.

78 Over the medium to long term (2031-2050) the current ETS settings would continue to remain out of sync with how New Zealand forest carbon is recognised internationally, resulting in the Crown allocating more NZUs to participants than is recognised as carbon storage. This poses a risk to the Crown of lower domestic mitigation effort than is needed to meet New Zealand's international climate change targets.

2.4 OPPORTUNITIES TO IMPROVE ETS FORESTRY ACCOUNTING SETTINGS

2.4.1 Averaging accounting

79 The Government has an opportunity to align ETS forestry accounting with the averaging accounting approach New Zealand is adopting, to determine the contribution forestry makes towards meeting its international climate change targets.[29]

80 Introducing averaging accounting into the ETS for post-1989 forests would remove the need for participants to account for fluctuations in carbon over the life of the forest, such as emission liabilities at harvest. This could significantly increase incentives to establish new forests because:

- foresters would be able to sell a greater proportion of the NZUs they receive for carbon stored in their forests at a lower risk, increasing the financial return from establishing new forests;
- it is expected to reduce participant compliance effort (as could have simpler accounting rules and less ongoing reporting); and
- it could improve the scheme's ability to drive mitigation effort in line with New Zealand's contribution to international climate change targets.

2.4.2 Temporary adverse events accounting

81 The current ETS forestry temporary adverse event rules reflect the large negative impact these events have for forestry's contribution to New Zealand's international climate change targets under the international Kyoto Protocol accounting rules.

82 However, the changes to New Zealand's international climate change forestry accounting rules essentially smooth out carbon emissions and removals over the life of New Zealand's forest estate. Therefore, from 2021 onwards, temporary adverse events are likely to have a small marginal impact on New Zealand's ability to meet its international climate change targets (and fiscal impact for the Crown). This accounting change provides an opportunity to also change the ETS forestry temporary adverse event accounting rules. Removing emission liabilities for temporary adverse events could reduce financial pressure for participants, and encourage further participation and afforestation.

2.4.3 Post-1989 forest offset planting

83 Under New Zealand's international climate change forestry accounting approach, carbon emissions from deforestation of post-1989 forests that are above their long-term average carbon storage amount can be offset by the establishment of a carbon equivalent forest in another location. There is an opportunity to consider extending the current (recently improved) offset planting rules for pre-1990 forests to post-1989 forests in the ETS.[30]

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[29] Note that an alternative proposal for permanent forest ETS accounting treatment, where a declaration of permanence is given, is proposed in a separate regulatory impact assessment within this package (*Creating a Permanent Post-1989 forest activity in the Climate Change Response Act 2002).*

[30] The draft RIA for the other forestry package operational improvements (*Emissions Trading Scheme: Permission to consult on Forestry Sector Operational Improvements*) suggests making changes to the ETS offsetting rules that apply to forests established pre-1990 to ensure they can be used more effectively.

84 Introducing offset planting for post-1989 forests will reduce the risk attached to registering forests in the ETS. This could encourage ETS participation and afforestation. It could also help to ensure participants "plant the right tree, in the right place, for the right purpose", an aim of the One Billion Trees programme.

2.4.4 Deforestation exemptions for post-1989 forests

85 Section 60 of the CCRA could be extended to enable the Governor-General to exempt post-1989 forestry participants from having a deforestation NZU liability, if deforestation of the land would be in the public interest. For example, if an archaeological site is discovered in a forest the forest owner may be prevented from replanting it. As a result the land would have to be removed from the ETS and the forest owner would normally have to pay back the units received for that area.

86 Extending the section 60 provision would remove this risk of unanticipated costs arising, and make ETS forestry participation more attractive.

2.4.5 ETS forestry IT system replacement

87 Te Uru Rākau has started the process to replace its ETS forestry IT systems. Any changes to the ETS forestry accounting rules will be incorporated in the replacement system (see Section 6: Implementation and Operation for more information).

88 The table below links the problems identified in the previous section with the opportunities this RIA will explore.

Table 1: Summary of ETS forestry accounting problems and solutions

Problems	Solutions
ETS forestry participation and afforestation incentive lower than it could be because: - Risky returns from accounting for harvest liabilities - High complexity and reporting requirements Risk of reduced ability of the ETS to drive mitigation effort in line with climate change targets because: - From 2021 ETS forestry accounting rules will no longer align with forestry's contribution to New Zealand's international climate change targets	Replace stock change accounting with averaging accounting to increase ETS forestry participation and afforestation as it will: - Remove harvest liabilities (for new forests and for some existing forests) - increase the financial return from establishing new forests - reduce ongoing reporting requirements - align the ETS forestry accounting rules with forestry's contribution to New Zealand's international climate change targets Removing emission liabilities for temporary adverse events could encourage participation and afforestation as it will: - reduce financial risk for ETS forestry participants Introducing offset planting could encourage participation and afforestation as it will: - reduce financial risk for ETS forestry participants Offset planting could also: - help to ensure participants "plant the right tree, in the right place, for the right purpose" - remove barriers to economic and Maori development Allowing deforestation exemptions for post-1989 forests would: - Lower financial risk for ETS forestry participants, improving their participation incentive

Section 3: Objectives

3.1 ETS OBJECTIVES

89 The ETS aims to assist New Zealand to meet its international climate change obligations, including those under the Kyoto Protocol and the Paris Agreement. This requires meeting international climate change targets and reducing net emissions below business as usual levels.[31] The proposed changes in the Climate Change Response (Zero Carbon) Bill would also alter this purpose to include a long term domestic target/s (i.e. for 2050) and require New Zealand to meet domestic emissions budgets every five years.

3.2 ETS REVIEW OBJECTIVES

90 Three broad aims guided the 2015/16 review of the ETS. They were to:

i. ensure the scheme helps New Zealand meet its international obligations cost effectively;
ii. ensure the New Zealand economy is well prepared for a strengthening international response to climate change, and potentially higher carbon prices; and
iii. allow the ETS to evolve with these changing circumstances, particularly with respect to the framework provided by the new climate change agreement.

91 These objectives reflect the need to update the ETS to ensure it is fit for purpose to drive climate change mitigation under the Paris Agreement. The 2015/16 review also aimed to improve domestic confidence in the scheme, as participants have expressed concerns about regulatory uncertainty.

3.3 SPECIFIC FORESTRY PACKAGE OBJECTVIES AND CRITERIA

92 The table below contains specific objectives and criteria relevant for developing proposals that address the ETS forestry package issues identified as part of the 2015/2016 review. They have been chosen in reference to review's objectives and objectives contained in other relevant RIA and options analyses (i.e. the ETS unit supply RIA for stage II of the 2015/16 review, and other ETS forestry package RIA).[32]

Table 2: ETS Forestry Package criteria and objectives

ETS forestry package objectives	Increase ability of the ETS for forestry to help New Zealand cost-effectively meet its climate change targets	Improve ETS forestry operations	Support New Zealand's broader climate change programme
Criteria: How objectives are judged	• Increases incentive to store carbon in forests • Allocates obligations and entitlements to support alignment with international climate change targets	• Improves ease of compliance for participants • Administrative efficiency and effectiveness for regulators	• Consistent with wider climate change and wellbeing priorities • Provides durable regulatory certainty and predictability • Avoids unintended consequences

[31] Section 3 of the Climate Change Response Act 2002.

[32] Climate Change Response Act 2002: Permanent Forests and Operational Improvements (considered in December 2018); and Climate Change Response Act 2002: Forestry Sector Operational Improvements (Part 2)(considered in March 2019).

3.4 ETS FORESTRY ACCOUNTING AND PERMANENT FOREST CRITERIA

93 We have weighted the criteria in this regulatory impact assessment to make it clear which outcomes would address our problem definition (primary criteria), and which are indirect costs or benefits of a solution to address our problem definition (secondary criteria).

94 The primary and secondary criteria weightings in the table below apply to both the ETS Forestry Accounting and Permanent Forest RIA (that was used for the December 2018 ETS forestry decisions). As the ETS forestry operational improvements work stream is more focused on delivery of the ETS, the same criteria are grouped slightly differently.[33]

Table 3: Primary and secondary criteria for ETS forestry accounting options

Primary criteria : address the problem definition	How it will bring about outcomes
Increases incentives to store carbon in forests	• Reduces ETS forestry financial risk and therefore increases the potential financial benefit from receiving NZUs when establishing new rotational forests in New Zealand. • Retains the ETS disincentive to deforest (i.e. from the requirement to surrender NZUs) and maintains or enhances ETS incentives to store extra forest carbon (i.e. from forest management changes). • Is compatible with changes to improve incentives to establish permanent forests.
Allocates obligations and entitlements to support alignment with climate change targets	• Provides entitlements and obligations (i.e. allocations of units) that reflect the forestry sector's level of internationally recognised climate change mitigation contribution (i.e. the average amount of carbon stored in a forest over its life). This will help to ensure the ETS can drive mitigation effort in line with the level of difficulty New Zealand has to meet its international climate change targets, which will reduce Crown fiscal and reputational risk. • Risk and burden sharing between the Crown, participants, sectors and groups reflects the level of contribution each makes to New Zealand's international climate change targets.
Improves ease of compliance for participants	• Reduces compliance costs for participants and ensures the ETS forestry system and rules are easy to understand. Doing so could encourage people (particularly smaller foresters) to enter and remain in the ETS. • Changes to the rules do not result in unjustifiably high transition costs for participants.
Secondary Criteria: indirect costs and benefits	**How it will bring about outcomes**
Administrative efficiency and effectiveness for regulators	• Reduces or minimises administrative costs (both in the implementation stage for new proposals and on an ongoing basis). • Ensures participant reporting is accurate and the Government can identify and manage non-compliance (to maintain the integrity and effectiveness of the ETS).
Provides durable regulatory certainty and predictability	• The Government provides predictable frameworks, principles and conditions for participating in the ETS market. • Changes to the ETS rules are clearly signalled, with sufficient time for participants (which includes businesses, forest owners and potential forest land buyers) to plant and adjust to the change. Having certainty and predictability about the rules and market conditions prevents unnecessary disruption for businesses (particularly for those that enter into forward contracts), and maintains investor and participant confidence in the ETS for forestry.

[33] "financial incentive to store carbon in forests", "administrative efficiency and effectiveness for regulators" and "ease of compliance for participants" are the primary criteria, and the rest are secondary criteria

Avoids unintended consequences	• Prevents the creation of perverse incentives (i.e. opportunities to gain NZUs which do not relate to additional carbon storage). This will help to maintain the integrity of the ETS. • Minimises and appropriately manages any potential inequity between participants, sectors and groups. This will help to maintain support for the ETS for forestry, particularly when eligibility decisions for new rules are being made.
Consistent with wider climate change and wellbeing priorities	• Reflects the Crown's responsibilities as a Treaty partner (with a particular focus on Māori development by reducing barriers to invest). • Encourages economic growth and community development (helps New Zealand's just transition to a low-emissions economy). • Supports environmental resilience (i.e. maintains biodiversity, and prevents soil erosion and water shortage issues). • Supports New Zealand's international reputation (i.e. by encouraging significant additional emissions reductions, only providing NZUs for emissions reductions, and only providing NZUs for mitigation effort that maintains environmental resilience). • Maintains integrity of wider ETS settings (i.e. aligns with the ETS unit supply framework, enabling the Government's to use its unit supply tools to help NZ reach its climate change targets).

Section 4: Options and impact analysis

95 This section considers the range of proposals to address the issues and make the most of the opportunities outlined in this RIA. The summary of options table below outlines all the options assessed as viable by officials (in the middle row). Other proposals considered, but subsequently discarded, appear in the column on the right.

96 Impact analysis is included for each option set. All options are assessed against the primary criteria, which demonstrate how well they address the issue and meet the package's objectives. Where relevant, they are assessed against secondary criteria.

97 Crown fiscal or reputational impact is measured by changes to NZUs allocated to (or surrendered by) participants. Particular attention is given to the number of additional NZUs allocated or no longer surrendered as a result of a policy change that are not associated with extra carbon storage towards domestic climate targets (as this can increase the risk of not reaching international climate change targets).[34] Total increases or decreases in Crown cost (or benefit) can be determined by multiplying the number of NZUs by the carbon price. It is expressed as NZUs in this RIA to ensure calculations remain accurate and can continue to be used to determine impacts if the carbon price changes. Costs also do not crystallise in the Crown's accounts until they are within the 4 year budgeting process.[35]

98 The impacts are presented as short term (2021-2030), medium term (2031-2040) and long term (2041-2050). These timeframes were selected to assist decision makers; they relate to the 2030 climate change target, and potential future New Zealand (NDC) climate change target periods (that are still under consideration).[36] The 'net' values used are the net impact of NZU surrenders and allocations for ETS unit supply over those periods, which would represent fiscal revenue or cost to the Crown.

[34] There is also a cost to certain sectors and the economy from participants having to surrender NZUs for mitigation effort above what is required to meet climate change targets.

[35] These projected costs are however generated to complete the cost benefit analysis in Section 5.2 – using a forecasted carbon price.

[36] The ETS forestry package Cabinet papers also indicate the fiscal costs over the Treasury's 4 year forecast periods.

4.1 SUMMARY OF ETS FORESTRY ACCOUNTING OPTIONS

Issue/opportunity	Recommended and viable options	Discarded options
Averaging accounting eligibility options		
A. New forest averaging accounting proposal	A.1: Participants are required to use averaging accounting for their post-1989 new rotational forests (preferred)	A.2: Participants who register newly established rotational post-1989 forests in the ETS can use either averaging or carbon stock change accounting
B. ETS accounting options for existing forests (assumes all new forests use averaging accounting)	B.1: Participants are required to continue to use carbon stock change accounting for their post-1989 existing forests (but use averaging accounting for their newly established registered forests) B.2: Participants are required to use averaging accounting for their post-1989 existing forests (and use averaging for their newly established registered forests) B.3: Participants have a one-way choice to use averaging or carbon stock change accounting for their post-1989 existing forests (preferred)	B.4: NZU repayment compensation
Transition arrangements to introduce averaging accounting		
C. Flexible averaging transition options for post-1989 existing forests	C.1: Participants transitioning their post-1989 existing forests to averaging accounting can surrender NZUs earned above the long-term average carbon stock at a transition MER and the next MER C.2: Participants can transition their post-1989 existing forests to averaging accounting at any MER (preferred)	C.3: Participants transitioning their post-1989 existing forests to averaging accounting, can surrender NZUs when harvest/clear their forests C.4: A further NZU repayment extension for C.1. C.5: Not allowing participants to register to earn NZUs up to the average on the second rotation
D. Eligibility date and registration basis for new and existing forests	D.1: Participants are required to use averaging accounting for all forests registered after 31 December 2020 (newly established or existing forests) (preferred) D.2: Participants are required to use averaging accounting for new forests established from 31 December 2019	D.3: Participants are required to use averaging accounting for new forests established and registered before 1 January 2019
E. Transition options between permanent post-1989 forest land and post-1989 forest land	E.1: Participants can transition their forest to the permanent post-1989 forest category, but must repay the NZUs earned between the carbon stock at the time of transition and their forest's long term average carbon stock (preferred) E.2: Participants can transition their forests to the permanent post-1989 forest category, but cannot earn units until the forest reaches its long-term average carbon stock E.3: Participants cannot transition their post 1989 forests using averaging accounting to the permanent post-1989 category until the forest reaches its long term average carbon stock amount	
Averaging accounting design settings		
F. Carbon stock change calculation used to determine forestry NZU entitlements and obligations	F.1: Carbon storage changes each period remains the basis for determining NZU entitlements and obligations and can only claim NZUs from the beginning of the MERP a forest is registered in under averaging accounting (preferred)	F.2: Any change to the current carbon storage calculation approach prior to averaging accounting implementation F.3: Participants can claim emissions units back to 2008 or establishment of their forest

G. CCRA forestry regulations making process	G.1: Retain current CCRA forestry regulation processes for averaging accounting (preferred)	G.2: Any options where the long-term average carbon stock amounts are not set in regulations G.3: Retrospective application of changes to long term average carbon storage amounts
H. Reporting requirements	H.1: Retain requirement to report each MER, less detailed reporting after forest reaches its long-term average carbon stock (preferred)	H.2: Participants are only required to report deforestation
I. Converting a forest's long-term average carbon stock into a forest average age	I.1: Forest average age for each forest type determined by assumed harvest age I.2: Forest average age bands determined by normal harvest ages for forest types (preferred)	I.3: Using carbon stock of a forest as a basis for recording and communicating when a forest reaches its long-term average carbon stock amount I.4: Providing NZUs to participants using averaging accounting based on an averaged amount as the forest grows I.5: Average age determined by carbon stored in forest types and nominated harvest ages
Temporary adverse events proposal		
J. Proposal to remove participants' temporary adverse event liability	J.1: Participants are not liable for carbon loss from a temporary adverse event that damages their forest using averaging accounting, and can continue to earn NZUs once the forest regains the same carbon storage as immediately before the event (preferred) J.2: Participants are not liable for forest carbon loss from a temporary adverse event that damages their forest (regardless of whether it uses stock change or averaging accounting)	J.3: Participants are not liable for carbon loss from a temporary adverse event that damages their forest using averaging accounting, they can keep earning NZUs
Improvements for the ETS deforestation rules		
K. Should post-1989 forest owners be able to offset their deforestation liability by planting a forest elsewhere?	K.1: Participants can offset their averaging accounting forest deforestation liability by establishing a carbon equivalent forest in another location (preferred) K.2: Participants can offset their deforestation liability, regardless of which accounting approach is used for their forest	
L. Proposal to extend pre-1990 deforestation liability exemption to post-1989 forests	L.1: Participants are eligible for deforestation liability exemptions under section 60 of the CCRA (preferred)	
M. Reducing the increased incentive to deforest existing forests under averaging accounting	M.1: Participants must wait a number of years to be eligible to enter deforested land that is re-established into the ETS as a new forest M.2: Participants must wait a number of years before being able to earn NZUs after deforestation	M.3: Participants cannot re-enter forest that was deforested into the ETS and earn units under averaging accounting

4.2 ETS FORESTRY AVERAGING ACCOUNTING PROPOSALS

4.2.1 AVERAGING ACCOUNTING ELIGIBILITY

99 This RIA provides options for introducing averaging accounting into the ETS for forestry. It splits the decisions between new and existing forests as the benefits and costs of these options for participants and the Crown are dependent on when the forest is established.

A NEW FOREST AVERAGING ACCOUNTING PROPOSAL

100 This section presents the case for making averaging accounting compulsory for participants who register their newly established post-1989 forests (hereafter new forests) as rotational forests in the ETS.[37]

101 As indicated earlier, participants could alternatively choose to register these new forests into the permanent forest category in the ETS, and be subject to those accounting rules (which will be very similar to the current carbon stock change accounting rules).

102 MPI considered and discarded the option of allowing ETS forestry participants to continue to use the carbon stock change approach for forests established after 31 December 2020. This would risk increasing the misalignment between New Zealand's international climate change and ETS forestry accounting rules. It would also add complexity for participants who would have to choose between different accounting approaches. Analysis on the discarded option, A.2., can be found in Appendix 3: Discarded Options.

Option A.1: Participants are required to use averaging accounting for their post-1989 new rotational forests (preferred)

103 Under this option, participants would be required to use averaging accounting for new forests they register in the ETS as rotational forests. To use this accounting approach, the 'new forest' must meet all the requirements to enter the ETS. This includes meeting the definition of post-1989 forest land.[38]

104 The Crown would provide NZUs to participants using averaging accounting for carbon storage increases each reporting period until their forest (using averaging accounting) attains its long-term average carbon storage amount.[39] For a production forest, this would occur during its first harvest rotation. These participants would not be eligible for NZUs for carbon stock increases after their forest reaches this point (including for second rotation growth), but they would also not have to surrender NZUs each harvest.

105 Participants would have to surrender NZUs when a forest is deforested, deregistered, or if their forest is managed in such a way that it does not retain its long-term average carbon stock over time. However, these details depend on the calculation and ongoing reporting requirement options that are detailed in sections F-I of this RIA.

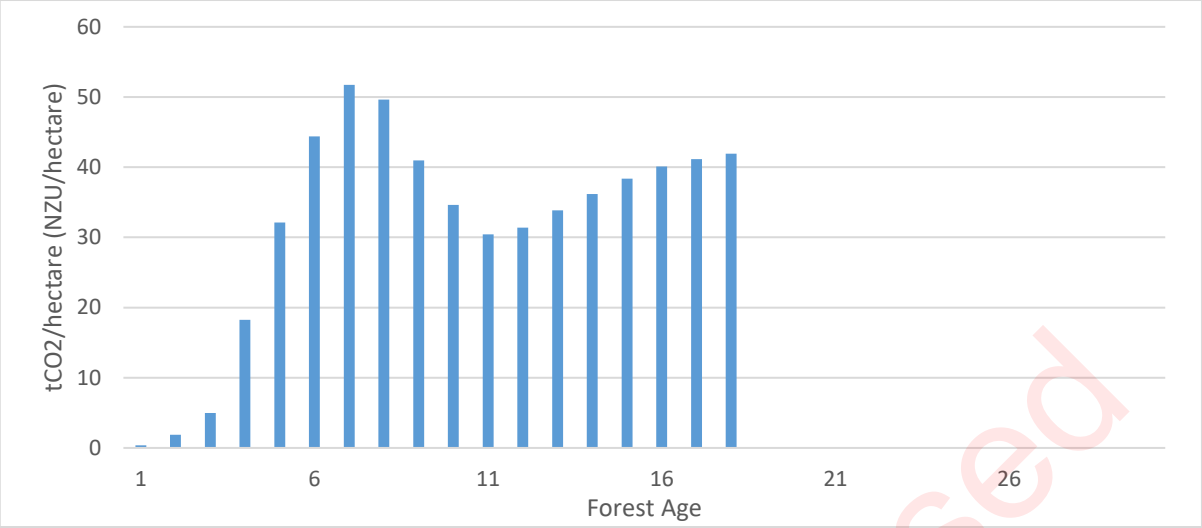
106 Figure 5 below demonstrates how NZUs could be allocated to a participant until their forest reaches its long-term average carbon storage amount. At that point they would cease to earn NZUs.

[37] Likely to be called the post 1989 forest category, as opposed to the permanent post 1989 forest category

[38] Post-1989 forests are those that meet all the criteria as post-1989 land in the CCRA, see appendix 2 for more information

[39] The most practical way to record and report when this occurs is by working out the age at which forests of differing types normally reach their long-term average carbon storage amount over several harvest rotations.

Figure 5: Example of NZU allocation under averaging accounting



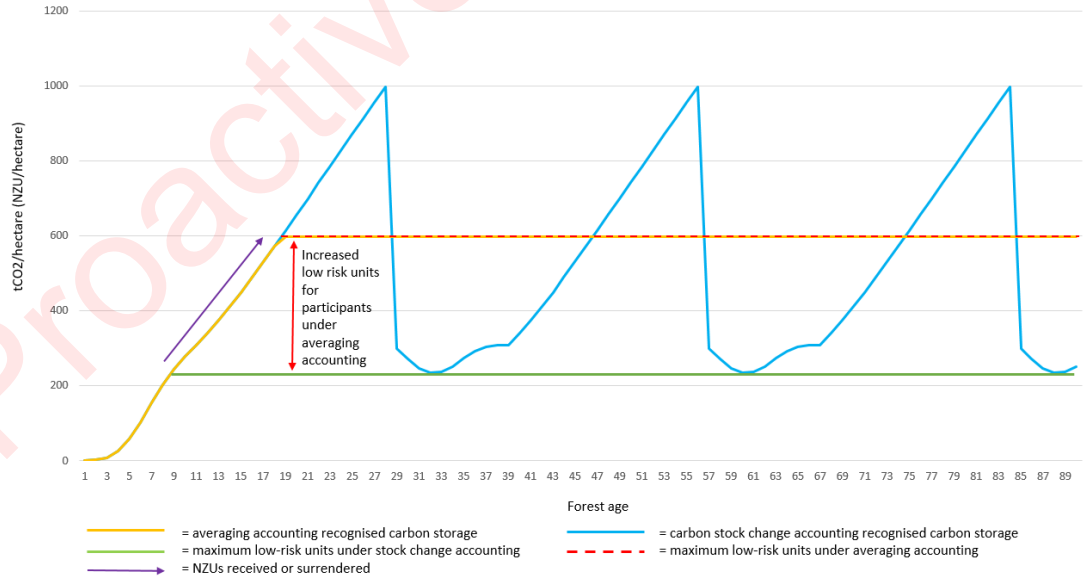
Note 1: Per hectare NZUs allocated to an illustrative hectare of production pine forest
Note 2: Shows a production pine forest harvested at age 28 years and a nationally area weighted carbon storage rate.
Note 2: Assumes long-term average carbon storage amount reached at forest age of 18

Impact analysis

Criteria: Increases incentive to store carbon in forests

107 Introducing averaging accounting for newly established post 1989 forests will significantly improve financial incentives to enter forests into the scheme and establish new forests. It will remove financial risk associated with having to surrender most NZUs received at harvest. Participants establishing rotational forests will therefore be able to make returns from selling NZUs received at lower risk. This is illustrated in Figure 6 below.

Figure 6: Comparison of level of 'low risk' carbon under averaging and current accounting



Note 1: NZUs issued for a hectare of production pine forest under current and averaging accounting; assumes long-term average carbon stock amount reached at forest age of 18.
Note 2: Figures are indicative only and represent a generalised production pine forest harvested at age 28 and replanted assuming similar forest management practices. Current and future carbon storage rates and management practices are assumed to be similar.

108 Compared to the status quo, averaging accounting may also enhance the incentive to store more carbon in rotational forests by extending rotation age. That is because it will allow participants to sell NZUs received for extending rotation length without risk of having to repay them at harvest. However, this potential benefit is dependent on the design decisions for determining when a participant's forest reaches its long-term average carbon storage amount (in section I).

Criteria: Allocates obligations and entitlements to support alignment with climate change targets

109 If averaging accounting is introduced for new forests, NZUs would be provided for growing the domestic carbon sink, which would make a significant contribution toward New Zealand's climate change targets.

110 ETS forestry accounting rules used to determine NZU allocations would align with New Zealand's international climate change target accounting approach (from 2021 under the Paris Agreement). This would help ensure that the ETS, through the carbon price signal, drives mitigation efforts in line with climate change targets, reducing potential ongoing Crown fiscal and reputational risk for New Zealand.

Criteria: Improves ease of compliance for participants

111 Averaging accounting could reduce the compliance burden for participants with rotational forests. Once their forests reach their long-term average carbon storage amount, they would cease to be eligible to receive or surrender NZUs. Therefore, the need for them to undertake detailed carbon calculations, often requiring consultants and mapping, significantly reduces from this point.

112 These participants are also less likely to make mistakes and therefore accrue penalties under averaging accounting (under the new penalties regime expected to be progressed as part of the CCRA Amendment Bill in 2019). This is because it removes the need to account for emissions liabilities at harvest, which is a common emissions returns error.

113 Participants will need time to understand the new rules. But all new participants would need to become familiar with ETS rules in any case, and averaging accounting is simpler to understand than stock change accounting.

Criteria: Administrative efficiency and effectiveness for regulators

114 If averaging accounting is introduced for new forests, Te Uru Rākau's total administrative burden would likely increase. This reflects the significant expected resulting increase in ETS participation. There would also be some initial implementation costs. The most significant cost is the existing planned replacement of the ETS IT forestry system, building the averaging accounting rules and processes into the new system would be a relatively small marginal part of this cost. Administrative cost estimates are set out in Section 6.

115 Ongoing monitoring and returns processing is also likely to decrease in the long term, as forests reach their long-term average carbon storage amounts. The cost per return for these participants could also decrease, but this will depend on decisions about what is required to be reported and how easy this reporting can be made in a new IT system.

116 There would also be a cost for the EPA to include more forests in its register.

Criteria: Consistent with wider climate change and wellbeing priorities

117 Averaging accounting's contribution to new forest establishment, particularly in the context of potentially higher carbon prices,[40] will support New Zealand to reach its One Billion Trees goal and climate change targets. It will help the nation transition to a low-emissions economy at low cost.

118 By encouraging new forest planting, and ensuring ETS forestry accounting reflects long-term carbon impacts accurately in line with New Zealand's international climate change accounting, the proposal shows environmental integrity. This may reduce barriers to potential international market linking opportunities (particularly for two-way access to international carbon markets).[41]

119 The predicted increase to the rate of new forest establishment is expected to provide employment opportunities. Averaging accounting will boost investment in some regions (where there is potential for converting unproductive land to forestry), and support Māori development (by making it easier to derive multiple revenue streams from land).

120 There is likely to be some job creation trade-offs with the introduction of averaging accounting, where the numbers of jobs associated with sheep and beef farms in some regions may decrease if some whole farms are converted to forestry. Because of this, the proposed policy measures may lead to a reduction in demand for supporting services in some towns (where sheep and beef farmers are based), and increases in others (where forestry sector workers are based). To ensure regions can adapt and still thrive, this will need to be carefully managed by communities.

121 Increased forest establishment could improve water quality as sediment, nutrient and micro-bacterial contaminant leaching is lower under forests (both exotic and indigenous) relative to pastoral agriculture. However, planting will need to be supported by appropriate management. [42] For instance, sediment can be lost at harvest, and increased planting can reduce water availability in drier parts of the country.

122 Averaging accounting for post-1989 rotational forests also compliments the accounting option for those who register permanent post-1989 forests in the ETS (as per the proposal agreed to by Cabinet in December 2018). Forests subject to either of the two post-1989 forestry activities will both be recorded in the ETS.[43] Therefore, it will be possible for Te Uru Rākau to transition post-1989 forests using averaging accounting to the permanent category. Detail on how this transition will occur is included in section E of this RIA.

Criteria: Provides durable regulatory certainty and predictability

123 The sector can reasonably expect that averaging accounting will be used for the foreseeable future. While averaging accounting for new forests may require rethinking business plans for those using stock change accounting, there is also a reasonable expectation that use of the new approach will be required to align with the international rules. The Government has also clearly signalled the change through consultation.

[40] In the recently published draft Productivity Commission report on transitioning to a low-emissions economy, it noted that significantly higher carbon prices would be required to drive emissions down to meet future targets.

[41] Note, however, that decisions on international units and how they might be incorporated if brought in are still to be determined.

[42] The National Environmental Standards for Plantation Forestry places obligations for those undertaking forestry activities to manage the potential effects of their forestry operations. Council plans are important for water management.

[43] As separate Carbon Accounting Areas – see section C for more detail on the importance of this level of detail.

Criteria: Avoids unintended consequences

124 Enabling participants to use averaging accounting could create an incentive to deforest post-1989 forest land (registered or not registered in the ETS) in order to earn more NZUs when it is entered into the ETS at a later date. This is because the number of NZUs is linked to when the forest is registered in the ETS, and averaging accounting provides a greater number of units with no harvest liability than the current accounting approach. More information on this issue and potential mitigation options are contained in section M of this RIA.

125 There is also a risk that rules for application dates for introducing averaging accounting and the basis of eligibility for new forests could be unnecessarily disruptive for participants or regulators. For instance, if averaging accounting is required to be used 'too early' some participants may not have enough time to plan for the change. Conversely, if averaging accounting is offered 'too late' participants could miss out on its benefits (and New Zealand would miss out on additional afforestation). Options to address this are outlined in sections B, C, and D of this RIA.

Stakeholder views

126 Most submissions to the A Better ETS for Forestry consultation supported the proposal to require all people registering new forests to use averaging accounting (73 out of 114 submissions in favour). Those who supported the introduction of averaging accounting noted its simplicity and increased potential to drive afforestation relative to the existing forestry accounting approach.

127 Those submitting in favour of averaging accounting included forestry sector organisations, industry bodies (such as the NZ Farm Forestry Association, the Forest Owners Association, and Federated Farmers), iwi and Māori, local government, and individual submitters.

128 Many of the submissions opposing the introduction of averaging accounting for new forests preferred the flexibility provided by the current carbon stock accounting approach between growing their forest for carbon or timber. Some stated there were better investment drivers under the current approach.

129 Submitters also raised the potential for creation of a perverse financial incentive for owners of existing post-1989 forest land to deregister and/or deforest existing forest land, allow it to sit idle (or use it for purposes such as pasture), and subsequently register it as a 'new' forest, thereby accruing NZUs under averaging accounting. As noted above, options for addressing this loophole are contained in section M of this RIA.

Impact analysis table A: New forest averaging accounting proposal

Variations from status quo:++ much better + better than 0 about the same - worse than - - much worse

Primary criteria	Status Quo: current ETS accounting	A.1 Participants are required to use averaging accounting for their post-1989 new rotational forests (preferred)
Increases incentive to store carbon in forests	**0** Allocates around 200-300 low risk NZU per hectare for a production pine forest. Projected 13,300 hectares/year afforestation under current ETS settings.[44]	**++** • Could result in an around 70 percent increase in afforestation[45] (from around 13,300 hectares per year to a gradual increase to around 23,000 hectares per year) from an increased financial incentive to establish new forests under averaging accounting– as participants can receive around 300-500 extra NZU per hectare (for a production radiata pine forest) that can be traded without risk of repayment at harvest.[46] • Could enhance the incentive to store more carbon in forests by extending rotation age (if option I.2 in section I is also accepted).
Allocates obligations and entitlements to support alignment with climate change targets	**0**	**++** • The greater rate of afforestation would increase Crown NZU allocations by around 8.8, 33.2, and 35.3 million NZUs over the 2021-2030, 2031-2040, and 2041-2050 periods, respectively. These allocations align with the amount of contribution those additional forests make to New Zealand's climate change targets, which would increase over time as the forests grow and store more carbon.[47]
Improves ease of compliance for participants	**0**	**++** (some contingency on detailed design) • Much lower need to undertake detailed carbon calculations once participants' forests reach their long-term average carbon stock (thereafter, could reduce costs by hundreds of dollars per return).[48] • Likely to reduce the number of carbon accounting mistakes in emissions returns (so can avoid penalties of around $1000 per incorrect return under the proposed compliance regime).

44 Around 200-300 low risk NZU per hectare for a production pine forest. 13,300 ha/year under current ETS settings and around 23,000 ha/year assuming an 18 year production pine average. Assumes 90 percent exotic planted at 1,000 stems/hectare and 10 percent native/regeneration/reversion planted at 2,300 stems/hectare – see Appendix 1 for more information.

45 Based on modelling and analysis completed by the University of Canterbury in 2019.

46 Dependant on species, harvest age, forest management and site productivity. Assuming a New Zealand area weighted post-1989 pine growth, a long-term average carbon stock age of 18 for production pine.

47 By around 9.5, 41.9 and 79.8 million tonnes of CO_2 over those same periods. Assumes around 80 percent of afforested area is registered into the ETS.

48 Dependent on the size of the forest, as costs increase with larger properties.

Secondary criteria		
Administrative efficiency and effectiveness for regulators	**0**	**- short term ++ long-term** (some contingency on detailed design) • Te Uru Rākau currently estimates they would need additional $2.1 per annum budget to administer and assist ETS participants to use the averaging accounting rules – but most of this cost represents the large expected increase in ETS participation. • There would also be initial implementation costs associated with building new IT systems and developing new processes required to support averaging accounting. Costs will depend on detail design decisions, although IT costs will expected be in the low millions. • The need for ongoing monitoring returns processing, is expected to decrease per participant costs. This will depend on detailed design but the reduction, if any, is likely to be small.
Consistent with wider climate change and wellbeing priorities	**0** BAU ETS incentive estimated to contribute 130 million trees to the One Billion trees programme.	**++** • Estimated increased contribution of around 89 million trees (78,450 hectares) to the One Billion Trees programme (an increase from 130 million to 219 million trees over 2018-2027). • Estimated forestry job creation of 58 to 94 FTEs over next 10-20 years. Further jobs created in forest management, eventual harvesting of the forests, and at seedling nurseries on top of this estimate. However, sheep and beef jobs also likely to be displaced.[49] • Improvement to some environmental outcomes such as nutrient retention and avoidance of run-off (displacing land use with more nitrates per hectare), increased carbon storage, and avoidance of soil erosion. But could also impact water availability. • It is compatible with the other ETS forestry package changes such as a new accounting treatment for permanent forests (see section E). • A reduced carbon price from increased unit supply will reduce mitigation effort required by other emitting sectors (assisting New Zealand to cost effectively transition to a low emissions economy).
Regulatory certainty	**0**	**+** • Participants can reasonably expect averaging accounting to be used for the foreseeable future. • Participants have the option of joining the ETS, so averaging accounting will only be mandatory for those who wish to use it.
Avoids unintended consequences	**0**	**-** • Enhances the benefit a participant could receive from using an existing option to deforest then re-enter the ETS.
Overall comment	Recommend the Government implement option A.1., as it is likely to significantly increase participants' incentive to establish new forests and help New Zealand meet its climate change targets (and the One Billion Trees programme goal). It will also help to ensure the ETS drives the right signal to help New Zealand reach its international climate change targets.	

