Technical Annex to the Consultation Document

Annual Updates to New Zealand Emissions Trading Scheme Limits and Price Control Settings for Units 2026

Ngā Whakahou Ā-Tau ki ngā Tepe me ngā Tautuhinga Whakatau Utu mō ngā Wae mō te Kaupapa Hokohoko Tukunga o Aotearoa 2026

Ministry for the Environment
Manatū Mō Te Taiao

Te Kāwanatanga o Aotearoa
New Zealand Government

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Introduction

This technical annex provides further detail on the modelling used in the consultation document, *Annual updates to New Zealand Emissions Trading Scheme Limits and Price Control Settings for Units 2026*.

Proposed options in the consultation document

Every year, the Government is required to review settings for the auctions of the New Zealand Emissions Trading Scheme (ETS) for the next five years. It must decide on:

- the appropriate supply of New Zealand Units (NZUs or units)
- price control settings that align with New Zealand's emissions budgets and the 2050 target.

As part of this process, we must consider the advice and recommendations of He Pou a Rangi | Climate Change Commission.

This year, the Government is consulting on three options for updating the ETS settings for 2027–31. These relate to the supply of units via auction volumes. All three options retain the status quo price controls, extended to 2031 and adjusted for the latest inflation forecasts. The options are:

- Option 1: Commission-recommended auction volumes – 14.7 million units across 2027–31
- Option 2: Government-recommended auction volumes – 13.0 million units across 2027–31
- Option 3: Lower auction volumes – 7.7 million units across 2027–31.

New Zealand Emissions Trading Scheme market model

This technical annex focuses on the analysis from the ETS market model. Other settings analysis, particularly the analytical model, is described more fully in appendix 1 of the consultation document.

The 2026 ETS market model analysis is based on:

- an updated ETS market model with recent data updates, judgements relating to evolving market dynamics, and new functionalities for more robust forecasts
- updated model assumptions and core scenarios to capture NZU secondary market price dynamics and risks to 2026 auction outcomes
- assessment of three proposed ETS unit and price control settings options, as set out in the consultation document
- sensitivity testing to assess the impact of supply, demand, behavioural and data uncertainties on model forecasts.

The **first section** of this annex describes:

- technical updates to the model since its last release in November 2025
- the main assumptions used in this analysis.

This section is intended to provide transparency on technical modelling details.

The **second section** outlines additional modelling results. It gives further detail about the main insights in the consultation document, followed by a range of sensitivity analyses.

ETS market model updates and calibration

Data updates since November 2025

The Ministry for the Environment published updates to the market model in November 2025. This update was the version of the model used to support final policy decisions on New Zealand Emissions Trading Scheme (ETS) settings in 2025. In this version, relatively minor changes were made compared with the version released for last year's consultation.

Three main data updates have been made since the November 2025 release:

- Industrial allocation represents free New Zealand Unit (NZU) allocations and is a component of supply in the market model. As noted under the settings analytical model, industrial allocation forecasts have been updated in the revised model to reflect ongoing policy changes. Current forecasts align with the March Baseline Update 2026 and are the same as those used to inform this year's settings options.
- The total stockpile of NZUs refers to all NZUs held in private accounts. The current version of the model uses the total stockpile data available from the Environmental Protection Authority as of December 2025. The model now refers to this stockpile as the starting point for stockpile movements.
- The 2025 emissions projections were released in October 2025 and amended in January 2026. We have used these projections to update:
  - the zero-price projection that forms baseline demand in the model
  - the non-ETS sector emissions that are included to help evaluate modelled scenarios against the emission budgets.

Accessing the 2026 market model

The latest (May 2026) version of the model, which incorporates the above data updates, is available on request from the Ministry for the Environment. Please contact etsconsultation@mfe.govt.nz.

Because the model is a macro-enabled Excel spreadsheet, we cannot make it available directly on our website.

Main model assumptions for 2026 ETS settings analysis

Auction supply

In the 'model' tab of the ETS market model spreadsheet:

- the 'status quo' unit settings option (cell B5) refers to status quo settings (i.e., as set in the regulations in 2025) and extended to 2031
- 'CCC' refers to the settings proposed by He Pou a Rangi | Climate Change Commission (the Commission). This toggles both the unit settings (auction volumes and cost containment reserve volumes) and the price controls (the latter are the same for both options).

Also shown are other unit settings options, as set out in the consultation document, but these must be manually copied in.

Afforestation

Carbon removals attributed to forestry are a supply side component in the market model. They are dynamically modelled using yield tables and either exogenous or endogenous afforestation projections.

Our central assumptions for forestry removals consist of:

- the official afforestation projections (excluding afforestation on Crown-owned land, which is captured in non-ETS projected emissions)
- yield tables consistent with the Ministry for Primary Industries (MPI) forestry model as of November 2025.

This assumption is set by toggling cell B6 on the 'model' tab to 'MPI Central'. Note, the discrepancy adjustment row in the afforestation tab ensures the totals exactly match MPI projections.

Using an exogenous assumption for forestry means that afforestation is not responsive to ETS prices within the model. However, prices are generally projected to average around the long-run marginal cost of forestry. Finally, the projections align with the policy to constrain conversion of farmland to exotic afforestation registered in the scheme, assuming that the ballots are fully subscribed and other afforestation (eg, on farm forestry blocks) happens in the same proportions as it has historically.

Forestry is a large source of both supply and uncertainty in the scheme. We therefore did a sensitivity analysis using endogenous forestry projections. These are derived using a simplified version of the 'Manley' formula,[1] which relates afforestation rates to prices. The main limitation is that the 'Manley' formula tends to predict relatively high rates of afforestation at current and expected price levels. To compensate for this known bias, we use the more

[1] The 'Manley' model was developed by Professor Bruce Manley of University of Canterbury to relate afforestation rates to New Zealand Emissions Trading Scheme prices and a range of other relevant factors, such as land and log prices. The market model uses a simplified version of the formula to estimate the afforestation response.

conservative 'low' specification of the formula. We discuss the results in the sensitivity analysis Responsiveness of afforestation to price signals section.

Users can combine the 'Manley' endogenous response with an overall annual limit on afforestation if desired. This is set by cell B18. To disable this functionality, simply set the parameter value very high (>100,000).

Stockpile

The stockpile, as viewed by the market model, can be broadly split into two categories:

- surplus – assumes highly liquid characteristics (can be bought and sold quickly)
- non-surplus ('other') – assumes more illiquid characteristics.

The price responsiveness of holders in both groups is a significant source of uncertainty in ETS market dynamics.

The model's starting total stockpile is set at 135.9 million NZUs, based on Environmental Protection Authority data.

The **surplus** is the most liquid component of the stockpile, so the model assumes this is drawn down first to meet NZU demand. The 2026 settings analysis uses the Ministry for the Environment's central surplus stockpile estimates (34.1 million NZUs). This is slightly higher than the Commission's estimate (29.7 million NZUs).

The non-surplus stockpile can also be made available to meet NZU demand under certain conditions. This assumption is determined by the parameter controlling the transfer of stockpiled units to the surplus stockpile (cell B13 in the model tab). For this analysis, we used 5 percent for most scenarios. The exception was the sensitivity analysis, which we discuss further in the Sensitivity analysis section.

