



# Gatwick Airport Northern Runway Project

## Greenhouse Gases Technical Note

**Book 10**

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## 1 Introduction

### 1.1 Purpose of this Document

- 1.1.1 This document responds to recent submissions from Interested Parties on matters relating to the National Economic Impact Assessment (“NEIA”) and the GHG assessment carried out by the Applicant.
- 1.1.2 The Applicant notes that the Rule 17 request from the ExA dated 15 August also raises queries in relation to the NEIA. This is addressed separately but refers to this document as appropriate.

## 2 Matters raised

### 2.1 Introduction

- 2.1.1 Comments raised by Interested Parties can be addressed under the following themes:

- 2.1.1.1. Inbound flights and contextualisation
- 2.1.1.2. Updating the GHG assessment
- 2.1.1.3. Economic effects and the GHG assessment.

### 2.2 Inbound flights

- 2.2.1 Respondents continue to allege that the assessment has not adequately considered the impacts of inbound flights arriving at Gatwick that will arise as a result of the Project. It is claimed that by excluding inbound flights, the assessment has not adequately considered the environmental effects of these flights. Additionally, there remain suggestions that it is appropriate to base the assessment of significance on a contextualisation of all inbound flights against the UK’s carbon budgets.
- 2.2.2 The consideration of inbound flights has been considered most recently by the Applicant in **The Applicant’s Response to ExQ2 – Climate Change and Greenhouse Gases** [[REP7-079](#)] and **Appendix D – Response to Submissions on CC.2.1** [[REP8-119](#)].
- 2.2.3 The rationale for considering only outbound flights has been presented previously, but in summary this approach was adopted to align with the UK’s GHG Inventory methodology, which reflects the UK’s reporting duties under the

UNFCCC Kyoto Protocol and aligns with the process for determining progress against the UK carbon budgets. The mandated methodology for reporting the UK's GHG Inventory is based on bunker fuel sales in the UK, and hence considers only flights where fuelling of aircraft takes place in the UK. The rationale on domestic flights (again considering outward only) was adopted to align with this wider reporting mechanism.

- 2.2.4 Inbound flights comprise two main elements: those from domestic flights within the UK, and those arriving from the rest of the world (RoW). (Additionally, while representing less than 0.5% of aviation emissions within the original ES analysis it should be assumed that APU and Engine Testing emissions also arise for inbound flights).
- 2.2.5 In **Appendix D – Response to Submissions on CC.2.1** [\[REP8-119\]](#) the Applicant explained its rationale for considering only outbound flights, but presented further analysis which took into account the emissions arising from domestic inbound flights, on the grounds that they fell within the scope of the UK carbon budget (paras 1.1.10-12). The effect of this analysis is considered further below when responding to comments about the need to update the GHG assessment.
- 2.2.6 It is not feasible to model the emissions directly from inbound flights due to the wide geographic nature of the airports from which these depart, and lack of knowledge of the operational arrangements at those airports. For the purposes of considering the likely emissions from inbound airports these may be assumed to be, approximately, equivalent to the scale of outbound flights. This approach was applied to all inbound flights, including international flights, but for reasons set out in **The Applicant's Response to ExQ2 – Climate Change and Greenhouse Gases** [\[REP7-079\]](#) and **Appendix D – Response to Submissions on CC.2.1 (Finch)** [\[REP8-119\]](#) this raises the issue of how emissions arising from international inbound flights should be contextualised. This is addressed further below.
- 2.2.7 As for any suggestion that this approach to “doubling” of outbound flights produces a potential inconsistency (in that inbound flights may not benefit from the same technological advances that have been assumed for the outbound flights), the Applicant does not accept that this is a justifiable criticism of the approach taken. That approach does integrate the assumption that inbound flights are broadly demonstrating the same technical developments that are in place for outbound flights. This is appropriate because:

2.2.7.1. Aircraft efficiency benefits and use of zero emissions aircraft rely on the same vehicle making the return journey hence, clearly, they will have the same level of technological and efficiency improvements as are incorporated in the main assessment.

2.2.7.2. While SAF usage for inbound flights might be expected to differ from that required for aircraft refuelling in the UK as set out in [REP7-079] the assumption incorporated into the Jet Zero strategy as to the global uptake of SAF falls within the range of scenarios incorporated within ICAOs Long Term Aspirational Goals (LTAG) for international civil aviation emissions<sup>1</sup> and on this basis is considered sufficiently appropriate to inform the consideration of inbound flights.