[49] The effects on regional development will vary by region and town, and are likely to lead to some winners and losers. The effects on employment are likely to be concentrated in districts with higher potential for afforestation. In the North Island, likely districts are the Manuwatu–Wanganui region, Wellington region, Gisborne and Hawkes Bay region, and South Waikato region. In the South Island, likely districts are Marlborough region, and Otago and Southland regions. This is based on analysis undertaken for the One Billion Trees programme in September 2018.

B ETS ACCOUNTING OPTIONS FOR EXISTING FORESTS (ASSUMES ALL NEW FORESTS USE AVERAGING ACCOUNTING)

130 As indicated in section A, applying averaging accounting to new forests offers significant benefits, but the case for applying it to ETS eligible forests already established when averaging accounting is introduced (existing forests) is less clear. Several eligibility options for existing forests are therefore outlined below, each of which assumes new forests use averaging accounting.

131 Officials considered but discarded a number of eligibility options, such as not requiring a reconciliation process when transitioning existing forests in the ETS to averaging accounting, or not allowing participants to move their existing forests on second rotation to averaging accounting. They were discarded due to equity and fiscal concerns, which are outlined in more detail in Appendix 3. More detailed options for transitioning existing forests to averaging accounting are contained in section C.

Option B.1. Participants are required to use carbon stock change accounting for their post-1989 existing forests (but use averaging accounting for their newly established registered forests)

132 Participants with existing forests registered in the ETS could be required to use the current carbon stock change accounting approach.

Option B.2. Participants are required to use averaging accounting for their post-1989 existing forests (and newly established registered forests use averaging accounting)

133 Participants with existing forests registered in the ETS could be required to use the carbon stock change accounting approach. A transition would be required to move forests from using carbon stock change accounting to averaging accounting.

Option B.3. Participants have a one-way choice to use averaging or carbon stock change accounting for their post-1989 existing forests (preferred)

134 Participants could be given a one-way choice to use either averaging or carbon stock change accounting for their existing forests registered in the ETS.

135 Once a participant nominates to move their existing forest to averaging accounting, they will no longer be eligible to use the stock change approach for that area of forest.

Reconciliation process required for options B.2 and B.3 (where existing forests use averaging accounting)

136 Options B.2. and B.3. above would require participants to undergo reconciliation processes during the transition to averaging accounting to determine new averaging entitlements and unit balances for their existing forests registered in the ETS.

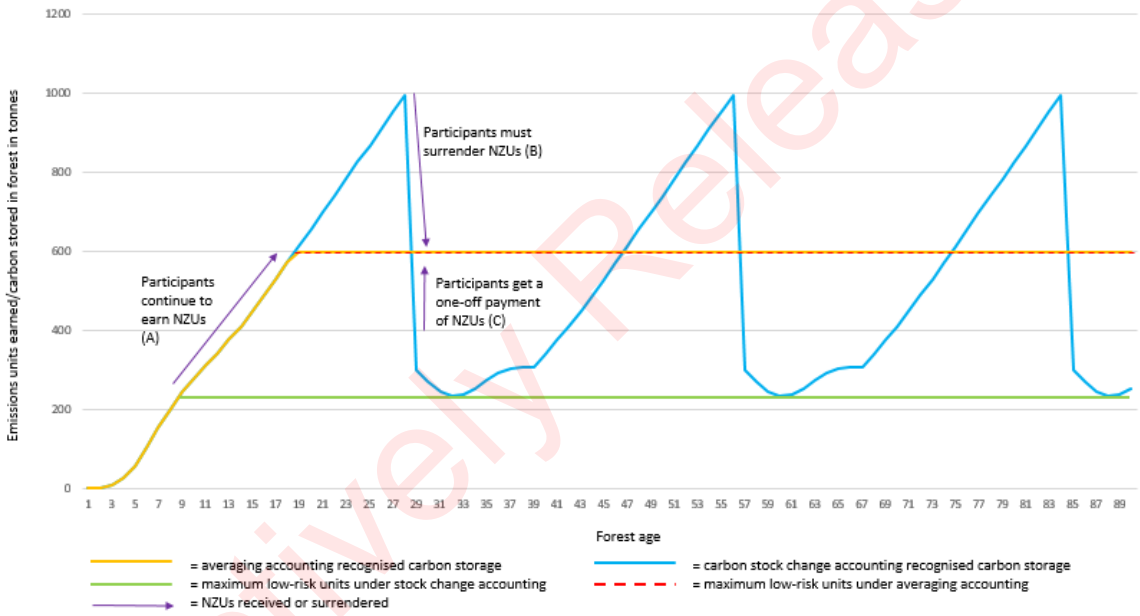
137 All participants using averaging accounting are entitled to NZUs for their forest's growth up until it reaches its long-term average carbon stock. Therefore, some participants will continue to be eligible to receive NZUs for their existing forests under averaging accounting, and benefit from having no harvest liabilities (similar to a new forest).

138 Some participants, on the other hand, would be required to surrender NZUs received for forest growth above its the long-term average carbon stock. The amount to be repaid will always be equal or less than the amount that would be required to be repaid at harvest.

139 In Figure 7 below, those at any point along 'A' would continue to earn NZUs, whereas those at points along 'B' would be required to surrender NZUs.

140 Participants with a forest at point 'C' would receive a one-off payment of NZUs during the transition.[50] This is because they would have surrendered NZUs at a previous harvest that they are entitled to trade at low risk under averaging accounting. Some participants have forests of multiple age classes and will therefore likely have a mix of forestry land at A, B and C.

Figure 7: Illustration of NZU entitlements and obligations for an existing forest transitioning to averaging accounting



Note 1: Line 'C' represents the long-term average carbon stock age up to which the participant can earn.
Note 2: For existing post-1989 forests in 2023 it is estimated that around 52,000 hectares will be at A (below the forest average at the point of transition); 122,300 hectares could have lower surrender NZUs obligations depending on their unit balance at time of transition; and 88,700 hectares could be harvested before the MERP transition (whether the Crown pays the participant credits to the forest average, or the participant has reduced harvest surrenders depends on the unit balance at the point of transition).
Note 3: Changes to the long-term average carbon stock age would vary the amount of existing forests within A, B, and C.

[50] At least 30 percent of the registered forest area will have already been harvested and participants would have surrendered NZUs for that harvest in a previous MERP.

Impact analysis

Criteria: Increases incentive to store carbon in forests

141 None of the options for existing forests can trigger an afforestation response (as by definition these forests are already established).

142 However, it may result in increases in carbon storage through an enhanced incentive to extend rotation age,[51] if our preferred design decision for determining when a participant's forest reaches its long-term average carbon storage amount is accepted (in section I). Allowing participants with existing forests to extend rotations could result in an additional 5.9 million tonnes CO2e towards New Zealand's 2030 climate change target.

Criteria: Allocates obligations and entitlements to support alignment with climate change targets

Option B.1. maintains ongoing misalignment with international rules, but provides Crown short term revenue

143 Option B.1. would maintain an ongoing significant misalignment between the international rules that determine forestry's contribution to New Zealand's international climate change targets, and the ETS accounting rules (which determine NZU allocations and surrenders). As described in the problem definition section, the resulting over/under-allocation of NZUs to participants (compared to the carbon storage contribution their forests make) could undermine the ability of the ETS to incentivise the right level of climate change mitigation effort to meet New Zealand's international climate change targets.

144 In the short term, the accounting rule misalignment under option B.1. would result in existing ETS forest participants being required to surrender more NZUs than is needed to cover their internationally recognised emissions. This is estimated to result in the Crown receiving around 10.9 million net surrenders, compared to having 25.7 million tonnes net removals recognised in the NDC from existing forests over 2021-2030. This large quantity of surrenders reflects the fact that around 70 percent of registered production forests are expected to reach harvest maturity by the 2020s.

145 In the long term it is estimated that around 172 million units will be provided for existing forests in the ETS over 2021-2080. Over this period, New Zealand's forests are only expected to remove 62 million tonnes carbon dioxide (CO_2) from the atmosphere that will count towards our climate change targets. Providing more NZUs than is recognised as CO_{2e} removals from the atmosphere could reduce the mitigation signal the ETS provides.

146 These misalignments pose significant risks for the Crown, as any shortfall of carbon storage from forestry would either need to be met by increasing mitigation effort in other sectors or buying NZUs. Alternatively, the Crown could choose to not meet the international climate change target, which would have a negative impact on New Zealand's international reputation

[51] This is demonstrated by research carried out by the University of Canterbury for MPI in December 2018

Options B.2. and B.3. reduce ongoing misalignment with international rules, but result in short term increase in unit supply

147 In contrast, options B.2. and B.3. would better align ongoing ETS NZU allocations and surrenders with the contribution New Zealand forests make towards our international climate change targets. In the long term this will help to drive mitigation effort in line with the difficulty of climate change targets.

148 In the short term both options B.2. and B.3. could increase NZU supply to the ETS market over the 2021-2030 period. This is because participants who had held on to existing forest harvest liabilities could instead trade these NZUs at a lower risk under averaging accounting. These additional NZUs could reduce the ETS climate change mitigation effort signal (by reducing demand pressure on the carbon price), despite providing no associated forestry emissions removals from the atmosphere.

149 The level of units supplied to forestry will be one of many factors taken into account when the auction volumes are set in the 2020s. Reductions to the number of units that can be auctioned could potentially be made to mitigate other increases in unit supply in the market. However, this would represent a potentially large forgone revenue stream for the Government.

Option B.2. would reduce ongoing ETS and international accounting misalignment better than option B.3., but option B.2 would have a lower unit supply impact

150 Option B.2. would reduce ongoing ETS and international accounting misalignment and associated fiscal risk to the Crown from over-allocation of NZUs under option B.1. This would strengthen the ETS climate mitigation signal and reduce ongoing reputational and fiscal risk associated from lower-than-expected mitigation effort towards international climate change targets. Option B.3. would not address the ongoing misalignment between the ETS and international accounting approach to the same degree as in option B.2.

151 But option B.2. could result in a short term increased unit supply of up to 38.3 million NZUs over the 2021-2030 period.[52] This will add to the complexity of managing supply in a market where there is already a large potential oversupply of NZUs.[53] Noting that of this increase in unit supply, 8.3 million units are associated with a potential increased carbon sink from participants increasing rotation ages.[54]

152 Under option B.3. an estimated 46 percent, or around 137,000 hectares of existing forests, are expected to shift to averaging accounting if participants have a choice about accounting approach. This could result in an estimated increase in NZU supply over 2021-2030 of around 21.6 million NZUs (this also includes 8.3 million units associated with an increased rotation age). It is a conservative estimate that would be reduced if more participants switched to averaging accounting earlier than at harvest. Many participants may want to do so to reduce their ongoing reporting burden.

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52 This is calculated as the increased unit supply from switching from the current ETS accounting stock change approach (net surrenders of 10.9 million units) for existing forest to where all existing forests transition to averaging accounting (net allocation of 27.5 million units). We assume that all registered forest in the ETS will remain in the ETS, but some participants may deregister.

53 The current stockpile of NZUs banked in private accounts is approximately 130M units. The stockpile accumulated over 2013-2015 when ETS participants surrendered high number of cheap international units and banked the NZUs that were allocated to them.

54 MPI modelling estimates that there will be an increase in rotation length for a proportion of participants that are transitioned to averaging accounting, which will result in more units being allocated and an increased carbon sink.

153 This level of additional short-term supply of units (and associated drop in NZU demand pressure) could lower the price in the ETS and would increase the fiscal cost to the Crown (as recognised each 4-year forecast period). Mitigation options for the Crown, including reducing auction volume and/or buying NZUs, come at a fiscal cost. Therefore, the Government may wish to consider options to encourage participants to move to averaging accounting at a time that minimises the impact of the fiscal cost (i.e. softer measures to encourage an earlier move than in option B.2.).

Criteria: Improves ease of compliance for participants

154 Under option B.1., ETS requirements to meet current rules will not change. Having two accounting methods applying to post-1989 forest land in the ETS (averaging and carbon stock change accounting) in place could, however, confuse some participants. This could particularly affect those also registering new forests (as they will need to use both methods) and future forest land buyers. That is because they will need to consider which of the two post-1989 forestry accounting methodologies apply to forest land, when previously they only had to consider one.[55]

155 Under option B.2., once transitioned all participants would have to use one set of accounting rules that are easier to comply with at harvest (as per averaging accounting for new forests, this should reduce the number of penalties associated with incorrect carbon calculations in emissions returns). However, some participants would be required to surrender NZUs received (for carbon storage above an existing forest's long-term average carbon stock) during the transition. If the transition period was very short, this may cause financial distress.

156 Some participants could be required to change business plans under this latter option. For instance, if they have made forward sale contracts to supply units to third parties and are required to surrender units under averaging accounting, the participant will have to purchase units from elsewhere. Some participants would also need to change their business model, as a number owning large areas of forest land have created hedged carbon trading portfolios under the stock change approach (by investing in a variety of forest types of differing ages). Under averaging accounting, this hedging would result in no financial benefit. If these concerns are not sufficiently addressed, mandatory averaging accounting for existing forests could be seen as undermining property rights.

157 Under option B.3., allowing two accounting approaches increases effort for participants and potential forest land owners more than option B.1. This is due to the fact that once transitioned, there would be no point in time to use or to define which carbon accounting methodology applied. This makes it more likely that participants will make errors and potential land owners will have to work harder to ensure they understand which ETS rules apply to post-1989 forest land.

158 Compared to option B.2., option B.3. would enable participants to choose the accounting approach for their existing forests that best suits their business and matches their ability to mitigate the disruption and potential cost (of surrendering NZUs to the Crown) of the transition.[56]

[55] Note this is on top of having to verify whether the land is pre-1990 or post-1989, and if a permanent category applies (i.e. the proposed permanent post-1989 forest category).

[56] If they have made forward sales contracts to supply units to third parties, and are required to surrender units under averaging accounting, the participant will have to purchase units from elsewhere.

Criteria: Administrative efficiency and effectiveness for regulators

159 Option B.1. maintains current administrative processes for existing forests, but requires a small amount of additional ongoing resource to operate two accounting methodologies (for existing and new forests) due to the increased likelihood participants are non-compliant. It avoids short term transition costs associated with options B.2. and B.3.

160 Option B.2. would result in lower ongoing administrative costs for Te Uru Rākau compared to the status quo and option B.1. due to averaging accounting being easier to understand. However, the administrative effort required to assist participants during the transition could be high (particularly if timeframes to transition are too tight). The upfront IT development costs could be lower under this option compared to option B.3., as only one accounting system for post-1989 forest would need to be built for post-1989 forest (rather than two, with complex transitions between the two approaches).

161 Option B.3 could increase transition and ongoing administrative costs for Te Uru Rākau compared to option B.2. This is due to expected increased effort required to assist participants who get confused by not knowing from which date forests are deemed to be using carbon stock change or the averaging accounting approach.

162 The administrative burden of option B.2. and B.3. will to some degree depend on more detailed decisions about how the transition is designed and the degree to which participants choose to reconfigure their carbon accounting areas (CAAs). This is explored further in section C of this RIA.

Criteria: Consistent with wider climate change and wellbeing priorities

163 Enabling participants to keep existing forests on carbon stock change accounting means they would earn NZUs when no climate change mitigation is recorded for New Zealand's international reporting. In the market, these units could be seen as lacking credibility. Participants would also be required to surrender units when there was no corresponding emission recorded for New Zealand's international reporting. This requirement would be slightly reduced under option B.3. compared to option B.2. (as participants are given a choice about whether to use averaging accounting).

Criteria: Provides durable regulatory certainty and predictability

164 Option B.1. could enable participants to retain the rules they signed up to when registering their forest. This would provide certainty that the Government would not fundamentally change rules participants sign up for when they enter the ETS. But it may only provide short to medium-term certainty, as there are strong, and increasing, reasons for the Crown to move participants onto averaging accounting, and some participants would benefit from being able to use averaging accounting for their existing forests.

165 Option B.2. could undermine sector confidence in the regulatory certainty of the scheme. Some may choose to not register their forests or establish new ones out of concern that the Government may impose new rules that affect the viability of their businesses each time the international rules change. The degree of this impact would depend on how this was implemented (i.e. the impact would be less severe with a long transition to averaging accounting).

166 On the other hand, moving existing forests to averaging accounting benefits the Crown, reflects the unique cyclical nature of the New Zealand's forest, and aligns the climate change accounting rules for our 2030 target. Participants therefore would have certainty that this approach remains in place for the foreseeable future.

167 Option B.3. avoids the potential disruption to sector confidence and regulatory certainty outlined in option B.2., but also enables participants who wish to move to averaging accounting to do so. This enables participants to retain rules they signed up to when they registered their forests. It would provide certainty that change will not be imposed, while offering the option to move to averaging accounting for those who wish.

Criteria: Avoids unintended consequences

168 Making the transition one-way under option B.3. prevents participants from undertaking gaming or cherry-picking behaviour, which could create inequities between participants and result in revenue gains for behaviour that is not linked to increased carbon storage.

169 This is because allowing participants to switch to and fro between accounting approaches would give them a free hedging option. It would allow them to earn units for forest growth right up until harvest under the stock change approach, then choose to move to averaging accounting so they only need to repay units back down to their forest's long-term average carbon stock.

170 Allowing this type of hedging rewards participants for gaming behaviour that does not contribute to additional sequestration to climate change targets.

171 Further, enabling participants to continue to use the stock change approach indefinitely also allows them to earn units for growth that is not accounted for in New Zealand's climate change target accounting (growth above forest's long-term average stock, or on second or subsequent rotations). This runs counter to the purpose of providing an option to transition to averaging accounting, which is to simplify the ETS and reduce the misalignment between the international accounting approaches and the ETS.

Stakeholder views

172 Most submitters to the A Better ETS for Forestry consultation supported option 3 (63 out of 93). Most felt that there would be a split between those who benefit and those who will be made worse off by a transition to averaging accounting. An opt-in approach therefore was seen as most fair. A smaller number of submissions (9 out of 93) supported making averaging accounting mandatory for existing forests registered in the ETS.

Impact analysis table B: ETS accounting options for existing forests (assumes all new forests use averaging accounting)

Variations from status quo:++much better + better than 0 about the same - worse than - - much worse

Primary criteria	Status Quo – current ETS accounting	B.1. Participants are required to continue to use carbon stock change accounting for post-1989 existing forests	B.2. Participants are required to use averaging accounting for post-1989 existing forests[57]	B.3. Participants have one-off one-way choice to use averaging or carbon stock change accounting for post-1989 existing forests (preferred)[58]
Increases incentives to store carbon in forests	**0**	**0** • No afforestation/financial incentive impact.	**+** • Some participants transitioned are expected to increase rotation lengths, resulting in an estimated increase in storage of 5.9 million tonnes CO2e over 2021-2030.	**+** Same impact as B.2.
Allocates obligations and entitlements to support alignment with climate change targets	**0** 2021-2030:Estimated net surrenders of around 10.9 m NZUs (compared to NDC of around 25.7 million net removals). 2031-2040: Estimated net allocation of around 46.9 m NZUs (compared to NDC of around 4.8 million net emissions) 2041-2050: Estimated net allocation of 44.6 million NZUs (compared to NDC of 19.5 million emissions).	**0** • Ongoing - ETS and international accounting misalignment could undermine ETS ability to drive mitigation effort in line with climate change targets. • Short term - strong climate change mitigation signal (net ETS surrenders of around 10.9 million NZUs in a period when have 25.7 million net removals towards our NDC). • Long-term – risk of insufficient ETS mitigation signal (as 172 million net ETS allocation compared to 62 million net removals over 2021-2080). • Same net allocations and surrenders as the status quo.	**- - short term/transition; ++ long-term** • Ongoing - corrects option B.1 misalignment. • Short term - creates risk of reducing mitigation effort for the current climate change target compared to option B.1. (as results in increased supply of around 38.3 million units over 2021-2030). • Long term - results in reduced NZU allocation to forestry compared to option B.1. and likely increased mitigation effort (estimated 66 million NZU net allocation over 2021-2080). 2021-2030: estimated net allocation of 27.5 million NZUs 2031-2040: estimated net allocation of 24.8 million NZUs 2041-2050: estimated net surrenders of 8.6 million NZUs	**- short term; -/+ long-term** • Ongoing - slightly improved alignment. • Short term - creates risk of reducing mitigation effort for the current climate change target compared to B.1. (could result in increased supply of around 21.6 million units over 2021-2030).[59] • Long term - both small increases and decreases to forestry NZU allocations (and mitigation effort impacts). Risk of insufficient ETS driven mitigation signal with an estimated 150 million net unit allocation in the ETS over 2021-2080. 2021-2030: estimated net allocation of 10.7 million NZUs 2031-2040: estimated net allocation of 54.7 million NZUs 2041-2050: estimated net allocation of 35.2 million NZUs

[57] Total increase in number of units from switching from stock change to averaging accounting (B.2.) for existing forests would be 38.3 million units (10.9 million net surrenders + 27.5 million net allocation).

[58] Assumes participants can transition at any MER in the future, this would enable the largest number to move existing forests to averaging accounting, giving a maximum likely NZU allocation impact. Total increase in the number of units from switching from stock change to averaging accounting (B.3.) for existing forests would be 21.6 million units (10.9 million net surrender to 10.7 million net allocation).

[59] 8.2 million units associated with potential increased mitigation if account for rotation age changes, unit supply impact lower if most participants chose to move to averaging accounting by 2030.

Improves ease of compliance for participants	**0**	**-** • ETS rules largely remain the same. • Prevents some participants from benefiting from the simplicity benefits of averaging. • Extra effort and potential confusion for some participants that also establish new forests and forest land buyers (as will need to consider two forest classes).	**- - short term; + medium to long term** (contingent on transition) • May cause financial distress for participants with an NZU surrender obligation during the transition. • Could undermine participants' business plans or models. • Some existing participants will no longer have harvest liabilities. • Medium to long term: much simpler forestry accounting approach for participants to use.	**0 short term** (depends on transition); **+ medium to long term** • Increases ongoing effort for participants by more than option B.2. as there would be no point in time from which to determine if a forest is new or existing. • Enables participants to choose the accounting approach that best suits them (avoids financial distress and disruption to business models and plans in option B.2.).
Secondary criteria				
Administrative efficiency and effectiveness for regulators	**0**	**- medium/long term** • Additional administrative effort required to run two accounting systems (carbon stock change and averaging) indefinitely. • Avoids short term costs associated with options B.2. and B.3.	**- short term; ++ medium to long term** • Te Uru Rākau will need additional budget to provide assistance to participants transitioning to averaging accounting.[60] • Ongoing costs lower than the status quo and option 1, as all post-1989 participants would use one approach (no need to maintain and explain two approaches). • Reconfiguration of carbon accounting areas likely to be resource-intensive to administer.	**- short term; + medium term** • Te Uru Rākau will need additional budget to transition participants to averaging (similar to option B.2.). Giving a choice and not having a clear date to assign an accounting approach to existing forests[61] could require additional short- and long-term effort to help participants correctly apply the rules compared to option B.2. • Enables forest owners to choose the accounting approach that best suits them. • Reconfiguration of carbon accounting areas likely to be resource intensive to administer.

[60] It would also include building new IT systems, setting up new operational processes and policies, and communications.

[61] But requiring existing forest owners in the ETS to make a one-off, one-way decision on which accounting approach to use reduces the cost and effort required for Te Uru Rākau to deliver this option, compared to if it were an open option of when to transition.

Consistent with wider climate change and wellbeing priorities	**0**	**+ short term; -- medium to long term** • Maintaining misalignment between NDC and ETS accounting approaches could limit future two-way international market linking opportunities.	**--short term; ++ medium to long term** • Aligning the ETS more closely with New Zealand's NDC accounting approach may reduce barriers to potential international market linking opportunities.	**- short term; + medium to long term** • Compared to option B.2., more difficult to consider short term NZU supply and demand impacts for wider ETS settings. Similar international linking implication as option B.2. if most people move to averaging accounting.
Provides durable regulatory certainty and predictability	**0**	**0 short term; - medium/long term** • Short-term regulatory certainty (as would retain rules agreed to when entered forest into ETS); • Medium-term potential uncertainty (as Government has reasons to move existing forests to averaging accounting).	**0 short term; + medium/long term** • Short-term significant disruption to regulatory certainty, which could undermine confidence in the ETS for forestry; • Medium to long-term regulatory certainty (as Government has little reason to alter the accounting rules).	**0 Short term; + medium/long term** • Short-term avoidance of disruption of option B.2. as it enables participants to use the current rules (as per option B.1.); • Medium-term regulatory certainty for those that chose to move to averaging (but less than option B.2.) for participants remaining on carbon stock change accounting.
Avoids unintended consequences	**0**	**0** N/A	**0** N/A	**0** • One-off and one-way design prevents participants from 'gaming' or 'cherry-picking'.
Overall assessment	MPI recommends implementing Option B3 - providing participants with a one-way choice to move existing forests to averaging accounting. Participants with existing forests are likely to benefit from the increased simplicity of using averaging, particularly those with production forests. It will give confidence to the forestry sector that the Government will not force a change on participants once they have entered the scheme.			

4.2.2 TRANSITION ARRANGEMENTS TO INTRODUCE AVERAGING ACCOUNTING

173 This section considers options for transitioning existing forests to averaging and introducing mandatory averaging for newly established forests. It provides a range of options which ensure averaging can be introduced regardless of the eligibility decisions Government makes for option sets A and B. The transition options in section C and D could apply if averaging was mandatory for existing forests, or if there was a one-way option to transition existing forests to averaging. Option set D also considers an option to require existing forests to use averaging for new registrations, even if existing forests already registered in the ETS have an option to use stock change or averaging.

Existing forest timing considerations

174 As outlined in section B, if averaging was used for existing forests, a transition process to move existing forests in the ETS from stock change accounting to averaging would be required. This section outlines key design features for existing forests to transition to averaging, and flexible options for that transition to ensure participants are not subject to undue financial stress.

Transition in any MERP

175 Under any existing forest transition option, participants would be required to transition their forests to averaging accounting at the end of a mandatory emissions return period (MERP).[62] Participants are already required to provide detailed information on forest carbon stocks at these points in time. Therefore, transitioning their forests at MERPs would minimise their compliance burden and help to ensure Te Uru Rākau has the required information to determine participants' averaging NZU entitlements and obligations. MPI considered also enabling transitions at voluntary emissions reporting periods (VERs), so that participants would not need to wait five years to transition their existing forests. This option was discarded as the information provided at VERs may be less accurate than at MERs (MERs are used to "true-up" information provided at VERs).

Transition carbon accounting areas

176 Participants currently determine changes to the carbon stored in their forests each reporting period by aggregating similar parts of their carbon accounting areas together into sub-areas (i.e. based on forest types and date of planting). However, participants are only required to report the total carbon storage change that occurs in their carbon accounting areas (CAA). CAAs are self-selected forest areas that may contain several sub-areas. Therefore, Te Uru Rākau would only have access to information that enables it to transition existing forest CAAs to averaging.

177 Te Uru Rākau will provide further detail on how to operationalise transitions of existing forest CAAs during the regulation setting process. The granularity with which this can be achieved, and assistance Te Uru Rākau can provide participants, will depend on existing data collected and the capability of the new IT system (as part of the upgrade).

[62] Mandatory Emissions Returns are required every 5 years, or when defined transmissions of interest occur such as when a registered forest is sold.

Transition from 31 December 2022 on any rotation

178 The first possible transition point would be at the end of the current MERP, which is due to occur 31 December 2022 (for the period beginning 1 January 2018). However, it could be possible to have several transition MERs.

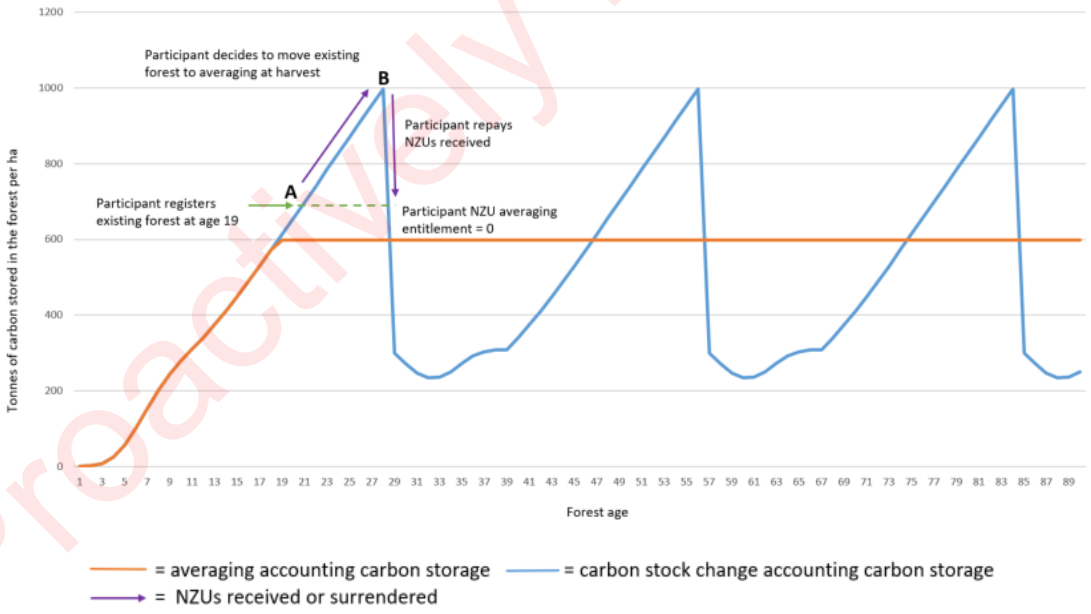
179 It may also be possible to have an NZU averaging entitlement for an existing forest on its second rotation. However, the viability of this will depend on how many transition MERs there are, and the date and registration decisions in section D.

180 A participant's existing forest averaging NZU entitlement for either first or second rotation will depend on when the forest was established and registered in the ETS.[63] This is because participants can only earn NZUs for forest growth that occurs once a forest is registered, and the averaging entitlement only relates to the initial part of a forest's first rotation.

181 Figure 8 and 9 below demonstrate how these detailed design aspects could occur. They are highly simplified for ease of understanding, and as many of the design details will be determined later in 2019 as part of the regulation setting process.

182 Figure 8 below demonstrates the importance of the date a forest was established and registered for whether a participant will have an averaging NZU entitlement or obligation for their existing forests transitioning to averaging.

Figure 8: NZU entitlements or obligations for existing forests during the transition to averaging



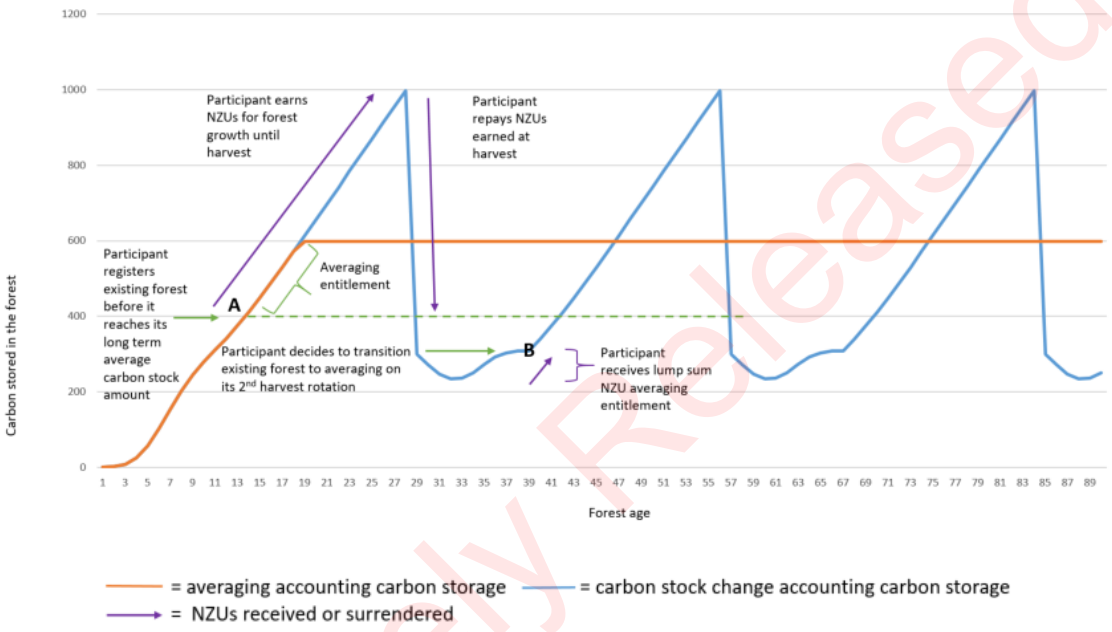
Note 1: Assumes forest is only one hectare, has only one age class and one carbon accounting area
Note 2: Assumes forest was established in 1997 (forest age 1), registered in 2016 (A: forest age 19), and transitioned 31 December 2022 (B: forest age/harvest age 28)
Note 3: Assumes average age of the forest is 18
Note 4: For simplicity, this diagram assumes NZU entitlements and obligations begin from the date the forest is registered and they are reconciled each year. In reality, NZU entitlements and obligations are determined each VER and MERP, and forests are eligible for NZUs from the beginning of the MERP the forest is registered in.
Note 5: The carbon stored in the forest is within a realistic range for radiata pine forest

63 Previously, providing any NZUs for second rotation growth was considered to create too large a fiscal risk. However, option set D provides a way to limit this risk by preventing participants from registering existing forests outside the ETS using the stock change approach.

183 In Figure 8, the participant registered their hectare of forest at point A (age 19), so they have only earned NZUs for growth above the forest's long-term average carbon stock (which occurred at age 18). Therefore, they are required to repay all of the NZUs they have received when they transition their existing forest to averaging (i.e. at point B).

184 Figure 9 below indicates that it may still be possible to have an NZU averaging entitlement for an existing forest on its second rotation.

Figure 9: NZU entitlements or obligations for existing forests on their second rotation during the transition to averaging



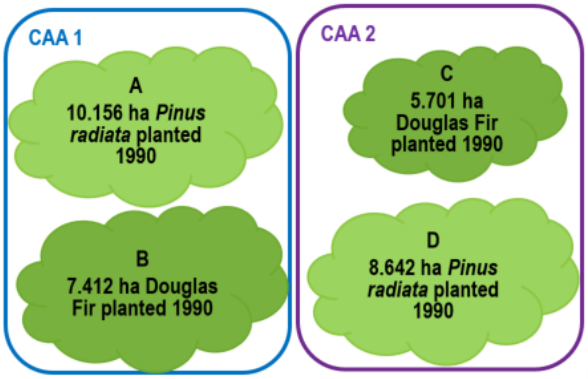
Note 1: Assumes forest has only one hectare, one age class and one carbon accounting area
Note 2: Assumes average age of the forest is 18
Note 3: This diagram assumes NZU entitlements and obligations begin from the date the forest is registered and they are reconciled each year. In reality they are linked to MER and VER.
Note 4: This diagram does not show what date the forest is registered or at which MER it is transitioned to averaging
Note 5: Assumes averaging entitlement is earned after 2008
Note 6: The carbon stored in the forest is per hectare for radiata pine

185 A participant with the hectare of forest in Figure 9 above could still be eligible to earn NZUs after transitioning to averaging. This is because they entered their forest into the ETS while it was still below its long-term average carbon stock, and have recently surrendered all of their NZUs at harvest. They would receive their NZU entitlement as a lump sum as part of the emissions return process to transition to averaging.

186 This scenario could occur if existing forests can be transitioned over several MERPs in the future. Second rotation existing forests transitioned to averaging before 31 December 2022 are likely to have finished the initial part of their first rotation before the ETS was introduced in 2008 (so would not be eligible for any averaging entitlement).

187 Figure 10 below provides a more realistic example of an area of existing forest a participant may wish to move to averaging. This is shown here to demonstrate that it will be more complex than the examples in Figures 8 and 9, to transition existing forests to averaging.

Figure 10: area of existing forest that contains two carbon accounting areas and four subareas



CAA 1 1990 P. Rad	
A	10.156
Total	**10.2ha**

CAA 1 1990 D. Fir	
B	7.412
Total	**7.4ha**

CAA 2 1990 D. Fir	
C	5.701
Total	**5.7ha**

CAA 2 1990 P. Rad	
D	8.642
Total	**8.6ha**

C FLEXIBLE AVERAGING TRANSITION OPTIONS FOR POST-1989 EXISTING FORESTS

188 This section contains flexible options for existing forest transitions to averaging. They aim to ensure participants are not subject to undue financial stress if they were required to move their forest to averaging, and to reduce barriers if participants have a choice about whether to move their existing forest to averaging. Other options were also considered but discarded as they were considered too operationally difficult. More information on those options can be found in Appendix 3.