The market model is quite sensitive to the liquidity parameter, which is not empirically testable. Recent practice has been to set it at a value that generates a broadly stable ratio of non-surplus stockpile units to compliance demand in the near term (up to 2035).

New Zealand Unit demand response to price

The aggregate demand response to prices in the model is derived from the Emissions in New Zealand (ENZ) model.[2] It is an autoregressive function that incorporates both a change element (response to annual price changes) and a momentum element (longer-run impacts, for example, from investment).

To test sensitivity and to construct error ranges, particularly for total net emissions projections, we used the standard errors of the coefficients. This includes applying +/– one standard error for smaller changes in responsiveness, or the 95 percent confidence intervals (+/– 1.96 standard error) for larger changes.

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[2] Emissions in New Zealand (ENZ) is a comprehensive modelling tool that projects and analyses economic and greenhouse gas emissions outcomes across sectors of the New Zealand economy. The model has been used to inform New Zealand's second emissions reduction Plan (ERP2) and the He Pou a Rangi | Climate Change Commission's (the Commission's) advice. See the ERP2 technical annex, for further information on the ENZ model.

Simulating 2026 auctions not clearing

The significant gap between the current secondary market price and the auction floor price creates a technical modelling challenge that the market model is not well suited to answer. This is because the model is designed to find price paths that balance supply and demand over the long term rather than year to year. Most commentators link the current lower price with continued short-term uncertainty and low market confidence, as opposed to the long-term fundamentals that the market model focuses on.

To address this shortcoming requires imposing judgement on the model about the near-term price outlook. Our preferred approach assumes that the secondary market price remains low this year (ie, auctions do not clear) but recovers to equal the floor price in 2027. This requires us to impose explicit judgements on 2026 and 2027 price outcomes in the scheme, rather than allowing the model 'to solve for price' (as it does for remaining years).

We also used a 'minimal judgement' approach, where the model solves for price throughout. This also shows no auctions clearing in 2026, but we think it may overstate the speed and magnitude of price increases post-2027. Still, it serves as a useful alternative, indicating:

- support for assuming 2027 auctions clear
- a higher potential upper price range.

A further sensitivity check shows the conditions, particularly the degree of stockpile drawdown, for a scenario where no further auctions are needed in the scheme. For this analysis, prices are held flat at $50.

The 2026 settings scenarios incorporate these approaches by exogenously setting the 2026 and/or 2027 prices. To simulate this, go to cell C10 in the 'Prices' sheet, and set it as desired. We used:

- a 2026 price at $40 in 2023 dollar terms, equivalent to about $43 in 2026 nominal terms (roughly the average year-to-date spot price)
- a 2027 price at or above $68 (the auction price floor converted to 2023 dollars) to exogenously impose a 2027 auction clearance.

Methodology for estimating total net emissions

The market model was not designed to estimate total net emissions; its focus is on net emissions covered by the scheme. However, the projections can be combined with other information to make a high-level projection of total net emissions. This can help with assessing whether a given combination of unit and price control settings accords with emissions budgets. Two additional sources of information and assumptions are needed.

1. **An estimate of emissions outside the ETS (mostly agriculture)**
   Official projections for 2025 are used to estimate non-ETS sector emissions. These projections also capture estimates of the impact on removals of the afforestation on Crown-owned land policy.

2. **A conversion of 'low-risk' forestry NZUs to total 'target' accounting removals**[3]
   Not all emissions removals are within the scheme, and the accounting treatment for some forestry units differs between the ETS and the 'target' accounting used for emissions budgets. This means the market model projections of 'low-risk' forestry NZUs usually underestimate removals that contribute towards the budgets. To adjust for this, an estimate of total removals is made by scaling up projected low-risk forestry units. The scaling factor has been set by comparing MPI's low-risk forestry removals projections with total removals projections (calculated with consistent information).

Net emissions are calculated as the total demand for NZUs (i.e., gross emissions in ETS sectors) plus non-ETS sector emissions less total removals.

These point estimates are subject to high uncertainty. They should be tested together with sensitivity tests. Varying the stockpile liquidity or the price responsiveness parameters are both useful sensitivity parameters.

We supplement these estimates from the ETS market model with emissions estimates from the broader-based ENZ model. To do this, price projections of the different options from the ETS market model are used as an input into ENZ, with other parameters unchanged from the 2025 projections.

[3] We acknowledge that this approach has limitations and are working on ways to more accurately translate the model afforestation projections into removals projections. A provisional approach using the Commission's forestry model is being tested but is not in use yet.

Unit and price control settings analysis for 2026

Scenarios for analysis

We used selected scenarios in the consultation document (see 'Implications for market dynamics and emissions budgets') to highlight the implications and trade-offs of the three proposed options for updating the New Zealand Emissions Trading Scheme (ETS) settings.

We outline the scenarios here in more detail. The first section steps through the different short-run market judgement approaches using option 2 unit and price control settings (status quo settings extended to 2031) to show how we settled on the preferred approach.

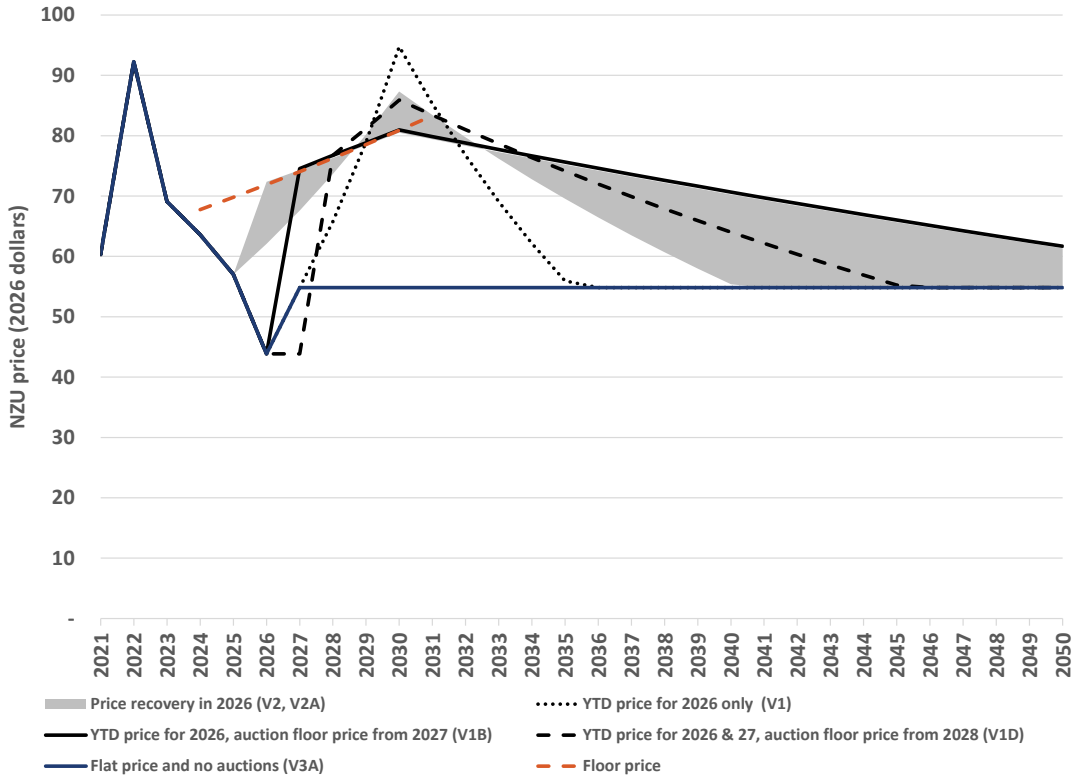
The second section then applies this preferred approach to short-term clearance to the other unit and price control options in the consultation document. This enables comparisons of the options using the same underlying assumptions.