2.2.8 On the basis that inbound emissions are considered approximately equal to outbound flights it is not considered necessary or useful to provide additional tables for inbound flights in addition to **ES Appendix 16.9.4 Assessment of Aviation Greenhouse Gas Emissions** [[APP-194](#)] Table 5.2.1/5.3.1/6.1.1/6.1.2 as these would simply represent a duplication of those tables. Other tables are considered below, particularly in the context of including domestic inbound emissions.

## 2.3 Contextualising aviation emissions

2.3.1 The contextualisation of aviation emissions has been based on comparing these to the UK carbon budgets and, for the purposes of that exercise, only emissions that fall within the scope of the UK carbon budgets are contextualised against those values.

2.3.2 With regards to this contextualisation some respondents have challenged that IEMA directs contextualisation of all emissions against the UK carbon budgets. It is the view of the Applicant that this is incorrect interpretation of the guidance, and inappropriate. On page 25-26 the IEMA guidance it sets out the principles for concluding major/minor adverse, or beneficial, impacts. It then, on page 27, notes (our emphasis):

*“A modification to this approach is required for the very largest-scale developments, those that in themselves have magnitudes of GHG emissions **that materially affect the UK’s or a devolved administration’s total carbon budget.** An indicative threshold of 5% of the UK or devolved administration carbon budget in the applicable time period is proposed, at which the magnitude of GHG emissions irrespective of any reductions is likely to be significant. **A***

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<sup>1</sup> <https://www.icao.int/environmental-protection/LTAG/Pages/LTAGreport.aspx>

***project that meets this threshold can in itself materially affect achievement of the carbon budget.”***

- 2.3.3 This makes clear that the (indicative) 5% threshold is intended to be used where a project might reach the scale of representing 5% of a national or devolved budget.
- 2.3.4 Any interpretation suggesting inbound international aviation emissions should be contextualised against the UK carbon budgets would imply that the IEMA intended this quantitative emissions level to be used as an absolute assessment of project impact for any project globally – which (from the highlights above) is clearly not the intention.
- 2.3.5 It remains the position of the Applicant that it is appropriate to contextualise emissions that fall within the scope of the UK carbon budgets against those budgets, and for emissions that fall outside that scope an alternative contextualisation approach should be identified.
- 2.3.6 The conclusion of this is that a revised **ES Chapter 16: Greenhouse Gases** [APP-041] Table 16.9.10 is required to present the comparison of Aviation Emissions to UK Carbon Budget with the inclusion of those additional aviation emissions within scope of the UK boundary, namely those from inbound domestic flights and from APU and Engine Testing emissions<sup>2</sup>.

**Table 1 Revised Table 16.9.10: Comparison of Aviation Emissions to UK Carbon Budgets**

Carbon budget	Period	Five-Year Carbon Budget (MtCO <sub>2</sub> e)	Future Baseline Aviation Emissions for Five-Year Budget Period (MtCO <sub>2</sub> e)	Future With-Project Aviation Emissions for Five-Year Budget Period (MtCO <sub>2</sub> e)	Net Increase between With-Project and Baseline Aviation Emissions (MtCO <sub>2</sub> e)	Contribution to Carbon Budget of Total Future Airport Aviation Emissions (%)	Contribution to Carbon Budget of Net Future With-Project Aviation Emissions (%)
Third Carbon Budget	2018-2022	2,544	0.907	0.907	-	0.036%	-

<sup>2</sup> Emissions from APUs and Engine Testing are relatively small, equivalent to around around 0.5% of combined LTO+CCD emissions. The presentation of Table 16.9.10 within the ES attributed all APU and Engine Testing as falling inside the scope of the UK carbon budgets. In practice a portion of these emissions would be attributable to international flights (hence excluded from the Third, Fourth and Fifth Carbon Budget contextualisation). To maintain consistency with the original ES they remain fully included in the contextualisation table above. APU and Engine Testing will also take place at other airports from where flights depart to fly to Gatwick. Rather than seek to attribute these differently to different geographies the revised table includes all APU and Engine Testing emissions for both Gatwick and other airports in totals. In practice this means the contextualisation of aviation emissions set out above use estimated emissions that are slightly higher than they will be in practice (and, conversely, were inbound international aviation emissions to be presented discretely, these would be slightly lower than in practice). It does not, however, affect the conclusions of the assessment due to their small scale.