The need for flexible transition options

189 Requiring participants with existing forests to surrender NZUs (received for forest growth earned above the long-term average carbon stock of their forest) at a transition MER brings forward their harvest NZU surrender obligation. As indicated in section B, this could cause financial pressure for some participants who have sold large quantities of units they have received.[64] It could also reduce the incentive for participants to move their existing forests to averaging if they have a choice (as the particular timing of the MER doesn't suit their situation, but it could do on another occasion in the future).

190 There are however, a number of options for which MER a participant could transition their existing forests to averaging accounting. These settings will determine which participants would be required to surrender NZUs during the transition and how difficult it may be for them to meet that liability.

191 The flexible transition MER options below aim to prevent any potential stress and maximise the number of participants that can use averaging accounting for their existing forests in the ETS.

Option C.1. Participants transitioning their post-1989 existing forests to averaging accounting can surrender NZUs earned above the long-term average carbon stock at a transition MER and the next MER

192 Participants moving their existing forests to averaging could be required to elect to do so at a "transition MER". Those who did not make an election to move their existing forests to averaging at this point would be required to use stock change accounting for their existing forests indefinitely (until they are de-registered).

193 The transition MER would occur at the end of the current MERP (31 December 2022), and at this point all existing forests being moved to averaging would have their NZU entitlements and obligations reconciled.

194 However, participants who at the time of the transition are deemed to have an "averaging obligation" (a requirement to surrender NZUs earned above the long-term average carbon stock of their forest) would have an option to settle their obligation either at the transition MER or the end of the next MERP (31 December 2025). This would give existing participants around six years to plan for any potential brought forward liability. This is because averaging eligibility decisions are likely to be announced in 2019, and the MER after the transition MER in 2023 would occur 3 years after (if the mini-MERP proposal currently being considered by Cabinet is accepted).

64 From EPA: currently approximately 660 ETS forestry participants are in this position. However, many of these people will harvest within the next MERP.

Option C.2. Participants can transition their post-1989 existing forests to averaging accounting at any MER (preferred)

195 A participant could decide to transition any existing forest CAA from stock change to averaging accounting when a MER is required.

196 Linking transitions to MERs signifies no end date as to when transitions can occur. There will, however, be scope for Government to review the need for continued opportunities for existing forests to be transitioned to averaging. This provision could be triggered at a moment when officials are confident most participants wishing to move existing forests to averaging would have done so. This would occur at least ten years after the first transition opportunity (i.e. in 2033/2035).

Impact analysis

Criteria: Increases incentives to store carbon in forests

197 Both options would not have a direct impact on ETS forestry incentives. Option C.1. could have a possible indirect negative carbon storage incentive impact as compliance burden and timing issues could reduce incentive to keep existing forests in the ETS.

Criteria: Allocates obligations and entitlements to support alignment with climate change targets

198 The estimated amount of land participants would choose to shift across to averaging is 137,000 hectares (46 percent of the scheme's existing forest land). This is because participants would likely be financially better off moving these forests, as they have been entered into the ETS before the forest reached its average long-term carbon stock (as only low risk units can be given for these forests). Because participants have a lot of flexibility about when to move existing forest, this is the expected uptake under option C.2. The same unit flow implications can be observed in option B.3. in the previous section.

199 While option C.1. could result in 137,000 hectares being moved to averaging for similar reasons, it is more likely that a lower proportion of existing forest area would be moved to averaging. This lesser amount would reflect the fact that not all participants will be financially better off moving their existing forest over the eight years.[65] Some participants would only be in a position to repay NZUs around harvest time (if they have not banked NZUs to cover their liability), as they receive timber revenue after harvest. Harvest is also a natural point in time for foresters to decide on future forest management activities, such as creating a new business plan based on averaging. This is because some land owners have contracts (including NZU supply agreements) that end at harvest.

200 Option C.1. will result in increased net surrenders to the Crown over 2021-2028 (over the two MERPs) as it brings forward harvest surrender obligations that would have occurred in a future MERP. In the long term, it means the Crown no longer allocates NZUs to many existing forests in future MERPs, reducing ongoing Crown fiscal and reputational risk.

[65] The vast majority of forests established in the 1990s are assumed to remain on the stock change approach.

Criteria: Improves ease of compliance for participants

201 Both options would create short-term disruption and compliance effort for participants with existing ETS forests. That is because they will have to learn a new accounting approach and undertake the averaging NZU reconciliation process.

202 Under option C.1., having two MERPs over which to repay any NZU liability gives participants time to plan for how to make repayments. Some participants may still struggle to adjust business plans to meet their repayment obligation within that timeframe. In particular, participants with forests due for harvest after 2028 may find it difficult if they plan to use their income from timber sales to meet NZU liabilities. In cases where a forest is above its average carbon stock age before harvest, some will also experience an abrupt halt to NZU payments. Where units were used in a business as a source of ongoing cash flow, this may be difficult to adjust for.[66]

203 Short-term pressures of this kind under option C.1. may mean some participants who would prefer averaging in the long term decide not to transition. Of that group, some participants may choose to de-register existing forests (to avoid having to use two accounting approaches) or sell their forest. Or, if averaging were compulsory, it could create financial stress for those whose business plans and NZU obligations could not be easily altered.

204 Option C.1. would also increase uncertainty for participants when land ownership changes occur. It is possible the new landowner may not be aware of an NZU surrender obligation created at the transition MERP, and they may have chosen not to buy the land if they had known. At minimum this increases landowner due diligence requirements.

205 The choice under option C.2. to transition existing forests at any MER in the future means participants can choose when to go through the transition and take on the associated disruption and potential NZU repayment obligation. It allows existing participants to more closely align their NZU repayment obligations with their harvest (as under the current rules) or use some other convenient timing.

206 Multiple transition times under option C.2., however, could create additional confusion and non-compliance, as participants are more likely to be unsure of which accounting rules apply to forest land. For instance, land buyers may need to undertake more due diligence, and participants are more likely to submit incorrect emissions returns, which can incur penalties.

Criteria: Administrative efficiency and effectiveness for regulators

207 Option C.1. would result in many participants applying to transition at a fixed point in time. Additional staff would need to be recruited and trained to process applications in a timely manner. This could add to staff pressures (need for short-term skilled contractors to undertake work at peak times) which already normally occur at MERs. However, this option would require little to no extra resource in the long term.

208 Under Option C.2., enabling participants to transition forests at multiple times would require tracking of land over an indefinite period. It could also become more complex for staff to track and process applications where the participant's forest is transitioned in sections (i.e. only two of 10 CAA are moved at each MER).

[66] Some participants also have contracts for the supply of NZUs that will no longer be able to be met when their income of NZUs stops abruptly.

209 A similar level of additional staff would be required to implement this option (as in option C.1.), but the effort would be spread out over time. As this option has multiple transition times it is expected to create additional confusion and non-compliance by participants. Overall, this would cost more to administer than option C.1.

Criteria: Provides durable regulatory certainty and predictability

210 Option C.1. provides certainty about what rules apply to which forests pre- and post-2023. It remains unclear, however, how durable this option is as some participants that would choose to move their existing forest to averaging in the long term will be prevented from doing so.

211 The inherent policy durability of option C.2. provides more regulatory certainty than option C.1. The risk it poses to the Crown, however, also makes it potentially vulnerable to change from future Governments.

Criteria: Consistent with wider climate change and wellbeing priorities

212 Option C.1. would provide more certainty about NZU supply from existing forests pre- and post-2028. This could help the Government prepare for the required mitigation effort across the domestic economy and adjust wider ETS settings if needed (for example, by adjusting NZU auctioning volumes).

213 In comparison, option C.2. would provide less certainty about NZU supply from existing forests before and after 2028 as participants could move their forests to averaging at any MERP in the future. This could hinder planning mitigation effort across the economy and adjustments to wider ETS settings. However, this level of uncertainty is likely within a tolerable range.

Stakeholder views

214 During consultation the public was presented with option C.1. Most submissions to this option (77 percent) supported the ability for foresters to defer repayment by one MERP. Some expressed a preference for additional flexibility in the timing of the transition to averaging. In particular, some submitters indicated that support for a one-way transition to averaging depended on being able to switch to averaging after they had harvested. Other submissions noted that a switch to averaging could disrupt near-term business plans and property rights (based on the existing approach). Flexibility on the timing as to when foresters could transition to averaging was therefore strongly preferred.

215 Some submitters stated that those participants who were early scheme adopters should not be disadvantaged relative to those establishing new forests.

Impact analysis table C: Flexible transition options to averaging for post-1989 existing forests

Variations from status quo:++ much better + better than 0 about the same - worse than - - much worse

Objectives	Status quo-stock change accounting	C.1. Participants transitioning their post-1989 existing forests to averaging accounting can surrender NZUs earned above the long-term average carbon stock at a transition MER and the next MER	C.2. Participants can transition their post-1989 existing forests to averaging accounting at any MER (preferred)
Increases incentives to store carbon in forests	**0**	**0**	**0**
Allocates obligations and entitlements to support alignment with climate change targets	**0** 2021-2030 Estimated net surrenders of around 10.9 m NZUs 2031-2040: Estimated net allocation of around 46.9 m NZUs; 2041-2050: estimated net allocation of around 44.6 million NZUs	**+short term; +long term** • Ongoing - increase in accounting alignment. • Short term - the Crown could receive increased surrenders. compared to the status quo.[67] This could bring about a small improvement in mitigation effort. • Long term - the Crown would allocate fewer NZUs to existing forests, which reduces ongoing Crown fiscal and reputational risk. 2021-2030: estimated net surrenders of around 31 million NZUs 2031-2040: estimated net allocation of 49.2 million NZUs 2041-2050: estimated net allocation of 43.8 million NZUs Total 2021-2050 net allocation of around 62.1 million units compared to around 80.6 million units under stock change accounting.	**short term; -/+ long term** • As per B.3. • Ongoing - slight increase in accounting alignment. • Short term - creates risk of reducing mitigation effort for the current climate change target compared to B.1. (results in increased NZU supply of around 21.6 million units over 2021-2030, but this would be lower if participants chose to move to averaging before 2030) • Long term - both small increases and decreases to forestry NZU allocations (and likely small mitigation effort responses). Compared to the status quo, ongoing risk of insufficient ETS driven mitigation signal with an estimated 150 million net unit allocation in the ETS over 2021-2080. 2021-2030 estimated net allocation of 10.7 million NZUs[68] 2031-2040: estimated net allocation of 54.7 million NZUs 2041-2050: estimated net allocation of 35.2 million NZUs

[67] The ongoing misalignment could undermine the Government's intention to align unit supply so that the ETS provides a price signal aligned with targets. This is to be achieved by introducing a unit supply decision-making framework and auctioning mechanism into the scheme that enables the setting of a cap.

[68] The total increase in the number of units from switching from stock change to averaging accounting (B.3.) for existing forests would be 21.6 million units (10.9 + 10.7 million units).

Improves ease of compliance for participants	**0**	**-- short term; +/- long term** • Short term disruption and compliance effort learning new accounting rules and undertaking reconciliation process. • Gives participants an extra MERP to adjust business plans. For some, this will be sufficient time to move. • Having a clear start and end date for the transition means it will be easier for existing participants to know which accounting rules apply to their land (prevents making errors and gaining penalties). • Having extended an surrender deadline will increase the complexity of transfers of interest (ownership changes) and risk to transferees as they may not realise there is an averaging surrender obligation that they will be liable for in future. • Some participants may undergo financial stress (if required to use averaging accounting by 2023), or may wish to move in the long term but it is too difficult to by 2028 (if they have a choice whether or not to use averaging).	**- short term; +/-long term** • Short term disruption and compliance effort (as per option C.1.). • Participants can choose to move their existing forests to averaging when it suits them best (so everyone who wishes to move will do so over time). • No clear start and end date for the transition means it's more likely participants will be confused about which accounting rules apply to their land (and make errors on emissions returns, which could incur penalties).
Secondary criteria			
Administrative efficiency and effectiveness for regulators	**0**	**--short term; +long term** • 3-4 FTEs likely to need to be recruited and trained to process applications during the transition which could add to staff pressures which normally occur at MERPs. • Long term little to no additional resource required.	**- short term; – long term** • Similar total cost as Option C.1. • 3-4 FTEs likely to need to be recruited and trained to process transition applications indefinitely. • Likely to require more administrative effort to correct returns (due to confusion and non-compliance).
Consistent with wider climate change and wellbeing priorities	**0**	**+** • Would provide more certainty about NZU supply from existing forests pre- and post-2028 than the status quo and option C.2., which could assist in adjusting wider ETS settings if needed (such as NZUs auctioning volumes)	**-** • Would provide less certainty than the status quo and option C.1. about NZU supply from existing forests post 2028, which could to a small degree hinder planning to adjust wider ETS settings.
Provides durable regulatory certainty and predictability	**0**	**-** • Provides certainty about what rules apply to which forests pre- and post-2023, however may not be durable (as some participants would want to move their forests to averaging in the future).	**-** • Provides more regulatory certainty than option C.1., as is more likely durable from participants' perspective, but as it results in a risk to the Crown, it could be open to change from future Governments.
Overall assessment		MPI recommends the Government implement option C.2. It will result in a short term increase in NZU supply which could impact climate change mitigation effort. But officials consider this cost is justified to enable more participants to transition their existing forests to averaging and prevent undue stress. Some participants may find a long transition confusing, but this can be mitigated to some degree by increasing Te Uru Rākau efforts to assist participants.	

D ELIGIBILITY DATE AND REGISTRATION BASIS FOR NEW AND EXISTING FORESTS

216 This section considers the costs and benefits of basing the date for mandatory averaging on whether a forest was established or when it was registered in the ETS. This section considers the implementation of dates for mandatory averaging. It also outlines appropriate dates for those rules to apply from. The analysis in this section supported Cabinet's decision in March 2019 to make averaging mandatory for all forest registrations from 31 December 2020 (option D.2).

Need to have a new forest date

217 Making averaging compulsory for both new and existing forests means that once existing forests have been transitioned, there would be no longer be any need to define and create new "stock change" and "averaging" categories in the ETS. The main consideration would be setting a date as to when the averaging rules come into effect.

218 If, however, existing forests are either required to remain on the stock change approach or have an option to continue to use it while averaging is also in place, it is necessary to set a date. This date would define when and which forests are categorised as using averaging or the stock change accounting.

Establishment or registration date

219 If stock change accounting is required for existing forests, then a date would need to be set for accessing averaging that is based on when the forest is established. This would ensure that participants cannot use averaging for their already-established forests that are not yet registered in the ETS.

Date not linked to implementation

220 The averaging eligibility date could be different from the date when averaging is introduced through the parliamentary process.

221 There will also be a delay between when the new averaging rules are introduced by Parliament and when participants are required to provide information to Te Uru Rākau and can receive NZU entitlements or are required to meet NZU obligations. All participants are required to submit a Mandatory Emissions Return (MER) in the first six months of 2023. This return will cover the period when averaging would be introduced (2018-2022).[69] Therefore, participants would not have to surrender NZUs or be able to receive NZUs for averaging entitlements until this point.

Option D.1. Participants are required to use averaging accounting for all forests registered after 31 December 2020 (preferred)

222 All participants could be required to use averaging for any post-1989 forests registered after 31 December 2020. This will mainly apply to registrations of newly established forests.

[69] Some participants may need to provide information earlier, including if their land undergoes a transmission of interest or they elect to submit a Voluntary Emissions Return (for some of the period).

223 However, it would require all post-1989 forests that have already been established prior to 1 January 2021, but registered in the ETS after 31 December 2020, to be accounted for using averaging.

224 Similarly, forests that have been deregistered prior to 31 December 2020 and then re-entered into the ETS after 31 December 2020 would be treated as "averaging forests" under this approach. Therefore, participants would not have to surrender NZUs or be able to receive NZUs for averaging entitlements until this point.

225 Therefore, this option could only apply if existing forests had an option to use averaging, or if there was an optional date for accessing averaging that started before the mandatory date (which is what Cabinet agreed on in March 2019).

Option D.2. Participants are required to use averaging accounting for new forests established from 31 December 2019

226 All participants could be required to use averaging for any "new forests" they register in the ETS which were established after 31 December 2019.

227 Under this option, all forests established prior to 1 January 2020 that are registered in the ETS are treated as "existing forests", regardless of whether they are registered in the ETS at 31 December 2019.

228 This option can be implemented whether or not averaging is available to existing forests.

Impact analysis

Criteria: Increases incentives to store carbon in forests

229 These options will reinforce forestry incentives by providing confidence that averaging rules will apply to all new forests registered as rotational forests from this date, as confirmed by legislation or regulation. This could help to ensure the afforestation incentive benefits of averaging are realised.

Criteria: Allocates obligations and entitlements to support alignment with climate change targets

230 The afforestation response from both options will help to make a significant contribution to climate change targets (as outlined for option A.1. in section A).

231 Option D.1. aligns with how New Zealand will account for its forestry sector internationally using averaging, thereby preventing any ETS and international accounting rule misalignment for those forests that register after 31 December 2020. Under option D.2., however, forests established prior to 1 January 2020 (but registered after that date) may indefinitely still register using the carbon stock change approach, therefore misalignment of the ETS with international rules could continue to increase.

Criteria: Improves ease of compliance for participants

232 Use of a specified date (e.g. 1 January or 31 December) reduces confusion for participants and land buyers and assists with planting, as it occurs in time to make decisions for the winter forest planting season. It also aligns with emissions reporting periods (i.e. MERs and VERs).

233 Option D.1. will give participants a long lead-in time to plan for the change in accounting method. Option D.2. would provide less time. While most participants are expected to

prefer to use averaging (so they can receive additional NZUs that can be traded at low risk), some participants with contracts and planting plans based around the stock change approach could benefit from additional time to make this decision.

234 Under option D.1., if all existing forests can use averaging (i.e. Option B.3. is accepted), or if there is an optional ability to use averaging before the mandatory date, some participants would need to use two new categories of forest "averaging" and "stock change".[70] This would cause some confusion and potential errors, but this is the result of a decision to apply a different accounting approach to existing forests as opposed to new forests.

235 In contrast, under option D.2., if all existing forests cannot use averaging, participants and land buyers would be required to understand and comply with "new forests" and "existing forests" categories, based on the date the forest was established.

236 Participants tend to misunderstand rules based on establishment. For instance, there is an emerging compliance issue where participants are registering pine forests that were planted on land that is already "forest land" due to the presence of native vegetation (e.g. young mānuka "scrub"). This land has an establishment date well before the pine forest's planting date (which the participant considered the "establishment date"). This type of error would lead to a large number of participants making applications under the 'wrong' accounting approach, and incorrect returns. However, this is the only option that would ensure existing forests cannot access averaging.

Criteria: Administrative efficiency and effectiveness for regulator

237 As there is no difference in accounting under stock change and averaging in the early years of growth of a forest on its first rotation (i.e., both accounting systems provide the same calculated number of NZUs to a participant), Te Uru Rākau will treat all forests the same for carbon accounting purposes initially. Additional administrative effort will be required to communicate the dates for mandatory averaging applying to the sector, and on what basis this is defined.

238 Option D.1. will have a minimal impact on operations as Te Uru Rākau already records registration dates to determine NZU entitlements under current rules.

239 The fact that staff will need to verify establishment dates (by assessing information provided by participants and reviewing aerial photography/satellite imagery), means that obtaining accurate information under option D.2. will potentially increase administrative effort and resource cost (from around 4-5 full-time equivalent (FTE) employees to 8-10 FTE).

Criteria: Provides durable regulatory certainty and predictability

240 Option D.2. has a mandatory application date: the earliest 1 January date after the legislation to introduce averaging can be brought into effect. This gives the sector confidence that the new rules will apply from that date.

241 Much of the detail about how averaging will apply, including the factors for determining age bands, will need to be made through the regulations setting process. This will occur at the same time as decisions about how the new IT build will change reporting.

[70] In March 2019, Cabinet agreed to this optional ability for post-1989 forests registered in the ETS after 31 December 2018.

242 A mandatory date (after 31 December 2020) would, therefore, ensure participants know exactly what rules will apply to their forests under averaging.

Stakeholder views

243 In the September 2018 consultation, Government consulted on whether forests established after 1 January 2020 should be classified as "new forests" and therefore be required to use averaging. Feedback was mixed, with 38 submissions supporting the proposal and 32 opposed. Those against it suggested having a date based on establishment of the forest may delay planting decisions. In particular, most comments pointed to concerns that a 2020 establishment date would result in a delay of planting planned for 2019.

244 Submitters advocating for introduction of averaging based on the ETS registration date (i.e. where a forester who planted in 2017 could register the forest in 2022 and use averaging) commented that this was a fairer approach. That was because it did not create a disadvantageous position for participants with recently established existing forests, some of who had already planted with the intention of using averaging.

Impact analysis table D: Averaging eligibility date and registration basis

Variations from status quo:++ much better + better than 0 about the same - worse than - - much worse

Primary criteria	Status Quo – current ETS accounting	D.1. Participants are required to use averaging accounting for all forests registered after 31 December 2020 (newly established or existing forests) (preferred)[71]	D.2. Participants are required to use averaging accounting for new forests established from 31 December 2019
Increases incentives to store carbon in forests	**0**	**+** • As per option A.1., an estimated 13,300 hectares of additional afforestation could result per annum (this would occur from 1 January 2021 if there was no option to use averaging accounting prior to this date - or 1 January 2020 if there was an option to it for forests prior to 31 December 2020). • Regardless of this option, an option to use averaging accounting for forests established in 2019 could encourage an estimated 4,000 additional hectares of forests planting in 2019.	**+** • Same afforestation response impact as D.1., except the estimated 13,300 hectares additional hectares of afforestation that could result per annum would occur from 1 January 2020 if there was no option to use averaging accounting for forests established prior to this date.
Allocates obligations and entitlements to support alignment with climate change targets	**0** • Would result in increasing misalignment with international accounting over time (as ETS participants would remain on current accounting).	**+** • The afforestation response from both options will help to make a significant contribution to climate change targets and result in an increase in NZU allocations as per option A.1. • Commences from the date New Zealand adopts averaging internationally, so will prevent any ETS and international accounting rule misalignment.	**-** • Same contribution to climate change targets and NZU allocation implications as option D.1. (and A.1.). • The potential for misalignment of the ETS with international rules could continue to increase, as existing forests will still be required to register using the carbon stock change approach.
Improves ease of compliance for participants	**0**	**-** • There could be some confusion for participants using averaging accounting for their forests as there are two new forest dates. However, using a 1 January date reduces confusion for participants and land buyers and assists with forest planting. • Participants will have a long lead in time to plan for the change in accounting methodology.	**- -** • Same implications for having two dates and a 1 January date as option D.1. • Provides less lead in time to plan to use averaging accounting than option D.1. • Would result in greater participant misunderstanding and errors compared to option D.1. as participants find it difficult to comply with rules-based establishment date.

[71] If averaging accounting is optional for existing forests then the importance of the "averaging" date for participants' planting decisions reduces as all participants will be eligible to move their forests to averaging accounting.

Secondary criteria			
Administrative efficiency and effectiveness for regulators	**0**	**0** • Will have a minimal impact on administrative effort as Te Uru Rākau already record registration dates to determine NZU entitlements under current rules.	**-** • Obtaining accurate establishment date information will potentially double administrative effort compared to the status quo as staff will need to verify that date (by assessing information provided by participants and reviewing aerial photography/satellite imagery).
Provides durable regulatory certainty and predictability	**0**	**+** • Gives certainty to the sector that averaging accounting will apply to their new forests from this date. (as the legislation confirming implementation of the package should be finalised by this date)	**++** • Gives certainty to the sector that the detailed averaging accounting rules are unlikely to alter (as the regulations supporting the change should be finalised by this date)
Overall assessment	MPI recommends that the Government implement option D.1. as it would provide regulatory certainty and minimise compliance costs for participants, minimise administrative costs, and assist with ETS alignment with international rules.		

E TRANSITION OPTIONS BETWEEN PERMANENT POST-1989 FOREST AND POST-1989 FOREST UNDER AVERAGING

245 This section contains options for transitioning post 1989 forests that use averaging accounting to the new permanent post 1989 forests category in the ETS. It aims to address a potential risk that participants could be unintentionally credited twice for some forest growth in certain circumstances.

Permanent post-1989 forests will earn more units than averaging post-1989 forests

246 Some post 1989 forest owners will transfer their forests from averaging accounting to the new permanent post 1989 category as they will earn more units under the stock change accounting approach that is part of the permanent category.

247 There are three primary reasons a forest owner may wish to transition their registered post-1989 forest to the permanent post-1989 forest activity:

a. They will receive units for all future carbon stock increases, rather than units for increases in the forest's average carbon stock (which will be fewer units as only the difference in the averages are rewarded);
b. They can claim units annually (as the stock changes), rather than only when a significant carbon storage change occurs and they move into the next age band (unlike the averaging treatment proposed in section I);
c. The units they receive will be tagged as coming from a 'permanent post-1989 forest', which will likely have a market premium.

248 There are many factors a forest owner will consider in deciding whether to transition an existing registered forest to the permanent post-1989 forest category. For example, in a complex harvest situation on highly erodible land, high harvesting costs and low timber prices may make it more economic to move to permanent forest accounting, to gain future income from unit sales rather than low and uncertain timber income. The reasons for moving to a permanent forestry model are discussed in the Regulatory Impact Assessment on the introduction of the Permanent post-1989 forestry activity (*Climate Change Response Act 2002: Permanent Forests and Operational Improvements).*

There is a risk of double crediting when transitioning a forest using averaging accounting to the ETS permanent post-1989 forest category.

249 Government decisions made in December 2018 determined that participants will earn units for all stock change once their forest is registered as a permanent post-1989 forest. These December decisions on how the forest transitions to permanent post-1989 eliminates double crediting in most cases, except for one: second rotation forests with a carbon stock below the average particular transition.

250 Transitioning from averaging accounting to permanent accounting is complex. This is because forests using averaging accounting are credited once during their first rotation up to the long term average of their carbon stock (calculated over a number of rotations).

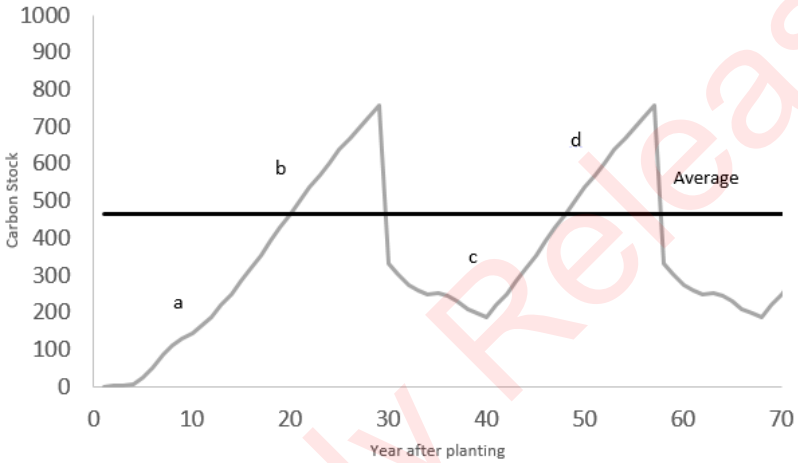
251 The expectation is that post-1989 forest will be managed in a similar manner into the future, which means that the average the post-1989 forest is rewarded up to on its first rotation is higher than simply the average of carbon stocks over its first rotation.[72]

[72] Refer to section I for information on converting a forest's long-term average carbon stock into a forest average age

252 Figure 11 below shows the four broad types of registered forest under averaging that can transition to the permanent category, this RIA only looks to address the transition for forests at point C as there is no risk of double counting for types a, b, and d:

a. First rotation forest, with a carbon stock *below* the average carbon stock for that forest;
b. First rotation forest, with a carbon stock *above* the average carbon stock for that forest type and harvest regime;
c. Second rotation forest with a carbon stock *below* the average and the number of units received for that forest. This is the transition this section looks to address; and
d. Second rotation forest with a carbon stock *above* the average carbon stock for that forest and harvest regime.

Figure 11: The four types of forest that may transition to averaging



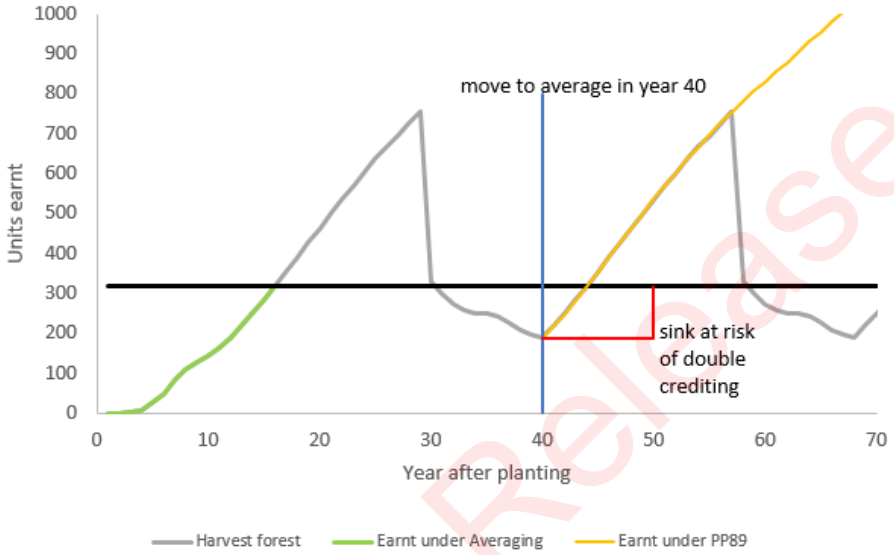
253 As any participants who transfer from averaging accounting to permanent post-1989 forest only receive 'permanent forest' units back to when the forest was transitioned to the permanent category, there is no risk of double crediting at points a, b and d. This is because:

i. As a forest receives full recognition for the increase in the carbon stock up to the average while on its first rotation (a), these forests are effectively moving from one stock change approach to another. As the forest can only be registered in one activity (post-1989 or permanent post-1989) it will only ever earn credits for a particular stock-change once.
ii. Forests with carbon stock well above the average (b or d) will have stopped receiving units under averaging once the average is reached. This means the forests will not be double credited as they will only receive units for future sequestration as a permanent forest[73]. This approach encourages an early decision on whether it will transition to permanent post-1989 forest.

[73] The December decisions concluded it was inappropriate to credit these forests back to the average as there would be significant risk of forest owners electing not to harvest (as the income from carbon could outweigh income from timber), the fiscal risk was too high, and the units would be issued for sequestration which New Zealand cannot count against its target (as the international accounting only recognises the additional sequestration once the decision to move to permanent post-1989 forest has occurred).

254 The double-counting issues only arises for forests transitioning from averaging accounting to permanent if they are on their second rotation and below the average (C in Figure 11). Units are earned for forest growth on the first rotation when the forest was post-1989 forest under averaging, and then could be earned again once the forest has transitioned to a permanent post-1989 forest. This is shown in Figure 12 below.

Figure 12: How a participant transitioning its forest from averaging accounting to the permanent post-1989 forest category could be double credited



255 If this was to occur, it would create a fiscal cost to the Crown (for the units transferred), while the units would have no environmental integrity (as they would be duplicative).

256 We need to develop an approach to ensure that any sequestration in forests transitioning from averaging accounting to permanent post-1989 are only credited once. While the operative detail of this will be in the regulations (e.g. the calculation methodology), we need to ensure that Cabinet is aware of the issue and has empowered the drafting of any necessary legislative clauses to deliver this.

Scale of the double crediting problem

257 We expect the number of forests transferring from production forests (under averaging) to permanent post-1989 forest at point C (figure 11) would be low. This is because the high costs associated with establishing harvesting infrastructure (e.g. logging roads at $140,000 to $500,000 per km) will be only used once if transition occurs at point C. It is more likely the forest owner will make the decision to transition the production forests prior to harvest (i.e move at point b), and not pay these costs. Second rotation forests are more likely to transition late in the rotation, e.g. as timber market conditions could change.

258 In the December 2018 RIA on permanent forests, officials estimated that 200 hectares per year of production pine forest would enter the permanent post-1989 category. This was an estimate based on all forest (both ETS registered and non ETS registered forest). Even if 100% of the retirement occurs from ETS registered land at point 'C', Crown revenues would be at around $850,000 per year.

We have considered three options to address this double counting issue

259 All of the options to address the double counting issue only apply to forests using averaging accounting on their second (or subsequent) rotation with a carbon stock below its long-term average amount at the time of transition (i.e. 'C' forests as defined in above).

Option E.1. Participants can transition their forest to the permanent post-1989 forest category, but must repay the NZUs earned between the carbon stock at the time of transition and their forest's long term average carbon stock (preferred)

260 Under this approach the participant would surrender the units between their forest's long-term average carbon stock (the average) and its carbon stock at the time of transition. This means any subsequent forest growth sequestration credited (as a permanent post-1989 forest) will not be double claimed.

Option E.2. Participants can transition their forests to the permanent post-1989 forest category, but cannot earn units until the forest reaches its long-term average carbon stock

261 This option would allow participants to transition their forests to the permanent post-1989 category but there would be no ability to earn units until the forest reaches its long term average carbon stock that applied to that area of forest at the time of transition. Once that point is reached, the participant is eligible to earn units for the forest.

Option E.3. Participants cannot transition their post 1989 forests using averaging accounting to the permanent post-1989 category until the forest reaches its long term average carbon stock amount

262 This option would not allow participants to transition their forest using averaging accounting to transition to permanent post-1989 category until the forest reaches its long term average carbon stock. Once that point is reached the participant may transition their forest and earn units for that forest.

263 This option was not consulted on, but was suggested during the public consultation period.

264 This option could be framed as preventing forests on their second rotation with a carbon stock below the average from transitioning to permanent forestry.

Impact analysis

265 Option E.1 provides for a simpler transition to permanent post-1989 forest as the transition process is resolved in one step (when the transition occurs). This reduces the long term complexity of moving to permanent post-1989 forest on both the participant and the Crown.

266 Option E.1 is clear and consistent about how participants will earn units across different areas of permanent post-1989 forest. This offers operational simplicity for the participant and the Crown.

267 In contrast, option E.2 and E.3 have unique legacy impacts for each area of forest that will increase the complexity for developing regulations, make participants' future decisions more challenging, and will make administration of the ETS more complex for the Crown.[74] The complexity of returns under option E.2 increases the risks participants will make errors in their returns and be penalised.

268 Option E.1 may have an upfront cost to participants that could impose a barrier to transitioning to permanent post-1989. However, as the preferred approach allows the transition time to be 'delayed' until carbon stocks are higher, this can be minimised by those participants who wish to reduce the barrier.

269 It may take several years (or decades for native forest) for a forest to reach the average after harvest. Option E.1 effectively deals with this issue as it provides flexibility to the participant, whereas options E.2 and E.3 do not allow for any units to be earned until the average is reached. This would act as a significant barrier to retiring areas which produce low quality timber into native forests.

270 There may be a fiscal impact from issuing these units to the permanent post-1989 participants. We expect this to be small, and offset by the participants surrendering units at the time the transition is made. The primary impact will be at the time of transition and over the growth of the forest.

271 Requiring ETS participants to surrender units when they transition from averaging accounting to permanent post-1989 (option E.1) will create a source of revenue for the Crown. We expect it to be relatively small and only over the short term. For a pine forest this may be around 170 units per hectare that transitions (which equates to $4,250 per hectare at $25 per unit).

272 Participants will re-earn these units at a fiscal cost to the Crown as their second rotation forest regrows (as a permanent post-1989 forest). This may be over 15 years (for a pine forest), or substantively longer for native forest (50 years or more, for a slower growing native forest).

Stakeholder views

273 In the Better ETS for Forestry consultation period the public was presented with options E.1 (unit repay, preferred approach) and E.2. The majority (70 percent) of respondents agreed with the preferred approach, while some (25 percent[75]) did not. Those respondents who did not support the preferred option stated the cost of unit repayment was a barrier to uptake. However, they were unaware the participant could delay transition until this was no longer an issue. Additionally, they proposed that the participant should receive recognition back to 2008 (which increases the risk of double crediting, and also is a departure from the ETS principle of the participant only earning credits since registration).

[74] For example, the development of the regulations to manage registered post-1989 averaged forest with multiple ages and forest types is proving to be very complex. Under Option E.2 it would be exponentially more complex to develop regulations and manage the crediting of these forests under permanent post-1989 forest if the averaging treatment needed to be considered. Under option E.3 the challenges for option E.2 would not be around 'crediting' but relate to when the forest can transition. For example when land is brought and sold each area of permanent forest would need to consider the average the forest was credits up to.

[75] The remaining 5% were non-applicable responses.