The third section conducts a range of sensitivity tests.

Testing judgements on the short-term market outlook

Figure A shows ETS price trajectories based on different assumptions about how the short-term market outlook might evolve. Option 2 status quo unit and price control settings, extended to 2031, are used for auction volumes and price controls.

Figure A: Analysis of status quo settings under different short-term market outlooks



Note: NZU = New Zealand Unit; YTD = year to date.

Source: Ministry for the Environment

Preferred approach: Prices assumed to recover to just above the 2027 auction floor price

The initial scenario (V1) in figure A assumes prices remain at year-to-date (YTD) levels below the auction floor in 2026, resulting in auctions not clearing. This outcome is assumed to be driven by high market liquidity and weak sentiment. The model then predicts sustained, large increases over 2027–30.

In the V1B iteration, the YTD spot price is again imposed for 2026. To reflect a subsequent market adjustment, prices in 2027 are anchored (by assumption) just above the floor price.

In contrast, the **V1D** scenario extends the imposed YTD spot prices through 2027 to capture prolonged sideways movement in the market. The 2028 price is anchored just above the floor price to represent a delayed market recovery.[4]

Minimal judgement approach

The shaded price paths in figure A depict a technically feasible outcome that is unlikely to be realistic in the short term, given current sentiment. These scenarios reflect participants reacting to market fundamentals and imply the secondary market rallies sharply over the course of 2026 (lower end of the range, designated V2).[5] The upper end of the shaded range in figure A in 2026 (designated V2A) assumes a more rapid adjustment that clears 2026 auctions with slower price increases thereafter.

No further auction approach

In the 'no further auction' approach, the price is held flat at $50 (in 2023 dollar terms). We used the model to test how much additional stockpile drawdown is needed to balance the market. Although significantly lower than in scenarios with auctions, the total stockpile still remains at quite high levels, more than 2.5 times annual demand at its lowest level in 2030. That is, prices remaining near current levels over the short and long run, which could suggest that auctions may no longer be required, is a potential outcome (subject to the constraints of the market model).

Main insights from judgements on the short-term outlook

Among the iterations, prices rallying to just above the floor price in the 2027 (**V1B**) scenario is internally consistent, it shows a smoother trajectory, and appears realistic.

A delayed rally to 2028 (**V1D**) and steady increases from this year (**V1**) capture other plausible scenarios that exhibit upside price risk.

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[4] The V1C scenario, not shown in figure A, holds 2026 year-to-date prices through 2027 and 2028 and then allows the model to determine the price. However, this combination of judgements did not yield internally consistent results.

[5] For context, the market has previously experienced similar sized gains, albeit driven by different market conditions. In 2021, spot prices rose from the mid-30s in May to the mid-60s by September. In 2023, spot prices rallied from the July low of $37 to around $70 by end of the year. That is, a rally of this magnitude is plausible under the right conditions.

After different starting points, **V1B** and **V2A** price paths both track just above the auction floor price. This would be consistent with:

- the auction volumes being necessary to meet overall demand, but
- participants being unwilling to pay higher prices than necessary in anticipation of exotic forestry driving down prices over the medium to long term.

Comparing the unit and price control options

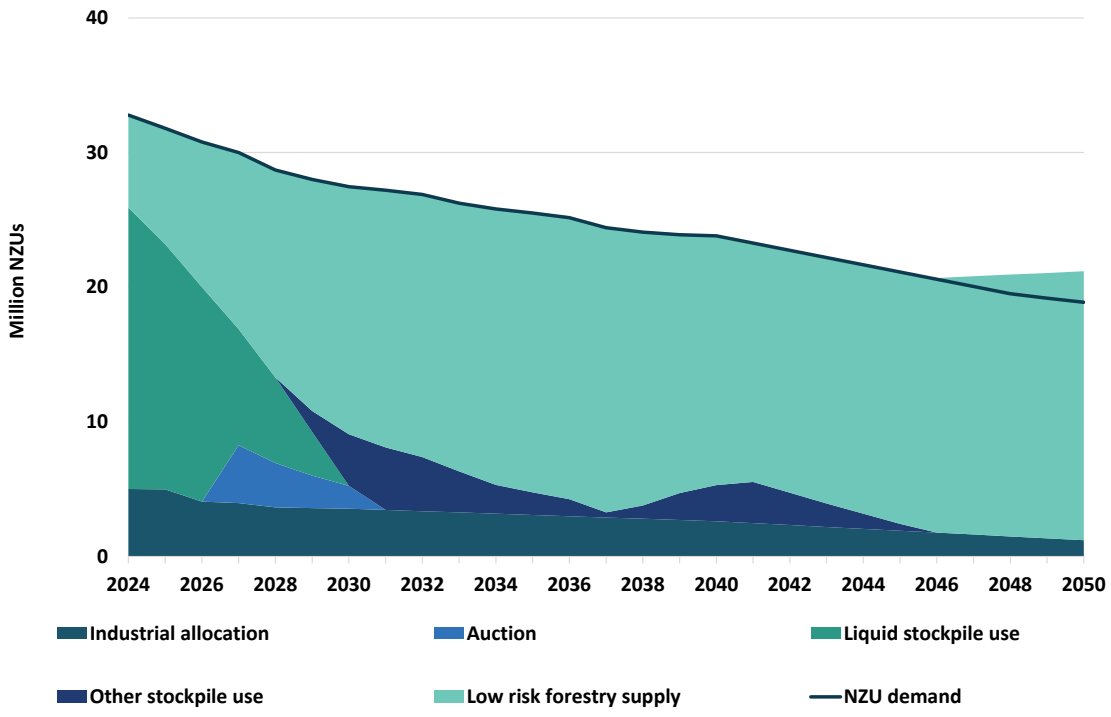
This applies the preferred approach of the short-term outlook (V1B) to the three options in the consultation document.

Projected sources of NZU supply

Figure B presents the supply outlook for option 2 (status quo unit supply and price control settings, extended to 2031). This scenario uses the market outlook assumption outlined in the previous section; prices remain below the auction floor price in 2026, and auctions do not clear before increasing in 2027 to levels just sufficient to restore auction clearance. Overall, the resulting supply outlook is internally consistent with a rebalancing of market supply towards forestry. This scenario does not point to a material risk of under supply developing. Total stockpile drawdown over 2026–30 is projected at just under 40 million New Zealand Units (NZUs), above the central surplus estimate (34 million) but well within the wider surplus range (16–48 million).

Because the 2031 auction volume is the only difference between option 2 and option 1 (Commission recommendation), figure B represents the projected outlook for both options.