Fourth Carbon Budget	2023-2027	0.552	1.105	1.105	-	0.057%	-
Fifth Carbon Budget	2028-2032	0.571	1.142	1.159	0.018	0.067%	0.001%
Sixth Carbon Budget	2033-2037	965	24.264	29.841	5.577	3.092%	0.578%

2.3.7 The equivalent update to the assessment of the Slow Fleet Transition is presented below:

**Table 2 Revised Table 16.9.11: Comparison of Aviation Emissions to UK Carbon Budgets<sup>3</sup>**

Carbon budget	Period	Five-Year Carbon Budget (MtCO <sub>2</sub> e)	Future Baseline Aviation Emissions for Five-Year Budget Period under Slow Fleet Transition (MtCO <sub>2</sub> e)	Future With-Project Aviation Emissions for Five-Year Budget Period under Slow Fleet Transition (MtCO <sub>2</sub> e)	Net Increase between With-Project and Baseline Aviation Emissions under Slow Fleet Transition (MtCO <sub>2</sub> e)	Contribution of Carbon Budget to Total Future Airport Aviation Emissions under Slow Fleet Transition (%)	Contribution to Carbon Budget of Net Future With-Project Aviation Emissions under Slow Fleet Transition (%)
Third Carbon Budget	2018-2022	2,544	0.910	0.910	-	0.036%	-
Fourth Carbon Budget	2023-2027	1,950	1.115	1.115	-	0.057%	-
Fifth Carbon Budget	2028-2032	1,725	1.169	1.187	0.018	0.069%	0.001%
Sixth Carbon Budget	2033-2037	965	25.117	30.770	5.654	3.189%	0.586%

<sup>3</sup> Note that Table 16.9.11 as presented in the original ES Chapter [\[APP-041\]](#) was incorrect. The corrected version was provided in [\[REP4-005\]](#).

- 2.3.8 The impact of the inclusion of inbound domestic flights within the Fifth Carbon Budget is minimal. Similarly, the influence in the Sixth Carbon Budget is also minimal.
- 2.3.9 In relation to international inbound flights, the alternative contextualisation adopted by the Applicant reached the conclusion that even if the emissions from all outbound flights were doubled, the total aviation emissions would represent only 0.11% of 2050 global aviation emissions (note, aviation sector only, not total global emissions), when contextualised against an appropriate scenario adopted by the ICAO (see **The Applicant's Response to ExQ2 – Climate Change and Greenhouse Gases** [[REP7-079](#)]). This figure would rise to 0.13% once well-to-tank emissions are allowed for. It has been suggested that this contribution to global aviation emissions would be significant in the context of a single Project. The Applicant disagrees and see no reason to prevent the Secretary of State reaching a judgment that the extent of the emissions generated by the Project would be insignificant at this global scale. The Applicant emphasises in any event that policy in the ANPS and the NNNPS relates to the ability of the UK to meet its own carbon budgets and carbon reduction targets and this approach to contextualising international inbound emissions outside the UK carbon budget does not affect the ability of the Project to meet that policy test. The emissions generated by the Project are no more than a consequence of helping the UK to meet part of its forecast demand as supported by policy.

## 2.4 Updating the GHG assessment

- 2.4.1 Apart from the revised tables set out above which allow for domestic inbound flight emissions, the examination process has considered two other sources of GHG emissions that are likely to have an impact on the contextualisation of total Project GHG emissions upon the UK carbon budgets. These are:
- Well-to-tank emissions associated with fuel (see the **Supporting Greenhouse Gas Technical Notes** [[REP4-020](#)] and **The Applicant's Response to ExQ2 – Climate Change and Greenhouse Gases** [[REP7-079](#)]);
  - Additional GHG emissions from waste incineration (see **Appendix D – Response to Submissions on CC.2.1 (Finch)** [[REP8-119](#)]).
- 2.4.2 The potential GHG emissions arising from well-to-tank emissions are set out in the Technical Note. The table at Paragraph 1.4.7 the Technical Note set out how the inclusion of well-to-tank emissions that fall within the context of the UK



carbon budgets alter the contextualisation of the Project against those carbon budgets.