Impact analysis table E: Transition options between permanent post-1989 forest and post-1989 forest under averaging accounting

Variations from status quo: ++ much better + better than 0 about the same - worse than - - much worse

Objectives	Status quo of double crediting	E.1. Participants can transition their forest to the permanent post-1989 forest category, but must repay the NZUs earned between the carbon stock at the time of transition and their forest's long term average carbon stock (preferred)	E.2. Participants can transition their forests to the permanent post-1989 forest category, but cannot earn units until the forest reaches its long-term average carbon stock	E.3. Participants cannot transition their post 1989 forests using averaging accounting to the permanent post-1989 category until the forest reaches its long term average carbon stock amount
Increases incentives to store carbon in forests	**0**	**0**	**0**	**0**
Allocates obligations and entitlements to support alignment with climate change targets	**0** • It is clear that there is misalignment between the ETS allocation rules and the international climate change target, undermining the integrity of the ETS.	**++** • Repayments of NZUs down to the average are fiscal income to the Crown[76]. This income would come in sooner than under options E.2 and E.3. • The quick transition to the permanent forest category means New Zealand can also quickly gain recognition for this against our climate change targets.	**0** • Avoids the risk of double crediting, but is unlikely to have much forest moving to the permanent post-1989 forest as the delay in crediting undermines the incentive. This means there is reduced likelihood of international recognition of permanent post-1989 forests vs. target.	**0** • Avoids the risk of double crediting, but is unlikely to have much forest moving to the permanent post-1989 forest as the delay in crediting undermines the incentive. This means there is reduced likelihood of international recognition of permanent post-1989 forests vs. target.
Improves ease of compliance for participants	**0** • Transitioning to permanent post-1989 forest will require an emissions return (determined in December 2018).	**-** • Upfront cost to some participants, as required to repay NZUs down from the average during the transition.	**- -** • Requires participants to wait until their forest reaches its long term average carbon stock (which could take decades) to earn units. • Significantly more complex when there is a mix-age forest transitioned to permanent post-1989 forest.	**- -** • As per option E.2, it requires participants to wait until their forest reaches its long term average carbon stock to earn units. • Will result in large numbers of carbon accounting area reconfigurations to maximise the opportunity.

[76] For a pine forest this may be around 170 units surrendered per hectare transitioned ($4,250 at $25 per unit, average age of 15 years).

Secondary criteria				
Administrative efficiency and effectiveness for regulators	**0** • Double-crediting would encourage more participants to move to permanent post-1989 forest, increasing administrative burden.	**0** • Transitional surrender is a one-off event allowing assistance to be provided to participants, and providing a clean split between accounting approaches. • This is part of the BAU process of moving to permanent post-1989 forest.	**--** • More complex to administer as the unit allocation eligibility needs to be tracked and restarted. • Makes buying and selling land more complex, and unit earning potential needs to be tracked. • Requires unique regulations to be developed.	**--** • Makes buying and selling land more complex, and unit earning potential needs to be tracked.
Consistent with wider climate change and wellbeing priorities	**0** • No environmental integrity, as double credits participants.	**0**	**0**	**0**
Avoids unintended consequences	**0** • Significant increase incentive to enter into forests as return on investment is *significantly* increased as a result of double crediting.	**++** • As the forest is credited from when it first transitions to permanent, this approach does not discourage the retirement of low quality production forests to natives. • Avoids the creation of a loophole where the participant deregisters a post-1989 forest and then re-registers it as permanent post-1989 forest.	**+** • Participants not earning units would reduce incentive to transition, but starting the 50 year clear-fell period 'earlier' may offer some advantages • Creates a loophole where the participant deregisters a post-1989 forest and then re-registers it as permanent post-1989 forest.	**+** • Would delay participants' decision to transition post-1989 forest to permanent post-1989 forest, so the 50 year non-clear-fell period would begin much later than the decision to move. • Creates a loophole where the participant deregisters a post-1989 forest and then re-registers it as permanent post-1989 forest.
Provides durable regulatory certainty and predictability	**0**	**+** • Foresters will know the number of units they are required to surrender when making the decision and not be exposed to average age changes. • Resolving the double crediting issue avoids foresters facing a change later at short notice.	**-** • The time of transition will be dictated by the average that applies at when the average is met. There is a risk the average could change, altering the time the forest needs to be left for.	- • As per option E.2., there is a risk the average could change, altering the time the forest needs will be delayed for in transition (and potentially having retrospective elements to the decision to change the averaging accounting regulations).
Overall assessment	MPI recommends the Government implement option E.1. This option best ensures a balance is struck between allocating obligations and entitlements to support the alignment with climate change targets, is the simplest solution to double crediting to implement for the Crown and participants, and provides long term regulatory certainty.			

4.2.3 AVERAGING ACCOUNTING DETAILED DESIGN SETTINGS

274 The sections below outline key ETS forestry design details that will need to change under averaging accounting to determine participants' NZU entitlements and obligations.

275 All of the detailed design decisions for averaging accounting will be consulted on through a regulation-making process after the high-level decisions on ETS forestry accounting improvements have been made. However, it is useful to confirm in advance of this process the design aspects that are critical for ensuring the policy intent of the changes. For instance, how to determine the long-term average carbon stock amount of a forest, and reporting requirements. This will give participants greater confidence about the flexibility they will have to earn NZUs under averaging accounting. It will also assist officials to prepare for the design of the new ETS forestry IT system and regulations.

F CARBON STORAGE CALCULATION USED TO DETERMINE FORESTRY NZU ENTITLEMENTS AND OBLIGATIONS

276 This section considers whether the current carbon storage calculation rules used to determine forestry NZU entitlements and obligations should remain under averaging accounting.[77] MPI considered a wider range of options in its pre-consultation RIA. However, many were discarded as they could pose significant Crown risks, cause participant confusion and would not be cost-effective to administer. Appendix 3 goes into further detail about these discarded options.

Current ETS forestry regulations carbon storage rules

One tonne of CO2e equals one NZU

277 In the ETS one tonne of forest CO2e stored equals one NZU. This conversion is required to align with the international accounting rules and maintain the integrity of the ETS.

Different calculation requirements for forests greater or smaller than 100 hectares

278 CCRA forestry regulations outline the forest carbon measurement rules used to determine participants' NZU entitlements and obligations. There are two ways to record carbon in forests in the ETS:

- forests smaller than 100 hectares in area are measured using default carbon storage tables based on regional or national averages for five tree types: radiata Pine, Douglas-fir, Exotic Hardwoods, (other) Exotic Softwoods, and Indigenous Forest; and
- forests that are greater than 100 hectares or more in area at any time must be measured using the Field Measurement Approach (FMA), which involves generating participant specific carbon tables for the five forest types.

279 In an ideal world, all scheme participants engaging in forest management practices that result in increased carbon storage, would be officially rewarded. Making participant specific measurements, however, is complex and costly.

[77] Carbon storage measurement is called "removals" in the CCRA. Forestry participants earn NZUs for removal activities (i.e. removing carbon from the atmosphere).

280 The default approach for forests smaller than 100 hectares reflects the greater need to reduce complexity and compliance costs for participants with small areas of registered forest. The approach for forests greater than 100 hectares retains accuracy needed for these owners to maximise carbon returns (maintaining the incentive to store carbon through forest management practices).

281 There is a risk that this split may no longer be appropriate when the regulations are updated next. This is because the current default look-up tables are due for improvement and the ETS forestry IT system update is likely to change what information participants are required to provide each return (i.e. provide more detailed maps, rather than input the carbon storage change amount). Both changes could alter the situations in which it is beneficial to have participant specific measurements.

Can only claim NZUs from MER forest is registered

282 As indicated in section C, ETS forestry participants are currently required to report the amount of carbon storage change that occurs in their forests over each reporting period.[78]

283 Participants are only able to claim NZUs for forest growth that occurs from the beginning of the latest reporting period in which their forest land was registered. This is intended to encourage people to register their forests in the ETS soon after they are established. It better enables the ETS to influence participants' forest management decisions (i.e. around deforestation and choice of forest species) over the life of a forest. Currently, it also helps to ensure participants receive NZUs they can trade at low risk (as the low risk NZUs can only be earned on the initial part of a forest's first harvest rotation).

Stakeholder views

284 The Government consulted on a preferred option of retaining the status quo for measuring carbon stock changes (default look up tables for those under 100 hectares and the FMA approach for land over 100 hectares).

285 A small majority of submitters agreed with the preferred option (53 out of 90), with 28 opposing it. Supporters of the preferred option suggested it was administratively simple and low cost, and could benefit smaller farmers. Supporters included the Forest Owners Association, a council, and forestry companies. Some submitters suggested that the FMA approach was disproportionately costly for small land parcels relative to its benefits (e.g. up to 500 hectares), while others criticised the accuracy of the current look-up tables or suggested they incentivised establishing exotic species over indigenous ones.

Option F.1. Carbon storage changes each period remains the basis for determining NZU entitlements and obligations and can only claim NZUs from the beginning of the MERP a forest is registered in under averaging accounting

286 Under averaging accounting, carbon storage change would still be the basis for determining participants' NZU entitlements and obligations each reporting period. However, the need to report could reduce after forests reach their long-term carbon storage amount. This calculation would equate one tonne of carbon with one NZU, and be set in the CCRA forestry regulations. Participants would still only be able to claim NZUs from the beginning of the reporting period in which their forest was registered.

[78] This is recorded for each participant's self-selected carbon accounting area (CAA).

Impact analysis table F: Carbon storage calculation used to determine forestry NZU entitlements and obligations

Variations from status quo: ++ much better + better than 0 about the same - worse than - - much worse

Objectives	Current carbon storage change rules apply under stock change accounting	F.1.: Carbon storage changes each period remains the basis for determining NZU entitlements and obligations, and can only claim NZUs from the beginning of the MERP a forest is registered in under averaging accounting
Increases incentives to store carbon in forests	**0**	**0** • Measuring carbon storage change encourages forest management practices that result in more carbon being stored in forests (such as high forest stocking rates).
Allocates obligations and entitlements to support alignment with climate change targets	**0**	**0** • Encouraging carbon storage in forests helps increase New Zealand's contribution to climate change targets. • Retaining the limit on when participants can claim NZUs back to limits fiscal risk to the Crown and ensures forestry participants are only rewarded for carbon storage increases as a result of ETS incentives (rather than other drivers when their forest is not registered).
Improves ease of compliance for participants	**0**	**0** • There is a $102.22 application fee. Consultant fees start at $500 per return and increase depending on size of the forest land being measured and complexity of return (I.e. number of CAA and underlying sub-areas). These costs are small compared to the amount of revenue participants can earn from selling NZUs (currently 1 NZU=$25).
Secondary criteria		

Administrative efficiency and effectiveness for regulators	**0**	**0**
		• Cost to process carbon storage change returns vary with size and scale of forest land. Key factors for cost are:
		  ○ Initial calculation and information verification;
		  ○ Correspondence to gain additional information; and
		  ○ Geospatial checks.
		• It takes staff between 1-50 hours to process each per return (only five percent of returns take 50 hours).
		• This effort is considered necessary to ensure the accuracy of the information used to determine NZU payments (which are often in the millions), noting this level of effort will change under the new averaging regulations and IT build.

Consistent with wider climate change and wellbeing priorities	**0**	**0** • Having one tonne of forest CO2e equal one NZU, and recording carbon storage changes maintains the integrity of the ETS.
Overall assessment	MPI recommends Option F.1. – that one tonne of carbon continues to equal one NZU; carbon storage change over a reporting period remains the basis for providing NZUs; and participants are still only able to claim NZUs from the beginning of the latest reporting period under averaging accounting. These settings maintain the integrity of the ETS and ensure participants have an incentive to store carbon in forests. MPI recommends that the decision on whether to maintain the two ways to record carbon in forests in the ETS is taken during the regulations setting process. The appropriateness of the 100 hectare split could be affected by other detailed design settings decided through the regulations process.	

G CCRA FORESTRY REGULATIONS MAKING PROCESS

Current regulation making process

287 Most of the details for calculating forestry carbon storage changes and NZU entitlements and obligations are set out in the Climate Change (Forestry Sector) Regulations 2008. Changes to participants' NZU entitlements and obligations apply prospectively through regular updates to these regulations. This is considered to remain the only feasible option under averaging accounting.

288 Options such as requiring participants to repay or earn NZUs due to changes in the long-term average carbon stock set in regulations or to earn up to the long-term average carbon stock set in regulations at the time of registration were considered, then discarded. This is because they could lower afforestation incentives, increase Crown fiscal risk, or reduce regulatory certainty. Further detail on those options is contained in Appendix 3.

Option G.1. Retain current CCRA forestry regulation processes for averaging accounting

289 The details for how to calculate forestry carbon storage and NZU entitlements and obligations would continue to be contained in the forestry regulations under the CCRA.

290 Any change to participants' NZU entitlements and obligations would apply prospectively through updates to the forestry regulations under the CCRA.

Stakeholder views

291 Submissions favoured applying legislative and regulatory changes prospectively (rather than retroactively). A total of 52 submissions out of 70 supported not requiring participants above their average forest age to repay units if a forest's average age is subsequently changed in regulations. Those in favour suggested that it would support the confident trade of units, and avoid additional uncertainty for participants. Reduced risk and greater regulatory stability would enable participants to establish new forests with more confidence.

292 In the case of participants below the average age, most submissions (39 out of 65 submissions) supported the preferred option of changing the number of NZUs received by participants using averaging accounting, so as to reflect changes in the average age set in regulation. This option was supported on the grounds that averaging accounting should reflect up to date and accurate carbon stock changes. Ten submissions favoured the alternative option, that foresters receive units until the average age set at the time a forest was registered.

Impact analysis table G: CCRA forestry regulations making process for averaging accounting

Variations from counterfactual: ++ much better + better than 0 about the same - worse than - - much worse

Criteria	Current regulations process	G.1. Retain current CCRA forestry regulation processes for averaging accounting (preferred)
Incentive to store carbon in forests	**0**	**0** • Will maintain current ETS incentives (prospective regulations encourage forest management practices that result in more carbon storage, as after registration all carbon storage changes are required to be reported).
Allocates obligations and entitlements to support alignment with climate change targets	**0**	**0** • Having the carbon storage change methodology in the forestry regulations under the CCRA apply prospectively ensures the Government can alter NZU allocations in response to nationwide changes in forest management in a timely manner (compared to altering allocations through primary legislation). • The Crown bears some downside fiscal risk by applying the regulations prospectively. This is because it could allocate NZUs based on an overstated national average, but equally it could under-allocate NZUs. The long-term average carbon stock ages could be set slightly conservatively if needed.
Improves ease of compliance for participants	**0**	**+** • Applying the regulations prospectively avoids participants having to meet an unexpected surrender obligation. • Reinforces averaging accounting opportunity to reduce the burden for participants once their forest reaches its long-term average carbon stock (if regulations applied retrospectively the likelihood of participants still having to report after their forest reaches its long-term average carbon stock would be high).
Administrative efficiency and effectiveness for regulators	**0**	**0** • Having the carbon storage calculation rules in regulations enables Te Uru Rākau to update them fairly quickly when nationwide changes to carbon storage occur, at relatively low cost/effort to the Government. • Prospective application of carbon storage rules set in regulations also means Te Uru Rākau does not need to re-open and reassess emissions returns based on changes to forest management practices that could not have been predicted. • Being responsive and being able to give participants predictable NZU payments minimises effort needed to deal with participant complaints and confusion.
Provides durable regulatory certainty and predictability	**0**	**0** • Prospective regulations maintain market confidence and certainty about likely NZU obligation and entitlements.
Overall assessment	MPI recommends implementing G.1. - that the forestry carbon storage calculations continue to be applied prospectively through the CCRA regulations under averaging accounting. It will maintain market confidence and participant certainty about NZU obligation or entitlements, and enable participants to enjoy less ongoing reporting requirements under averaging accounting. It is also the most administratively effective and efficient solution.	

H REPORTING REQUIREMENTS

293 This section outlines the current reporting requirements that can remain and the features that MPI recommends are altered under averaging accounting. Other options were considered but discarded as they could cause fiscal risk to the Crown, reduce regulatory certainty and increase reporting requirements. Those options are contained in Appendix 3.

Current reporting requirements

294 Post-1989 forestry participants are currently required to report carbon storage changes following every five-year mandatory emissions return period (MERP). The reporting requirements for each MER are based on the CCRA forestry regulations (as detailed earlier in sections F and G).

295 However, the need for detailed reporting of carbon storage changes (i.e. associated with forest harvesting) diminishes under averaging accounting once a forest reaches its long-term average carbon storage amount. That is because participants will not be eligible to receive NZUs for normal forest growth after this point.

Option H.1. Retain requirement to report each MER, less detailed reporting after forest reaches its long-term average carbon stock

296 Participants using averaging accounting would continue to be required to report each MER to determine their NZU entitlement and surrender obligations. They would continue to be required to use the carbon storage change calculation methods in the CCRA forestry regulations to determine the number of NZUs they can receive or must surrender over each MERP.

297 However, the requirement to undertake detailed reporting every five years would only apply to participants with forests (CAAs) below their long-term average carbon storage amount (at the start of a MERP). After this point participants would only be required to report in detail about the carbon in their CAAs when a significant change to their forest occurs. A significant change would be defined as one that alters a forest's long-term average carbon storage amount. This could be triggered by a change in the forest type (i.e. replanting with a different species), or potentially a change in the harvest age (refer section I). Detailed reporting would also still be required upon deforestation. This reporting would occur at the end of each MERP. If no significant change has occurred, a participant would only be required to confirm continued similar forest management at the end of each MERP.

298 The detail of exactly what information a participant is required to provide Te Uru Rākau in each MER will be decided through the regulatory setting process after averaging accounting has been introduced. This will be highly dependent on the decisions taken regarding the ETS forestry IT system replacement.

Stakeholder views

299 Most submissions (60 out of 73) supported continuation of existing mandatory measurement and reporting each MERP. Three submissions favoured a simplified reporting approach based on only reporting on average age, deforestation, and confirming continued management practise as they thought this struck a better balance of ongoing compliance and reporting costs.

Impact analysis table H: reporting requirements

Variations from status quo:++ much better + better than 0 about the same - worse than - - much worse

Criteria	Status Quo: Regulations change yield tables	H.1. Retain requirement to report each MER, less detailed reporting after forest reaches its long-term average carbon stock
Increases incentives to store carbon in forests	**0**	**0** • Will not directly impact afforestation and continues to discourage deforestation. • Unlikely to significantly alter forest management decisions, as participants need to undertake detailed reporting every 5 years until their forests reach long-term average carbon stock age and after this for major carbon storage changes.
Allocates obligations and entitlements to support alignment with climate change targets	**0**	**0** • No major change in risk to the Crown compared to the status quo, as only allocate NZUs for forest growth and still require major changes to the long-term average carbon stock age to be reported. • Marginally increased risk to the Crown as participants will be able to change behaviour within thresholds without triggering an obligation/NZU payment.
Improves ease of compliance for participants	**0**	**+** (subject to regulations and IT system decisions) • Places some degree of ongoing reporting burden on participants in perpetuity, but less than the status quo. The burden for participants could reduce once their forest reaches its long-term average carbon stock if they maintain fairly similar forest management practices over the life of the forest. • Less frequent detailed reporting requirements could increase the likelihood participants submit incorrect returns.[79]
Secondary criteria		
Administrative efficiency and effectiveness for regulators	**0**	**0** (subject to regulations and IT system re-build decisions) • Places some degree of ongoing monitoring and processing burden on Te Uru Rākau in perpetuity. But this burden would reduce once participants' forests reach their long-term average carbon storage amount (if they maintain fairly similar forest management practices over the rest of the life of the forest). • Reporting less often could result in more effort for Te Uru Rākau compared to the status quo from compliance actions for participants with incorrect returns, unless current reporting and compliance processes are improved.
Consistent with wider climate change and wellbeing programmes	**0**	**0** • Reporting ownership changes in a timely manner can be difficult for some participants with registered Māori land, as there can be frequent changes to trust structure. Te Puni Kōkiri is leading a current project to improve Māori land ownership rules.
Overall assessment	MPI recommends implementing option H.1., as it reduces the ongoing reporting burden for ETS forestry participants while maintaining ETS forestry incentives and minimising fiscal risk. MPI recommends care is taken to ensure the ETS forestry package regulations and IT system rebuild support the intent of this high level decision.	

[79] For the reporting process to be effective, current low compliance with reporting changes in forest ownership would need to be addressed. In 2018, 74% of MERs (for MERP 2) were submitted on time and without any significant errors.

I CONVERTING A FOREST'S LONG-TERM AVERAGE CARBON STOCK INTO A FOREST AVERAGE AGE

300 This section sets out options for determining when participants' forests reach their long-term average carbon stock under averaging accounting, which would determine how long they can receive NZUs for.

A forest's long-term average carbon stock will be determined by forest age

301 Unlike the carbon stock change method, participants will only be allocated NZUs until their forests reach their long-term average carbon storage amount under averaging accounting.[80]

302 This means Te Uru Rākau will need to determine when forests reach this amount. The most practical way to record and report this is by working out the age at which forests of differing types normally reach this point.

303 Participants already track their forests' age for carbon measurement (and forest management) purposes. The international accounting approach New Zealand will use from 2021 which uses averaging accounting is also based on age. This is because age is a very close proxy for carbon storage amount.

304 Other options, such as using forest carbon stock as a basis for when a forest reaches its long-term average carbon stock amount, were considered. But as Appendix 3 shows, they were discarded as they were judged too difficult for participants and regulators alike.

Determining when participants' forests reach their forest average age

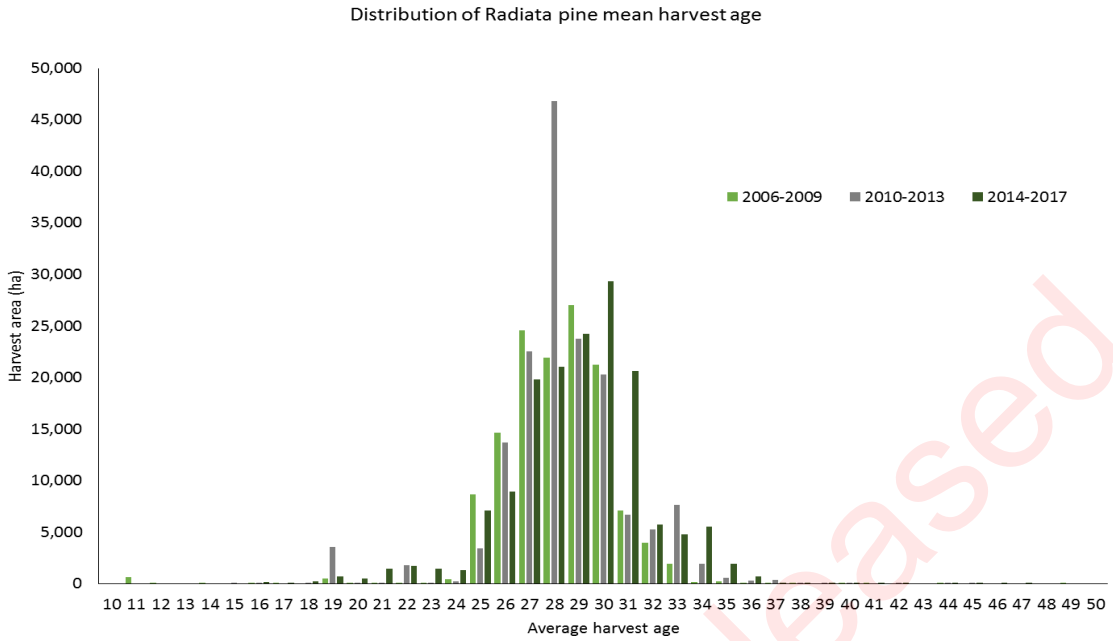
305 Options for determining when participants' forests reach their average carbon stock age under averaging accounting are detailed below. They all rely on harvest age as a determinant for when a forest reaches its average age. This is because most forest species[81] that are likely to be registered have a fairly typical range of ages when harvesting occurs (e.g. for radiata pine between 25-34 years) that can be described as normal rotation lengths. This tends to be driven by commercial drivers to supply timber (i.e. of certain sizes and quality). More information on typical harvest ages and is contained in Appendix 6.

306 Other options considered that were discarded are detailed in Appendix 3.

[80] Note this treatment refers to new forests and existing forests after they have moved to averaging. Section C of this RIA refers to NZU allocations and surrenders for existing forests during the transition to averaging.

[81] With the exception of indigenous forest and a large variety for exotic hardwoods (poplars, short rotation eucalyptus (pulp log regime) and longer rotation eucalyptus (saw log regime).

Figure 13: Distribution of radiata pine mean harvest age



Option I.1. Forest average age for each forest type determined by assumed harvest age

307 A forest's long-term average carbon storage age (hereafter the forest's "average age") could be determined by default forest ages set in the CCRA forestry regulations.

308 This would be based on ages at which forests of different types (i.e. the five current forest types) are typically harvested and typical timings for replanting.

The harvest ages and replanting timings could be generated from national averages for each forest type.

309 Under this option, participants will be eligible to earn NZUs for forest growth up to default forest type average ages.

Option I.2. Forest average age bands determined by normal harvest ages for forest types (preferred)

310 The average age of forests using averaging accounting would be determined by age bands set in the CCRA forestry regulations. Participants using averaging accounting will be eligible to earn NZUs for carbon stock increases from forest growth up until their forest reaches the average age for that forest type.

311 Much like option I.1., participants will be required to use average ages, as defined in regulations, which would be based on data on normal harvesting ages for forest types. However, rather than having only one set age for each forest type, a band of normal harvesting ages will apply to each forest type.

312 Participants would be able to earn or required to surrender NZUs to account for any change which would mean their forest's harvest age no longer falls within its default forest type age bands.

313 NZU entitlement and obligation changes as a result of a forest having a longer or shorter harvest rotation than the default age band would be based on information provided in an emissions return (i.e. proof of harvest/lack of harvest provided).

314 MPI previously considered (and consulted on) an option whereby participants could receive NZU entitlements and obligations based on their intended harvest age (and have a square-up once they harvested). While this would mean participants do not have to wait until harvest to receive further NZUs for a longer than normal harvest age, this option has been discarded as it would increase fiscal risk to the Crown (as participants could overstate the length of their rotation to earn more NZUs that they can trade, some participants would wish to do this even if they need to be repaid at harvest).

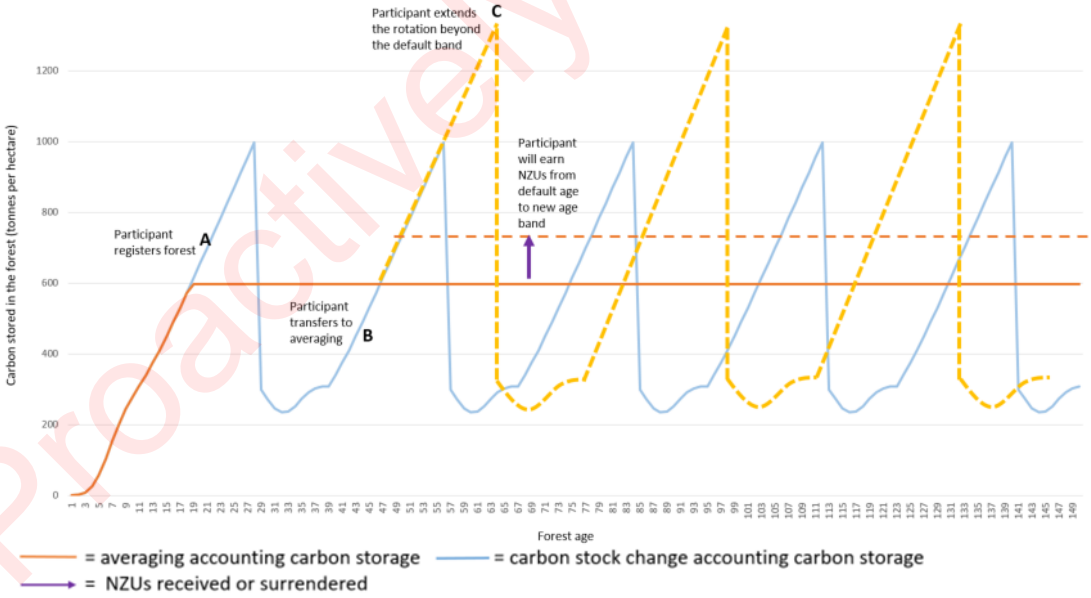
Option I.2. examples

Participants with forests not harvested and are above its default age band

315 If a forest has not been harvested, and it is older than the range of harvest ages in its default forest type age band, a new average age band will be applied to determine their additional longer rotation NZU entitlement. This means the participant can earn NZUs for the extra carbon stored between the default average age and the new forest specific average age.

316 Figure 14 below demonstrates this ability to earn additional NZUs from choosing to have a longer than commercially normal rotation length.

Figure 14: Extra NZU allocation for participants that harvest forest at older age than the norm



Note 1:This graph is for illustrative purposes only, and does not use data on actual carbon storage from a forest in the ETS
Note 2: In this diagram the participant registers their forest in the ETS at point A. They earn NZUs on the carbon stock change approach until point B. At point B, the participant decides to transition their forest to averaging accounting. As they registered the forest when it was above the default average age, they are not entitled to any NZUs upon transition to averaging accounting. But they can still earn NZUs for having a longer than normal rotation length (as proven at point C).

Participants with forests harvested below its default age band

317 If a participant harvests their forest at a younger age than the range contained in its default forest type age band, a new (lower) average age will be applied. The participant will be liable to surrender NZUs for the carbon they did not store by harvesting earlier than expected.

318 In cases where a participant harvests much earlier than expected for their forest's type, the size of this rotation band liability could be substantial. However, NZU liabilities would continue to be capped at the number of units allocated[82]. This amount is very unlikely to be more than half of the NZUs provided to a participant.

Impact analysis

Criteria: Increases incentives to store carbon in forests

319 Neither option has a direct impact on afforestation or deforestation incentives.

320 Option I.1. does not provide incentives to increase carbon storage through rotation length or penalise early harvest (compared to normal harvesting practices for each forest type). However, there is a possibility that the simplicity of this approach may encourage ETS participation, particularly of owners of smaller areas of forest.

321 Option I.2. provides an incentive to store additional carbon through extending rotation length (and disincentivises shortening rotation length). This incentive increases with the carbon price (significantly, if it were to reach $50), and is balanced out by other incentives participants face (such as harvesting to receive revenue from timber).[83]

322 Overall, the proportion of participants in the ETS who choose to have longer rotations could be lower under option I.2. compared to the status quo. However, this varies greatly depending on management and site productivity, and when the forest was planted and registered.[84] This option preserves the balance between the economic return from harvesting versus carbon returns from extending harvesting age.

323 Compared to the status quo, option I.2. provides a more direct and unencumbered incentive to extend rotation length to store carbon for both small forest land owners and those with forest land portfolios. That is because averaging accounting will allow participants to sell NZUs received for extending rotation length without risk of having to repay them at harvest. However, they would need to repay a portion of these NZUs if their forest has a shorter rotation in the future.

Criteria: Allocates obligations and entitlements to support alignment with climate change targets

324 The risk of over allocation increases under option I.1. compared to the status quo or option I.2. Under option I.1., forest entitlement would be based on typical harvest ages by forest type, not actual harvest ages. The risk to the Crown is if a significant portion of the registered forest is harvested earlier than anticipated; then, overall, more units would be allocated.

82 Section 190 of the CCRA refers

83 Although at high carbon prices owners of registered forest are likely to choose not to harvest their forests as the carbon revenue may exceed the timber revenue. This may raise some log security of supply concerns for wood processers.

84 Lower site productivity can make it more attractive to have a longer rotation length.

325 This risk is difficult to quantify, as participants can change forest management practices for many reasons. For instance, higher log prices could mean shorter rotations and harvesting earlier than first intended. However, over the last decade, even with log prices moving up and down, there has not been any significant shift in average harvest ages in New Zealand.

326 Under option I.2., participants would only earn additional NZUs from prolonging growth after forests reach the age band threshold, reducing the risk of over allocation of NZUs. This is similar to the allocation method New Zealand will use to measure growth towards climate change targets from 2021, where only actual and measured increases in carbon are credited.

Criteria: Improves ease of compliance for participants

327 Both options capitalise on the opportunity averaging accounting offers to reduce ongoing reporting obligations. For both options, lighter reporting of carbon stock changes will be required every five years after a forest reaches its average age.

328 Under option I.1., no reporting would be required unless a participant deforests. This would be a significant reduction in ongoing costs (returns are around $400 per return every five years over the life of the registered forest). This will also reduce the need for participants to surrender NZUs after forests reach their average ages.

329 Under option I.2. the reporting required every 5 years will be lighter than the status quo if no significant carbon storage changes occur. This may reduce time and effort for participants to complete emissions returns (or consultant costs for returns).

330 Option I.2. will still require participants to undertake detailed reporting for significant carbon storage changes to their forests (i.e. large changes to harvest age and changes to forest type). The level of cost and difficulty of undertaking these detailed returns will depend on decisions about the IT rebuild and regulations which support the age band proposal. For instance, under a likely "input" based model of reporting, participants would not have to undertake carbon calculations so it could be easier to comply with reporting requirements (and reduce the likelihood of attracting non-compliance penalties), but it may cost more per return than the current approach (as participants would need to provide more detailed inputs to enable Te Uru Rākau to undertake the calculations for them).

331 Any additional extra effort from changes to reporting requirements as part of the IT rebuild, however, can be limited and still remain lower than the status quo. This is because the Government would have the ability to change the size of the default harvest age bands in regulations to ensure they appropriately balance incentives to increase carbon storage against compliance effort.

Criteria: Administrative efficiency and effectiveness for regulators

332 For both options MPI could readily use existing data sources or source data on normal harvest ages for most different forest types. Obtaining information on indigenous forests may prove difficult, and exotic hardwoods may also need to be split into multiple harvest regimes. There will also be a need to consider how to treat permanent forest regimes that have not been entered into the ETS permanent forest category.

333 Under option I.1., requiring no emission returns to be submitted once participants' forests reach their average age until deforestation results in administrative savings for Te Uru Rākau (of around $1,000 per MER not submitted) compared to the status quo.

334 Option I.1. will also require reduced monitoring and compliance effort for Te Uru Rākau than option I.2. This is because there would be no need to ensure participants correctly declare their harvest age.

335 Option I.2. would cost more to administer than option I.1., as Te Uru Rākau will need to process returns after forests reach their average age if there is a significant change to their average age (such as harvesting at an older age than normal). Te Uru Rākau will also need to set up sufficient monitoring and compliance systems to ensure participants have submitted correct details about when they have harvested their forests in their returns. This is a current area of known non-compliance, which would need to be addressed if option I.2. is implemented.

336 At this stage it is unclear whether averaging accounting with age bands will reduce or increase administrative cost for Te Uru Rākau compared to the status quo. This is because it is highly dependent on the decisions taken around the ETS forestry IT system rebuild and detailed design regulations to support averaging accounting. For instance, it will depend on the level of detail participants will be required to report in emissions returns once a forest reaches its average age.

Criteria: Consistent with wider climate change and wellbeing priorities

337 Because reducing rotation length will require participants to surrender NZUs, Option I.2. creates a potential lock in impact. A worst case scenario would be if someone inherits or buys forest land thinking it could be converted to a different use or shortly result in harvest returns, only to realise it must be retained on a rotation length which is longer than required for timber revenue reasons to prevent incurring an NZU liability. Correct notification of transmissions of interest (ownership changes) is a current area of significant non-compliance in the ETS for forestry.

338 Option I.1. creates environmental integrity and gaming concerns, as the length of the forest's rotation does not affect the amount of NZUs participants can receive. For example, eucalypt forests that have a "pulp" regime, with short rotations (<20 years), could be given the same average age and associated NZU allocation as a saw log regime, with long rotations (up to 40 years). This could significantly disincentivise saw log regimes. To avoid this issue, option I.1. could use different age bands for different hardwood forest regimes. However, this would not address gaming concerns within a hardwood forest regime. It could also cause participant confusion as it would necessitate having a large number of default forest ages.

Stakeholder views

339 Most submissions (51 out of 70) on the average age and carbon storage calculation supported the age band proposal. Those that favoured this option generally cited that it would increase the flexibility to earn NZUs and improve carbon storage. Submissions in favour came from a wide range of stakeholder groups, including the main forestry industry body, the Forest Owners Association.