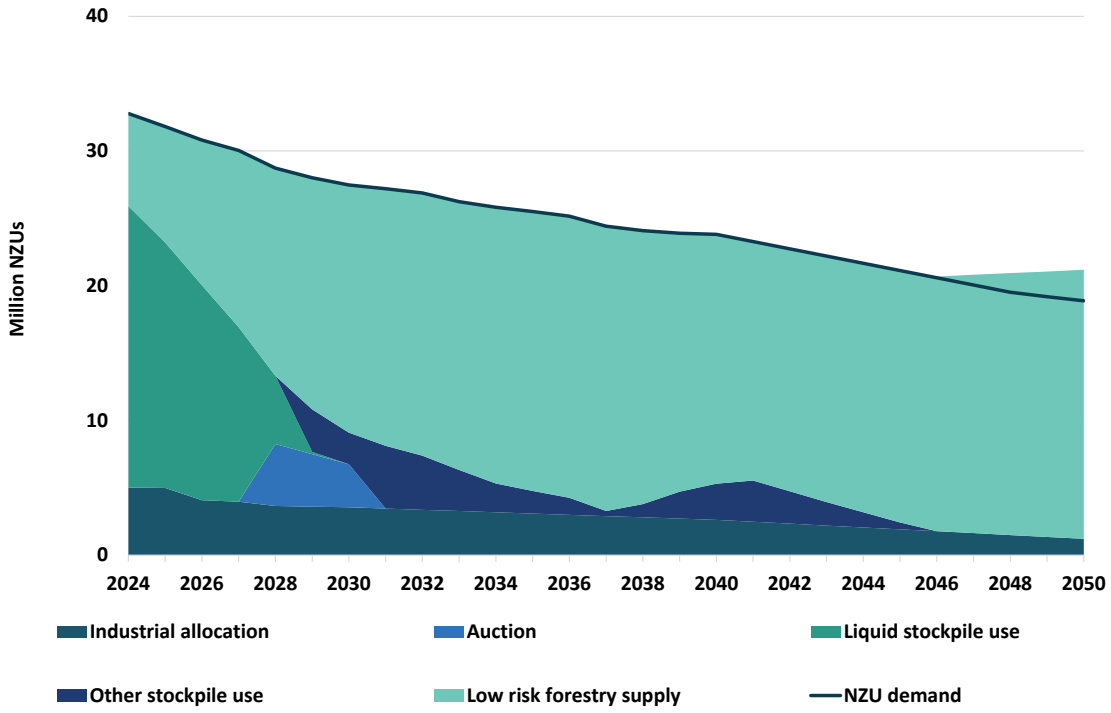
Figure B: Projected dynamics under option 1 and option 2 – status quo unit and price control settings



Note: NZU = New Zealand Unit.
Source: Ministry for the Environment

We also tested a further status-quo variant involving no auctions clearing in 2026 and 2027, equivalent to the option 2 variant with the 2027 auction volume rephased to later in the second emissions budget (EB2) (figure C). This was modelled by holding prices at year-to-date spot levels through 2027 (see the V1D iteration in figure A) but using the rephased option 2 auction volumes. This changed the mix of supply sources by year but did not materially change the projected outlook.

Figure C: Projected dynamics of option 2 (status quo) with zero 2027 auction



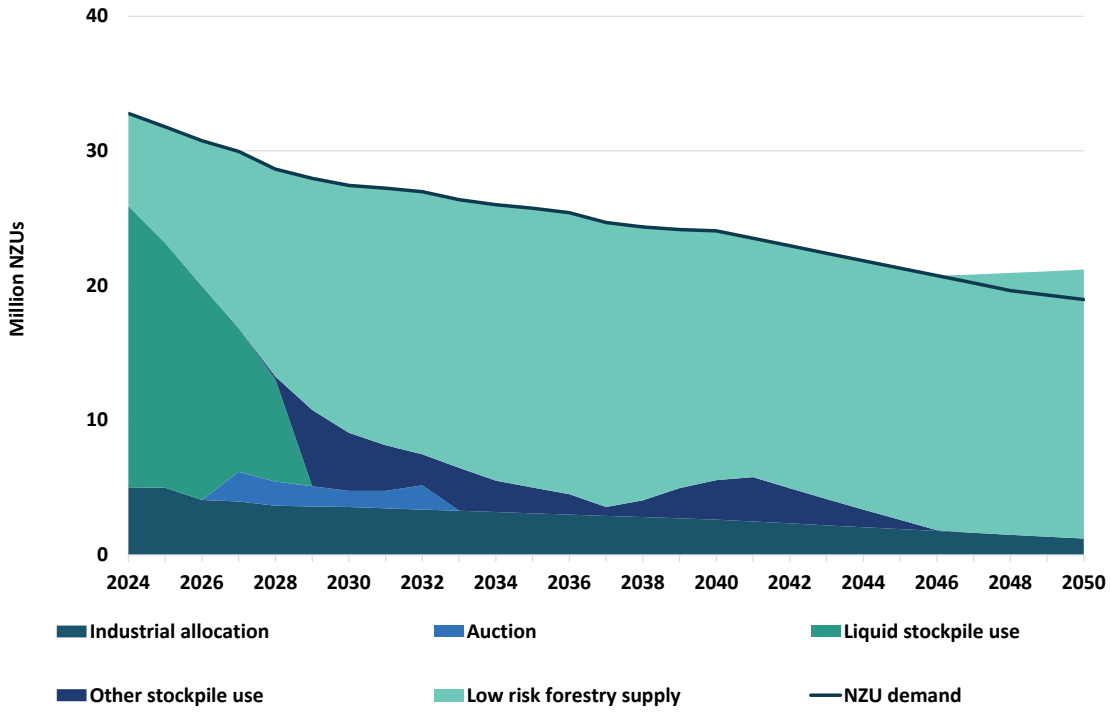
Note: NZU = New Zealand Unit.
Source: Ministry for the Environment

Figure D shows the supply outlook of the low unit volume option 3 with status quo price control settings, under the same short-term market clearance scenario and central surplus stockpile. Tighter supply pushes prices higher for longer, leading to auctions clearing into the early 2030s.

In the market model, this option is very sensitive to the surplus estimate. At the central estimate, the model doesn't quite solve (~300 NZUs shortfall in 2029, about 1 percent of demand) but even a small increase in the surplus estimate leads to material reductions in the peak price. For this reason, the peak price under this option is more uncertain than usual and requires further judgement. For the purposes of constructing the upside risk range for option 3 we increased the surplus estimate by 600 NZUs (<2 percent) to give a more balanced set of results.

Because this option was consistent with a view that the surplus is higher, we also tested this with a higher surplus estimate. Under these conditions, the price path was similar to the lower range of the status quo options but with a larger stockpile drawdown (figure G).