- 2.4.3 These values have been integrated into the aggregated update of **ES Chapter 16: Greenhouse Gases** [APP-041] Table 16.9.13 (the main contextualisation table within the ES) in Table 3 below.
- 2.4.4 The challenge regarding the scale of likely emissions from waste incineration were presented in **Appendix D – Response to Submissions on CC.2.1 (Finch)** [REP8-119], by reference to representations from the Nutfield Conservation Society. As noted within that document a working assumption for the sensitivity analysis was that waste incineration might result in additional emissions of up to 2.8 ktCO<sub>2</sub>e per year.
- 2.4.5 These values are assumed to be constant throughout the assessment period and have been integrated into the aggregated update of **ES Chapter 16: Greenhouse Gases** [APP-041] Table 16.9.13 (the main contextualisation table within the ES) in Table 3 below.
- 2.4.6 Table 3 below provides an updated contextualisation of With-Project emissions against the UK Carbon budgets, incorporating the changes arising from consideration of inbound domestic flights, well-to-tank emissions for fuel production within the UK, and emissions from waste incineration<sup>4</sup>.

**Table 3 Revised Table 16.9.13: Comparison of Total With-Project Emissions to UK Carbon Budgets**

Carbon budget	Period	Five-Year Carbon Budget (MtCO <sub>2</sub> e)	Future Baseline Emissions for Five-Year Budget Period (MtCO <sub>2</sub> e)	Future With-Project Emissions for Five-Year Budget Period (MtCO <sub>2</sub> e)	Net Increase between With-Project and Baseline Emissions (MtCO <sub>2</sub> e)	Contribution of Carbon Budget to Total Future Airport Emissions (%)	Contribution to Carbon Budget of Net Future With-Project Emissions (%)
Third Carbon Budget	2018-2022	2,544	4.627	4.627	-	0.182%	-
Fourth Carbon Budget	2023-2027	1,950	5.095	5.722	0.627	0.293%	0.032%
Fifth Carbon Budget	2028-2032	1,725	4.635	5.580	0.945	0.323%	0.055%

<sup>4</sup> Additionally the incorporation of consideration of inbound flights, and also the incorporation of waste incineration, require revisions to the tables included in the Technical Note at [REP4-020]. These are appended at the end of this document.

Sixth Carbon Budget	2033-2037	965	27.039	33.382	6.344	3.459%	0.657%
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## 2.5 Consideration of assessment against the UK's Nationally Determined Contribution.

2.5.1 Whilst preparing the updated tables set out above, the Applicant has noted what whilst not referenced within the IEMA guidance, the updated NNNPS refers the UK's Nationally Determined Contribution (NDC) within Paragraph 5.39:

*S.1(1) of the Climate Change Act 2008 reflects and puts into effect the net zero target set in light of the temperature goal of the Paris Agreement. The target was increased from 80% emission reductions by 2050 to 100% emission reductions by 2050 in June 2019. Carbon budgets 1 to 5 were set to meet the 80% emission reduction target, but carbon budget 6 (2033-2037) has been set to meet the 2050 net zero target, so it is more stretching. The UK's current Nationally Determined Contribution (set in line with Article 4 of the Paris Agreement) commits to reducing economy-wide greenhouse gas emissions by at least 68% by 2030, compared to 1990 levels, so it is more stretching than carbon budget 5. **The UK's Nationally Determined Contribution is on the pathway to the 2050 net zero target. Where it provides useful context, applicants may wish to compare their scheme emissions against carbon budgets, net zero and the UK Nationally Determined Contribution.** Where an applicant assesses the carbon impacts of its scheme against carbon budget 6, and later carbon budgets, it is to be taken also to have assessed the carbon impacts of the scheme against the net zero target in the Climate Change Act 2008, as they are in line with this target.*

2.5.2 NDCs are a requirement of the Paris Agreement and are structured to reflect the coverage of emissions under the Paris Agreement. To date these exclude emissions from international aviation and this constraint applies to the current NDC for the UK<sup>5</sup>.