Impact analysis Table I: Converting a forest's long-term average carbon stock into a forest average age

Variations from status quo: ++ much better + better than 0 about the same - worse than - - much worse

Criteria	SQ- stock change accounting, NZU entitlements based on carbon storage	I.1.: Forest average age for each forest type determined by assumed harvest age	I.2.: Forest average age bands determined by normal harvest ages for forest types (preferred)
Increases incentives to store carbon in forests	**0**	**-** • Does not provide a direct incentive to increase carbon storage through forest rotation length or penalise early harvest of forest (compared to normal harvesting practices). • Continues to discourage deforestation. • As it is a simple approach it may encourage ETS participation, particularly by forest owners with smaller areas of forest.	**+** • Provides an incentive for participants to store additional carbon through extending the rotation length of their forests (at today's carbon price by around 2-3 years).[85] • Provides disincentive to shorten rotation length. • Rotation length will depend on many factors, including carbon price, log returns, and site productivity.[86] • Provides a more direct incentive to extend rotation length than the status quo because averaging accounting allows participants to sell the NZUs they receive for extending rotation length without risk of having to repay them at harvest.
Allocates obligations and entitlements to support alignment with climate change targets	**0**	**-** • Higher fiscal risk for the Crown as more NZUs could be given to forest owners based on an assumed harvest age than is actually realised through forest carbon storage. The Crown's fiscal risk could be managed under this option through the use of conservative harvest ages. • Fiscal risk/benefit is difficult to quantify as changes to rotation length occur for other commercial reasons (i.e. driven by practices to increase returns from timber). • Using age rather than carbon stock to measure forests' long-term average carbon stock is slightly less accurate, but aligns with New Zealand's contribution to climate change targets.	**+** • Participants would only earn additional credits from forest growth after they reach the age band threshold, which reduces the risk of over allocation. Therefore as per the status quo credits are only provided once the additional carbon is store or realised, therefore no risk to the Crown of over allocation. • Allocates units in a similar method to how New Zealand will measure growth towards climate change targets. • Allowing participants with existing forests to extend rotations could result in an additional 5.9 million tonnes CO2e towards our 2030 climate change target.

[85] Based on economic modelling and analysis completed by the University of Canterbury in 2019. Allowing participants with existing forests to extend rotations could result in an additional 5.9 million tonnes CO2e towards our 2030 climate change target.

[86] Also forest management objectives and when the forest was planted and registered in the ETS.

Improves ease of compliance for participants	**0**	**++** • No reporting required every 5 years after forest reaches its average age, which removes return costs of around $400 per return. • Will reduce the need to surrender NZUs to the Crown after their forests reach the average age.	**+** • Participants required to undertake lighter reporting than the status quo after their forest reaches its average age (if have similar forest management practices over the forest's life). • Detailed reporting still required for significant forest carbon storage changes (level of cost for both lighter and detailed reporting dependant on IT rebuild and regulations decisions). • Ability to change size of harvest age bands in regulations will help to ensure create appropriate level of compliance effort.
Secondary criteria			
Administrative efficiency and effectiveness for regulators	**0** $2.3 million per MERP – around $1,000 per MER	**++** • An administrative saving of around $1,000 per MER not submitted after forests reach their average age. • IT build cost has yet to be determined, but this option would be simpler and cheaper than option I.2.	**+** • Will require a similar amount of processing per MER as the status quo before forests reach their average age. • Ongoing - averaging accounting with age bands will reduce the amount of monitoring and returns processing required once forests reach their average age. But reporting details (and costs) depend on regulations and IT re-build decisions. • Would require more effort to administer compared to option I.1. as Te Uru Rākau need to process returns for significant changes after forests reach their average age and ensure there is sufficient compliance and monitoring of harvest ages.
Avoids Unintended consequences	**0**	**- -** • Creates environmental integrity and gaming concerns, as the length of the forest's rotation does not affect the amount of NZUs participants receive.	**-** • Potential flow-on impacts for the wood processing industry as wood supply may alter from forest owners choosing longer rotations (or choosing not to harvest) with carbon prices.[87]
Consistent with wider climate change programme and wellbeing priorities	**0**	**-** • Unclear impact on upcoming climate change targets. • Creates integrity and reputation concerns, as NZU allocations would not sufficiently reflect specific forest management decisions and practices.	**-** • Potential rotation length lock in to prevent NZU surrenders. • Compared with option I.1. and no age, may create additional non-compliance risks and compliance costs for Māori due to required reporting of ownership changes (Māori land trusts have frequent trustee changes).
Overall assessment	MPI recommends implementing option I.2. It provides an incentive to store additional carbon by extending rotation lengths (and disincentivises shortening rotation length), which will contribute to climate change targets and reduce risk to the Crown. While option I.2. would be simpler to administer, it would not bring about these benefits. Regulations will be required to determine age band settings and further data collection could be required.		

[87] The timber processing sector, which is currently geared to process smaller log sizes (i.e. from younger pine trees). But this should not impact direct supply of logs overseas.

4.2.4 TEMPORARY ADVERSE EVENTS PROPOSAL

J PROPOSAL TO REMOVE PARTICIPANTS' TEMPORARY ADVERSE EVENT LIABILITY

340 This section outlines a proposal that participants using averaging accounting are not required to surrender NZUs to account for emissions released from a temporary adverse event. All other options for removing the temporary adverse event emissions liability were discarded as they could undermine the replanting incentive for participants, create fiscal risk for the Crown, or environmental integrity concerns. See Appendix 3 for more detail on the discarded options.

Option J.1. Participants are not liable for carbon loss from a temporary adverse event that damages their forest using averaging accounting, and can continue to earn NZUs once the forest regains the same carbon storage as immediately before the event (preferred)

341 This option would remove the temporary adverse event liability for post-1989 forests accounted for using averaging accounting. It would apply to new forests and existing forests that move to averaging accounting.

342 Participants would not be required to surrender NZUs for carbon lost as a result of an adverse event that impacted forest accounted for using averaging. Their ability to earn NZUs would be paused for the forest area affected by the event. They could earn NZUs for forest growth again once the affected forest area had accumulated the same amount of carbon it had just before the event occurred. This would require participants to create a new "adverse event" subarea in their CAA and report to Te Uru Rākau about the event and when the affected forest area is fully re-established. Exactly what they would need to report could be determined during the averaging accounting regulations setting process.

343 Participants with forests accounted for using the stock change method would continue to be required to repay/surrender NZUs for forest carbon loss from a temporary adverse event.

344 "Temporary adverse event" would be defined in the CCRA, with the ability to further refine the definition in regulation. The liability associated with temporary adverse events would only be removed if the forest could be re-established to the carbon storage it was just before the temporary adverse event. This would mean forests subject to events such as fires and wind-throw are likely to have their liability removed/could qualify, whereas those subject to events that usually result in permanent damage would not have their liability removed.[88]

345 The legislation would need to appropriately link to the general reporting requirements and regulations about carbon storage changes. For instance, participants would not be required to report very small losses of carbon (and very small areas of clearing) associated with temporary adverse events, for which the reduction in liability from doing so outweighs the cost of reporting.

[88] There are already provisions in the CCRA that can remove this liability (and other emergency measures to assist participants) when there are large scale catastrophic events.

346 The deforestation rules in the CCRA that require participants to surrender NZUs earned if a forest is not re-established within set times (i.e. 4 years) will still apply.

Option J.2. Participants are not liable for forest carbon loss from a temporary adverse event that damages their forest (regardless of if it uses stock change of averaging accounting)

347 This option would extend option J.1. to apply to all post-1989 participants. The pause and re-earn design would apply to both participants with forests accounted for using averaging that are below their long-term average carbon storage age, and participants with forests accounted for using the stock change method.

Impact analysis

Criteria: Increases incentives to store carbon in forests

348 Because the financial risk of registering forests would be further lowered, options J.1. and J.2. support the averaging accounting proposals to encourage ETS participation and afforestation. It removes the need to plan (by taking out insurance, for example) or pay for a significant temporary carbon loss event liability.

349 The pause and design under both proposals would also incentivise participants to quickly re-establish the lost forest carbon stock (so they can again earn NZUs).

Criteria: Allocates obligations and entitlements to support alignment with climate change targets

350 Under both options, the removal of the emissions liability would align fairly closely with international rules. That is because both the international and ETS averaging accounting temporary adverse events would have a small impact on recorded emissions at the point when they occurred. Similarly, the pause and re-earn design reflects the much larger impact for international accounting of the total forest carbon stored over its life (it would be much lower if the forest is not re-established).

351 The options would create a small increase to potential Crown risk. That is because a temporary adverse event would be internationally recorded as a minor temporary decrease in forestry's contribution to international climate change targets, but there would be no associated reduction in NZU allocations.

352 The international climate change accounting rules record the average amount of carbon stored in New Zealand's forests over their lives, taking into account all the times emissions were released from forests and periods when forests are growing (i.e. over 5 rotations).

353 MPI considers it may not be appropriate to remove the temporary adverse event liability for participants using stock change accounting. It would provide them with a benefit that results in a small increase to Crown risk, when they already create an ongoing fiscal risk to the Crown. It would also be inconsistent with the stock change approach for rotational forests, which records all temporary changes in carbon storage.

354 In contrast, providing relief from temporary adverse event liabilities for participants with forests using averaging accounting (or using the new permanent forest category in the ETS as per a Cabinet decision made in December 2018) would provide support for a change in carbon storage that they are unlikely to have planned for. Those forests also are much more likely to reduce the Crown's fiscal risk.

Criteria: Improves ease of compliance for participants

355 It removes the need for participants to surrender NZUs to the Crown at an unexpected time. This is expected to be particularly unexpected for participants using averaging accounting, as they are not in a cycle of planning to repay NZUs each harvest.

356 Participants using averaging or the stock change accounting would need to undertake a similar level of administrative effort to remove their temporary adverse event liability.

357 Post-1989 participants subject to a temporary adverse event would be required to notify Te Uru Rākau of the time of the event, the cause, the carbon storage loss amount and size of the affected areas, time of replanting (if any), and size and carbon storage of the forest area once re-established to at least the same carbon storage as just before the adverse event.

358 These activities would require substantial participant effort, and would cost in the low thousands of dollars per temporary adverse event return. However, participants would not be required to undertake these reporting obligations for areas where costs to apply outweighs the NZUs foregone. It also removes the need to surrender NZUs at an unexpected time.

Criteria: Administrative efficiency and effectiveness for regulators

359 Under both options, the cost to process each temporary adverse event application could differ depending on the forest area affected. For instance, a loss of forest within a CAA may only require reference to geospatial data, whereas loss of forest across several CAA would require staff to undertake complex calculations to reconfigure registered forest areas. Te Uru Rākau would also need to monitor the affected site, and ensure acceptable proof is provided of the event and forest regeneration. It is unlikely that it would be appropriate to cost-recover these applications (as large scale adverse events currently covered under section 60 of the CCRA are not cost-recovered). However, we do not expect many temporary adverse event applications, and there will be a minimum threshold.

360 There would be a cost to set up the IT systems to support this proposal. This is expected to be fairly low as it could be considered as part of the upcoming ETS forestry IT systems rebuild. Systems for removing liabilities for large scale adverse events would need to be included in that rebuild in any case.

361 Option J.2. would be slightly more costly compared to option J.1. because more land would be eligible for the temporary adverse event liability exemption.

Stakeholder views

362 The large majority of submitters on A Better ETS for Forestry (70 out of 87) supported option J.1. Submitters supporting the proposal believed that it would increase ETS participation and afforestation.

363 Some submitters supported option J.2. (not included in the consultation document). Some also thought further detail was needed on what classified as an adverse event, and the level of monitoring and reporting of the event that would be required. A small proportion of submitters opposed the proposal, stating that NZU repayment does not form a large part of insurance cost.

Impact analysis table J: Proposal to remove participants' temporary adverse event liability

Variations from status quo:++ much better + better than 0 about the same - worse than - - much worse

Primary Criteria	SQ- stock change accounting, NZU entitlements based on carbon storage	I.1: Participants are not liable for carbon loss from a temporary adverse event that damages their forest using averaging accounting, and can continue to earn NZUs once the forest regains the same carbon storage as immediately before the event (preferred)	I.2: Participants are not liable for forest carbon loss from a temporary adverse event that damages their forest (regardless of whether it uses stock change or averaging accounting)
Increases incentives to store carbon in forests	**0**	**++** • Could encourage ETS participation and afforestation as would lower the financial risk of registering forests. • The pause and re-earn design would incentivise participants to quickly re-establish the lost forest carbon stock (so the participant can begin re-earning NZUs).	**+** • Reduces the financial risk of entering the ETS and encourages quick re-establishment as per option J.1. • The quick re-establishment incentive would be weaker for stock change participants (as the difference between their deforestation and harvest liabilities would be small).
Allocates obligations and entitlements to support alignment with climate change targets	**0**	**+** • Would align NZU payments fairly closely with the international climate change accounting rules. • The pause and re-earn NZU design reflects the much larger impact for international accounting of not re-establishing the forest. • Small increase to potential Crown risk.	**-** • Similar impacts for the Crown as under option J.1. • Would be inconsistent with the stock change accounting methodology. • Would provide an additional benefit to participants that results in a small increase to Crown risk.
Improves ease of compliance for participants	**0**	**+** • Removes the need for participants to surrender NZUs for an event that they may not have planned for. • Would cost participants per temporary adverse event return. • Participants are not required to undertake reporting obligations for forest areas where the cost to apply would outweigh the NZUs foregone.	**-/0** • Participants would have similar costs as per option J.1. • Removes the need for participants to surrender NZUs to the Crown at an unexpected time, but they could be more prepared to surrender NZUs to the Crown.
Secondary criteria			
Administrative efficiency and effectiveness for regulators	**0**	**-** • Would add ongoing administrative effort for Te Uru Rākau to process temporary adverse event applications. • Cost per application would differ depending on the forest area affected. Would require monitoring and verification, and could include a site visit. • The cost to set up the IT systems to support this change is likely to be low.	**- -** • Similar costs and reasons for costs as per option J.1. • Would be more costly compared to option J.1. because more land would be eligible for the temporary adverse event liability exemption.
Overall assessment	MPI prefers option J.1. It could encourage ETS participation, afforestation and quick forest re-establishment. It would only result in a small increase to Crown risk for participants using averaging accounting (who unlike stock change participants reduce ongoing risk to the Crown). The administrative and participant effort impacts are likely to be manageable.		

4.2.5 ETS DEFORESTATION RULE IMPROVEMENTS

364 This section outlines a number of proposals to improve the deforestation rules. This includes a proposal to enable offsetting and exemptions for post-1989 forest land. There is also a proposal to address the issue identified in section A, whereby the deforestation incentive increases under averaging accounting.

K SHOULD POST-1989 FOREST OWNERS BE ABLE TO OFFSET THEIR DEFORESTATION LIABILITY BY PLANTING A FOREST ELSEWHERE?

365 This section puts forward a proposal to extend the current pre-1990 forest land option to offset deforestation emissions by establishing a carbon equivalent forest in another location to post-1989 forest land.

Option K.1. ETS forestry participants can offset their averaging accounting forest deforestation liability by planting a carbon equivalent forest in another location (preferred)

366 Participants would be eligible to remove their deforestation liabilities for their existing post-1989 forests using averaging accounting if they establish a new forest that stores at least the same amount of carbon and forest area elsewhere.

367 Most of the post-1989 forest offsetting rules would be similar to the current pre-1990 offsetting rules, including the period for establishing the offset forest.[89] The changes to improve the offset planting rules for pre-1990 forests (agreed to by Cabinet in December 2018 and March 2019) would also apply to post-1989 registered forests. However, some changes may need to be made in regulations that are specific to post-1989 offsetting. Different processes may be required to determine carbon equivalence of the offset forest. This is because unlike pre-1990 offsetting, the post-1989 forest offsetting NZU liability may not be the same as the carbon storage emitted upon deforestation (as section 190 of the CCRA caps this liability at NZUs earned).

368 Participants would not be eligible to offset forests that were below their long-term carbon storage age. They could, however, still earn additional units for carbon stock increases that occur in the offset forest, which if applied to the original forest would have altered its long-term carbon storage age (such as extending rotation age, or switching to permanent forest).

369 Offsetting will not apply to deforested permanent, indigenous (non-plantation) or regenerating exotic post-1989 forests.[90] But newly-established offset forest can be indigenous or regenerating exotic forest.

370 Post-1989 forest offsetting will apply from the date participants can use averaging accounting, this will ensure the rules work appropriately and prevent having to change the rules after averaging accounting is introduced.

[89] Climate Change Response Act 2002 s.186A

[90] But the offset forest being established can be indigenous or regen exotic. and could become permanent forest.

Option K.2. Participants can offset their deforestation liability, regardless of which accounting approach is used for their forest

371 The offsetting rules for option K.1. would also apply under this option. In addition, all participants would be eligible to offset post-1989 plantation forests' deforestation liabilities by establishing a carbon-equivalent and area-equivalent forest in another location.

372 Participants using stock change accounting would not be required to transition existing forests to averaging accounting prior to offsetting. They would be able to offset the difference between their harvest liability and their deforestation liability.[91]

373 Once a participant's forest that used carbon stock change accounting was offset, they could continue to earn and repay NZUs for their offset forest using the carbon stock change method. However, the unit balance of the post-1989 forest immediately prior to deforestation would be transferred to the new offset forest.

374 Participants that offset forests using averaging accounting would have the treatment described in option K.1.

Impact analysis

Criteria: Increases incentives to store carbon in forests

Offsetting could increase ETS participation and afforestation

375 Offsetting could reduce the financial risk of entering new forests into the ETS, which could increase ETS participation and afforestation

376 It also creates a financial incentive for participants to retain the same forest cover across New Zealand when moving their production forest land into a different land use (i.e. turning it into farm land).

377 In many cases it could be more economically efficient for participants to offset their forestry emissions rather than pay deforestation liabilities.

Offsetting makes economic sense for forests using averaging accounting

378 It could make economic sense for participants to establish an offset forest if the cost of paying their deforestation liability (which includes losing the ability to make revenue from trading NZUs surrendered) was higher than the cost of purchasing forest land and the revenue gained from trading NZUs earned from newly-established forest (which would use averaging accounting).

379 This is likely to be the case for most participants using averaging accounting because they are able to retain a significant amount of NZUs that they can trade at low risk. Such participants are also more likely to have traded their NZUs prior to changing land use. Their deforestation liability is therefore likely to be an unplanned cost. As a result, many participants using averaging accounting may want to offset their deforestation liability.

[91] This is the amount that can be offset under international climate change accounting rules

380 This would not, however, be the case for participants with forests on the stock change approach. Such participants would have a deforestation liability that is fairly close to the liabilities they plan for each harvest. For instance, they are likely to have retained a large amount of NZUs received to cover their harvest liability, which could be used to cover most of their deforestation liability. They would also only be able retain a small amount of NZUs that could be traded without risk of having to surrender them at harvest. It is expected then that very few participants with existing forest would want to plant offset forests to cover their existing forest deforestation liabilities.

381 In addition, the potential area of existing forest which could be deforested is limited[92] and existing forest deforestation rates are projected to remain low.

382 An example of the relative trade-offs for participants with new and existing forests are demonstrated in the table below.

Table 4: Costs for a participant using post-1989 offsetting under averaging versus stock change accounting (and new forests use averaging accounting)

Consideration	Averaging	Stock change
Units earned (per hectare)	600	900
Units surrendered at harvest (per hectare)	0	600 - 700
Units surrendered at deforestation (per hectare)	600	900
Lower risk carbon (per hectare)	600	200 - 300[93]
Cost of deforestation relative to harvest ($25)	$15,000	$7,500
Land establishment cost The forest owner will also need to consider land, establishment and harvesting costs for the offset forest.	The Afforestation Grant Scheme is based on an assumption of a forest land establishment cost of $1500 per hectare.	

Note 1: Figures are indicative only and represent a generalised production pine forest harvested at age 28 and replanted assuming similar management practices. Current and future carbon storage rates and management practices are assumed to be similar.

Uptake likely fairly moderate for participants with forests using averaging accounting

383 While it is likely to make economic sense for some participants using averaging accounting to use offsetting, uptake is still expected to be much lower than the 75 percent rate that occurred when this option was provided for pre-1990 forest. The high rate for owners of pre-1990 forests reflects that these participants are not eligible for NZUs for carbon stock increases, and they face a large deforestation liability (often larger than post-1989 registered forests as post 1990 liabilities are not capped at NZUs forest owners have received).

Uptake dependent on other factors

384 Moreover, the decision to undertake offset planting is also dependent on other factors such as the carbon price, log prices and higher returns from other activities such as permanent forest replanting.[94]

[92] Currently there is around 260,000 hectares of production pine forest registered in the ETS. Based on the findings of a 2018 University of Canterbury report commissioned by MPI, between 1.4 - 5 percent of this could be deforested at the point of clear fell, equating to between 3,640 and 13,000 hectares of currently registered ETS forest deforestation.

[93] The number of units which can be traded freely could also be lower than this level if the participant entered their forest into the ETS several years after it was established.

[94] Other trade-offs include the size and age structure of their forest estate; their unit balance at the time of deforestation; net present value (NPV) of forestry versus other land use options, forest versus land ownership; land lease expiry; the capital to replant, re-invest, attract new investors for a long term return; availability, purchase and establishment cost of offset land; transaction costs for those having to purchase or lease offset land; costs associated with re-establishment of roading and forest landing infrastructure on the offset land.

Criteria: Allocates obligations and entitlements to support alignment with climate change targets

Offsetting aligns with the international rules encouraging flexible land use

385 Offsetting aligns with the international climate change accounting rules that enable flexible land use (the FLU rule). Not providing NZUs for normal forest growth reflects the international rules which enable offsetting for pre-1990 forests and post-1989 forests that are similar to pre-1990 forests. Post-1989 forests that have reached their long-term average carbon stock are considered similar to pre-1990 forests (as their carbon storage for normal forest growth no longer contributes to climate change targets).

386 Post-1989 plantation forests below their long-term average carbon stock are also below the forest's normal harvesting age for commercial (timber revenue) reasons. This means there is little reason to consider deforestation and offsetting during this time.

387 The offsetting eligibility limitations would ensure the offset forest land is covered by corresponding international accounting rules that maintain the environmental integrity of the ETS. For instance, if an indigenous (non-plantation) or a regenerating forest was deforested, it could not easily be re-established in another location without causing environmental issues as such a reduction in biodiversity or an increase in erosion.

Offsetting for stock change forests extends period of ongoing accounting misalignment

388 While the international offsetting rules apply to all post-1989 forests from 2021, applying the rules to forests using stock change accounting would potentially extend the ongoing misalignment between using averaging internationally and stock change for NZU provision. This is because instead of phasing out use of stock change accounting (either through a mandatory or optional shift) it would enable participants to continue to use it on what is essentially a newly-established forest.

Offsetting would reduce risk to the Crown

389 Participants that choose to offset their forests would reduce the risk of New Zealand not reaching its climate change targets. This is recorded as a reduced fiscal cost – to the extent of the avoided deforestation emissions.

390 At the time the forest is offset it is also considered to reduce fiscal income to the Crown (as no NZUs would be surrendered upon deforestation). But the decrease in risk caused by avoiding deforestation emissions outweighs this cost as the size of the international deforestation liability is higher than the number of NZUs participants surrender upon deforestation (as participants' deforestation liability is capped at the NZUs they have received).

Criteria: Improves ease of compliance for participants

391 Under both options, participants would have to apply to Te Uru Rākau to offset their post-1989 forest land and provide details of their proposed offset planting. They would then need to report on establishment of new forest on the offset land, including when it was planted, and provide sufficient proof that equivalent carbon stock has been re-established on the offset land. The exact details of what participants will need to provide for post-1989 offsetting will be decided in the averaging accounting regulations and as part of the IT system rebuild late 2019.

392 This reporting is likely to cost in the low thousands of dollars. However, offsetting would be optional, so each participant can decide whether the cost would outweigh the benefit. This cost adds to the likelihood that participants using the stock change approach are unlikely to use offsetting if given the option.

Criteria: Administrative efficiency and effectiveness for regulators

393 Both options would increase administrative effort for Te Uru Rākau. Processing costs per application are likely to be high as geospatial and ownership checks and carbon equivalency equations are required. New processes for carbon equivalency and to determine NZU entitlements for forest management changes on the offset forest will also need to be set up. However, overall costs are likely to be low, as we only expect a few people to take up this option per annum. In addition, most participants using averaging accounting are unlikely to consider taking up this option until their next harvest.

394 The marginal impact of setting up IT systems and processes to introduce this proposal may be reduced by the need to be set up pre-1990 forest land offsetting in the new IT system in any case. However, the cost of additional support required specifically for post-1989 forest offsetting is highly dependent on the IT system rebuild and ETS forestry package regulations decisions. For instance, it could be difficult to apply post-1989 offsetting rules to forests accounted for using the FMA (this is not an option for pre-1990 forests).

395 Option K.2. would only very marginally increase administrative effort compared to option K.1. as it could result in more people taking up the proposal.

Criteria: Provides durable regulatory certainty and predictability

396 There is also some uncertainty about whether New Zealand will be able to apply this rule beyond 2030. New Zealand will put forward a new international climate change target and supporting emissions mitigation approach (Nationally Determined Contribution) for the post-2031 period.

Criteria: Consistent with wider climate change and wellbeing priorities

397 Reduced deforestation emissions will assist New Zealand to meet its climate change targets.

398 Offsetting could also increase land use flexibility, which will be important to ensure New Zealand is well prepared to transition to a low-emissions economy at low cost and in an inclusive manner.

399 Diversified land use and reduced barriers to optimised land use are important drivers of regional and Māori development.

400 Land use flexibility could assist people to make good environmental decisions for their land, which would assist the One Billion Trees principle of “planting the right tree, in the right place, for the right purpose”. For instance, if an area of soil on a patch of land without forest becomes vulnerable due to a natural disaster, under offset planting it may be more economically viable for a forest owner to shift their forest to the vulnerable land to prevent soil erosion (and improve water quality).

401 However, offset planting could create flow-on impacts for the New Zealand economy. It could increase demand for land suitable for forestry, which could increase land prices, and potentially increase competition for land with new planting.

Stakeholder views

402 Submitters to the A Better ETS for Forestry consultation were asked to comment on whether offsetting should be introduced for post-1989 land using averaging accounting. The majority of respondents (63 out of 77 submitters) supported option K.1. They stated that this would increase land use flexibility, encourage land to be used for its best purpose, and would help incentivise planting the “right tree, in the right place, for the right purpose’’.

403 11 submitters also suggested that offsetting should be made available to post-1989 forests using the carbon stock change approach.

Impact analysis table K: Should post-1989 forest owners be able to offset their deforestation liability by planting a forest elsewhere?

Variations from status quo: ++ much better + better than 0 about the same - worse than - - much worse

Criteria	SQ- stock change accounting, NZU entitlements based on carbon storage	Option K.1.: Participants can offset their averaging accounting forest deforestation liability by establishing a carbon equivalent forest in another location (preferred)	Option K.2.: Participants can offset their deforestation liability, regardless of which accounting approach is used for their forest
Increases incentives to store carbon in forests	**0**	**+** • Could reduce the financial risk of entering new forests into the ETS, which could increase ETS participation and afforestation. • Offsetting makes it financially attractive for participants using averaging accounting to retain the same amount of forest cover across New Zealand.	**+/0** • For participants using averaging accounting it has the same benefits as option K.1. • It would not be financially attractive to use offsetting for existing forests on the stock change accounting approach (unless there is a significant increase to the carbon price).
Allocates obligations and entitlements to support alignment with climate change targets	**0**	**+** • It would align with the international rules that determine New Zealand's carbon contribution to international climate change targets. • The eligibility limitations would ensure the offset forest land is covered by corresponding international accounting rules that maintain the environmental integrity of the ETS. • Would reduce risk to the Crown of reduced contribution to international climate change targets.	**+/-** • Similar impacts for the Crown as under option K.1. • Applying offsetting to forests using the stock change approach would extend the time when the ETS accounting approach misaligns with the international approach used to determine NZ's contribution to international climate change targets and stock change for NZU provision.
Improves ease of compliance for participants	**0**	**-/0** • Participants would have to undertake detailed reporting for Te Uru Rākau that will likely cost in the low thousands per return. • Offsetting would be optional so each participant can decide whether the reporting costs would outweigh the benefits	**-/0** • Stock change participants would have similar compliance requirements compared to option K.1. • The added costs of reporting add to the likelihood that participants using the stock change approach are unlikely to choose to use offsetting.

Secondary criteria			
Administrative efficiency and effectiveness for regulators	**0**	**-** • Would marginally increase administrative effort for Te Uru Rākau overall as few people would use this option per annum. • Likely to cost several thousand dollars per application (geospatial mapping could take up to two days and complex carbon equivalence calculations could be required). But this could be cost recovered. • Costs likely to mostly accrue in 30 years' time (as most participants using averaging accounting are unlikely to consider taking up this option until their next harvest). • Marginal cost of setting up IT systems could be reduced by the need to set up pre-1990 forest land offsetting processes in the new IT system in any case. However, will need to build bespoke systems for post-1989 carbon equivalence rules, and to provide an ability to earn units from forest management changes that occur in the offset forest.	**- -** • Very similar impacts as option K.1. • Marginally increased administrative effort as could result in more people taking up the proposal.
Provides durable regulatory certainty and predictability	**0**	**0/-** • Some uncertainty about whether New Zealand will be able to apply this rule beyond 2030.	**0/-** • Same uncertainty as in option K.1.
Consistent with New Zealand's broader climate change programme	**0**	**+** • Assists New Zealand to meet its climate change targets and transition to a low-emissions economy at low cost. • Will increase land use flexibility, which assists regional and Māori development; and gives flexibility to "plant the right tree, in the right place, for the right purpose". • Could increase demand for land and land prices.	**+** • Same impacts as Option K.1. for new forests. • Unlikely to have much flow-on effect in relation to existing forests (as unlikely to financially benefit from using offsetting).
Overall assessment	MPI recommends implementing option K.1. It would encourage ETS participation and afforestation and retaining forest cover when changing land use. It gives participants greater land use flexibility, which will assist New Zealand's transition to a low-emissions economy, and could encourage planting the "right tree, in the right place, for the right purpose". MPI considers the administrative and compliance effort impacts of offsetting are manageable given likely take-up. MPI does not recommend implementing option K.2. as it is unlikely to make economic sense to offset existing forests and would extend the period over which stock change forests cause misalignment with the international climate change rules.		

L PROPOSAL TO EXTEND PRE-1990 DEFORESTATION LIABILITY EXEMPTION TO POST-1989 FORESTS

404 This section outlines a proposal to extend the deforestation NZU liability exemption provision in section 60 of the CCRA to post-1989 forest land. The exemption applies when deforestation of the land is in the public interest and is outside the participant's control. No other options have been identified that would address this issue.

The CCRA has a general exemption provision (section 60)

405 Section 60 of the CCRA allows the Minister to recommend that the Governor-General grants exemptions from ETS liabilities for activities listed in Schedule 3 of the CCRA. These activities include deforesting pre-1990 forest land or pre-1990 offset forest land. The intent of this section is to exempt ETS participants from certain activities if circumstances arise that were not envisaged when the CCRA was drafted, or where a person becomes subject to an ETS liability due to circumstances outside their control.

406 Exemptions have been provided in justifiable cases for pre-1990 forest landowners in the interest of fairness because their deforestation liabilities can be very high. If pre-1990 forest land owners deforest, they must surrender units equal to the emissions from the total biomass in the forest at the age it was deforested. This can be a significant cost. For example, if 30-year old radiata pine is deforested in the Auckland region, the emissions would be 860 tonnes CO_2 per hectare and the cost would be $21,500 at the March 2019 unit price of $25.

407 Before recommending an exemption, the Minister must be satisfied that the exemption would not undermine the environmental integrity of the ETS, and that the benefits of the exemption exceed the deforestation emissions cost. The Minister must also have regard to the desirability of minimising any compliance or administrative costs associated with the ETS; the relative costs of giving the exemption or not giving it, and who bears the costs; any alternatives; and any other relevant matters.

408 Each case is considered on its merits, and to date three forestry exemptions have been made. One involves a case where pre-1990 forest landowners are exempted from having to surrender units for deforestation emissions if they clear trees from an archaeological site and are prevented from replanting it due to the terms of the consent to clear the site. In this example, the social benefit of protecting the archaeological site is considered to be greater than the Crown's cost of foregone revenue.

409 Section 60 does not cover deforestation of post-1989 forests. However, participants with these forests may also be affected by the same unanticipated issues as pre-1990 forests.

Option L.1. Participants are eligible for deforestation liability exemptions under section 60 of the CCRA (preferred)

410 The section 60 deforestation exemption could be extended to post-1989 forest land in the ETS.

411 The deforestation exemption will apply for the new categories of post-1989 forests in the ETS (averaging accounting, and permanent forests).

412 The same public benefit, environmental integrity, compliance and administrative considerations that apply to pre-1990 forests under the exemption would also apply to post-1989 forests.

Impact analysis

Criteria: Increases incentives to store carbon in forests

413 Allowing participants to be exempted from the cost of having to remove forest from their post-1989 forest land if unforeseen circumstances arise could increase the attractiveness of registering forests. This in turn could make establishing new forests more attractive.

Criteria: Allocates obligations and entitlements to support alignment with climate change targets

414 Assessing the cost to the Crown of extending the section 60 provisions to post-1989 is difficult. MPI cannot anticipate how frequently it would be used, or the quantity of NZUs that would be exempted. However, the fiscal implications and options to minimise these, or any use of this provision will be manageable as the Minister for Climate Change (and ultimately Cabinet) must be satisfied the costs do not exceed the public benefits on a case-by-case basis.

415 If an exemption is granted, the Crown incurs the cost of foregone revenue from deforestation NZU surrenders. For post-1989 participants this equals the total number of NZUs they have received from the Crown. This is different to the quantity of revenue foregone for pre-1990 forests (as they must surrender NZUs equal to the carbon loss upon deforestation).

416 Option L.1. will create an incentive for participants to transition their existing forests the new post-1989 categories which are better aligned to New Zealand's international climate change forestry accounting under the Paris Agreement.

Criteria: Improves ease of compliance for participants

417 This option would prevent participants having to organise their affairs to surrender NZUs to the Crown for an event they could not have anticipated.

Criteria: Administrative efficiency and effectiveness for regulators

418 Option L.1. would create extra work for MPI in processing applications for exemptions and taking the proposals through Ministerial and Cabinet approval of the exemption Orders. This extra work is not expected to be onerous or extensive. It could be absorbed by current baseline costs.

Criteria: Avoids unintended consequences

419 The key benefit of option L.1. is that it would avoid participants having to surrender NZUs for impacts on their post-1989 forest land that they could not have foreseen. Although registration of post-1989 forestry land into the ETS is voluntary, the forest owner cannot be completely aware of future events. For example, an archaeological site may be discovered on the land which requires excavation, or an insect pathogen attack may reduce the forest growth rate.

Criteria: Consistent with wider climate change and wellbeing priorities

420 Option L.1. supports the One Billion Trees programme principle of ensuring the right trees are in the right place for the right purpose. It removes a disincentive to deforest post-1989 forest land where this is justified for environmental or social reasons. It also maintains integrity of the ETS by only allowing exemptions that support the environmental integrity of the ETS.

Stakeholders views

421 Submitters to the A Better ETS for Forestry consultation were asked to comment on whether the existing section 60 exemption provisions in the CCRA should be extended to post-1989 forest land. Most responses (80 percent) were in favour. One submitter commented that the key difference is that pre-1990 forest land status was imposed whereas post-1989 forest land registration is voluntary. This means they thought the bar must be higher for exempting post-1989 forest land.

Impact analysis table L. Proposal to extend pre-1990 deforestation liability exemption to post-1989 forests

Variations from status quo:++ much better + better than 0 about the same - worse than - - much worse

Primary criteria	SQ- no change	Option L.1: Participants are eligible for deforestation liability exemptions under section 60 of the CCRA (preferred)
Increases incentives to store carbon in forests	**0**	**+** Reduced risk from including an exemption for deforestation liabilities could increase registration of post-1989 forest land and make investing in new forests more attractive.
Allocates obligations and entitlements to support alignment with climate change targets	**0**	**0/-** Negligible impact on foregone revenue to the Crown from fewer NZUs being surrendered upon deforestation.
Improves ease of compliance for participants	**0**	**+** Prevents participants having to organise their affairs to surrender NZUs to the Crown for an event they could not have anticipated.
Secondary criteria		
Administrative efficiency and effectiveness for regulators	**0**	**-** Administration to support this option is not expected to be onerous or extensive, and could be absorbed in the current baseline.
Avoids unintended consequences	**0**	**+** The key benefit of this option is that it would avoid unintended consequences associated with deforestation liabilities for post-1989 forest land.
Consistent with New Zealand's broader climate change and wellbeing priorities	**0**	**+** Supports the One Billion Trees programme principle of "planting the right tree, in the right place, for the right purpose". It also maintains integrity of the ETS by only allowing exemptions that support the environmental integrity of the ETS.
Overall assessment	MPI recommends extending section 60 deforestation exemptions to post-1989 forests in the ETS. Doing so will avoid participants having to surrender NZUs for impacts on their post-1989 forest land that they could not have foreseen.	

M REDUCING THE INCREASED INCENTIVE TO DEFOREST EXISTING FORESTS UNDER AVERAGING ACCOUNTING

422 This section considers measures to reduce a perverse incentive identified during the consultation process. The measures aim to reduce the incentive for existing forest owners to deforest their land so as to register the re-established land in the ETS under averaging accounting.

