



HM Treasury

Green Book Discount Rate Review 2026

HM Treasury response

October 2026

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Chapter 1

Introduction

1.1 In December 2025, HM Treasury commissioned Professor Ben Groom and Professor Mark Freeman to lead an independent review of the Green Book's approach to discounting. The chief aim was to consider whether the value of the Green Book discount rate remained appropriate and whether it risked undervaluing the long-term benefits of transformational investments relative to short-term impacts. The full terms of reference were published on GOV.UK at the time of commissioning.¹

1.2 Professors Groom and Freeman concluded their review in June 2026.² HM Treasury is very grateful for their rigorous and thoughtful work on a complex and contentious subject. The review drew on extensive evidence and input from leading experts and practitioners, and its final publications are a valuable resource that will inform public sector appraisal for years to come.

1.3 In September 2026, the Chancellor confirmed that the government would accept the central recommendation of the review: to reduce the Green Book discount rate from 3.50% to 3.00% for the first 30 years of a proposal. This will place greater value on the long-term benefits of investment and strengthen the case for transformational projects that drive growth, wherever they take place.

1.4 The final report sets out 23 discrete recommendations. HM Treasury has accepted 15 in full, partially accepted 5 and has not accepted 3 at this stage. Across the recommendations, the government has sought to reflect the review's findings while ensuring that changes to the Green Book are practical and proportionate. Where recommendations have not been accepted in full, HM Treasury has set out its reasoning and will keep the relevant issues under review.

1.5 This document sets out HM Treasury's response to each recommendation and confirms the changes made as a result of the review. HM Treasury has reflected these in a new version of the Green Book.³ It has also published updated Green Book supplementary guidance on discounting, including the full schedule of standard discount rates and discount factors for different years of an appraisal period.⁴

¹ ['Review of discounting in the Green Book: Terms of Reference'](#), HM Treasury, December 2025

² ['Green Book Discount Rate Review 2026'](#), HM Treasury, June 2026

³ ['The Green Book'](#), HM Treasury, October 2026

⁴ ['Green Book supplementary guidance: discounting'](#), HM Treasury, October 2026

1.6 Box 1.A summarises the main changes to HM Treasury's guidance arising from the review.

Box 1.A Changes to the Green Book and the Green Book supplementary guidance on discounting

- The discount rate for years 1 to 30 is reduced from 3.50% to 3.00%.
- The discount rate for years 31 to 75 is reduced from 3.00% to 2.50%.
- The discount rate for years 76 to 125 is reduced from 2.50% to 2.25%.
- The Green Book no longer recommends the use of the health discount rate of 1.50%. Instead, the value of future real health effects should be uprated by 2% per annum over time. This leads to mathematically equivalent appraisals of health effects.
- The Green Book supplementary guidance on discounting no longer recommends using sensitivity analysis to test how an assumption of pure time preference of zero might affect the results of an appraisal.

Chapter 2

Responses to review recommendations

R.1. The discount rate accounts for the maturity and systematic risk of projects.

We recommend that HM Treasury uses the discount rate to account for project maturity and project systematic risk only in its economic appraisals.

2.1 HM Treasury accepts this recommendation. It has reflected this recommendation in the Green Book supplementary guidance on discounting.

2.2 The Green Book makes clear that an appraisal's time horizon should cover the whole lifetime of the proposal. The Green Book does not set required 'payback periods' over which a project must have repaid its costs.

R.2. Do not overwork the discount rate.

We recommend that HM Treasury avoids overworking the discount rate by including project specific issues within it. These issues should be addressed elsewhere in the analysis. The Green Book should provide a schedule of consumption discount rates applicable across different public projects, allowing for variations in project maturity and risk.

2.3 HM Treasury accepts this recommendation. It has reflected this recommendation in the Green Book supplementary guidance on discounting.

R.3. The findings of the Environmental Discount Rate Review remain robust.

We recommend that HM Treasury retains the conclusions from its Environmental Discount Rate Review (HM Treasury 2021).