2.5.3 The 2030 NDC for the UK is set at 68% reduction in economy-wide emissions compared to 1990 emissions. This commitment includes domestic aviation emissions but excludes international aviation emissions. The latest reporting from UK Government states 1990 territorial GHG emissions as 812.4 MtCO<sub>2e</sub>, which

<sup>5</sup> Although the most recent request from the UK Government to the CCC has asked them to consider whether international aviation might be brought into the purview of the 2035 NDC, see <https://assets.publishing.service.gov.uk/media/66b358cace1fd0da7b593444/letter-to-ccc-from-sos-desnz.pdf>.

would set the NDC level of 68% reduction as being equivalent to approximately 260 MtCO<sub>2e</sub>. The modelled GHG emissions for the Project in 2030 are estimated as 0.143 MtCO<sub>2e</sub> (incorporating well-to-tank emissions within the UK reporting boundary). This equates to approximately 0.055% of the NDC, comparable to the contribution that the Project makes to the Fifth Carbon Budget Period as reported above in Table 3. At this level the conclusion remains that, when considered in the context of the UK's NDC, the GHG emissions arising from the Project remain not significant.

### 3 Economic effects and the GHG Assessment

- 3.1.1 Comments from Interested Parties appear to relate mainly to some form of alleged shortcoming in the GHG assessment that derives from the methodology used to carry out the National Economic Impact Assessment (“NEIA”) [APP-251].
- 3.1.2 To the extent that these comments allege that by not incorporating inbound flights in the estimation of net GHG emissions, the damage costs arising from these remain unquantified, this has been addressed in the updated TAG assessment produced at Deadline 8A (see the **Impact of the DfT TAG November 2023 update on the Applicant’s National Economic Impact Assessment** [AS-164] as summarised above.
- 3.1.3 In so far as there is some broader allegation about the implications of the NEIA for the GHG assessment, the Applicant considers that this conflates what are in fact two distinct aspects of appraisal relating to GHG emissions and economic impacts.
- 3.1.4 The Applicant does not consider that there is anything in the NEIA which provides a basis for any contention that the GHG assessment is defective. Its position is set out further below.
- 3.1.5 The NEIA and the revision reflecting the DfT TAF November 2023 update [AS-164] complies fully with appraisal guidance in terms of which costs and benefits can and should be monetised. It 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’).
- 3.1.6 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).

- 3.1.7 The Applicant explained the approach taken to the NEIA in [REP7-079], but in summary: it took the form of a cost-benefit welfare analysis of the Project, using the TAG methodology identified above. It considered (1) the capital and operational costs of the project, before (2) assessing impacts on users (passengers) and providers (airlines and airports) of aviation services having regard to changes in fare levels and airport revenues; then (3) considering potential wider economic effects including output changes in imperfectly competitive markets the impact on public accounts from increased APD, marginal external costs relating to increased road traffic, employment and productivity impacts, trade and foreign direct investment and tourism. The assessment then accorded a value to environmental impacts, in particular those arising from air quality, GHG emissions and noise, before calculating the Net Present Value (“NPV”) of the Project. This calculation took the value of impacts (benefits) on passengers and providers, adding the value of wider impacts (benefits) and then subtracted the cost of the environmental impacts and the cost of the Project.
- 3.1.8 It can be seen first of all that this is a form of analysis that has been prepared for a specific purpose – to meet the requirements of TAG guidance. It is a financial exercise that is not designed to consider economic benefits in a way which translates into carbon emissions. For example, calculations of impacts on users and providers of airline services are influenced by increases in air traffic movements, but the emissions resulting from those movements are assessed separately as part of the GHG assessment (aviation, ABAGO and surface access emissions). Output changes in imperfectly competitive markets, increased APD and changes to marginal costs to business arising from increased traffic on the road network, these are again financial calculations which have no independent bearing on the assessment of GHG emissions arising in particular from aviation and surface access under the GHG assessment.
- 3.1.9 To the extent that the TAG methodology requires an economic “cost” value to be placed on carbon emissions, it relies upon the emissions calculated under the GHG assessment. It does not purport to set out a methodology for assessing how GHG emissions themselves are to be assessed. The Applicant acknowledges that in its latest update, the TAG guidance advises that the cost/benefit analysis should take into account the implications of inbound flight emissions. This has been addressed by the Applicant, albeit in the context of the wider issue of whether and how inbound flight emissions should be included in any GHG assessment within the ES. However, there is nothing in its original or

updated methodology which identifies or implies a form of emissions arising from economic activity that sits outside the GHG assessment work to date, including the outcome of that work as summarised above.

