



Gatwick Airport Northern Runway Project

Impact of the DfT TAG November 2023 update on the
National Economic Impact Assessment

Book 10

VERSION: 1.0

DATE: AUGUST 2024

Application Document Ref: 10.75

PINS Reference Number: TR020005

Table of Contents

1	Introduction	1
2	Overview of DfT's TAG update	2
2.2	How were carbon costs calculated under the submitted assessment?	2
2.3	What changed in the appraisal guidance from Nov 2023?	2
3	NPV sensitivity estimate with the new TAG unit	5

Tables

Table 2-1: Worked example of the carbon cost calculations under the TAG update	4
Table 3-1: NPV sensitivity estimates	5

1 Introduction

- 1.1.1 This note summarises the results of a sensitivity analysis in which the Net Present Value ('NPV') of the Northern Runway Project ('NRP' or 'the Project'), as estimated in the **Needs Case Appendix 1 – National Economic Impact Assessment** [[APP-251](#)], was updated to reflect the latest DfT Aviation Appraisal guidance concerning the valuation of greenhouse gas ('GHG') impacts for transport interventions: [TAG Unit A5.2](#) dated November 2023.
- 1.1.2 The National Impact Assessment provides an assessment of the NRP's economic impacts at a national scale in net present value terms using a cost-benefit analysis approach consistent with HMT's Green Book and DfT's Transport Appraisal Guidance ('TAG').
- 1.1.3 This type of assessment is typically used to assess the NPV of publicly-funded transport projects in the UK, and while not required for privately-funded schemes such as the NRP, it represents a useful framework to assess the trade-off between socioeconomic benefits and financial and environmental costs of a scheme, given that impacts of the scheme "*can be compared in a common unit of measurement*" ([TAG Unit A1.1](#), para. 1.1.2). The national assessment considers the impact of NRP on passengers, airlines, and airports (user and provider benefits), on the wider economy, and its environmental costs.
- 1.1.4 In the assessment submitted under [APP-251](#), the NPV of the Project is estimated to be £21.6bn.
- 1.1.5 Relevant representations including The **New Economics Foundation Written Representation** [[REP1-241](#)] have noted that, following DCO submission, the relevant appraisal guidance has been updated in particular with respect to the evaluation of GHG impacts ([REP1-241](#), para. 2.10). In its response to the New Economic Foundation (NEF's) Relevant Representation, the Applicant acknowledged that guidance had been updated although as the update postdated the application it was not possible at the time to reflect it (**The Applicant's Response to Written Representations – Appendix D Response to New Economics Foundation Written Representation** [[REP3-076](#)], para. 2.1.3). At the time, aspects of the application of the new guidance were not clear to the Applicant, it therefore committed to reach out to DfT to clarify these points and provide an update afterwards (paras. 2.1.4).
- 1.1.6 As the Applicant has now been able to clarify these points with DfT, the rest of this note outlines how the Applicant set out to apply the TAG update to produce a

sensitivity estimate of the NPV of the Project and the limitations of this sensitivity analysis.

2 Overview of DfT's TAG update

2.1.1 As noted in the Introduction, the most material changes to appraisal guidance concerns the evaluation of GHG impacts.

2.1.2 In [APP-251](#), the GHG impact assessment undertaken as part of the NPV calculation followed the [November 2022 version of TAG unit A5-2](#) aviation appraisal, the latest available at the time of application.

2.2 How were carbon costs calculated under the submitted assessment?

2.2.1 The assessment uses input forecasts of GHG emissions (expressed in tCO₂e) at Gatwick Airport and in its surface access network for the Baseline and Project scenarios and monetises them to include as carbon costs in the NPV calculation.

2.2.2 GHG emissions were broken down into: (1) incremental emissions that would fall under the UK ETS, EU ETS, and CORSIA (traded emissions) and (2) incremental emissions that would not fall under a traded scheme (non-traded emissions).

2.2.3 In the assessment and in accordance with the guidance prevailing at the time:

- traded emissions are not monetised as the carbon costs from these emissions are accounted for in the airfares modelled as part of the user and provider benefits
- non-traded emissions are monetised using TAG appraisal values
- only domestic and outbound emissions are monetised in accordance with national carbon accounting rules
- non-CO₂ impacts are not monetised due to the lack of robust methodology to assess them.

2.2.4 This results in GHG costs estimated at -£1.3bn using the central carbon price scenario (Table 7.3.1 in [APP-251](#)).

2.3 What changed in the appraisal guidance from Nov 2023?

2.3.1 The latest version of [TAG Unit A5.2](#) includes new guidelines concerning the valuation of greenhouse gas impacts for transport interventions (para 3.3.3.).

2.3.2 Three main changes in the guidance have been identified:

- Incremental inbound emissions need to be monetised in the assessment
- Traded and non-traded emissions need be assessed jointly and the carbon valuation price should be adjusted to avoid double-counting emissions
- Displaced emissions from activity elsewhere (i.e. from other airports in this case).

2.3.3 Detail on how each of these changes to guidance have been accounted for in the sensitivity analysis, including potential limitations to the assessment methodology are provided below.

[Adding incremental inbound emissions](#)

2.3.4 **Change in scope:** As only domestic and outbound emissions were monetised in the submitted assessment, inbound emissions were also included in the scope.

2.3.5 **Approach used:** To include incremental inbound emissions, the level of incremental outbound emissions from the DCO submission was doubled assuming a 1:1 ratio of departing to arrival flights.