2.4 HM Treasury accepts this recommendation. It has reflected this recommendation in the Green Book supplementary guidance on discounting.

R.4. Remove the health discounting schedule.

We recommend that health costs and benefits are discounted at the standard rate, with relative price adjustments used to convert health utility units into the consumption numeraire.

2.5 HM Treasury accepts this recommendation. It has removed references to the health discount rate from the Green Book and the Green Book supplementary guidance on discounting.

2.6 The updated Green Book now recommends that appraisal practitioners should uprate the value of future real health effects by 2% per annum over time. This relative price adjustment produces an equivalent result to discounting at the health discount rate. The government's appraisal of health is therefore unaffected by the removal of the health discount rate.

2.7 In making these changes, the government has continued to ensure that its appraisals properly recognise the value of long-term health interventions that support people's health over decades and generations.

R.5. Relative price adjustments.

We strongly recommend that HM Treasury undertakes a body of work to evaluate future relative price changes for a range of social, health, and environmental benefits. This is a necessary condition for the successful application of a single schedule of consumption discount rates.

2.8 HM Treasury accepts this recommendation. It will work with other public bodies to develop forecasts for relative prices for health, environment and other types of social benefit. These forecasts will be published in the relevant Green Book supplementary guidance documents.

R.6. Do not undertake discount rate sensitivity analysis.

We recommend that, for any specific net benefit, b_{it} , only one consumption discount rate should be given by the Green Book. This does not prohibit the risk free discount rate varying by maturity, t , or the risk premium varying by project, i . HM Treasury (2026a, Table 3.B) should be reviewed in light of this recommendation.

2.9 HM Treasury partially accepts this recommendation. The previous version of the Green Book supplementary guidance on discounting recommended using sensitivity analysis to test how an assumption of pure time preference of zero might affect the results of an appraisal. HM Treasury has removed this section in the updated guidance. However, HM Treasury has maintained Annex A of the Green Book that recommends discount rate sensitivity analysis for the appraisal of private finance models. This is discussed further in the response to R.22.

2.10 Practitioners should continue to conduct sensitivity analysis for other important input variables that are relevant in an appraisal. This is described in Chapter 6 of the Green Book.

R.7. The discount rate is STPR, but SOC evidence is relevant.

We recommend that HM Treasury views the social discount rate as a purely STPR concept. However, when establishing a numerical value for it, STPR and SOC evidence are both relevant.

2.11 HM Treasury accepts this recommendation. It has reflected this recommendation in the Green Book supplementary guidance on discounting.

2.12 HM Treasury will continue to use a social time preference rate (STPR) approach to establish the Green Book discount rate. In other words, the Green Book discount rate should reflect the rate at which society is willing to trade off consumption today for consumption tomorrow.

2.13 HM Treasury will inform its decision on the Green Book discount rate using evidence from a social opportunity cost of capital (SOC) approach. In other words, HM Treasury will use information on the cost of capital derived from the different sources of government funding, and the return on the private investment that it displaces.

2.14 HM Treasury notes the commentary in the technical annexes on the marginal cost of public funds. This topic was out of the scope of the review, but HM Treasury recognises that this remains a matter of debate among experts.

R.8. The social discount rate should be regularly reviewed.

We recommend that HM Treasury reviews both the expected growth rate component of the Ramsey Rule, g , and the real rates of interest from the Bank of England yield curve every five years, or sooner if there is a significant change in real yields.

2.15 HM Treasury accepts this recommendation. The latest review of the Green Book discount rate concluded in 2026. HM Treasury therefore expects that the next review will conclude in 2031, though this is subject to change.

R.9. The pure rate of social time preference should remain $\delta = 0.5\%$.

$\delta = 0.5\%$ should represent social pure time preference alone. Individual mortality risk and private experimental impatience should not be included. Catastrophic and systematic risks should be handled explicitly in the risk analysis.

2.16 HM Treasury accepts this recommendation. It has reflected this recommendation in the Green Book supplementary guidance on discounting.