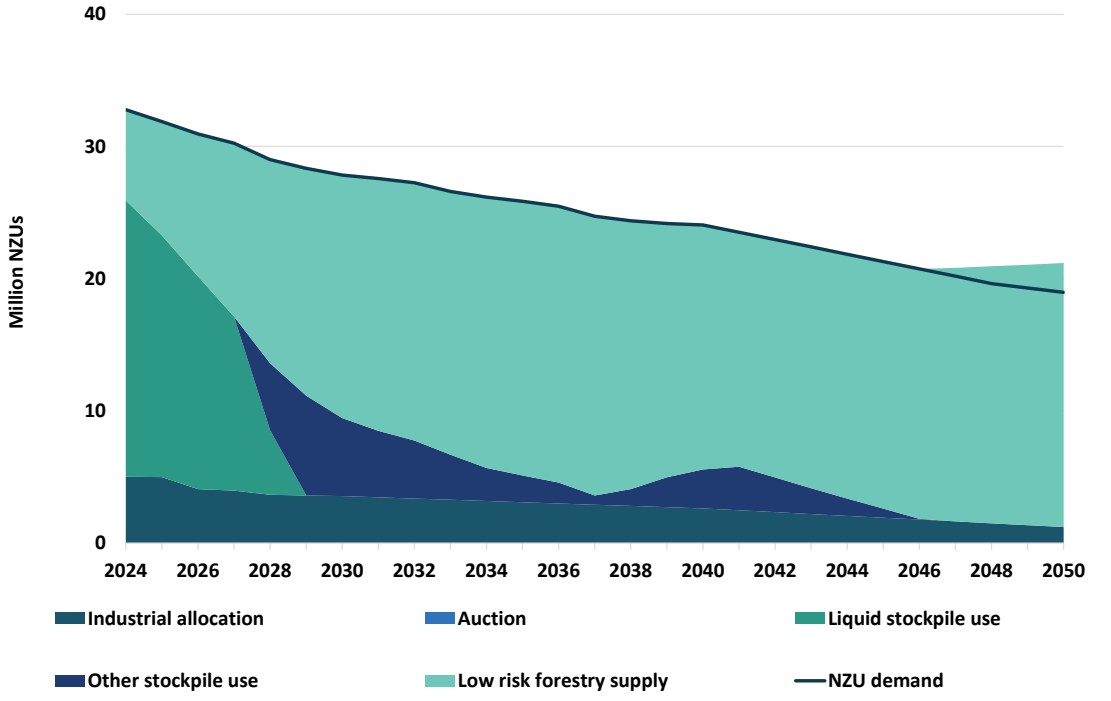
Figure D: Projected dynamics of option 3 (low auction volume)



Note: NZU = New Zealand Unit.
Source: Ministry for the Environment

In the 'no further auctions clear' scenario, prices are held flat below the auction floor price by assumption. As in figure E, the low price and lack of auction supply result in faster stockpile drawdown to meet demand and clear the market.

Figure E: Projected dynamics under the no auction scenario



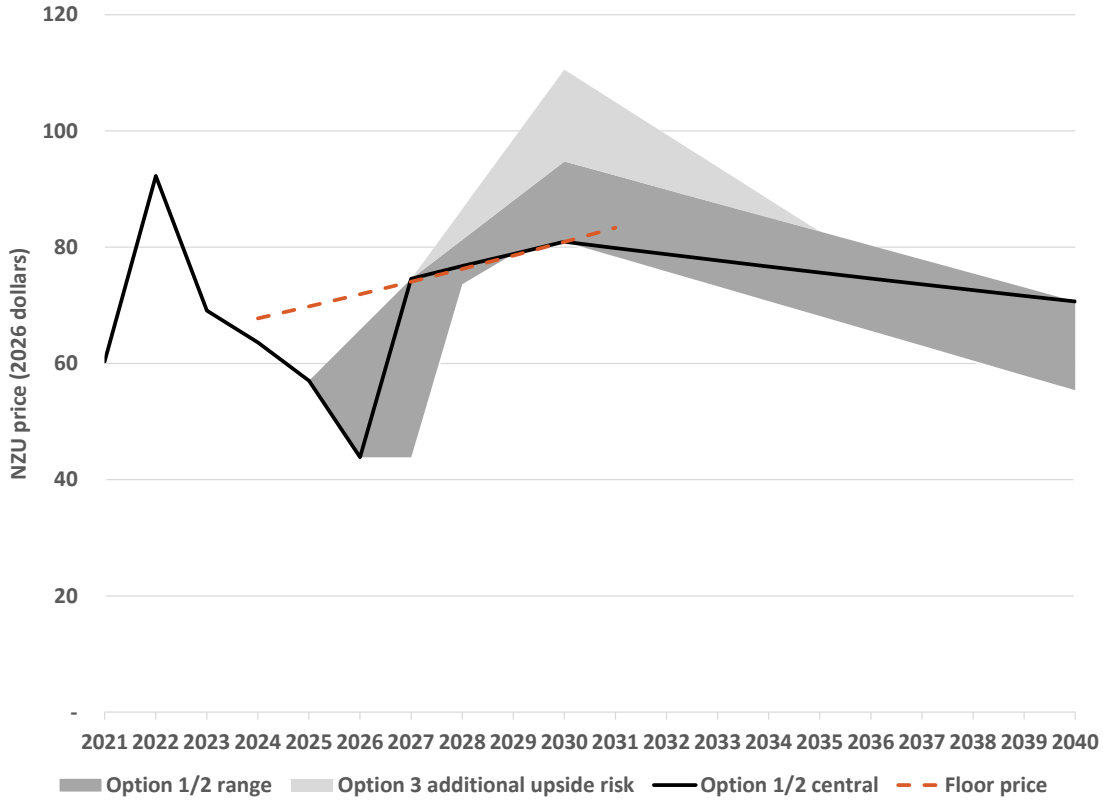
Note: NZU = New Zealand Unit.
Source: Ministry for the Environment

Implications for projected prices

Figure F shows the projected price paths for the auction volume options presented above.[6] The status quo options (1 and 2) and low auction-volume settings (option 3) tell a similar story; the price paths are broadly consistent and imply a comparable supply outlook. The darker shaded area in figure F shows the range of price pathways under different short- term outlook assumptions for options 1 and 2. In general terms, the longer prices are low in the near term (implying auctions do not clear), the higher they rise towards 2030 to offset the lost earlier auction supply.

The lighter shaded area in figure F shows the additional upside price risk from the lower volume option 3 when the adjusted central surplus estimate is used. As noted above, this option is quite sensitive to the surplus estimate in the model, so needs to be treated with additional caution. That said, the result is consistent with economic logic that, when unit supply from the surplus stockpile becomes constrained, low auction volumes increase undersupply risk and accordingly have higher upside price risk.

Figure F: Projected price paths for auction volume options 1 to 3



Note: Ranges have been smoothed. NZU = New Zealand Unit.

Source: Ministry for the Environment

[6] This is shown as figure 5 in *Annual Updates to New Zealand Emissions Trading Scheme Limits and Price Control Settings for Units 2026*.