423 The options consider how a time limit could be used to prevent the deforestation incentive from increasing under averaging accounting. Precise details, such as the length of time it would apply for, will be consulted on and decided during the regulation-setting process after averaging accounting legislation is introduced.

424 MPI also considered an option to have a permanent exclusion from entering deforested land into the ETS. This was discarded as it would permanently remove the ETS incentive to reforest deforested land. The permanent exclusion option is included in Appendix 3.

Current deforestation disincentive rules

425 A number of deforestation disincentive rules exist within the ETS forestry regulations. The default minimum restriction for all forest land is that it cannot be re-entered into the ETS for four years if it has been left idle. However, forest land could be re-entered earlier if Te Uru Rākau has received adequate proof of conversion to non-forest land. It can be fairly inexpensive to meet this definition (i.e. a land owner could run pastoral animals over the deforested land for a year). So the cost barrier to deforest then re-enter forest into the scheme is not high.

426 This fairly low disincentive to re-enter previously deforested land into the ETS is not currently a major concern. That is because participants are unlikely to be financially better off from engaging in this behaviour. Deforesting with an intention to reforest would delay when a participant can earn revenue from timber. In addition, under stock change accounting there is only a small quantum of low risk NZUs which can be earned (on the first rotation), and higher risk NZUs can be earned indefinitely. Furthermore, larger forest owners often have portfolios that manage the risk of having to repay NZUs at harvest.

Averaging accounting increases the deforestation incentive

427 Averaging accounting makes it more attractive for people to deforest their existing forest land then re-forest in order to register it as a new forest (compared to stock change accounting). This is because, as outlined in section A, it provides more NZUs that can be traded at low risk and a participant would not be able to earn any NZUs for forest growth that occurs after it reaches its long-term average carbon stock.

428 The incentive to deforest a forest then re-enter it into the ETS under averaging accounting will differ depending on the category of post-1989 existing forest land held:[95]

a. Participants would have a high incentive to deforest existing post-1989 forest land that is not currently registered in the ETS (that was not established in the last couple of years). This is because they would receive a large quantity of low risk NZUs and would not be required to surrender them for their deforestation liability.[96]

[95] People who own existing forests that were fist established prior to 1990 would not have a significantly increased incentive to deforest as they cannot enter this forest into the ETS under averaging. A specific 8 year deforestation disincentive rule also already applies to this type of land.

[96] ETS registration is voluntary for post-1989 forestry, and therefore there is no deforestation liability for post-1989 forests that are not registered in the ETS.

b. Participants would have a fairly high incentive to deforest existing post-1989 forest land that is registered in the ETS if it had been registered many years after it was established (regardless of whether it was registered under averaging or stock change accounting). This is because they would also receive a large quantity of low risk NZUs at fairly low cost (as their deforestation NZU surrender requirement is capped at NZUs earned).[97] The deforestation liability would be particularly small if the existing forest had been moved to averaging accounting prior to deforestation.

429 Table 5 below demonstrates the amount of existing forest land that would not attract a deforestation liability or for which the deforestation liability is close to the harvest liability. It also demonstrates the cost to the Crown of participants earning additional low risk units from pursuing the loophole. This cost would not be matched by any additional contribution to New Zealand's climate change targets. In fact, increased deforestation, even if it is followed by quick re-establishment of the forest, would result in a reduction to New Zealand's contribution to its climate change targets. This is because the average carbon storage in New Zealand's forests would drop (as measured over several harvest rotations).

Table 5: Post-1989 land with zero or low deforestation liability

Type of land	Hectares of land	Potential scale of units earned by existing forest owners pursuing deforestation loophole (NZD value at $25 carbon price over 20 years, undiscounted)
Existing post-1989 land with no deforestation liability (not in ETS)	290,000 hectares	173 million tonnes ($4.3 billion)
ETS participants for whom deforestation is no more expensive than harvest	243,000 hectares	145 billion tonnes ($3.6 billion)

Note 1: Table is based on MPI estimates from early 2017 based on forest information available at that time. More recent estimates would see these figures change slightly.

Option M.1. Participants must wait a number of years to be eligible to enter deforested land that is re-established into the ETS as a new forest

430 Under this option, forest land that had been deforested cannot be re-established and entered into the ETS as a new forest (that can earn NZUs under averaging accounting) for a number of years. Hereafter, the period of time when participants are unable to re-enter deforested land into the ETS without a reduction in their ETS forestry entitlement is called the stand down period.

431 It could be possible to enter re-established forest land into the ETS before the stand down period ends. But the forest on that land would be treated as though it had already reached its average age. Therefore, once re-entered it would only be eligible (or liable) for NZUs if the forest moves into another age band (i.e. if the forest is harvested at an older or younger age than expected for commercial reasons).

432 The stand down period will need to be long enough to remove the averaging accounting deforestation incentive. For this RIA our working assumption is that the stand down period under option M.1. would need be around 15 years to remove the additional deforestation incentive.

[97] Section 190 of the CCRA sets out that no area of forest will need to surrender more units than those issued to the land.

433 The 15 year assumption is based on net present value (NPV) analysis MPI has undertaken which considers the relative benefit of receiving low risk NZUs under averaging accounting, compared to the costs of delaying receiving revenue from timber and labour to remove and replace forest (if the participant chooses to exploit the loophole). Further information on this NPV calculation is contained in Appendix 5.

434 The stand down period would apply to land registered as post-1989 forest land, and land that was never registered in the ETS. It does not apply to land that is registered into the permanent post-1989 category. This is because participants continue to receive the same benefits for this land regardless of the introduction of averaging accounting, and a 50-year restriction on deforestation for this land applies once entered into the scheme.

435 It may be possible to apply the stand down period to pre-1990 land. This will depend on decisions made later in 2019 during the regulations setting process on the appropriate length of time for the stand down period. This is because there is already an 8 year stand down period in place that provides a deforestation disincentive for participants owning pre-1990 forest land, which is based on different economic incentives to do so.

436 Consideration could be given to having a similar time limit for both post-1989 and pre-1990 forest land during the regulation setting process (the current pre-1990 stand down period is eight years).

437 The stand down period could apply from either 1 January 2020 or 1 January 2021.

Option M.2. Participants must wait a number of years before being able to earn NZUs after deforestation

438 This option places a time-limited restriction on the ability for a participant to earn NZUs for a forest that has been deforested and re-entered into the ETS. As for option M.1., the number of years will be long enough to remove the deforestation incentive under averaging accounting.

439 However, the stand down will need to be longer than option M.1. to remove the deforestation incentive to the same degree (likely around 18 years). This is because participants will have more choices to earn revenue under this option during the stand down period. They can still earn some NZUs if they re-establish their forest within the deforestation disincentive period (and doing so would shorten the delay in earning revenue from timber sales). More information on the NPV analysis supporting this initial assumed stand down period is in Appendix 5.

440 Under this option, participants could establish their forest during the stand down period and still be eligible to earn NZUs under averaging accounting. However, doing so would reduce the total number of NZUs they could receive for that forest. For instance, if the stand down period was 18 years and a forest was deforested in 2008 and re-established in 2018 with an average age of 18, it would only be eligible to earn NZUs for 10 years.[98]

441 The same eligibility rules apply under this option as per option M.1. regarding date of application, post-1989 forest land (in and outside of the ETS), and pre-1990 forest land.

[98] Average age (18) – remaining stand down period (8 years) = 10 years of BAU forest growth entitlement.

Impact analysis

Criteria: Increases incentives to store carbon in forests

442 Options M.1. and M.2. could ensure the incentive to deforest remains low under averaging accounting. If the time limit to re-enter forest land is sufficiently long, the economic return from trying to exploit this loophole will be very low (or non-existent).

443 MPI has undertaken NPV analysis to determine the appropriate length for the stand down period. It indicates that in most situations a period of 15 years should be sufficient to remove the increased deforestation incentive under option M.1. and 18 years under option M.2. However, this time period will change if the carbon prices changes (i.e. under a carbon price of $50 this increases to 23 years for option M.1.).

444 The amount of time required to remove the averaging accounting deforestation incentive is also sensitive to other factors. Changes to timber returns would change the appropriate length of this period (i.e. it would increase if returns from timber reduced). As the eligibility tests for entering forest into the ETS have tightened, participants may also be wary of exploiting a deforestation loophole, as their land may not qualify as "forest land".[99] In the past, ETS forestry participants have also faced significant reprisals to undertaking arbitrage behaviour.

445 Because this is a time-limited restriction, MPI considers both options are unlikely to significantly reduce the incentive averaging accounting brings to establish new forests. However, this could be the case if the length of the stand down period was very long. A very long deforestation disincentive period could discourage investment in forestry or participation in the ETS (as it reduces land-use choices for land owners).

446 While option M.2. gives participants more flexibility to make trade-offs between when they establish their forest after deforestation and how many NZUs they can earn for that forest, this would not improve incentives to establish more forests from land use flexibility as the stand down period would be longer.

Criteria: Allocates obligations and entitlements to support alignment with climate change targets

447 Both options would prevent participants from receiving NZUs for gaming behaviour that does not contribute to New Zealand's climate change targets. They would help to ensure the ETS assists New Zealand to reach its climate change targets by reducing the risk of deforestation under averaging accounting.

448 The design of the options is generally aligned with international accounting for climate change targets, under which New Zealand is penalised for deforestation of existing forest land (both pre-1990 and post-1989), but can count removals of emissions from that land if it is subsequently planted on again in the future.

Criteria: Improves ease of compliance for participants

449 Option M.1. provides a clear signal to participants as to the length of time they will need to wait until they can re-establish their forest and still be able to earn low risk NZUs for it as a new forest under averaging accounting.

[99] More information is now available and used to determine the eligibility of land prior to registration in the ETS.

450 Option M.2. provides participants more flexibility to earn revenue from their forest land, but doing so would make it more difficult to determine how many NZUs they are eligible to earn under averaging accounting. They could struggle to work out if they are economically better off delaying planting or re-establishing in the deforestation disincentive period (and earning fewer NZUs). This could mean they make economic decisions they regret later.

451 New land buyers will need to undertake further due diligence under both options to determine whether the land has been deforested within the stand down period. As indicated earlier in the RIA, due diligence is a current area of significant non-compliance for forest land ownership changes.

452 Under either option, sector participants could purchase land with the intention of establishing forest on it, then unexpectedly find that in order to maximise their returns they are required to wait to do so. A note could be required to be provided on land titles. However, this has been known to reduce land values, and compliance with this type of policy is fairly low.

Criteria: Administrative efficiency and effectiveness for regulator

453 MPI is unclear how it could effectively operationalise the options. There is a concern that new systems needed to ensure compliance with options M.1. and M.2. are likely to be very expensive and complex to run, as they would require resource-intensive spatial assessments.[100] For instance, they could require landowners to provide significant amounts of land use and land management information which may or may not exist and staff to assess information provided by participants and review aerial photography/ satellite imagery over long time periods.

454 Te Uru Rākau would also need to consider how the rules interact with any planned changes to the eligibility rules as part of the regulations update process in late 2019.

Criteria: Avoids unintended consequences

455 Option M.1., and also option M.2. to a lesser degree, create a risk that participants delay planting trees in order to ensure they can receive the maximum number of low risk NZUs from their new forests.

456 These options could also reduce land use flexibility and potential revenue that can be gained for people not responsible for the deforestation of the land. For example, someone could deforest their land, then sell it on. Unless land owners are related parties, the second land owner would have never been at risk of deforesting their land just to then quickly re-establish and re-enter the forest land into the ETS. The likelihood of this situation occurring could be low if the deforestation disincentive period is relatively short.

457 If the rules apply from 1 January 2021 there is a possibility some participants may try to deforest and re-establish their land to re-enter it into the ETS as a new forest. However, they would need to achieve this within a year. Conversely, applying the rules from 1 January 2020 would impose a restriction on land owners before averaging accounting is mandatory or the ETS forestry package regulations have been finalised.

Criteria: Provides durable regulatory certainty and predictability

458 Both options provide greater certainty for ETS participants, compared to the counterfactual. They would better enable participants to predict future carbon prices and unit supply relative as they eliminate the incentive for existing forest land owners to repeatedly generate NZUs on existing forest land.

[100] For instance by assessing information provided by participants and reviewing aerial photography/satellite imagery.

Consistent with wider climate change and wellbeing priorities

459 The potential for delayed planting and reduced land-use flexibility could undermine the One Billion Trees programme goal to increase planting in the next ten years and increase land-use flexibility to ensure people "plant the right tree, in the right place, for the right purpose". Land-use flexibility is also important for regional and Māori development, and to help New Zealand to move to a low-emissions economy at low cost.

460 Both options make it clear that the Government will not provide NZUs for gaming behaviour. This maintains the integrity of the ETS.

Stakeholder views

461 In the A Better ETS for Forestry consultation, submitters highlighted the potential for averaging accounting to create a perverse incentive for some participants to deregister and/or deforest existing forest land, allow it to sit idle for a period (or use it for other purposes such as pasture), and subsequently register the land as a "new" forest to earn the maximum amount of NZU's.

Impact analysis table M: Reducing the increased incentive to deforest existing forests under averaging accounting

Variations from status quo: ++ much better + better than 0 about the same - worse than - - much worse

Primary criteria	Retain current deforestation disincentive rules	Option M.1. Participants must wait a number of years to be eligible to enter deforested land that is re-established into the ETS as a new forest	Option M.2. Participants must wait a number of years to be eligible to earn NZUs after deforestation
Increases incentives to store carbon in forests	**0**	**+** • If the time limit to re-enter forest land into the ETS is sufficiently long it could ensure the incentive to deforest remains low under averaging accounting. But this would need to alter over time as the appropriate length of the stand down period depends on the carbon price and timber returns. • The length of the stand down period will need to be consulted on as it also depends on participants' appetite for risk (of not passing the forest land eligibly test and of a Government response to exploiting a loophole) and a very long stand down period could discourage investment in forestry or participation in the ETS (as it reduces land-use choices for land owners).	**+** • All of the impacts for option M.1. apply to option M.2.
Allocates obligations and entitlements to support alignment with climate change targets	**0**	**+ +** • Would prevent participants from receiving NZUs for gaming behaviour that does not contribute to New Zealand's climate change targets. • Would help to ensure the ETS assists New Zealand to reach its climate change targets by reducing the risk of deforestation under averaging accounting.	**+ +** • All of the impacts for option M.1. apply to option M.2.
Improves ease of compliance for participants	**0**	**-** • New land buyers will need to undertake further due diligence (and compliance for forest land ownership changes). They could also unexpectedly find they need to wait to plant to maximise their returns from their new forest. • Provides a clear signal to participants about how long they will need to wait until they can re-establish their forest and still be able to earn low risk NZUs for it as a new forest under averaging accounting.	**- -** • All of the impacts for option M.1. apply to option M.2. • Would provide participants more flexibility to earn revenue from their forest land,. • As it would be more confusing for participants to determine what revenue they can earn than option L1, they are more likely to make economic decisions that they regret.

Secondary criteria			
Administrative efficiency and effectiveness for regulators	**0**	**- -** • Unclear how to effectively operationalise this option. It may be possible to set up new systems to do so. However, those systems are likely to be very expensive to run, as they would require resource intensive spatial assessments. • Te Uru Rākau would need to consider how the rules interact with planned changes to eligibility rules as part of the regulations process starting late 2019.	**- -** • All of the impacts for option M.1. apply to option M.2.
Avoids unintended consequences	**0**	**- -** • Risk participants delay planting trees to ensure they can receive the maximum number of low risk NZUs from their new forests. • Could reduce land use flexibility and potential revenue that can be gained from land for people who were not responsible for deforestation of the land. • If the rules apply from 1 January 2021 there is a possibility some participants may try to deforest and re-establish their land to re-enter it into the ETS as a new forest. Applying the rules from 1 January 2020 would impose a restriction on land owners before averaging accounting is mandatory or the ETS forestry package regulations have been finalised.	**- -** • All of the impacts for option M.1 apply to option M.2.
Provides durable regulatory certainty and predictability	**0**	**+** • Compared to the counterfactual, it would better enable participants to predict future carbon prices and unit supply relative by reducing the incentive for existing forest land owners to repeatedly generate NZUs on existing forest land.	**+** • The impact for option M.1. applies to option M.2.
Supports wider climate change and wellbeing priorities	**0**	**-/+** • Potential for delayed planting and reduced land-use flexibility does not support the One Billion Trees programme goal to increase planting in the next ten years and increase land-use flexibility to ensure people “plant the right tree, in the right place, for the right purpose”. • Makes it clear that the Government will not provide NZUs for gaming behaviour. This maintains the integrity of the ETS.	**-/+** • All of the impacts for option M.1. apply to option M.2.
Overall assessment	MPI recommends introducing a time limit for re-entering forest land into the ETS as it will reduce the incentive to deforest under averaging accounting. MPI recommends Cabinet delegate the design decision about whether option M.1. or M.2. should be implemented, and when they should apply from to climate change Ministers to decide alongside further advice on the operational implications of the two options. Te Uru Rākau will need to ensure the design of the preferred option effectively enables it to monitor and encourage compliance. The length of the time limit can be decided during the regulations process in late 2019. MPI recommends that the length of the stand down period is set in regulations so that it can be altered for changes that affect the deforestation incentive such as the carbon price and revenue from timber. It would also be useful to consult on the appropriate length of the time limit as a long stand down period could impact the attractiveness of forestry investment. Consideration could be given to having a similar time limit for both pre-1990 and post-1989 forest land.		

Section 5: Conclusions

5.1 WHAT OPTION, OR COMBINATION OF OPTIONS, IS LIKELY BEST TO ADDRESS THE PROBLEM, MEET THE POLICY OBJECTIVES AND DELIVER THE HIGHEST NET BENEFITS?

462 MPI recommends that the Government introduces an averaging accounting package which includes:

a) Requiring participants to use averaging accounting for post-1989 forests registered after 31 December 2020;

b) Participants with existing post-1989 forests have a one-way choice to use averaging or carbon stock change accounting in any MER from 31 December 2020;

c) Participants can transition their forest using averaging accounting to the permanent post-1989 forest category, but must repay the NZUs earned between the carbon stock at the time of transition and their forest's long-term average carbon stock;

d) Participants using averaging accounting will receive NZUs for normal forest growth until each forest reaches its long-term average carbon storage amount – determined by forest ages within bands (for different forest types and rotation lengths);

e) Participants will no longer be required to undertake detailed reporting, they will only need to confirm continued forest management (or undertake detailed reporting if their forest moves into a new age band) under averaging accounting;

f) Participants will not have a temporary adverse event liability for their forests' using averaging accounting, and can continue to earn NZUs once the carbon storage of the affected forest is re-established;

g) Participants can offset their deforestation liability for their plantation forests using averaging accounting (by establishing a carbon equivalent forest in another location);

h) Extending the deforestation exemption provisions in section 60 of the CCRA to post-1989 forests in the ETS; and

i) Introducing a time limit for re-entering forest land into the ETS that has been deforested.

Introduce averaging accounting for new forests (Option A.1. recommended)

463 MPI's preference is for ETS participants to be required to use averaging accounting for newly established forests that are registered in the scheme. This change is likely to significantly increase participants' incentive to enter the ETS for forestry and establish new forests. Importantly, it will help New Zealand to more cost-effectively reach its climate change targets and One Billion Trees programme goal. It will also ensure unit allocations to forestry participants assist the ETS to drive mitigation effort in line with New Zealand's climate change targets.

464 There was general support for averaging accounting for new forests during the consultation process as it would make it easier to earn revenue from trading NZUs, reduce compliance effort for participants once their forests reach their long-term average carbon stock, and make the rules simpler to understand.

465 There will be some additional administrative costs to implement averaging accounting, compliance effort required during the transition, and the need to address a potential increase to the deforestation incentive. But officials consider the benefits of option A.1. far exceed these costs, and these costs can be effectively mitigated.

Forests already registered in the ETS can be moved to averaging accounting (Option B.3. recommended)

466 MPI recommends providing participants with a one-way choice to move existing forests in the ETS to averaging accounting. The case for doing so is less clear cut than the new forest decisions (in option sets A and D). However, such a move will go some way to better aligning ETS forestry obligations and entitlements with how New Zealand accounts for its international contribution to climate change mitigation.[101] We also expect that a proportion of participants who transition their existing forests to averaging accounting will increase their carbon storage through extending rotation lengths.

467 Participants with existing forests are likely to benefit from the increased simplicity of using averaging accounting, particularly those with production forests. The proposed optional approach will provide regulatory certainty for participants with existing forests and for those considering establishing forests and entering them into the ETS. As forestry is a long term business, fundamentally changing the accounting approach (as per option B.2.) could result in a significant loss of confidence in the Government's commitment to provide regulatory certainty for participants. This sentiment was expressed during consultation.

468 Making the transition one-way under option B.3. prevents participants from gaming or cherry-picking between the two accounting approaches (i.e. in response to fluctuations in the price of carbon). This maintains the integrity of the ETS.

Participants can transition their post-1989 existing forests to averaging accounting at any MER (Option C.2. recommended)

469 MPI recommends enabling participants to transition their existing forests to averaging accounting at any MER in the future. It would give participants sufficient time to transition their existing forests to averaging accounting, helping prevent undue stress. Compared to a one-off transition under option C.1., more participants will be able to choose the accounting approach that best allows them to manage their forest in the ETS. The result will be increased sector confidence in the scheme, which actively supports participation. Some participants may find it confusing having to work with two accounting approaches indefinitely. But MPI could partially mitigate this through regular communication.

470 This option will, however, create a short term risk of increased unit supply, and future unit supply uncertainty that will require consideration as part of the wider ETS settings (i.e. for auctioning volumes). There will also be increased long term operational costs.

Averaging accounting required for all post-1989 forests registered after 31 December 2020 (Option D.1. recommended)

471 MPI recommends averaging accounting is required for all post-1989 forests registered after 31 December 2020. The Government has accepted this proposal, and provided participants an option to register their forests under averaging accounting from this date.

472 Option D.1. ensures participants are only required to use averaging accounting once they know how it will actually apply in the supporting ETS forestry regulations.

[101] In comparison with mandatory averaging accounting for existing forests, however, this would create a smaller short term increase in NZU supply, which could impact climate change mitigation effort.

473 Linking eligibility to registration minimises participant confusion from potential errors while lessening effort for administrators. Importantly, it will help ensure future registrations of existing forests use averaging, thereby helping align the ETS with New Zealand's international climate change accounting.

474 The RIA analysis to support enabling participants to access averaging from 2019 is contained in a separate RIA provided to Cabinet in March 2019. Doing so provides participants with certainty about the rules that apply to their forests planted this year. This is expected to drive a small amount of additional afforestation. A decision to not enable existing forests to move to averaging could make the implementation of averaging slightly more complex.

Participants can transition their forest to the permanent post-1989 forest category, but must repay the NZUs earned between the carbon stock at the time of transition and their forest's long term average carbon stock (Option E.1. recommended)

475 This option provides a simple transition for participants to move their forests using averaging accounting to the permanent post-1989 category and avoids creating a loophole that could allow some participants to be double credited. It allows participants to delay their transition time until they are able to cover the upfront cost of repaying credits, helping prevent undue financial stress. It is also unlikely to delay the retirement of production forest to natives.

Under averaging accounting carbon storage changes each period remains the basis for determining NZU entitlements and obligations and can only claim NZUs from the beginning of the MERP a forest is registered in (Option F.1. recommended)

476 MPI recommends the Government confirms that carbon storage change over a reporting period remains the basis for providing NZUs under averaging accounting. This will ensure participants continue to have an incentive to undertake forest management practices that increase carbon storage.

477 It is also recommended participants are still only able to claim NZUs from the beginning of the latest reporting period under averaging accounting. These rules exist to limit fiscal risk to the Crown and ensure forestry participants are only rewarded for carbon stock increases as a result of ETS forestry incentives (rather than incentives that exist when a forest is unregistered).

478 It is recommended that decisions about the appropriate size threshold for requiring participants to undertake forest specific measurements (i.e. the FMA) are considered as part of the regulations making process following passage of legislation to introduce averaging. This is because submitters had mixed views on the appropriate size of the threshold and this decision could be affected by other needed changes to the regulations (such as updates to the carbon storage look up tables).

Retain current CCRA forestry regulation processes (Option G.1. recommended)

479 MPI recommends that the forestry carbon storage calculations continue to be applied prospectively through the CCRA regulations under averaging. Such a move will maintain market confidence and participant certainty about NZU obligation or entitlements. It will also ensure that under averaging, participants enjoy less ongoing reporting requirements.

Retain requirement to report each MER, less detailed reporting after forest reaches its long-term average carbon stock (Option H.1. recommended)

480 This option reduces the ongoing reporting burden for ETS forestry participants, while maintaining ETS forestry incentives and minimising fiscal risk. MPI recommends care is taken to ensure the averaging regulations and IT system rebuild decisions support the intent of this high level decision. However, we note that this will be considered alongside the need for an effective compliance regime.

Forest average age bands determined by normal harvest ages for forest types (Option I.2. recommended)

481 Option I.2. provides an incentive to store additional carbon through extending rotation length (and disincentivises shortening rotation length), which is influenced by the carbon price and is (at least partially) balanced out by other incentives such as harvesting to receive revenue from timber. This option provide a more direct incentive to increase rotation length and imposes less effort for participants than the status quo. This is because the units they earn for having longer rotations can be traded at lower risk and their NZU entitlement will only change for significant changes in rotation length. More carbon storage in forests will contribute to New Zealand's climate change targets.

482 MPI notes further work will be required as part of the averaging accounting regulation making process to determine the age band settings. For instance, to confirm the number, range and size of the forest type age bands. New data may also need to be collected, or assumptions made, about indigenous forest rotation lengths. New systems are likely to be required to ensure participants correctly state their forests' harvest age.

483 While option I.1. would require significantly less compliance and administrative effort for both participants and regulators, MPI does not support this option as it would not provide an incentive to store carbon in forests by extending rotations (or disincentivise shortening rotation length). Doing so increases Crown risk as the NZUs provided to participants for forestry carbon storage may not closely match their contribution to climate change mitigation.

Participants will not have a temporary adverse event liability for their forests using averaging accounting, and can continue to earn NZUs once the carbon storage of the affected forest is re-established (Option J.1. recommended)

484 MPI recommends the Government introduces option J.1. It could reinforce the benefits of introducing averaging by further encouraging ETS participation and afforestation, and create an incentive to re-establish damaged forests quickly. It would align with international climate change contribution rules and only create a small increase to Crown risk for participants using averaging accounting (who reduce ongoing risk to the Crown). Participants' financial risk of registering forests would lower, and they would only need to report on the temporary adverse event if the administrative burden of doing so was lower than the cost of paying the temporary adverse event liability. The ongoing administrative effort required is likely to be low, but will depend on the decisions made during the averaging accounting regulations and IT system rebuild processes, and on participant uptake.

Participants can offset their deforestation liability for their plantation forests using averaging accounting (Option K.1. recommended)

485 MPI recommends implementing option K.1. It would support the averaging accounting changes to encourage ETS participation and afforestation by de-risking forestry as an investment opportunity, and encourages retention of forest cover when changing land use.

486 It gives all participants that establish new forests greater land use flexibility, which will assist in New Zealand's transition to a low-emissions economy, and could support regional and Māori development. Land use flexibility could also assist people to "plant the right tree, in the right place, for the right purpose".

487 As offsetting is voluntary, participants could decide whether the benefits of offsetting outweigh the costs. Offsetting would result in low per annum administrative costs, particularly in the next 30 years, and the high per-application costs could be cost recovered.

488 While some submitters supported option K.2., officials do not recommend implementing this option. It is unlikely to make economic sense for participants to offset forests that are using stock change accounting and doing so would extend the period when these forests cause misalignment with the international climate change contribution rules. Moreover, existing forests could still be offset if moved in advance to averaging.

Extending the deforestation NZU liability exemption provisions in section 60 of the CCRA to post-1989 forests in the ETS (Option L.1. recommended)

489 Section 60 of the CCRA could be extended to enable the Governor-General to exempt post-1989 forestry participants from the cost of having to remove land from their registration if it would be in the public interest to do so. Extending the section 60 provision would remove this risk of unanticipated costs arising, and make ETS participation more attractive.

Create a time limit on re-entry of deforested land; delegated Ministers decide which option; length of time limit set in regulations

490 MPI recommends introducing a time limit for re-entering forest land into the ETS as it will reduce the incentive to deforest under averaging accounting. MPI also recommends Cabinet delegate the design decision about whether option M.1. or M.2. should be implemented and when the time limit should apply from to climate change Ministers. This will give Te Uru Rākau time to provide needed advice on their ability to effectively monitor and encourage compliance under the different options.

491 MPI recommends that the length of the stand down period is set in regulations so that it can be altered for changes that affect the deforestation incentive such as the carbon price and revenue from timber.

492 It would be useful to have stakeholder views on the appropriate length for the time limit during the regulations consultation. The number of years for the time limit will need to be sufficiently long to ensure the incentive to deforest remains low. But it will also need to be sufficiently short to prevent any significant unintended consequences (such as delayed planting, or a reduced incentive to establish forests).

Further work required before implementation

493 The recommendations in this paper provide the high level direction for introducing averaging accounting into the ETS. As a result of Cabinet decisions on these issues, officials can:

- provide drafting instructions for PCO;
- finalise the detailed design of averaging in the ETS through the regulations process and as part of the ETS forestry IT system upgrade (i.e. on what age band will apply to different types of forest);
- ensure the whole ETS forestry package can be taken through the needed legislative and regulation processes within the Government's intended timeframes.

5.2 SUMMARY OF COSTS AND BENEFITS OF THE PREFERRED APPROACH

Affected parties	Notes:	Impact $m present value	Evidence certainty	Page reference in the RIA
Additional monetised costs of proposed approach, compared to taking no action				
Regulators				
The Crown[102]	a. Reduced NZU surrender (from existing forests) and increased NZU allocation (from new forests with age bands), cost of introducing averaging	$543 million over the period 2019-2030 (estimated 22.1 million less surrenders from existing forests and 8.8 million additional units) $545 million over the period 2031-2040 (estimated additional units: 7.8 million for existing forests and 33.2 million for new forests) $264 million over the period 2041-2050 (an estimated 25.9 million additional units allocated[103])	Medium	36 (new forests) 45 (existing forests)
Administrators (Te Uru Rākau)	b. Administrative cost to implement averaging	$49 - 52 million[104]	Medium	37 (new forests) 120-125 (section 6)
Total Monetised Cost	a + b	2019-2050: $1.401 billion - $1.403 billion		

Expected benefits of proposed approach, compared to taking no action				
Regulators				
The Crown[105]	c. Value to New Zealand of additional contribution to climate change targets	$0.844 billion (15.5 million tonnes CO_2) over 2021-2030 $2.35 billion (41.8 million tonnes CO_2) over 2031-2040 $3.86 billion (68.6 million tonnes CO_2) 2041-2050	Medium	37 (new forests)
Total Monetised Benefit		$7.054 billion over 2019-2050		

102 Crown cost is recorded over the current climate change target period and likely future periods. The total unit allocation cost to the Crown is provided. Units allocated by the Crown are considered a cost to the Crown, units surrendered are considered revenue (as NZUs are a tradeable commodity); The net present value calculation completed by NZIER assumed a carbon price increasing to $50 by 2050, and a discount rate of 6 percent.

103 This includes an estimated 9.4 million fewer units for existing forests and 35.3 million additional units for new forests over 2041-2050.

104 $49,749,732 - $54,541,067 NPV comprised of the cost items in the implementation section, using a 6% discount rate used over relevant years.

105 It is the avoided cost of having to purchase NZUs at $37.5 in 2033 (as per PCE assumption of increased carbon price out to 2050); cost of raising capital is a multiplier of 1.5, as per: http://www.mfe.govt.nz/climate-change/why-climate-change-matters/global-response/paris-agreement/economic-modelling-of-our

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Affected parties	Notes:	Impact $m present value	Evidence certainty	Page reference in the RIA
Non-monetised costs [d. and g. may be able to be monetised when regulations are being finalised]				
Regulated parties				
ETS forestry participants (those with new or existing forests and potential land buyers)	d. Compliance effort increase from introducing averaging	Low – for participants who use averaging Medium – for participants using stock change accounting for their existing forests	Medium	37 (new forests) 46 (existing forests)
	e. Increased reporting for offsetting, section 60 exemptions and adverse events	Medium	Medium	89 (adverse events) 96 (offsetting) 101(section 60 exemption)
Regulators				
The Crown	f. Temporary adverse event Crown risk	Low	Medium	89
	g. Offsetting Crown risk	Low	Medium	96
Administrators	h. EPA cost	Low	Medium	37
Wider government (I.e. MfE + local government)	i. Short term complexity managing unit supply	Medium	Medium	47
Other parties				
Communities	j. Community disruption and planning	Medium	Medium	37
Total non-monetised cost		Small - Medium	Medium	
Non-monetised benefits				
Regulated parties				
ETS forestry participants	k. Reduced compliance effort from averaging	Medium	Medium	36
Regulators				
The Crown	l. Offsetting Crown benefit	Medium	Medium	96
Administrators (Te Uru Rākau)	m. Reduced ongoing administrative costs	Medium	Medium	37
Wider government	n. Contribution to the One Billion Trees programme	Medium	Medium	37
Other parties				
Iwi/other parties	o. Assist communities and environment	Medium	Medium	37 97
Total non-monetised Benefit		Medium	Medium	

Notes (corresponding to notes in tables above)

a. The overall total additional cost to the Crown includes the cost of participants choosing to transition existing forests from stock change to averaging accounting, and the additional units allocated to participants due to an increased afforestation response. Optional averaging for existing forests will result in lower unit surrenders for participants choosing to move their forests to averaging accounting (compared to those that retain their forests on the stock change approach).[106] The cost of transitioning some existing forests to averaging accounting will decrease over time, as the Government will no longer be allocating units that it would have otherwise under stock change accounting.

b. Te Uru Rākau will need additional budget to set up new systems in the IT build and processes to assist participants to use averaging (including transitioning existing forests to averaging). Enabling the use of two accounting approaches would require ongoing administrative effort and additional IT capability. There will be additional running costs, as significantly more participants are expected to enter the ETS under averaging and to facilitate existing forest transitions to averaging. Ongoing costs to implement offsetting and temporary adverse event proposals are also included.

c. Averaging is estimated to increase the economic incentive to afforest by around 70 percent, from around 13,300 hectares per year under the current stock change accounting to around 23,000 hectares per annum under averaging accounting.[107]

d. It will create some disruption for participants that wish to move their existing forests to averaging accounting, and add extra ongoing effort for those who choose to use both averaging and stock change accounting. There would be no point in time for forest land buyers to easily determine if a forest is using stock change or averaging accounting.

e. Participants can choose whether the benefits outweigh the reporting costs to access offsetting and the section 60 exemption. There will be a threshold to ensure participants only need to report on temporary adverse events when it makes economic sense.

f. The temporary adverse event proposal will result in a small increase to Crown risk because the event would be internationally recorded as a minor temporary decrease in forestry's contribution to international climate change targets, but there would be no associated reduction in NZU allocations.

g. Offsetting will result in small short term increases to Crown costs. This is because when the forest is offset this is treated as reduced fiscal income to the Crown (as no NZUs would be surrendered upon deforestation). Offsetting costs are expected to be lower than the benefit to the Crown from increased mitigation from new forest planting.

106 Around 46 percent of existing forests are assumed to benefit and transition to averaging accounting overtime. It is assumed that the majority of existing forests owners will make the decision to transition to averaging accounting at or around the point of harvest, and therefore result in a lower unit surrender liability under S190 of the CCRA.

107 Based on research and analysis completed by the University of Canterbury in 2019. Afforestation projections used within the modelling assume a gradual increase towards these estimates. Afforestation rates are particularly challenging to predict. Future afforestation rates are subject to a range of factors such as: wood product returns, differing rates of return between forestry and other land uses, nursery capacity, forest/land owners future intentions, future international and domestic carbon accounting rules, land availability, health and safety issues related to topography, government planting schemes and current private sector interest in participating in forestry schemes administered by the government, forest owner's carbon price predictions.

h. There will be a cost to EPA to update its ETS register, and if there are any rulings implications from the proposals. This would be appropriated as part of the 2019/20 Budget process to implement the new ETS forestry IT system.

i. The short-term increased unit supply from moving existing forest to averaging accounting will add to the complexity of managing unit supply in a market where there is already a large potential supply of NZUs. For instance, it would reduce the potential volume of units for auctioning under the wider proposed ETS changes.

j. Numbers of jobs associated with sheep and beef farms (or potentially other land uses) could reduce in some regions, particularly in cases where entire farms are converted to forestry. This could cause community disruption. Because sediment is lost at harvest, and increased planting can reduce water availability in drier parts of the country, additional planting will also need to be supported by appropriate forest management (as controlled by the NESFP and council plans).

k. Participants using averaging accounting will have a much lower need to undertake detailed carbon calculations once forests reach their long-term average carbon stock, but this will be offset at least partially by other reporting requirements.

l. The offsetting proposal will reduce Crown risk from reduced mitigation towards international climate change targets from deforestation emissions.

m. Introducing averaging accounting will reduce Te Uru Rākau's ongoing administrative effort, as it is a simpler approach to explain to participants and there will no longer be a need to assess accuracy of complex harvest liability calculations. There will also be a reduced need to monitor forest growth and process returns after forests reach their long-term average carbon storage age.

n. Estimated increased contribution of around 89 million trees (78,000 hectares) to the One Billion Trees programme (an increase from 130 to 219 million trees over 2018-2027).

o. The predicted increase to the rate of new forest establishment is expected to create forestry jobs that could assist with economic development. Increased forest establishment could improve water quality, which will assist communities. Planting offsets could also assist participants to make good environmental decisions, as it is easier to move forests to other locations if the land is not suitable for forestry. Offsetting could assist economic and Māori development as flexible use of land reduces barriers to investment, and makes it easier to derive multiple revenue streams of from commonly owned land.