2.17 HM Treasury recognises that there are different views on the value of the pure time preference rate. The review carefully considered the arguments for assuming that the rate is zero, and for assuming that the rate is above zero. Having considered these arguments, HM Treasury accepts the final report's rationale and is confident in accepting its recommendation.

R.10. The elasticity of marginal utility of consumption should be $\mu = 1.25$.

$\mu = 1.25$ should be used in the Ramsey Rule. It represents a moderate increase in the curvature of social valuation relative to current guidance and is supported by triangulation across UK distributional choices, subjective well being, expert judgement and the broader empirical evidence. Private risk and intertemporal substitution estimates inform, but do not determine, the value.

2.18 HM Treasury accepts this recommendation. It has reflected this recommendation in the Green Book supplementary guidance on discounting.

R.11. Welfare weights should be harmonised at $\varepsilon = \mu = 1.25$.

Although ε and μ represent different concepts, Green Book welfare weights should use $\varepsilon = 1.25$ alongside $\mu = 1.25$ in the Ramsey Rule. Appraisals should report the conventionally unweighted NPSV and, where distributional analysis is material, a welfare weighted NPSV using $\varepsilon = 1.25$.

2.19 HM Treasury accepts this recommendation. It has reflected this recommendation in the Green Book.

R.12. Per capita real consumption growth should be 1.5%.

We recommend that, for the parameterisation of the Ramsey Rule, $g = 1.5\%$. This reflects a growth rate in real consumption of 1.75% and a downward adjustment of 0.25% to account for population growth over the next 30 years.

2.20 HM Treasury accepts this recommendation. It has reflected this recommendation in the Green Book supplementary guidance on discounting.

2.21 Growth in the UK economy is strong compared to international peers. The United Kingdom saw the joint-fastest growth in the G7 across the first half of 2026. The International Monetary Fund (IMF) has revised up its forecast for UK real GDP growth in 2026, from 0.8% in April to 1.3% in October.⁵

R.13. Disentangling the components of L .

We recommend that HM Treasury revisits the parameter L to more explicitly disentangle the separate economic effects that underlie it.

2.22 HM Treasury accepts this recommendation. It has reflected this recommendation in the Green Book supplementary guidance on discounting.

⁵ ['World Economic Outlook, October 2026: Resilience under strain, urgent choices'](#), International Monetary Fund, October 2026

R.14. With limited exceptions, the average social risk premium should be applied to all projects.

Except where it is practical, proportionate, and evidence-based to do otherwise, the government should apply the same risk premium to all projects irrespective of their betas. A notable exception, covered in Chapter 12, is projects with social insurance properties. More detailed evidence on the systematic risk of public projects should be gathered to review the impact of this recommendation at a later date.

2.23 HM Treasury accepts this recommendation. It has reflected the general principle that the same social risk premium should be applied to all projects in the Green Book supplementary guidance on discounting.

2.24 Nevertheless, HM Treasury also agrees that there may be circumstances in which a different approach is appropriate for social insurance projects. It will therefore keep the treatment of these projects under review.

R.15. Social insurance projects should have a discount rate below the average.

We recommend that any public project that delivers high social benefits when there is a significant negative shock to aggregate consumption should have a lower discount rate than is applied elsewhere through the Green Book. This, though, should be an exception, with explicit permission required from HM Treasury before this is actioned.

2.25 HM Treasury has not accepted this recommendation at this stage.

2.26 HM Treasury agrees with the theoretical principle underlying the recommendation. National resilience is valuable, and there is a case for investing in public projects that could deliver high social benefits during negative shocks. However, there are various practical challenges to applying a lower discount rate to these projects.

2.27 Firstly, it would be difficult to assess rigorously whether a project would indeed deliver high social benefits during a negative shock. Such assessments are likely to be uncertain, contentious and prone to change.

2.28 Secondly, UK government appraisals do not typically monetise some of the benefits associated with social insurance projects, such as those arising from national security measures or pandemic prevention. These non-monetised benefits therefore cannot be adjusted using a social discount rate.