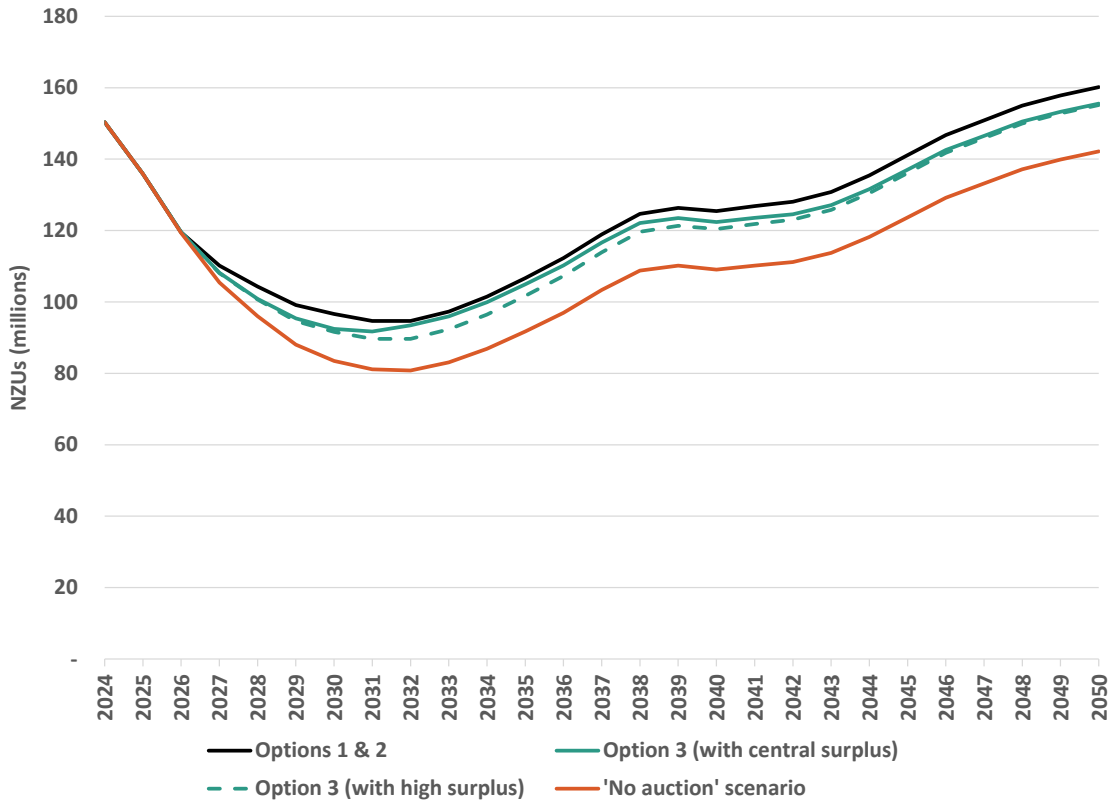
Implications for projected stockpile

Figure G shows NZU stockpile levels under the different auction options. The two status quo and low-auction options display similar stockpile trajectories, reflecting near identical market dynamics. Under all options, total stockpile levels remain slightly lower than 100 million NZUs in 2030, significantly exceeding annual compliance demand.

From 2030 onwards, the stockpile begins to rebuild as the forestry cycle progresses, indicating increasing unit availability through the third emissions budget (EB3).

By contrast, the absence of auction supply (no auction scenario) increases reliance on stockpile drawdown to meet the demand, leading to lower total stockpile levels. Even so, the stockpile remains substantial (83 million), exceeding 2.5 times annual demand in 2030.

Figure G: Projected NZU stockpile under options 1 to 3 and hypothetical no auction scenario



Note: NZU = New Zealand Unit.
Source: Ministry for the Environment

Implications for total net emissions projections

In the consultation document, the section ‘Implications for total net emissions projections’ outlines estimates of total net emissions.

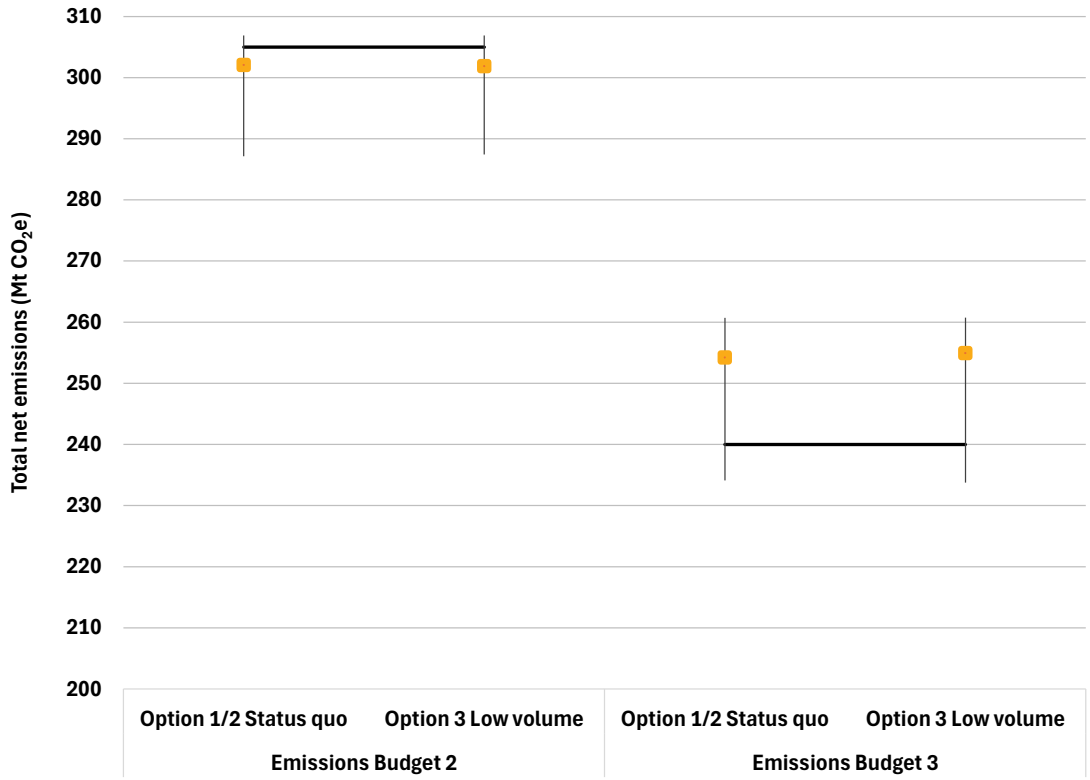
The market model is not designed to estimate total net emissions. It focuses on net emissions covered by the ETS. To produce high-level estimates of total net emissions, model outputs are, therefore, combined with additional information. As a result, emissions estimates are presented as ranges derived from sensitivity analysis based on alternative assumptions about price responsiveness.

Within these limitations, the analysis indicates a high likelihood that all modelled auction volume options will keep total net emissions (central projection) within the EB2 target range (figure H).

By contrast, it is highly likely that total net emissions under all options will exceed the EB3 threshold. The EB3 outcome reflects the continued drawdown of stockpiled units in response to flat or declining future price expectations, which offsets the tightening of auction supply over this period. Even with this effect, as shown in figure G, the total stockpile is expected to continue to increase post-2030 as forestry units steadily accrue. In these circumstances, it is difficult to construct a case that prices will remain sufficiently high for long enough to drive net emissions within the EB3 target using the ETS alone.

We tested for robustness of the market model emission estimates using the ENZ model and assigning option price paths in the ENZ model. The ENZ approach yielded broadly similar results. We provide details of the analysis and results in the section Sensitivity analysis section.

Figure H: Projected net emissions in EB2 and EB3 under options 1 to 3



Note: CO_2e = carbon dioxide equivalent; EB2 = second emissions budget; EB3 = third emissions budget; Mt = megatonnes.
Source: Ministry for the Environment

Sensitivity analysis

The Model assumptions section highlights areas where sensitivity analysis is appropriate. We focus here on sensitivities to model inputs (stockpile estimates and liquidity, afforestation response to price) and varying assumptions for the ETS central cyclical price-path assumption.