5.3 WHAT OTHER IMPACTS IS THIS APPROACH LIKELY TO HAVE?

Potential risks and uncertainty

494 Having options for eligibility to accounting approaches (averaging and stock change), requires new forms of ongoing administrative effort and creates a risk of participant confusion or compliance costs (which could impact attractiveness to enter the ETS).

495 To mitigate these risks we propose to ensure the new ETS forestry IT system (under replacement as it is currently not fit for purpose) has greater functionality to assist ETS participants. Any new system must be able to help undertake calculations and monitor compliance, and staff must be able to provide greater assistance when averaging is introduced and on an ongoing basis.

496 The future carbon price and how land owners will respond to that price is unclear – the carbon price will be an important factor for landowners thinking of developing new forests. Further uncertainties include how much of the wood supply will be further processed in New Zealand and what the economic and social impact on rural communities will be. There is more certainty around environmental outcomes, although how big those impacts are is less clear.

497 Other Government decisions affecting land use and land values, the ETS, and the forestry sector will likely have an effect on the outcomes from the policy proposals in this RIA. For example, separate and subsequent decisions taken by the Government that result in NZU price increases may increase the level of new planting in response to averaging accounting.

498 Any inclusion of agriculture in greenhouse gas emission reduction efforts will increase the incentive to convert farmland to forestry, which would alter the forecasts in this RIA.

499 The decision on how the 2030 commitment will be treated in the Crown accounts in 2033 could affect the valuation of the fiscal risk relating to shortfalls in meeting the objectives.

5.4 COMPATABILITY WITH GOVERNMENT'S EXPECTATIONS FOR THE DESIGN OF REGULATORY SYSTEMS

500 There are no significant incompatibilities with the Government's 'Expectations for the design of regulatory systems'. The proposals will make some key design changes, but this is to ensure that the ETS forestry accounting rules and related operational settings can more effectively meet the Climate Change Response Act 2002's purpose: to enable New Zealand to meet its international climate change obligations.

Section 6: Implementation and Operation

6. 1 LEGISLATION, REGULATIONS, AND OTHER PROCESSES

501 Cabinet intends to introduce a Bill during 2019 giving effect to policy decisions in this RIA (MfE and MPI will work with the Parliamentary Counsel Office on drafting of the Bill).

502 Those legislative changes will need to be supported by regulations on the operational details of forestry in the ETS. The process to set the regulations will begin during the legislative process, when officials will complete the following:

- the policy process to determine regulation settings (e.g. age bands, yield tables, long-term average carbon stock ages);
- public consultation and engagement with Treaty partners; and
- website updates to provide information to the public.

6.2 IT AND OPERATIONAL

503 MPI, under delegation from the EPA, will be responsible for the implementation and ongoing operation and enforcement of the new ETS forestry arrangements (reflecting all the ETS forestry package changes – operational and accounting related).

504 Te Uru Rākau is currently planning a major replacement of its ETS forestry IT system, called the Climate Change Information System (CCIS).[108] It is currently scoping the requirements for a replacement of the CCIS and developing a business case. In addition to accommodating future design changes, a replacement of the CCIS would also enhance the usability of the system for current and future participants.

505 Implementing the ETS forestry package changes contained in this RIA alongside the redevelopment is cost-effective as many processes can be updated and communications can be altered together. However, some of the policy changes could alter the IT development pathway. For instance, having two accounting approaches (the status quo approach and averaging) will increase the complexity of the redevelopment and increase the timeframes before a new system can go live.

506 The IT changes will be significant and complex, and are likely to take at least three to four years (before the new system can go live). We propose to seek new funding for the implementation of the ETS forestry package through Budget 2020. This funding will cover implementing averaging accounting, and operational business process improvements. Further information on the level of funding required will be provided as part of a subsequent Cabinet paper.

507 Various operational activities will be required to implement the ETS forestry package (both the ETS forestry accounting changes and the ETS forestry operational and permanent forest category changes). Some activities are preparatory in order to go live, some are transitional and related to moving away from the current state, and others will be permanent and ongoing.

[108] The future of the CCIS is currently being reviewed as it has reached the end of its functional life, and is no longer supported by Microsoft. This means that it is unable to be modified to meet future ETS requirements and is at risk of failure for existing functions.

508 The exact mix of activities to get ready, transition, or permanently change will be dependent on the final policy decisions for the entire package of forestry accounting decisions. They will also depend on decisions taken to replace the ETS forestry IT system and improve business processes, which will occur alongside the regulation setting process for the ETS forestry package.

List of likely implementation operational activities:

- IT system redevelopment;
- Education for participants/landowners (i.e. on the new accounting rules and new look-up tables). Includes workshops, development of calculators and tools to help participants make decisions, revisions of guides and factsheets, website revisions, and tutorial videos;
- Update of ETS guides and websites;
- Update of Te Uru Rākau internal operational policies and procedures;
- Staff training;
- Application processing centre/call centre training;
- Recruitment of additional operations staff/processing centre staff. For the ETS forestry accounting changes, this would be needed to manage:
  - increased number of phone and email enquiries regarding the new accounting rules;
  - transition arrangement (i.e. if existing forests can switch to averaging);
  - transitional arrangements (i.e. for swapping existing participants from the stock change method to the averaging accounting method);
  - increase in data processing (i.e. if an expanded area will be subject to forest-specific monitoring under the rotation length band option);
- Recruitment of additional analysts for ETS forestry accounting proposals to:
  - process ETS registration applications due to the additional checks required (i.e. to identify if the land is newly established forest or not);
  - review all emissions returns to check for harvesting, to ensure those on a delayed surrender timeframe comply;
- Additional ETS compliance staff to monitor, assist and enforce compliance with the new obligations;
- Updating/creating new database queries and reports;
- Legal advice to clarify interpretation of the new legislation and regulations to inform operational process and decision-making;
- Development/update of Standards under the CCRA.

Cost estimates for upfront implementation of averaging, P89 offsetting, adverse events policies		
Key actions	**Comments**	**Estimated cost**
Process roll out costs for the entire ETS forestry package		
Project management of implementation.	Includes project manager, project coordinator, communications staff member, and project analyst. 12-month project.	$720,000 (evenly spread over 2020-2023)
Roadshow/outreach/extension process for the introduction of averaging.	Two major sets of roadshows at regulation introduction and prior to participants having to make decisions. Includes cost of event organiser and communications staff member. To be reassessed after One Billion Trees programme roadshow.	$250,000 (50% 2020; 50% 2023)
Backfill of operational staff who are providing input into regulation drafting and development. Focus group testing of regulations during drafting.	Two FTEs –multiple staff would be involved but for only a portion of their time. Assumes three meetings costed at $5k per meeting.	$230,000 (2019)
Develop/update operational procedures – Operations, GIS, and outsourced providers. Train operational staff, GIS analysts and outsourced provider staff of changes. Train Te Uru Rākau regional staff, MPSP staff etc.	Two contractors for six months. Cost of flying staff to Wellington and their accommodation costs.	$300,000 (2020)
Develop/update fact sheets, guides, website, presentations, video tutorials, update forms.		$300,000 (2019 and 2020)
IT system costs apportioned to averaging		
Incorporate ETS forestry accounting changes into new IT systems.	Averaging supplier/Te Uru Rākau SMEs backfill = 15% of the total IT build cost (i.e. $3M if $20 million; $3.75M if $25 million) BAU build cost (no policy changes) = 85%=$17M-21.25, includes workflow/CRM/case mgt/reporting/integration/test/project mgt/supplier/Te Uru Rākau SMEs backfill]	$3,000,000-$3,750,000 (2019)
IT system support, amortisation costs, capital charge (for new IT system build).	Two FTE - IT system support/data analysts Ongoing vendor support costs [is the proportion of vendor costs required for the IT build apportioned to averaging] Amortisation costs - 7 years [is the proportion of amortisation on the $20m that relates to averaging] Capital Charge - 7 years [is the proportion of capital charge on the $20m that relates to averaging] [Total costs to support $20m IT system: $3.57m/annum (for first 7 years), $390k/annum thereafter]	IT support/ maintenance costs of $58,500 per annum for vendor costs (from 1 Jan 2023) Capital charge $180,000 per annum for 7 years (from 2019) $450,000 amortisation cost per annum for 7 years (from 2019)

Ongoing costs associated with Averaging package [Timeframe for implementation – January 2023 for final system go live]		
Policy proposal	**Estimated operational costs**	**Assumptions**
Averaging for new forest, age bands, ongoing reporting requirements, and managing the deforestation loophole[109]	$2.1m/pa from 2019	• Application processing/contact centre – three FTE • Operations – four FTE • Compliance/field staff four FTE • GIS four FTE • One legal advisor • Two additional team leaders • Additional land status notice registration costs and title verification checks **Additional staff needed to:** • Process additional new application for new and existing forest (contact centre, Operations and GIS), including s144 effort; • Undertake the more resource intensive GIS checks; to verify whether forest is actually "new forest" for all ETS registration applications; • Manage the increase compliance workload as a result of managing a higher number of participants and a large area of registered forest (which is coming up to harvest and therefore may require forest type change checks to occur); • Undertake site visits to verify forest establishment (as recent forest plantings cannot be verified through aerial photography/satellite images by the GIS); • Process an increased number of transfers of participation (due to an increase in participants); • Process an increased volume of FMA data (due to an increase in participants); • Undertake verification of whether forests are harvested within band, monitoring of forest type changes; • Manage increased volume of legal queries; • Manage the additional staff.
Optional transition to averaging for existing forests	$1.815m from 31 December 2022-31 Dec 2030 $400k from 2023	**Assumptions:** • Assumed to add 25% to the cost of processing five-yearly MERs. • Assumes three MER transition dates due to mini-MERP proposal. Higher compliance effort is required, as some participants will transition part of their forest to averaging or will have some existing forest on stock change and some on averaging resulting in a greater number of errors in their emissions returns. The increased volume of work and unfamiliarity of the work require additional staff to assist with the processing of the transition MERs. Two FTE Operations and two FTE GIS to process increased number of CAA reconfiguration due to the desire by some participants to split their forests amongst different accounting approaches.
Adverse events	$50k - $200k/pa (from 1 Jan 2023)	**FTE:** 0.5-1.5 FTE across GIS, Operations, compliance and Datacom (contact centre). Costs dependant on frequency, scale and complexity of adverse events.
Offsetting for post-1989 forests	$60k-$100k/pa (from 1 Jan 2023)	**Assumptions:** • 5 cases per annum (100 hectares) initially increasing to 15 applications (1,000 hectares) per annum in 10 years' time. • Site visits required to verify successful establishment of forest. Assuming this process will be cost recovered (regulations amendment) as it is fundamentally different from p90 offsetting. • Further, cannot rely on copy/paste functionality from other processes when designing IT and Operations process systems for this work.

[109] Assumes reduced reporting once forests reach the long-term average carbon stock (at an age of 18 for a radiata pine forest)

6.3 ASSUMPTIONS

509 The administrative and participant impacts in this RIA have been based on current operations (which record staff effort in relation to numbers of hectares processed) and the expected increase in volume of applications (recorded as increased forest area to process) as a result of averaging making forest registration more attractive.

510 The impacts in the cost-benefit analysis are based on the preferred proposals, and those settings tend to be more administratively costly than most of the alternative options. Therefore, the costings are fairly conservative. For instance, it is assumed averaging accounting is introduced with age bands (based on rotation length and forest type). This allows for conservative estimates, as it would be more operationally (and fiscally) costly to implement than the alternative simple approach.

511 While a final estimate of the likely cost of the upgrade to the CCIS is still being determined, an overall budget estimate of $20 million to $25 million is anticipated based on past efforts and output in attempts to enhance the current system, advice from industry experts and other costing metrics.

512 Te Uru Rākau intends to follow Treasury's Better Business Case process to develop the budget bid for Budget 2020/21 to seek this additional funding once a final estimate has been determined. Part of this will involve testing the market for IT system providers.

513 Approximately $3 million of $20 million IT system build cost would be required to implement averaging accounting in the CCIS. This sum at this stage is a best efforts estimate, and dependent on the future policy decisions on the detailed design of averaging accounting, the market response by service providers, as well as decisions on supporting regulations scheduled for introduction in 2020.

6.4 IMPLEMENTATION RISKS AND MITIGATIONS

Legislation

514 There is a risk that the legislative process is held up due to other priorities and business in the House. There is also a risk that significant changes are made to policy positions during the Parliamentary process or that the complexity of changes and interactions means unanticipated additional regulations are needed. The impact of those changes, including on IT systems, would need to be considered at that time.

515 MPI has been working closely with Te Uru Rākau on the policy and supporting evidence, and will continue to do so for any regulations to ensure the Government can move as quickly as possible once the ETS forestry package changes are introduced in legislation.

IT systems and operations

516 The greater the number of dimensions to eligibility for averaging accounting and the greater the complexity of the rules, the more risk of extra administrative cost, participant non-compliance, or reluctance to enter the ETS (which could impact afforestation rates). To mitigate these risks, Te Uru Rākau has been considering the additional support that could be provided to participants and additional capability they could develop as part of the IT system rebuild. This additional support would impact the time needed and cost of developing the IT system.

517 Noting the historically low compliance and levels of understanding of technical ETS requirements, especially for small scale foresters, it is possible that participants may not fully appreciate the implications of certain options. This could create implementation issues as participants may regret choices they have made as part of the transition to the new ETS forestry package rules (i.e. for the one-off one-way existing forests option). This could be mitigated through education and communication throughout the consultation period as well as prior to the introduction of the new ETS forestry IT system.

Section 7: Monitoring, evaluation and review

518 Below are the metrics MPI can use to know whether the anticipated impacts occur.

Criteria: Improve ETS incentives to store carbon in forests

Te Uru Rākau will record:

- The number of existing participants, their area of existing ETS forest that is elected to move to averaging accounting, and the amount that remains on the stock change approach (and those that de-register); and
- The rate and amount of new forest land registered in the ETS.

MPI will obtain information annually from MfE through LUCAS[110] on:

- Afforestation, including mapped forest area that are not ETS participants';
- Ongoing monitoring to ensure planting is successful and the land remains in forest to meet the requirements of forestry ETS participants;
- Deforestation area, specific location and forest type;
- Forest management, growth rates, and carbon stock estimates for validating ETS average.

MPI will obtain information from the University of Canterbury on:

- Deforestation intensions (Professor Bruce Manley, NZ School of Forestry, undertakes an annual deforestation survey).

MPI will undertake a survey on:

- Existing forest owners' intentions to remain on stock change accounting or move to averaging accounting, to increase the accuracy of the costings.

This will help MPI to determine whether the ETS forestry accounting changes have effectively incentivised further afforestation and extension of rotation length, how many participants have chosen to use averaging accounting, and the fiscal implications of averaging accounting uptake (by new and existing forests).

Criteria: Allocates obligations and entitlements to support alignment with climate change targets

MPI can obtain information through the EPA on:

- ETS forestry NZU trading activity levels, possible quantum of forestry banked units (and likely percentage of banked forestry units), overall oversupply (or undersupply) of NZUs to the market due to banking and other policy changes.

MPI can obtain information from MfE on:

- Carbon price changes over time.

This will help MPI to determine the unit supply impacts of the ETS forestry accounting changes (i.e. whether increased unit supply from allowing existing forests to use averaging accounting has had an impact on the carbon price).

[110] Land Use and Carbon Analysis System

Criteria: Improves operations (for administrators and participants)

Te Uru Rākau will record:

- Increases in the number of emissions returns submitted on time;
- Decreases in the number of incorrect emissions returns submitted;
- Decreases in the number of prosecutions and cases where penalties are applied;
- Increases in the number of changes in registered forest ownership notified on time;
- Changes in the number of enquiries to the ETS contact centre.

This will help MPI to determine if there have been any compliance impacts from introducing the ETS forestry accounting changes (and any flow-on impacts for administrative effort).

System-level monitoring and evaluation

519 For participants subject to forest-specific monitoring, a wide range of information specified in Standards made under the Legislation/Regulations is collected to enable calculation of forest carbon stocks. In meeting legal obligations, Te Uru Rākau also collects a broad range of activity statistics that can be related to the effectiveness of the Legislation, Regulations and Standards.

New data collection

520 Te Uru Rākau will need to collect extra data, particularly if the Government chooses to implement the preferred design and eligibility proposals giving effect to the decisions in this RIA (I.e. a long transition for existing forests and age bands). The new data would be used to pre-populate correctly calculated emissions returns, which would reduce participant costs, compliance effort, and the likely number of penalties imposed (for incorrect returns). Data collection would be mandatory rather than voluntary for specification of forest establishment dates, improved specification of forest area (already mandatory), and extent and timing of adverse events and replanting.

521 This pre-population approach, however, would fit with the intended new approach as part of the IT system upgrade.

MPI recommends formal evaluation of the ETS forestry accounting package

522 MPI also suggests the Government undertake a formal review of the ETS forestry accounting package after three to five years.

Appendices

APPENDIX 1: MODEL DESCRIPTION, DATA, ASSUMPTIONS AND LIMITATIONS

ETS NZU flow model

523 The forest carbon calculation methodology used to determine ETS unit flows is based on a forest growth simulation method. Growth simulation for post-1989 forests registered in the ETS starts at 1990 and uses species-specific yields that provide carbon stock and change estimates by age on a per hectare basis. The growth simulation model tracks the post-1989 forest area planted, harvested and deforested through time and generates annual estimates of carbon stock and change by multiplying the area at a given age by the carbon yields per hectare for that forest's age and species. Post-1989 forest entitlement is then calculated based on the year registered into the ETS and within the MERP.

524 Post-1989 harvest and deforestation surrenders to the Crown are modelled based on the age/species and carbon loss at the time the activity occurred. Post-1989 forest surrenders are subject to section 190 of the Climate Change Response Act 2002 (post-1989 forest participants cannot be liable to surrender more NZUs than their current entitlement balance). Post-1989 forest harvest surrenders are modelled based on each forest's entitlement (unit balance) and the carbon loss due to harvest in consideration of section 190 of the Climate Change Response Act 2002.

525 Depending on when the post-1989 forest was established and the species and year registered, the forest owner may or may not surrender fewer units than received upon harvest. Harvesting and surrender projections are based on when the activity is projected to occur, and this may differ from when the forest owner reports a carbon change decrease due to harvesting.[111] Second rotation entitlement assumes the area is replanted within a year under similar management practices to the first rotation, and forest entitlement starts when net increases from replanting exceed net losses from residual decay.

526 Pre-1990 planted forest deforestation surrenders are modelled based on annual Deforestation Intentions Surveys.[112] They are adjusted to take into account ETS pre-1990 planted forest deforestation exemptions and the uptake in pre-1990 planted forest offsetting. Deforestation age is assumed to occur at the point of clear-fell, and ETS pre-1990 forest default lookup tables are used to determine the amount of NZU surrenders.

527 Averaging accounting for existing forest owners is based on forest owners retaining units up to their forest's average age. The amount of units claimed for existing forest owners is a function of when the forest was registered in the ETS, the year planted, species and the forest's average age. Forest owners can keep units up to the average age, or if they earned more credits than that, pay back to the average age. If the forest average age is reached before 2018, then the units received up to the forest average are deducted from the forest owner's harvest liabilities.

111 Forest owners with post-1989 forest registered in the ETS have the option to report during Voluntary Emissions Returns, but are required to report at Mandatory Emissions Reporting Periods (MERP).

112 http://www.mpi.govt.nz/dmsdocument/11776-deforestation-intentions-survey-2015-final-report

ETS unit flow data and assumptions

528 The ETS unit flow model includes around 326,000 hectares (or around 50 percent) of post-1989 forest registered in the ETS. All data for these forests is recorded by the year planted, year registered into the ETS and forest species.

529 Future afforestation rates[113] are based on research conducted by the University of Canterbury[114] and take into account carbon prices, product returns, recent trends, and government policy. The scenario used for the ETS carbon stock change accounting forecasts assumes a gradual increase to around 13,300 hectares of new forest planting per year. Based on recent historical uptake of post-1989 forest into the ETS, the projections assume that the majority (80 percent) of new afforestation from 2019 onwards[115] is registered into the ETS.

530 Afforestation rates assuming averaging accounting is introduced in the ETS are also based on research conducted by the University of Canterbury, School of Forestry in 2019.[116]

531 ETS unit flow forecasts reflect the ETS species composition, with pine and other mixed species comprising around 80 percent, Douglas-fir 11 percent, and regenerating post-1989 natural forest nine percent. Future species compositions are based on recent commercial planting trends and assume around 90 percent exotic and 10 percent native planting/regenerating and reversion. A national area weighted Field Management Approach (FMA) yield table by species grouping is used to calculate post-1989 forest carbon stock and change.

532 Pre-1990 planted and post -1989 forest deforestation forecasts from 2018 are based on the annual Deforestation Intentions Surveys conducted by the University of Canterbury. Projections of pre-1990 planted deforestation take into account exemptions and pre-1990 planted forest offsetting, and vary depending on the carbon price and offsetting take-up.

533 Based on the results of the annual Deforestation Intentions Survey, offsetting could have a significant impact on reducing the level of pre-1990 planted deforestation with increasing carbon prices. Based on current carbon prices, land prices, and product returns, offsetting in the ETS could reduce pre-1990 planted forest deforestation from 50-80 percent.

113 Future afforestation rates are subject to a range of factors, such as wood product returns, differing rates of return between forestry and other land uses, nursery capacity, forest/land owners future intentions, future international and domestic carbon accounting rules, land availability, health and safety issues related to topography, government planting schemes and current private sector interest in participating in forestry schemes administered by the government, and forest owners' carbon price predictions.

114 http://www.mfe.govt.nz/publications/climate-change/afforestation-responses-carbon-price-changes-and-market-certainties. Modelling and analysis completed by the University of Canterbury in 2019.

115 A proportion of this afforestation is funded by government afforestation schemes. Depending on the scheme, carbon credits are not able to be earned until after 10 years of establishment.

116 *Potential impacts of NZ ETS accounting rule changes for forestry – averaging and harvested wood products,* Professor Bruce Manley, NZ School of Forestry, University of Canterbury.

534 Projecting the amount of post-1989 deforestation over the next decade within the ETS is challenging. It is assumed that the majority of future post-1989 deforestation will be from small to medium single-age forest holdings, where the initial intention was for a one-rotation investment. Based on research and analysis completed by the University of Canterbury in 2018[117] the projections assume that around 3.1 percent of the post-1989 forests could undergo a land use change after clear-fell.

535 Post-1989 harvesting rates are based on the forest age class (projections of changes to demand over time), and factor in carbon price variations and wood returns. Current forecasts assume optimal rotation ages for pine between 26 and 30 years, around a 45-year rotation for Douglas-fir and growth until steady state for post-1989 natural forest. Also modelled are extended rotation ages with higher carbon prices. Average rotation lengths could vary as forest owners factor in wood returns, harvesting costs and the carbon balance in the forest (e.g. whether it is better to continue to accrue units, or harvest and meet liabilities).

536 Based on research completed by Scion in 2016,[118] it is assumed a small proportion (around 5 percent) of production forest registered in the ETS might not be harvested in the future due to either being uneconomic or the forest being managed for other purposes.

537 Projections are estimated at the time that the activity is estimated to occur. This may differ as to when the forest owner/manager submits an actual emissions return.

538 The long-term average carbon stock age assumed in the ETS unit flow projections is based on research and analysis conduction by the University of Canterbury in 2019[119]. Transition ages are 21 for radiata pine, 29 for Douglas-fir, and continued crediting for permanent forests until steady state carbon is reached. The long-term average carbon stock has a significant impact on Crown unit allocation (and resulting participants' forest entitlement).

Uncertainty and limits

539 The accuracy of ETS unit flow forecasts is limited to research, analysis and modelling completed to date. Some of the main limitations are provided below.

540 Given the option, existing forest owners are only assumed to take up averaging accounting where it is to their economic advantage. Additional research, analysis and modelling would benefit the Government better understanding on the likely uptake of averaging accounting versus those existing forest participants who chose to remain on the current stock change accounting approach.

541 The modelling of future surrenders assumes a 100 percent emissions return compliance for any post-1989 carbon stock decrease. Forecasts exclude any reduction in surrenders due to non-compliance or non-notification, which can have a significant impact on actual and forecast surrenders to the Government.

117 Based on research and analysis completed by the University of Canterbury in 2017.

118 https://www.mpi.govt.nz/dmsdocument/30687/loggedIn

119 *Carbon price impacts on forest management,* Professor Bruce Manley, NZ School of Forestry, University of Canterbury.

542 Projections of post-1989 forest de-registrations or withdrawals from the ETS are not included in the forecasts. This could impact on the forecast surrenders and in particular the level of post-1989 deforestation recorded within the NETS. Forecasts are estimated at the time that the activity is predicted to occur. This may differ to when the forest owner/manager submits an emissions return.

543 Afforestation rates are based on modelling, research and analysis completed by the University of Canterbury in 2019. Future afforestation rates are inherently challenging to predict and should be treated with caution.

544 Future afforestation rates are subject to a range of factors such as wood product returns, differing rates of return between forestry and other land uses, nursery and planting capacity, forest/land owners future intentions, future international and domestic carbon accounting rules, land availability, health and safety issues related to topography, government planting schemes and current private sector interest in participating in forestry schemes administered by the government, forest owner's carbon price predictions.

One Billion Trees programme

545 The impact of ETS averaging accounting on the One Billion Trees programme is based on the estimated additional afforestation incentive from averaging accounting. The impact assumes 90 percent of the planting is exotic species at around 1,000sph, and 10 percent is natural/reversion at around 2,300sph.[120]

NDC model data and assumptions

546 The model used to determine forestry contribution towards the 2030 target is based on a forest growth simulation method. Growth simulation for post-1989 forests starts at 1990 and uses species-specific yields that provide carbon stock and change estimates by age on a per hectare basis.

547 The principle behind the model is to credit afforestation and reforestation up until the long-term average carbon stock is reached. It does this by introducing an accounting distinction between new and existing activities. The modified approach credits new activities (afforestation) up until the long-term average carbon stock, and then transfers this land to the existing category, where all sustainable harvest emissions (i.e. followed by replanting) would be accounted for under a business-as-usual Reference Level.

548 Post-1989 production forest averages are based on the long-term average carbon stock over a number of rotations (or perpetual rotations) and include the impact of harvested wood products within the forest average. The long-term average carbon stock ages are based on research completed by Scion and the University of Canterbury in 2017.[121] Radiata pine is assumed to transition at age 22 (assuming harvesting at 28 years and including the impact of harvested wood products on the forest average), Douglas-fir is assumed to transition at age 29 and post-1989 natural forests are assumed to transition at a steady state.

120 http://www.mpi.govt.nz/funding-and-programmes/forestry/planting-one-billion-trees/tracking-progress-of-the-one-billion-trees-programme/?_sm_au_=isVqtsJ02FMnMVMq

121 *Options for calculating the long-term average carbon stock in post-1989 forests.* S.J. Wakelin, B.R. Manley and L.J. Dowling.

549 Species yield tables are based on the New Zealand's National Greenhouse Gas Inventory post-1989 forest plot network. Based on research completed by Scion in 2016, a small proportion (around 5 percent) of the post-1989 forest estate is assumed not be harvested in the future due to it being uneconomic or the forest being managed for other purposes.

550 Emissions from deforestation could have a significant impact on New Zealand's 2030 target. As with our NDC, all forest deforestation is included, and the amount projected depends on the carbon price, level of offsetting, and other land use change drivers. Emissions from deforestation are instant and assume the activity occurs around the point of harvest. Planted forest deforestation projections are sourced from the annual Deforestation Intentions Survey. Natural forest deforestation is projected to occur based on the average of the last six years reported in the 2017 GHG NIR submission.

551 The 2016 Greenhouse Gas National Inventory data on afforestation and deforestation is used from 1990-2016 as the basis for the historical time series. Soil emissions from the conversion of non-forest to forest are assumed to be 0.35tC/hectare and occur over 20 years (IPCC default).

552 Afforestation projections are based on research conducted by the University of Canterbury in 2019.[122] New planting projections are based on variations in carbon price, wood products returns, land availability and relative land use economics, and the ETS forest accounting treatment (stock change or averaging accounting).

122 http://www.mfe.govt.nz/publications/climate-change/afforestation-responses-carbon-price-changes-and-market-certainties

APPENDIX 2: DEFINITION OF FOREST LAND

553 Section 4 of the Climate Change Response Act 2002 defines forest land to be:

a. any land of at least one hectare that has, or is likely to have, tree crown cover from forest species of more than 30 percent in each hectare; and

b. Includes an area of land that temporarily does not meet the above requirements (e.g. through harvesting) but is likely to revert to forest species.

- This means that temporarily harvested forest does not meet the requirement to be bare land.

- For an existing forest to be considered bare land again, it must be cleared, and remain as non-forest land for four years before it can be re-planted and considered “new”.

c. This does not include:

- A shelter belt (or most riparian plantings) where the average Crown width is less than 30 m and isn’t contiguous with another area that meets the above requirements.

APPENDIX 3: DISCARDED OPTIONS

Issue/opportunity	Discarded options	Impact analysis
A NEW FOREST AVERAGING ACCOUNTING PROPOSAL		
A. New forest averaging accounting proposal	A.2. Participants who register newly established post-1989 forests in the ETS can use either averaging or carbon stock change accounting	• Participants planting new forests have not yet signed up to the accounting approach that applies to their forest, therefore changes to the rules for new forests would not undermine their property rights. However, it could cause disruption for participants who have planned to plant certain forest blocks over time for a hedged forestry portfolio. • This option would not adequately address issues with the status quo – harvest liability financial risk and complexity, and misalignment between international and ETS accounting rules. • Completely optional averaging accounting for new forests would mean there is no point in time from which land buyers could determine what accounting approach has been applied to forest land, causing possible uncertainties and confusion. This could also lead to gaming opportunities as participants could cherry pick between approaches. • Optional averaging accounting for a subset of participants that plant new forests would be less costly and complex for land buyers and Te Uru Rākau (administrative effort rises with the number of participants using a particular accounting approach). But it would still require management of two new classes of forest. This complexity would be compounded if not all existing forests were required to use averaging accounting. • It would fail to address the issue of long term fiscal risk to the Crown and reduced ability for NZ to meet international climate change targets (as a result of misalignment between international and ETS accounting approaches).
B ETS ACCOUNTING OPTIONS FOR EXISTING FORESTS (ASSUMES ALL NEW FORESTS USE AVERAGING ACCOUNTING)		
B. ETS accounting options for existing forests (assumes all new forests use averaging accounting)	B.4. NZU repayment compensation	• Providing compensation to cover the cost of an NZU repayment obligation for an existing forest moving to averaging accounting would come at large fiscal cost to the Crown and would mean participants receive a windfall gain that other comparable participants have not had access to. In effect it would be a transfer of cost and risk from participants to the Crown for no additional carbon storage/climate change mitigation benefit. • It would be difficult to give participants an amount which reflects the NZU value of the eligible forest.

C TRANSITION ARRANGEMENTS TO INTRODUCE AVERAGING ACCOUNTING		
C. Flexible transition options for post-1989 existing forests	C.3. Participants transitioning their post-1989 existing forests to averaging accounting, can surrender NZUs when harvest/clear their forests	• This option would lower the risk of impacts to property rights and enable participants with existing forests above the long-term average carbon stock age of their forest to use earnings from timber sales to cover purchase of NZUs and subsequent surrenders to the Crown. • This option is not recommended because it would extend the length of time when there is misalignment between international climate change and ETS accounting approaches, which means the Crown would not have access to all of those NZUs before 2030 (to assist with the 2030 climate change target). This could have implications for the wider ETS settings, as NZUs would be surrendered to the Crown over a longer time period, including after 2030 (the next climate change target period). This could make it more difficult to determine wider settings such as suitable levels of NZUs to be auctioned. • It would also require significant operational effort for Te Uru Rākau and ongoing compliance costs for participants (and not all participants could access this option, given pre-existing forward contracts).
	C.4. A further NZU repayment extension for C.1.	This option would cater for some participants that cannot transition forests to averaging accounting due to financial pressure. But it: • increases length and difficulty of transition. The exemptions process will also require additional administrative effort up until harvest; and • provides less certainty about when NZUs surrendered makes it difficult to adjust wider ETS settings if needed (such as NZUs auctioning volumes).
	C.5. Not allowing participants to register to earn NZUs up to the average on the second rotation	• The option of earning NZUs up until to the long-term average carbon stock amount could be attractive to owners with existing forests not currently registered in the ETS. If 50 percent of currently non-registered existing forest area was registered in the ETS, and could accrue units on the second rotation, the cost to the Crown would increase significantly in the short and long term.[123] However, officials consider this could be managed through the design of the options (i.e. requiring all new registrations to use averaging accounting). • Allowing participants to earn NZUs up to the average on the second rotation is important as it reduces the gap in total units that could be earned between existing forests planted prior to 2008 (when they could first enter into the ETS) and new forests that can earn units from the point of planting.

[123] The short term cost could increase by an estimated 57.3 million NZUs over 2021 to 2030 (revenue of 9.2 to an expense of 48.1). Costs to the Crown in the long term could also increase by an estimated 66.6 million NZUs over 2031 to 2050 (from estimated revenue of 9.2 to an expense of 57.4).

D. Eligibility date and registration basis for new and existing forests.	D.3. Participants are required to use averaging accounting for new forests established and registered from 1 January 2019	This option prevents a potential delay in planting as per option D.1. and ensures business as usual forestry emissions removals. But it was discarded for the reasons below. • People may not increase planting to take advantage of this rule as it can take up to a year to secure seedlings for planting/they are driven by timber returns; • It could disrupt a small number of participants' business plans if they wish to have all their forests on current stock change accounting and have planned to afforest in 2019; • It brings about questions of appropriateness due to retrospectivity; • It creates short term disruption and regulatory uncertainty as participants are required to comply with the new rules from 1 January 2019, but may not have certainty of what the new rules are in legislation when they plant their forests (as legislation is likely to be passed in the later part of 2019).
F AVERAGING ACCOUNTING DESIGN DETAILS		
F. Carbon stock change calculation used to determine forestry NZU entitlements and obligations.	F.2. Any change to the current carbon storage calculation approach prior to averaging accounting implementation	Changes to the status quo are not required as the current approach has submitter support and effectively balances administrative cost, participant effort and accuracy/ETS forestry incentives. These rules can also be considered during the regulations setting process. Two options to change the status quo were considered, but discarded: • Allow all forestry participants to use either default carbon storage tables or the FMA approach. This option presents a significant fiscal risk to the Crown, as forest owners with poorer quality forests will use the default tables and over-claim NZU entitlements. It may also result in some small forest owners using the FMA approach when it is economically inefficient (carbon profits do not cover measurement costs). • Require all forestry participants to use default carbon storage look up tables. This approach would significantly reduce compliance costs for larger forest owners and administration costs for Te Uru Rākau. But as default carbon tables allocate NZUs at regionally (or nationally) averaged values, it could undermine the incentive for participants to manage their forests to store additional carbon. A completely default approach could pose international integrity concerns. It would also introduce fiscal uncertainty, i.e. if the default table is set higher/lower than the actual average yield for the region.
	F.3. Participants can claim emissions units back to 2008 or establishment of their forest	• This option will significantly increase fiscal risk for the Crown and administrative effort for Te Uru Rākau for no gain in carbon storage activity. • It would reward participants for registering their forests in the ETS after they have been planted. Under both accounting methods this undermines the financial returns that can be gained through the ETS and provides windfall gains for already planted forests. • Moving existing forests to averaging accounting and then allowing the participant to claim credits back to 2008 (instead of when they registered) is estimated to cost the Crown 13.2 million NZUs over 2021-2030 (from estimated revenue of 9.2 to a cost of 4.0 million units over 2021-2030).[124]

[124] Assuming an 18 year average and existing forests registered from 2013 to 2017 are able to claim units up to the forest average from 2008. If the average age is 21 then the additional cost to the Crown is estimated to increase to 14.2 million NZU's over 2021-2030 (from an estimated cost of 11.7 to 25.9 million NZU's over 2021 to 2030).