2.29 HM Treasury will nevertheless keep the treatment of social insurance projects under review. It is working with the Department for Business, Innovation, Science and Trade to develop Green Book supplementary guidance on economic resilience. This guidance will help appraisal practitioners assess the social benefits of economic resilience.

R.16. STPR discount rate models should be informed by rare disaster risk.

We recommend that HM Treasury extends the STPR Ramsey Rule model to incorporate rare disaster risk. This will result in a lowering of the risk free rate, an increase in the average risk premium, and a case for applying negative risk premia in exceptional cases to projects that provide the greatest social insurance at times of economic collapse.

2.30 HM Treasury partially accepts this recommendation.

2.31 HM Treasury accepts the recommendation to extend the STPR Ramsey Rule to incorporate rare disaster risk. It has reflected this recommendation in the Green Book supplementary guidance on discounting.

2.32 HM Treasury does not accept the recommendation to set a lower discount rate for social insurance projects. It has explained its rationale in the response to R.15.

R.17. The forward social discount rate should decline over time.

We recommend that HM Treasury retains a declining term-structure of the risk-free discount rate, with the forward rate dropping by 0.5% at 31 years and a further 0.25% at 76 years. We also recommend that the risk premium does not vary with maturity.

2.33 HM Treasury accepts this recommendation. It has reflected this recommendation in the Green Book and the Green Book supplementary guidance on discounting.

2.34 The Green Book supplementary guidance on discounting also makes clear that the profile of discount rates is expressed in terms of forward rates, rather than spot rates.

R.18. The social discount rate should be 3.0% for standard projects and 1.5% for social insurance projects.

For maturities of 0–30 years, the risk-free discount rate should be 2%, with a 1% risk premium for standard projects and a -0.5% risk premium for social insurance projects. At 31 years the forward rate declines by 0.5%, with a further decline of 0.25% at 76 years.

2.35 HM Treasury partially accepts this recommendation.

2.36 HM Treasury accepts the recommendation to set the headline Green Book discount rate to 3.00% for years 1 to 30. It has set the discount rate to 2.50% for years 31 to 75 and 2.25% from years 76 to 125. HM Treasury has reflected this recommendation in the Green Book and the Green Book supplementary guidance on discounting.

2.37 HM Treasury notes the international comparisons that are set out in Table 4.1 of the technical annexes of the final report.⁶ A headline discount rate of 3.00% is broadly consistent with the social discount rates used in other countries. HM Treasury will continue to ensure that its approach to discounting is in line with international peers.

2.38 Some public bodies make appraisal decisions using wider methodological approaches that are developed independently through separate governance and decision-making processes. These bodies may therefore use different discount rates to those recommended in the Green Book, subject to approval from HM Treasury.

2.39 HM Treasury does not accept the recommendation to set a lower discount rate for social insurance projects. It has explained its rationale in the response to R.15.

R.19. Use explicit relative price adjustments rather than sector specific discount rates.

Non consumption outcomes should be valued using explicit, sector specific shadow price paths and the resulting consumption equivalent values should be discounted using the common consumption discount schedule. In the absence of more specific evidence, environmental unit values should increase in line with real income per person, corresponding to an income elasticity of willingness to pay of one. This provides a transparent default consistent with the existing treatment of health and the value of time in UK appraisal.

2.40 HM Treasury accepts this recommendation. It has explained how it will adopt this recommendation in the response to R.5.

⁶ [Green Book Discount Rate Review: Technical Annexes](#), Mark C. Freeman and Ben Groom, June 2026

R.20. Further embed comprehensive wealth accounting within the Green Book framework for sustainable growth.

The Green Book should further emphasise that appraisal should consider how interventions change the economy's productive asset base, including produced capital, educational human capital, health capital, and natural capital. A positive project NPV should therefore be accompanied by an assessment of whether the resulting path maintains or increases comprehensive wealth.