Surplus stockpiles estimate and stockpile liquidity

Surplus stockpile estimate

The initial surplus stockpile provides a source of NZUs for market participants to meet their emissions obligations. As a result, it can influence projected ETS dynamics and price paths. A larger surplus puts downward pressure on prices. A reverse effect is expected for a smaller surplus. We tested the sensitivity of modelled outputs for lower and upper bound surplus stockpile estimates.

Stockpile liquidity

Impacts of the settings depend partly on participants' decisions to use stockpiled units to meet their annual emissions obligations. Participants choose to do this to maximise their current and future benefits, using available information, including the expected NZU price.

If participants expect prices to increase at a slower rate than the cost of capital, both foresters and compliance participants have less incentive to hedge their future requirements, and there is less incentive to hold NZUs as a financial asset. There will be limits to this, the compliance penalties are sufficiently stringent that participants are unlikely to be fully unhedged. But, on balance, some units in the stockpile are likely to become available to the market if prices are not trending steadily higher.

Because there will be a spectrum of liquidity in the stockpile, we tested the sensitivity of settings options to this issue by using different liquidity parameters. Figure I shows the projected price path from the low, central and high liquidity scenarios for option 1 (status quo unit settings, extended to 2031). The main analysis used 5 percent liquidity in the central scenario, which shows a stable other stockpile unit to compliance demand ratio through to 2035. For the sensitivity analysis, we used 4 percent and 10 percent respectively for low and high liquidity.

The shaded area in figure I shows the spectrum of price sensitivity across low and high surplus stockpile estimates.

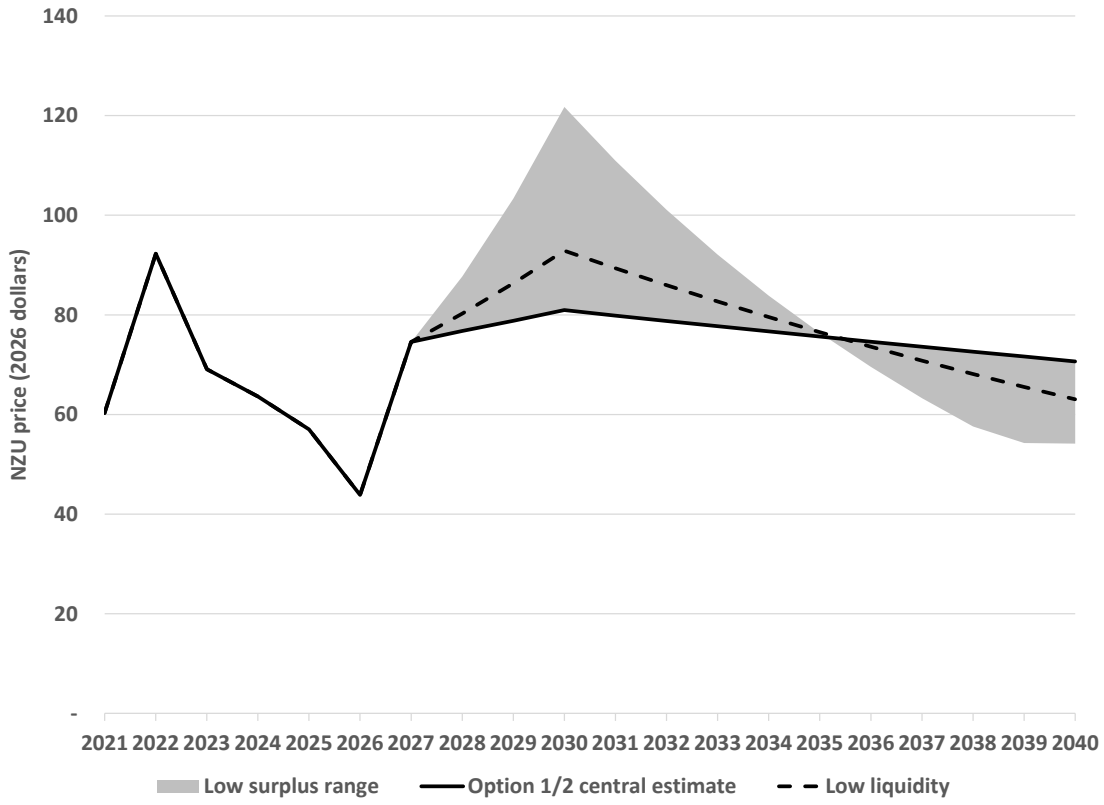
Sensitivity analysis results

The main modelling scenarios in this document share a common assumption that 2026 prices will remain considerably lower than the auction price floor, and auctions will clear from 2027. This would indicate that stockpile use, along with expected forestry supply, industrial allocation and auctioned units, would be sufficient to match compliance demand.

Compared with this base case, a low surplus stockpile estimate (midpoint of the lower range) implies a tighter supply position. This requires substantial drawdown of other stockpiles (around 14 million NZUs) during EB2, whereas under a high surplus stockpile, no other stockpile drawdown is projected.

The overall story is unchanged under low versus high liquidity assumptions. Under low liquidity, limited drawdown of the surplus stockpile increases reliance on the other stockpile to meet the NZU demand, putting upward pressure on prices. Conversely, under high liquidity, the price does not rise above the auction floor during EB2. This is the same outcome as shown in the 'no auction' scenario (figure E).

Figure I: Sensitivity to surplus stockpile



Note: NZU = New Zealand Unit.
Source: Ministry for the Environment

Responsiveness of afforestation to price signals

Afforestation and forest removals are central to the ETS. They are the primary, yet highly sensitive, mechanism for offsetting New Zealand's gross emissions. Afforestation has historically been quite responsive to ETS prices. The policy to restrict the conversion of farmland to exotic forestry, as registered in the scheme,[7] is expected to curb this responsiveness by setting limits on the most commonly afforested land-use class (LUC6). This is one factor behind using the 2025 central afforestation projections as the main forestry assumption.