G. CCRA forestry regulations making process	G.2. Any options where the long-term average carbon stock age is not set in regulations	• This option was discarded as the Crown will need the ability to respond to changes in ETS forestry participant behaviour in a timely manner (i.e. cannot wait 20 years for adjustments to transition ages to take effect). Any change to the long-term average forest carbon stock age would not be applied retrospectively (to avoid participants having to pay back any units if the long-term average carbon stock age changed).
	G. 3. Retrospective application of changes to long term average carbon storage amounts	• Making retrospective changes to the average age could increase fiscal risk for the Crown and financial risk for participants. The Crown could be required to allocate NZUs to participants, and participants could be required to surrender NZUs to the Crown unexpectedly (this would be particularly burdensome if it occurred after the participant's forest reached its average age).
H. Reporting requirements	H.2. Participants are only required to report deforestation	• While this is a simple approach that removes any on-going compliance and administration costs for participants and Te Uru Rākau, it would be very financially risky for the Crown as it could not track changes in carbon stock over the life of the forest. It will also encourage game playing behaviour (i.e. to extend a forest's first rotation length to gain maximum NZUs then reduce it thereafter).
I. Converting a forest's long-term average carbon stock into a forest average age	I.3. Using carbon stock of a forest as a basis for recording and communicating when a forest reaches its long-term average carbon stock amount	• Although this option would more closely link CO2e tonnes to NZUs, it was discarded as it would be too difficult for participants and regulators. The link to CO2e by using age is also very close, so this option would not improve the environmental integrity of the ETS compared to the simpler option.
	I.4. Providing NZUs to participants using averaging accounting based on an averaged amount as the forest grows	• This approach would provide an amount of NZUs to participants that reflects the actual growth of the forest, but also takes into account the emissions that will occur in the future at harvest. The impact of this option is that participants would receive a lower number of NZUs every year as their forest grows compared to the preferred option (of providing one NZU per additional CO2e tonne stored each MERP), but they would earn NZUs up until the forest is harvested (e.g. up until age 28, rather than up until an "average age" of 18). • This option was discarded as it would reduce the incentive to enter the ETS by reducing the returns that could be made from trading NZUs, as participants would need to wait longer to receive their NZUs. It would also extend the length of time participants are required to undertake detailed reporting each MERP.

	I.5. Average age determined by carbon stored in forest types and nominated harvest ages	• This approach would be the same as option I.2., but would allow participants to nominate an intended harvest age, which would be used to calculate their forest's average age. This would allow the participant to claim NZUs upfront for future growth according to intentions. • This option has been discarded as it allows for gaming opportunities for participants, and may not drive the right level of mitigation activity. • By allowing participants to claim NZUs up front based on intended behaviour, the Government would effectively be providing a loan for participants to extend forest rotation ages. It would allow participants to be credited for storing carbon before NZ recognises it in its NDC accounting method. This means the incentives to extend rotation age for carbon purposes would be given before participants are aware of the NZU price or commercial wood industry drivers. This would come at a cost to the economy if the result was that more extensions to harvest rotations occur than would be considered optimum to balance climate change mitigation effort and meeting wood supply demand. For instance, domestic wood processors may struggle to source wood for input to mills while NZ is on track to reach its climate change targets. • Additional compliance or penalties would also be required under this option to ensure participants complied with their stated intentions.
J. Proposal to remove participants' temporary adverse event liability	J.3. Participants are not liable for carbon loss from a temporary adverse event that damages their forest using averaging accounting, they can keep earning NZUs	Officials considered this option as it provides additional financial support to participants that they can use the NZUs received to help cover the cost of replanting/re-establishing. But: • not pausing the provision of NZUs could undermine the replanting incentive for participants, as they receive NZUs regardless of whether or not they replant/ re-establish their forest quickly, or to the required age. • the Crown would be allocating NZUs to participants not backed by internationally recognised carbon storage; and • the fiscal risk is slightly elevated over option J.1., as payments of NZUs continue, which leaves the Crown more exposed to adverse events.
M. Reducing the increased incentive to deforest existing forests under averaging accounting	M.3. Participants cannot re-enter forest that was deforested into the ETS and earn units under averaging	While this would be an administratively simple option, and it would fully eliminate the ability to pursue the identified loophole, it would: • permanently remove the ability for ETS participants to earn NZUs for re-establishing forest land. This would dampen the incentive to establish forest, particularly for a future land owner who was not responsible for deforesting the land; and • impact land owners who had previously had scrub on their land, who would no longer be eligible to plant a new forest and earn NZUs under averaging accounting at any point in future.

APPENDIX 4: CONSULTATION

A Better ETS for Forestry Consultation (August-September 2018)

554 MPI and Te Uru Rākau consulted on a range of proposals for averaging accounting from August to September 2018. This took place alongside a wider ETS consultation, led by MfE.

555 Proposals in this RIA draw on feedback provided through the A Better ETS for Forestry consultation, including comments on a start date for averaging accounting for new forests. A full summary of submissions is published separately in the report Emissions Trading Scheme Consultation Submissions Analysis.

556 The A Better ETS for Forestry consultation took place over six weeks from August to September 2018, and included workshops in ten cities and towns and a Māori Leaders' Workshop held in Wellington.

Stakeholder Review Session (February 2019)

557 As part of the policy design process following the A Better ETS for Forestry consultation, MPI held a stakeholder review session with external forestry sector stakeholders on 8 February 2019. Officials tested their updated thinking on policy design elements for averaging accounting and sought to investigate potential loopholes and/or perverse incentives raised by stakeholders through the formal consultation process.

2015/16 ETS review consultation and Climate Change Forestry Reference Group

558 This RIA also draws from MPI, Te Uru Rākau and MfE's engagement from 2015 with stakeholders, iwi and Māori on the design elements of averaging accounting. Key elements of this engagement include feedback on a forestry technical note published in March 2016 as part of the 2015/16 ETS Review consultation, and officials' regular engagement with the Climate Change Forestry Reference Group (the CCFRG) following stage two submissions of the 2015/16 ETS Review.

559 The CCFRG was formed to assist officials to develop proposals that would encourage significant new planting and increase ETS participation. The membership was formed of individuals with strong experience and expertise in the forestry sector, carbon forestry, post-1989 forestry participation in the ETS, permanent carbon forestry, farm-forestry, and Māori forestry. These members were: Peter Clark, Peter Weir, Howard Moore, Murray Parrish, Ollie Belton, Dr. Murray McClintock, Edwin Jansen and Harvey Bell.

Other internal and external feedback

560 Drafts of research and analysis underpinning this RIA have been subject to feedback and input from internal experts (i.e. for views on operational, fiscal, environmental and regional development impacts). We have also worked closely with MfE and obtained input and feedback from the Treasury, Te Puni Kōkiri, the Office of Treaty Settlements, the Ministry of Justice, the Ministry for Business, Innovation and Employment, the Ministry of Foreign Affairs and Trade, the Department of Conservation, the Department of the Prime Minister and Cabinet, and the Environmental Protection Authority.

APPENDIX 5: TABLE OF STAKEHOLDER VIEWS FROM CONSULTATION

Emissions Trading Scheme forestry accounting package	
Option	**Stakeholder views**
A New forest averaging accounting proposal	
A.1. Participants are required to use averaging accounting for their post-1989 new forests (preferred)	A Better ETS For Forestry consultation: Most submitters supported introduction of averaging accounting for new forests. Submitters commented that it provided greater simplicity and increased potential to drive afforestation relative to the existing forestry accounting approach. It was supported by a range of stakeholder groups, including forestry sector organisations, industry bodies, iwi and Māori, local government, and individuals. Stakeholder review session: Attendees were supportive of averaging accounting. Some thought that it could reduce the incentive to look after carbon storage on land after units have been earned. 2015/16 review: Many submitters that supported averaging accounting thought it should only be introduced if it were optional. These submitters pointed to reduced flexibility for larger forest owners in managing carbon returns. Overall, they supported ETS forestry accounting changes that would make the scheme simpler and less risky for participants. This was noted as a deterrent to participation in the ETS, in particular for small land owners. Averaging accounting for new forests was seen as a positive shift towards a simpler accounting approach for forestry. CCFRG: Members were comfortable with the proposal for all “new forests” to use averaging accounting.
B ETS accounting options for existing forests (assumes all new forests use averaging accounting)	
B.1. Participants are required to continue to use carbon stock change accounting for their post-1989 existing forests (but use averaging accounting for their newly established registered forests)	A Better ETS for Forestry consultation: Most submitters did not favour requiring existing foresters to remain on carbon stock change accounting. Those in support noted they had set business plans based on the existing approach and a mandatory change to averaging accounting would leave them worse off. 2015/16 review: Was not consulted on. CCFRG: Members had mixed views on this option. Some thought the forestry sector may be comfortable with this option as it maintains the rules existing forest owners had signed up to when they entered the ETS. Others thought existing forest owners may consider it unfair that new participants can use a simpler and less risky accounting system.

B.2: Participants are required to use averaging accounting for their post-1989 existing forests	A Better ETS for Forestry consultation: Most submitters did not favour a mandatory change to averaging accounting. Those objecting to a mandatory change to averaging accounting for existing forests noted they had set business plans based on the existing approach and a mandatory change would leave them materially worse off. 2015/16 review: A compulsory move to averaging accounting was not viewed favourably by submitters.
B.3: Participants have a one-way choice to use averaging or carbon stock change accounting for their post-1989 existing forests (preferred)	A Better ETS for Forestry consultation: Most submitters preferred an optional one-way choice to use averaging accounting (or remain on stock change accounting). Submitters suggested there would be a split between foresters who benefit and those who will be made worse off by a transition to averaging accounting. An opt-in approach was therefore seen as most fair. Stakeholder review session: There was support for an optional choice to move to averaging accounting, as some participants would be negatively impacted. They suggested there would be an upswing of registration into the ETS, as foresters would look to gain the option to use averaging or carbon stock change accounting 2015/16 review: Most submitters supported optional averaging accounting. CCFRG: Most members supported this option. Some members were concerned about the complexity impacts of running two accounting systems indefinitely. Members also noted this option could raise potential Māori/land arrangement equity issues (due to Treaty settlements).
C Flexible transition options for post-1989 existing forests	
C.1: Participants transitioning their post-1989 existing forests to averaging accounting can surrender NZUs earned above the long-term average carbon stock at a transition MER and the next MER	A Better ETS for Forestry consultation: Stakeholders were presented with only this option during consultation. The majority of submitters were in favour of the ability to defer repayment. However, some submitters sought further flexibility than one MERP after transitioning, noting that foresters may be disadvantaged where they aren't able to line the liability up with their harvest (and returns from selling timber). CCFRG: Most members were in favour of being able to surrender NZUs when harvesting/clearing their forests, as it would mean participants could use earnings from timber sales to cover the purchase of NZUs and subsequent surrenders to the Crown.
C.2: Participants can transition their post-1989 existing forests to averaging accounting at any MER (preferred)	A Better ETS for Forestry consultation: Submitters were not presented with option C.2., however, multiple submitters noted a preference for greater flexibility in the timing of transition to averaging accounting than option C.1. above. These submitters suggested that there was benefit to being able to surrender NZUs when harvesting/clearing their forests as it would mean participants could use earnings from timber sales to manage costs from buying/surrendering NZUs. Stakeholder review session: Some participants suggested it was important to make the consequences in the timing of the switch from carbon stock change to averaging accounting as low impact as possible. CCFRG: Most members were in favour of being able to surrender NZUs when harvesting/clearing their forests as it would mean participants could use earnings from timber sales to cover the purchase of NZUs and subsequent surrenders to the Crown.

E: Transition options between permanent post-1989 forest land and post-1989 forest land	
E.1: Participants can transition their forest to the permanent post-1989 forest category, but must repay the NZUs earned between the carbon stock at the time of transition and their forest's long term average carbon stock (preferred) **E.2: Participants can transition their forests to the permanent post-1989 forest category, but cannot earn units until the forest reaches its long-term average carbon stock**	A Better ETS for Forestry consultation: 70% of respondents agreed with the surrender obligation approach (25% did not). Those respondents who did not support the preferred option stated the cost of unit repayment was a barrier to transition or proposed that the participant should receive recognition back to 2008.
F Carbon stock change calculation used to determine forestry NZU entitlements and obligations	
F.1. Carbon storage changes each period remains the basis for determining NZU entitlements and obligations and can only claim NZUs from the beginning of the MERP a forest is registered in under averaging accounting (preferred)	A Better ETS for Forestry consultation: Submitters were in favour of updating the regulations and look-up tables noting these were out of date. Submitters advocated generally for regulatory improvements on an ongoing basis that were administratively efficient and simple for participants. They also supported the ability of the Government to change the number of units participants using averaging accounting receive (where those participants are below the average age, reflecting that averaging accounting should reflect up to date and accurate carbon stock changes).
G CCRA forestry regulations making process	
G.1: Retain current CCRA forestry regulation processes for averaging accounting (preferred)	A Better ETS for Forestry consultation: Submissions favoured applying legislative and regulation changes prospectively (rather than retroactively). 52 submissions out of 70 on this question supported this option. Submitters suggested this option would support the confident trade of units, and avoid additional uncertainty. It received support from a wide range of stakeholder groups including ETS participants, the forestry sector, industry bodies, carbon consultants, and iwi/Māori. CCFRG: Members were comfortable with the option where participants who have forests above the long-term average carbon stock age will not be required to repay, or able to earn more NZUs, due to a change in the long-term average carbon stock age set in the regulations.
G.2: Any options where the long-term average carbon stock amounts are not set in regulations **G.3: Retrospective application of changes to long term average carbon storage amounts**	A Better ETS for Forestry consultation: The majority of submitters were against these options, and preferred option G.1 as it was perceived to provide reduced risk and greater regulatory stability.

H Ongoing reporting	
H.1: Retain requirement to report each MER, less detailed reporting after forest reaches its long-term average carbon stock (preferred) **H.2: Participants are only required to report deforestation**	A Better ETS for Forestry consultation: The majority of submitters supported continuing existing measurement and reporting each MERP after a forest reaches its average age. Three submissions were in favour of simplified reporting (e.g., only reporting on average age, deforestation, and confirming continued management practise), suggesting this struck a better balance of ongoing compliance and reporting costs. Stakeholder review session: Participants thought ongoing reporting under averaging accounting could become a reporting and data handling burden over the long-term for large foresters managing multiple age-class forests. Participants favoured simplified reporting (e.g. at regular period at planned harvest date).
I Converting a forest's long-term average carbon stock into a forest average age	
I.1. Forest average age for each forest type determined by assumed harvest age	A Better ETS for Forestry consultation: A minority of submissions (10 out of 70) supported an option where a forest's average age was based on forest type and region alone. Those supporting this option did so on the grounds of its simplicity and administrative efficiency. CCFRG: Members were generally comfortable with having forest type age bands. They wanted enough incentive to extend rotation length, but still keep things simple.
I.2. Forest average age bands determined by normal harvest ages for forest types (preferred)	A Better ETS for Forestry consultation: The majority of submitters favoured basing the forest average age on forest type, but with the ability to nominate age bands. This received wide support from stakeholder groups such as the Forest Owners Association, Ngati Porou Forests Ltd. and carbon consulting firms. CCFRG: Members were generally comfortable with having forest type age bands. They wanted enough incentive to extend rotation length, but still keep things simple.
J Proposal to remove participants' temporary adverse event liability	
J.1. Participants are not liable for carbon loss from a temporary adverse event that damages their forest using averaging, and can continue to earn NZUs once the forest regains the same carbon storage as immediately before the event (preferred)	A Better ETS for Forestry consultation: A strong majority of submitters (70 out of 87) supported the proposal to provide temporary adverse event cover for foresters using averaging accounting, and believed it would incentivise increased afforestation and participation in the ETS due to lower risk. Submitters also thought it would help incentivise permanent afforestation. Those opposing the proposal noted that NZU repayment constituted only part of private insurance cost (which also includes other losses such as to the value of timber and costs of re-establishing the forest). Stakeholder review session: Participants were generally in favour of temporary adverse event coverage, but questioned its scope (e.g., for pest diseases). Some participants suggested it should remain reasonably open in definition, and adaptable over time. Others suggested specificity was useful to make clear for forest owners where they would need to seek private insurance. CCFRG: members thought that proposals covering temporary adverse events would help to de-risk participation in averaging accounting, making it more attractive, particularly for permanent forests.

K Should post-1989 forest owners be able to offset their deforestation liability by planting a forest elsewhere?	
K.1: Participants can offset their averaging accounting forest deforestation liability by establishing a carbon equivalent forest in another location (preferred)	A Better ETS for Forestry consultation: The majority of submitters supported the Government's preferred option of introducing offsetting for forests using averaging accounting. They noted that it would increase land use flexibility, encourage land to be used for its best purpose, and would help incentivise the "planting the right tree, in the right place, for the right purpose." 11 submitters also commented that offsetting should be made available to post-1989 forests using the carbon stock change approach. Stakeholder review session: Participants were supportive of the proposal to allow offsetting, but raised whether it should also be extended to post-1989 land using carbon stock change accounting.
L Proposal to extend pre-1990 deforestation liability exemption to post-1989 forests	
L.1. Participants are eligible for deforestation liability exemptions under section 60 of the CCRA (preferred)	A Better ETS for Forestry consultation: The majority of submitters supported the Government's preferred option of extending section 60 to post-1989 forests. One submitter made the comment that the key difference is that pre-1990 forested land status was imposed whereas post-1989 registration is voluntary. This means the bar must be considerably higher for exempting post-1989 forest land.
M Reducing the increased incentive to deforest existing forests under averaging accounting	
M. Reducing the incentive to deforest existing forests under averaging accounting	A Better ETS for Forestry consultation: Submitters raised a concern about the potential for the creation of a perverse incentive to deforest under averaging accounting. They thought it could mean some owners of existing post-1989 forest land have financial incentives to deregister and/or deforest their existing forest land, allow the land to sit idle for a period of time (or use for other purposes such as pasture), and subsequently register the land later as a "new" forest, and accrue NZUs.

APPENDIX 6: PERCENTAGE OF HARVEST AREA CAPTURED WITHIN AVERAGE HARVEST AGE BLOCKS

Radiata pine: ten year block

	25-34
	% of area
2006-09	98%
2010-13	95%
2014-17	93%

Radiata pine: two five year blocks

	25-29	30-34
	% of area	% of area
2006-09	72%	26%
2010-13	69%	26%
2014-17	51%	42%

Radiata pine: three 5 year blocks

	22-26	27-31	32-36
	%t of area	% of area	% of area
2006-09	18%p	76%	5%
2010-13	12%	75%	10%
2014-17	13%	73%	12%

Douglas-fir: ten year block

	36-45
	% of area
2006-09	91%
2010-13	80%
2014-17	93%

Notes:

- Data sourced from the National Exotic Forest Description
- Area harvest data has randomly rounded to base 3.
- Harvest age data is provided by respondents as the long-term average carbon stock age of harvest for a specific species in a Territorial Authority (TA).
    - Information about the range of ages harvested by species and TA is not provided, meaning some variability is missing.
- The data has been grouped into four-year blocks to reduce between-year variability in harvest ages.
- Each block consists of 2 census years, where all forest owners with 40 or more hectares are surveyed, and 2 sample years where only owners with 1000 or more hectares are surveyed.
- No harvest data is collected for forests smaller than 40 hectares. The result is averages biased towards the behaviour of larger forests if the average harvest age for these forests is significantly different than for the under-40 hectare forests.
- Extreme long-term average carbon stock ages have been trimmed, such as forests harvested at under 10 years or over 80 years.
    - These extremes either represent unusual behaviour or possible data errors, but only represented a small percentage of total area harvested.

Age blocks have not been provided for eucalypts due to the skew and variability in harvest ages.

APPENDIX 7: DEFORESTATION DISINCENTIVE: ECONOMIC ANALYSIS

A short net present value (NPV)[125] analysis is used below to determine a plausible length of time-limited suspension between the point of deforestation and when foresters are able to plant re-join the ETS. This is to determine whether a time period can be defined that would eliminate the economic advantage of pursuing the deforestation loophole. It was based on expert opinion and a number of pre-existing analyses.[126]

The NPV analysis looks at costs and revenue associated with the return on carbon (through NZUs earnt in the ETS) and return on timber (e.g., labour costs for planting and revenue on logs sold). It is assessed at the time of harvest of the existing forest, where the forest owner has the choice between the base case of replanting immediately and earning no additional NZUs, or the primary scenario of deforesting the land for a set period of time before planting and entering the ETS as a new forest (under averaging accounting). A full set of assumptions are provided in table 6 below.

As shown in table 6, the NPV for pursuing the deforestation loophole decreases as the length of temporary suspension from replanting and re-entering the ETS increases. A time-limited suspension of 15 years before planting and re-entering is needed to decrease the economic return (NPV) of pursuing the deforestation loophole below the alternative of replanting (and not earning units under averaging accounting).

This analysis does not look at the risks to land owners attempting to deforest and re-enter the ETS at a later date (e.g., the risk that a future government amends ETS forestry regulations to prevent re-entry of that forest to the ETS). It assumes forest owners are able to reasonably foresee that variables such as carbon price, log price, future genetic improvements of trees, and ETS accounting will not substantively change in future.

Table 6: Net present value comparison of forest owner who pursues deforestation loophole with a forester who replants immediately

Years before re-planting and entry to ETS is allowed	Net present value of landowners investment (NZD/hectare for logs + carbon)		Decision with highest economic return (NPV)
	Base case – Forester replants immediately, no additional NZUs	Primary scenario – Deforest then re-enter ETS as new forest	
0 years	$1,660	$7,214	Deforest then re-enter ETS
5 years		$4,572	Deforest then re-enter ETS
10 years		$2,775	Deforest then re-enter ETS
15 years		$1,552	Replant immediately
20 years		$719	Replant immediately
25 years		$152	Replant immediately
30 years		($253)	Replant immediately
40 years		($674)	Replant immediately

A number of sensitivity scenarios are shown below to test which variables affect the relative viability of pursuing the deforestation loophole. This sensitivity analysis suggests that higher carbon prices, lower discount rates used by foresters, and lower costs of temporarily deforesting would all increase the length of time-limited suspension needed to nullify the economic advantage of deforesting.

125 Net present values represent the value of investment decisions at present (now), and discount future costs and returns based on the time-value of money (ie, that money today holds more value than money earned in future).

126 https://www.mpi.govt.nz/news-and-resources/open-data-and-forecasting/agriculture/ ; David Evison's "The impact of carbon credits on New Zealand Radiata pine forestry profitability"

Table 7: NPV for deforestation loophole under different sensitivity scenarios

Sensitivity cases	Number of years suspension before deforestation loophole has lower profitability
Primary scenario (as in table 6 above)	15 years
Carbon price rises 3% per annum (from $25 start)	18 years
Carbon price of $50	23 years
Temporary conversion to grazing land is cost neutral[127]	21 years
Participant uses low discount rate[128] (3%)	16 years
Participant has less profitable timber returns[129]	17 years
Participant has more profitable timber returns[130]	14 years

Below are the detailed assumptions used in developing the NPV analysis for a time-limited suspension from re-joining the ETS. It is assumed that forest owners respond in a profit-maximising way to economic drivers in making land use decisions relating to their land, and do not face regulatory or other barriers associated with temporarily converting their land to other uses (e.g., regional authority regulations preventing conversion of land from or to forestry).

127 Base case assumes $1,055 cost associated with converting land to grazing land, with no net revenue earned for the period where land is deforested. This scenario tests plausible situations where farmers are able to earn minimal revenue from an alternative land use to offset any land conversion costs (e.g., by renting the land to sheep and beef farmers to offset the conversion cost from fertiliser, ryegrass sewing etc.

128 Base case uses 8% discount rate, sensitivity case uses 4% discount rate.

129 Base case equates to NPV on logs of $1,660/hectare when no delay is introduced. This sensitivity scenario assumes a forester's NPV on logs is $500 lower. Controlled variable is through stumpage value.

130 Base case equates to NPV on logs of $1,660/hectare when no delay is introduced. This sensitivity scenario assumes a forester's NPV on logs is $500 higher. Controlled variable is through stumpage value.

Table 8: Base scenario assumptions

Factor	Assumption
Discount rate	8%
Length of NPV calculation	Three rotations after point of decision.
Forestry regime	Radiata pine 28-year rotation production forest. Unpruned regime (taken from Manley, 2018) of: - Plant 1000 stems/hectare - Waste thin to 800 stems/hectare at mean crop height of 8m - Waste thin to 500 stems/hectare at mean crop height of 14m Total NPV on logs equates to $1,660.
NZU price	$25, static over time.
Log prices	Default values in NZFFA radiata 4.0 calculator as at 03 March 2019, reflecting forest gate prices.
Financial costs of production forest (e.g., clearfell logging, labour and supervision, establishment costs)	Default values in NZFFA radiata 4.0 calculator as at 03 March 2019.
Age in which average is reached	18 years, using default lookup table values
Banking/selling of NZUs	Forest owner accrues value of NZUs in year in which these are earned and makes no additional revenue from market speculation. Forest owner submits voluntary emissions returns annually to accrue NZUs as the forest grows.
Effect of ETS participation on land value	Not incorporated in this analysis. In reality, accruing NZUs and selling these would be expected to result in a net decrease in future land value (due to the liability on the land that would be accrued where that land is converted to other land uses).
Costs and revenue of land conversion to alternative land use (rough grazing), including administrative costs (from re-entry to ETS)	$1,055/hectare cost for land conversion and re-registration in ETS. No net revenue earned through alternative land use (e.g., from stocking sheep and beef on land). Costs drawn from 2017 MPI analysis assuming: • Spray out pine regeneration 10l/hectare Glyphosate 360/Meturon 170g/hectare – $250/hectare • Oversow perennial ryegrass/clover 20kg/hectare – $200/hectare • Fertiliser (superphosphate 400kg/hectare) – $300/hectare • Fencing – $250/hectare • Water supply – $50/hectare • ETS reregistration cost ($500) for a 100 hectare block – $5/hectare • Risk that part of the land will not be considered eligible when reregistered – Not quantified

APPENDIX 8: GLOSSARY

Accounting, accounting rules and accounting approach

In the ETS this refers to the methodology for quantifying the changes in the carbon stored in registered forests from tree growth, and the amount emitted upon events such as clearing (harvesting) and deforestation.

Afforestation

Establishment (either by planting or natural regeneration) of forest on land that did not previously have tree cover.

Allocation

The Crown gives emissions units to ETS participants eligible to receive units for activities. For example an eligible forest owner registered in the scheme will receive emissions units from the Government in accordance with tree growth.

Averaging accounting

The averaging accounting method reflects the amount of carbon stored in their forest over the long term, with emissions units allocated to participants.

Below ground Biomass

'Below ground biomass' refers to the root systems of the tree that remains in the ground after harvest. These roots will contain and store carbon.

Carbon accounting area

A carbon accounting area is a self- selected area of forest participants must report carbon storage changes for each reporting period. It can contain several sub-areas.

Carbon equivalence

When land is the subject of an offsetting land application under section 186A of the CCRA, carbon equivalence means the offsetting forest land will contain the same carbon stock as the pre-1990 land, at the time of clearing, within the usual rotation period.

Carbon price

The cost of one emissions unit (New Zealand Unit). A single unit represents one tonne of carbon dioxide equivalent.

Carbon sink

Natural and artificial processes that take carbon dioxide from the atmosphere and store it are known as 'carbon sinks'. Because they take in and store carbon dioxide through the process of photosynthesis, forests are a good example.

Carbon Stock

The amount of carbon contained within a forest.

Carbon stock change

Addition or removal of carbon stock contained in a forest.

Carbon storage

The uptake of carbon-containing substances, in particular CO_2, in terrestrial or marine reservoirs. Biological storage includes direct removal of CO_2 from the atmosphere through afforestation.

Carbon storage calculation

Is the calculation used to determine participants' entitlements or obligations each MERP based on the carbon change that occurs in their forest over the reporting period. It is based on calculations outlined in the ETS forestry regulations.

Climate Change Response Act 2002 (CCRA)

A legal framework to help enable New Zealand to meet its international climate change obligations under various international agreements such as the United Nations Framework Convention on Climate Change and the Kyoto Protocol.

CCRA Amendment Bill

The full suite of ETS forestry package changes are intended to be made through a Climate Change Response Amendment Bill by the end of 2019.

Commercial forest

A forest grown primarily for the purpose of earning an income from harvested timber.

Crediting

Refers to the amount of forest growth (carbon stock increase) for which a participant can receive emissions units. A participant 'allocated' emissions units is being 'credited' for that increase in carbon stored.

Crown

The New Zealand Government.

Deforestation

a) To convert forest land to land that is not forest land; and
b) Includes clearing forest land, where s 179 applies.

Deforestation liability

A participant must surrender units when deforesting certain forests under the ETS.

De-registration

Post-1989 forest land participants may cease to be a scheme participant at any time by applying to be removed from the register of participants. A participant can cease to be registered voluntarily, or because the land is no longer eligible (for example, following deforestation).

Emissions Mitigation

The reduction or removal of emissions. In the case of forests, this specifically relates to carbon storage, as forests act as a carbon sink.

Emissions trading scheme/ETS

The New Zealand Emissions Trading Scheme was created through the Climate Change Response Act 2002 (CCRA), passed in recognition of New Zealand's obligations under the Kyoto Protocol. It is the primary method for the New Zealand Government to achieve its long-term commitment to reduce greenhouse gas emissions.

Environmental Protection Authority (EPA)

The EPA maintains the register for ETS participation and is the agency responsible for administering the ETS under the CCRA. A range of functions relating to forestry activity are delegated to MPI.

Existing forests

Forests which have already been established when averaging accounting is introduced for newly established forests that meet the definition of post-1989 forest land under the CCRA.

FMA Field Measurement Approach

The CCRA forestry regulations use two forest carbon measurement rules to determine participants' NZU entitlements and obligations in forests in the ETS: Lookup tables (for forests smaller than 100 hectares in area) and the FMA. The FMA approach requires participants to generate specific carbon tables for the five tree types: Radiata Pine, Douglas Fir, Exotic Hardwoods, (other) Exotic Softwoods, and Indigenous Forest and is not considered to be cost efficient for small area forest blocks.

Forest estate

All of New Zealand's forest, both commercial and permanent.

Forest land

a) Means an area of land of at least one hectare that has, or is likely to have, tree crown cover from forest species of more than 30 percent in each hectare; and
b) Includes an area of land that temporarily does not meet the requirements specified in paragraph (a) because of human intervention or natural causes but that is likely to revert to land that meets the requirements specified in paragraph (a); but
c) Does not include –
    i. a shelter belt of forest species, where the tree crown cover has, or is likely to have, an average width of less than 30 metres; or
    ii. an area of land where the forest species have, or are likely to have, a tree crown cover of an average width of less than 30 metres, unless the area is contiguous with land that meets the requirements specified in paragraph (a) or (b).

Forestry sector

Those working directly in forestry, including industry bodies, forest growers, wood processors, manufacturers and exporters.

Full time equivalent

A unit that indicates the workload of an employed person in a way that makes workloads or class loads comparable across various contexts.

Harvesting restrictions

A participant is restricted from harvesting their forest within specified legal parameters.

International climate change targets

New Zealand is committed to international climate change targets as a party to the United Nations Framework Convention on Climate Change and the Kyoto Protocol (MfE Website).

Lookup table

Tables for default carbon storage used to determine participants' NZU entitlements and obligations for forests in the ETS where forest areas are less than 100 hectares in area.

Land use flexibility

The ease with which a participants can change their land use while meeting ETS obligations.

Liability

Liability here means the requirement to surrender or repay NZUs under the ETS.

LUCAS

Land Use and Carbon Analysis System. The part of MfE that is responsible for measuring the carbon in trees for international climate change accounting.

Mandatory Emissions Return

All post-1989 forestry participants are required to calculate carbon stock change for the Mandatory Emissions Return Period (MERP). Completed return forms must be submitted to MPI within 6 months of the end of such a period. Mandatory emissions returns are also required to be submitted following certain events, such as following transmissions of interest (forest ownership changes).

Mandatory Emissions Return Period (MERP)

The five yearly period each post-1989 forest land participant is required to report for. The current MERP is 2018-2022.

Nationally Determined Contribution (NDC)

How a country states its target under the Paris Agreement on Climate Change. It represents the individually determined contributions each country should make to reduce national greenhouse gas emissions and adapt to the impacts of climate change. The individually determined contributions each country should make to reduce national greenhouse gas emissions and adapt to the impacts of climate change.

Natural Regeneration

The commencement of growth of seedlings present as a result of a process other than planting.

New forests

Newly established forests that meet the definition of post-1989 forest land in the CCRA and as defined by policy decisions in this RIA.

New Zealand's international climate change forestry accounting rules

The accounting rules set internationally that New Zealand must adhere to in the calculation of its NDCs.

New Zealand's international climate change targets

The targets New Zealand has committed to meeting as a party to the United Nations Framework Convention on Climate Change and the Kyoto Protocol and the Paris Agreement.

New Zealand Unit (NZU)

A unit issued by the Registrar and designated as a NZU.

Offset Planting

Planting a carbon-equivalent forest that will store as much or more carbon than the forest that has been deforested.

One Billion Trees Programme
A programme led by Te Uru Rākau that fulfils the Government's goal to plant one billion trees by 2028.

Pre-1990 forest Offsetting
The option for owners of pre-1990 forest land to remove an area of forest, and not surrender units for the emissions, provided a forest of at least equivalent area and carbon stock is established on eligible land.

Paris Agreement
An international treaty within the United Nations Framework Convention on Climate Change (UNFCCC), dealing with greenhouse-gas-emissions mitigation, adaptation and finance, starting in the year 2020.

Participant
Here, a person, persons or entity that is registered and:
- participates in a forestry activity; or
- carries out an activity covered by the ETS.

A participant must report on emissions (or on carbon captured) and may need to surrender units to cover emissions or may receive an entitlement of units for carbon capture.

Permanent forest
A forest which will not be clear-fell harvested.

Permanent post-1989 forest
A proposed new activity in the Climate Change Response Act 2002 (CCRA).

Post-1989 forest land
Post-1989 forest land is land which meets the forest land criteria, and includes:
- was not forest land on 31 December 1989; or
- was forest land on 31 December 1989 but was deforested between 1 January 1990 and 31 December 2007; or
- was pre-1990 forest land that was deforested on or after 1 January 2008, and any ETS liability has been paid.

Post-1989 forest
The default category for registering eligible forest into the ETS, used to distinguish from land included in the new permanent post-1989 forest category.

Pre-1990 forest land
- was forest land on 31 December 1989; remained as forest land on 31 December 2007; and
- contained predominantly exotic forest species on 31 December 2007.

Land that was indigenous forest land on 31 December 1989, and remained so on 31 December 2007, is not pre-1990 forest land and is not subject to ETS obligations.

Re-establish
An area of forest land that is temporarily clear of forest species and is then established in forest.

Register

The process for entering post-1989 forest in the ETS.

Retrospective application

An application that concerns an activity undertaken in the past.

Rotation

The cycle of growth and felling or cutting of trees.

Rotational forest

Forest managed using successive rotations.

Saw tooth accounting

When a rotational forest accounts using the stock change approach the sequential period of storage followed by a sharp decline is carbon stock (after harvest) results in a pattern that resembles a saw teeth.

Section 60

The section of the CCRA that currently contains deforestation exemption provisions for pre-1990 forest.

Spot market/spot price

The price of an NZU on the 'open' market which units can be purchased for at short notice.

Stock change approach

Where the participant accounts for the net carbon stock change in the forest.

Sub-areas

Forest areas within a CAA comprise a sub-area if they have matching;

- forest type
- age
- Region if radiata pine and default lookup tables are used for carbon calculation
- Year cleared, if applicable

(for the current and any rotations in the past ten years).

Surrender

The transfer of one or more units to the Crown surrender account in the Register to meet an emissions obligation.

Temporary adverse event

Adverse events which do not directly result in long term or permanent deforestation.

Transmission of interest

A participant either transfers land to a new participant, enters into a contract where the contract holder is the new participant, or a contract is terminated and the landowner or new contract holder is the participant.

Trustee

An individual person given control or powers of administration of property in trust with a legal obligation to administer it solely for the purposes specified.

Units

This means a Kyoto unit, a New Zealand Unit (NZU) or an approved overseas unit. Currently the ETS only transacts NZUs and NZ AAUs.

Unit Balance

The current balance of units received for a Carbon Accounting Area since its first registration. The participant may or may not still hold these units.

Voluntary

This means that an option is available to be chosen but not obligatory. Post-1989 forest participation is voluntary.

Zero Carbon Bill

A proposed Act that commits New Zealand to zero carbon by 2050 or sooner, through a fair and cost-effective transition to a zero-carbon economy.