2.41 HM Treasury has not accepted this recommendation at this stage.

2.42 HM Treasury agrees with the principle that is set out in the final report. It agrees that appraisal practitioners should consider how a proposal might affect the economy's productive asset base, including the sustainability of assets that underpin long-term prosperity. HM Treasury recognises that there are limitations to the extent to which discounting, or relative price adjustments, can fully capture these considerations. HM Treasury will continue to consider how these sustainability considerations can be reflected in government appraisal. However, it does not consider a change to the Green Book to be proportionate at this stage.

R.21. Consider Target and Cost Analysis to establish target consistent biodiversity prices.

Non monetisable objects such as biodiversity could enter into CBA via a constraint on their depletion or a commitment for restoration. Carbon pricing currently follows this approach rather than having a specific discount rate. Binding government commitments, such as the Environment Act (2021), could be used to determine targets.

2.43 HM Treasury partially accepts this recommendation.

2.44 The Department for Environment, Food & Rural Affairs (Defra) has previously considered the target-cost approach to appraisal. It recommends its use, for specific purposes, in the assessment of biodiversity impacts. This is set out in Defra's appraisal guidance, *Enabling a Natural Capital Approach*.⁷ Defra and HM Treasury will keep this approach under review as they develop further evidence relating to biodiversity.

⁷ ['Enabling a Natural Capital Approach'](#), Department for Environment, Food & Rural Affairs, February 2026

R.22. For highly complex projects, the answer is unlikely to lie in a discount rate.

For private finance models, the discount rate should reflect, in a proportional way, the risk that such contracts impose on the public sector. For transformational projects and ultra-long-term projects such as nuclear decommissioning, HM Treasury should undertake more detailed welfare analysis and not rely on a discount rate.

2.45 HM Treasury partially accepts this recommendation.

2.46 Government projects may have social costs and social benefits that stretch into the ultra-long-term, beyond year 125 of the appraisal. These can be significant and practitioners should consider them carefully. HM Treasury nonetheless accepts the recommendation that standard discounted cost-benefit analysis has limited meaningfulness for social costs and social benefits that are expected to occur beyond year 125. Practitioners should provide other qualitative and quantitative analysis to support the appraisal of these ultra-long-term impacts. HM Treasury has reflected this principle in the Green Book supplementary guidance on discounting.

2.47 HM Treasury does not accept the recommendation that the discount rate for private finance contracts should be adjusted for the specific risk that such contracts impose on the public sector. Instead, practitioners should discount such contracts at the standard STPR, and apply an additional sensitivity analysis as set out in Annex A of the Green Book. Practitioners should also be particularly careful to adjust for optimism bias in their estimates of future social costs and social benefits. Nonetheless, in its response to R.14, HM Treasury notes the academic debate around adjusting the social risk premium in the discount rate for different projects. This is therefore a topic that HM Treasury will keep under review.

2.48 HM Treasury does not accept the recommendation on explicit welfare analysis. It discusses this further in its response to R.23.

R.23. Transformational projects require explicit welfare analysis.

We recommend that HM Treasury uses explicit welfare analysis rather than discount rates when undertaking the economic appraisal of transformational projects.

2.49 HM Treasury has not accepted this recommendation at this stage.

2.50 HM Treasury agrees with the theoretical principle that is set out in the final report. Transformational projects embody many economic characteristics that are difficult to handle in standard discounted cost-

benefit analysis. It may therefore be more accurate, and more proportionate, to use welfare analysis, enhanced beyond the usual Green Book standard. HM Treasury will continue to consider this. However, it does not consider a change to the Green Book to be proportionate at this stage.

2.51 HM Treasury has taken steps to improve its appraisal of transformational projects. For example, in October 2026, HM Treasury published guidance on a new type of analysis, known as economic potential analysis.⁸ This examines how different packages of interventions might address the constraints holding a place back. It does not produce a bottom-up estimate of social costs and social benefits, which are then adjusted using the discount rate. It instead compares a given place to a set of similar places and examines the economic indicators on which the place is relatively disadvantaged compared to its peers.

⁸ [‘Guidance on developing place-based business cases’](#), HM Treasury, October 2026

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