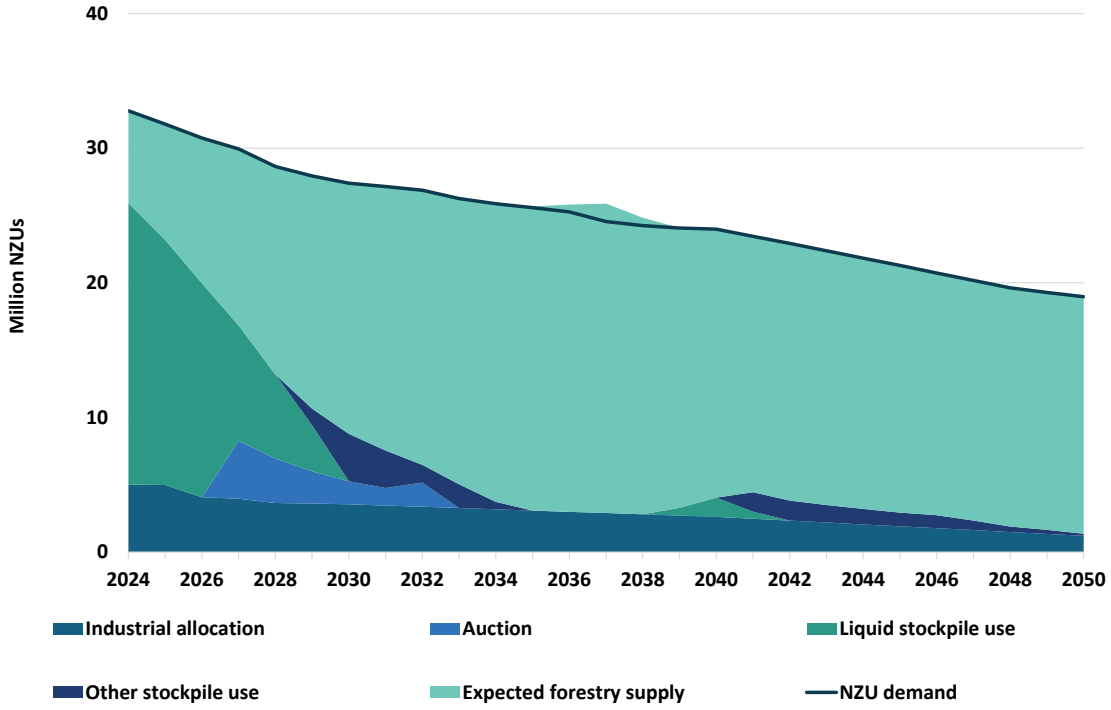
To test the implications of afforestation being more responsive to price signals, we ran the market model with the endogenous forestry response based on the 'Manley' formula. The 'Manley' approach projects slightly lower total levels of afforestation to 2050 than the Ministry for Primary Industries (MPI) central projections (625,000 hectares for 2026–50 versus 683,000 hectares). However, it frontloads the projected afforestation rates slightly, compared with MPI

[7] See the Ministry for Primary Industries website for further information. Ministry for Primary Industries. Limits to restrict farm-to-forest conversions. Retrieved 18 May 2026.

projections. This, in turn, leads to higher projections of low-risk forestry units over the 2030s and 2040s and less need to draw from the 'other' stockpile units (figure J).

Due to the lag between afforestation and carbon sequestration, higher afforestation in the 2020s than that projected by MPI does not materially alter total emissions estimates for EB2 or EB3.

Figure J: Responsiveness to afforestation projections



Note: NZU = New Zealand Unit.
Source: Ministry for the Environment

Cyclical versus constant price path

Most of the scenarios assume that prices will generally increase during the 2020s, then fall from the 2030s onwards. This reflects a view that prices must be high enough in the shorter term to:

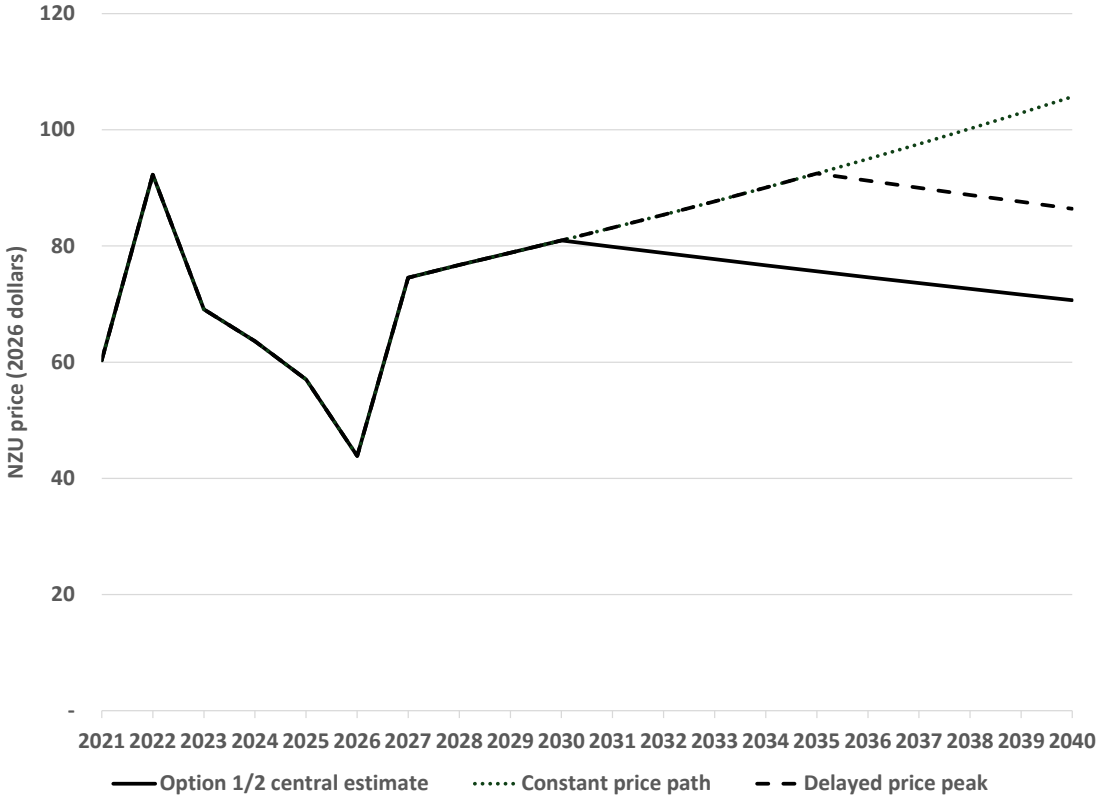
- release auction volumes
- induce enough stockpile drawdown to meet compliance demand while the forestry supply is relatively low.

Over the longer term, we expect the growing forestry supply will exert downward pressure on prices. The timing of this turning point is imposed on the model, but the magnitude of the peak is endogenously determined.

An alternative approach is to allow the model to endogenously determine a price path based on a constant price change assumption (figure K). This may be a plausible price pathway if the policy restricting exotic forestry from registering in the scheme acts as an enduring and binding cap on afforestation, preventing additional afforestation from curbing prices. We also tested the same cyclical price path with an extended peak price, assuming a slower stockpile drawdown and auctions playing a role for an extended period in balancing the market.

The model projects emissions under these alternative price-path scenarios. EB2 net emissions are relatively insensitive to the scenarios tested, because prices over the EB2 period are broadly similar across scenarios, and the lag in forestry means removals at this horizon are largely determined already. By contrast, emissions begin to respond more clearly to the price signal in EB3. Under the constant and extended peak price-path scenarios, EB3 emissions are projected to be 1–2 mega tonnes of carbon dioxide equivalent (Mt CO_2e) lower than under the baseline cyclical price-path scenario.

Figure K: Constant and delayed peak price-path assumptions



Note: NZU = New Zealand Unit.
Source: Ministry for the Environment

Alternative approaches to total emissions projections

We tested the robustness of the market model's emissions projections using the Emissions in New Zealand (ENZ) model. We also tested the central price-path scenario, as well as the higher (V1) and lower (V3) price-path scenarios using the ENZ model.

The ENZ model indicated lower emissions than the market model for both EB2 and EB3. For EB2, the difference was small, less than 1 Mt CO_2e. The differences over EB3 were larger, 3–4 Mt CO_2e, but ENZ emissions projections remain materially above the budget target. This indicates that the market model estimates are relatively conservative and that the overall conclusion that emissions are likely to exceed EB3 is robust to different model approaches.