2.3.6 **Limitations identified:** inbound flights emissions may not exactly match those of outbound flights to the extent that some of the policies applicable to outbound flights may not apply to inbound flights. For instance, SAF use for outbound flights which are subject to UK policy may not be similar to those of inbound flights – thereby affecting the levels of emissions. However, doubling the level of outbound emissions is considered a reasonable proxy and proportionate for this exercise.

[Assessment of traded and non-traded emissions jointly](#)

2.3.7 **Change in scope:** In the submitted assessment, only non-traded emissions were monetised while the cost of traded emissions was assumed to be internalised in the fares modelled. In application of the TAG update, traded and non-traded emissions are monetised jointly using an adjusted carbon valuation price.

2.3.8 **Approach used:** In line with the worked example given in TAG (see para. 3.3.3), the sum of incremental traded and non-traded emissions are monetised using an adjusted carbon price. This adjusted carbon price discounts the appraisal carbon value ([TAG data book, Nov. 2023](#)) with DESNZ's traded carbon values for modelling purposes (Nov. 2023). This adjustment accounts for the carbon costs that have not been already internalised in the fare modelling by removing traded costs from the weighted average price applied. A worked example is provided below.

Table 2-1: Worked example of the carbon cost calculations under the TAG update

Formula	Component	2047 value
A	Incremental traded and non-traded emissions (tCO ₂ e)	1,210,280
B	TAG carbon appraisal value (2010 prices, £/tCO ₂ e)	293
C	Proportion of additional emissions traded under CORSIA	13%
D	CORSIA price (2010 prices, £/tCO ₂ e)	246
E	Proportion of additional emissions traded under EU/UK ETS	24%
F	EU/UK ETS price (2010 prices, £/tCO ₂ e)	96
G	Proportion of additional non-traded emissions	64%
$H = C \cdot D + E \cdot F + G \cdot 0$	Weighted average of the relevant emission trading prices (2010 prices, £/tCO ₂ e)	55
$I = B - H$	Carbon cost applied to total emissions (2010 prices, £/tCO ₂ e)	240
$J = (-1) \cdot (I \cdot A)$	Valuation for change in emissions	-£290m

- 2.3.9 **Limitation identified:** For there to be internal consistency in the assessment, the traded carbon values assumed in the fare modelling should match those assumed in the carbon price adjustment described above. However, in this case, the latest guidance suggests using DESNZ's traded carbon values (Nov. 2023) while the fare modelling was in line with Jet Zero 2022 inputs which assumed higher carbon prices at the time.
- 2.3.10 **Approach used:** DfT acknowledged doing the assessment on this basis would generate inconsistencies in traded carbon price assumptions and provided the Applicant with baseline airfare forecasts using DESNZ appraisal values. This carbon cost growth path was used to update the airfare modelling as part of the users and providers impacts.
- 2.3.11 **Remaining limitations identified:** Using updated traded carbon prices in the fare model addresses any potential inconsistencies in terms of carbon price assumptions. There would be a small feedback loop into forecasts (because fares are slightly lower as a result), which has not been modelled but the Applicant understands this would not materially affect the estimates.

Assessment of displaced emissions

- 2.3.12 **Change in scope:** In the submitted assessment, all incremental emissions from the Project were considered to be additional and were in scope. In application of the TAG update, DfT acknowledges that some of the activity generated could be displaced and accepts that where possible and proportionate, displaced emissions can be considered in the appraisal.
- 2.3.13 **Limitation identified:** the sensitivity analysis is therefore conservative to the extent that under the traffic forecasts in the submitted assessment there is some level (even if limited) of displacement from other airports which has not been accounted for the analysis. Modelling displaced emissions would amount to a new and separate assessment of environmental impacts altogether which was not considered proportionate for this exercise.

3 NPV sensitivity estimate with the new TAG unit

- 3.1.1 The table below presents the results of the sensitivity analysis (left-hand column) compared to the NPV under the submitted assessment (right-hand column).

Table 3-1: NPV sensitivity estimates

Component	With TAG update (£bn)	DCO submission (£bn)	% difference
Present value of benefits to users and providers (A)	11.9	13.1	-9%
Benefits from output increases in imperfectly competitive market (B)	12.1	13.5	-10%
Government revenues (C)	2.5	2.5	0%
Marginal External Costs (D)	-4.0	-4.0	-
Total environmental costs (E)	-5.1	-1.4	-278%
Private costs (F)	-2.1	-2.1	-
NPV (A+B+C+D+E+F)	15.2	21.6	-30%
(Ranges)	(12.9 – 17.8)	(20.7 - 22.3)	

Note: NPV ranges in parentheses illustrate the low and high values given different DfT input values for monetary costs for GHG and air quality.

- 3.1.2 Applying the TAG update as outlined above results in:

- lower net user and provider benefits from £13.1bn (DCO) to £11.9bn (with TAG update);
- higher environmental costs, driven by higher GHG costs, from -£1.4bn (DCO) to -£5.1bn (with TAG update);
- lower NPV from £21.6bn (DCO) to £15.2bn (with TAG update).

3.1.3 Considering the output of this sensitivity assessment, the Project is still expected to bring substantial benefits at a national level. The Applicant's conclusions remain the same as outlined in [REP3-076](#) (para. 2.1.4) that the increase in carbon costs due to the TAG update do not change the overall conclusions of the assessment that the Project would result in net benefits to users and the broader UK economy (high and positive Net Present Value of the proposed scheme).