3.1.10 Further, the NEIA is careful to not include any calculation in relation to economic benefits and costs that cannot be reliably assessed, given the absence of robust evidence including evidence on the mechanisms by which economic welfare impacts could arise. These include the potential impacts of workers moving to more productive jobs, effects on trade and foreign investment and tourism, as explained in [REP7-079]. Where the assessment excludes these effects from the NPV analysis on the grounds of a lack of clear evidence, similar considerations apply to the assessment of carbon emissions:

(1) It is not necessary to allow for carbon relating to trade or tourism to form part of the assessment - beyond the emissions that should properly be allowed for when considering the effects of aviation, that is the movement of planes holding freight or tourists, which have been assessed. The fact that the Project may encourage increased trade and investment which is reflected in more jobs across different sectors or greater economic activity does not translate into a reliable or meaningful assessment of carbon emissions. The increased additional economic value or employment does not mean that emissions correlatively increase or that the emissions would result from the creation of that value or employment, or that it can be meaningfully assessed, because there are innumerable decisions to be taken on how that activity may arise which affect whether or how carbon is generated. No realistic assessment could be made of how that activity will generate additional carbon emissions;

(2) Similarly, in relation to tourism, whether inbound or outbound, even to the extent that there may be financial benefits such as expenditure in hotels and restaurants, these do not in themselves imply resulting changes in carbon emissions that can then be reliably assessed in identifiable correlation with the operation of this project. Difficulties in obtaining evidence of how inbound and outbound tourism could generate benefits across the UK apply particularly to any suggestion that the carbon emissions resulting from various forms of tourist activity beyond the Project can or should be assessed.

3.1.11 Setting these conclusions against the findings in Finch, the Applicant notes the following parts of the judgment:

*“74. Whatever the precise meaning of the term, to determine that a potential effect is “likely” requires evidence on which to base such a determination. If evidence is lacking so that a possible future occurrence is a matter of speculation or conjecture, then a rational person would not feel able to judge that it is “likely”. Such agnosticism is not the same as judging the event to be unlikely. It reflects a belief that there is too little knowledge on which to base a judgment.*

*75. The need for sufficient evidence on which to base an assessment is not spelt out as a requirement in the EIA Directive. But it can be deduced from the description and purpose of the EIA procedure. As set out in article 1(2)(g), stage (iv) of that procedure - which follows (i) the preparation of the environmental statement by the developer, (ii) the carrying out of consultations, and (iii) the examination by the competent authority of the information received - is: “[a] reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of [its] examination;”*

*76. The initial, information gathering stages of the process, including the preparation of the environmental statement, are thus directed towards the ability to reach a reasoned conclusion on the significant effects of the project on the environment. This is confirmed in article 5(1), which provides that the environmental statement shall “include the information that may reasonably be required for reaching a reasoned conclusion on the significant effects of the project on the environment, taking into account current knowledge and methods of assessment.” Similarly, article 5(3)(c) provides that, “where necessary, the competent authority shall seek from the developer supplementary information, in accordance with Annex IV, which is directly relevant to reaching [a] reasoned conclusion on the significant effects of the project on the environment.”*

*77. Implicit in these provisions, and in the aims of the EIA Directive, is the criterion that material should be included in the environmental statement and taken into account in the procedure only if it is information on which a reasoned conclusion could properly be based. Conjecture and speculation have no place in the EIA process. Thus, if there is insufficient evidence available to found a reasoned conclusion that a possible environmental effect is “likely”, there is no requirement to identify, describe and try to assess this putative effect. This criterion*

*must also govern, where a possible effect is regarded as “likely”, the nature and extent of the assessment of the effect.*

*78. There is here an area of evaluative judgment involved in determining the scope of an EIA. Judging whether a possible effect of a project is likely and capable of assessment may, depending on the circumstances, be a matter on which different decision-makers, each acting rationally, may take different views”.*

- 3.1.12 The judgment therefore recognises that there must be sufficient evidence (not conjecture or speculation) on which a reasoned conclusion could be based that a possible environmental effect is likely; and even if the evidence allows for a reasoned conclusion that an effect is likely, it will still govern the nature and extent of the assessment of the effect.
- 3.1.13 In this case, the Applicant considers that beyond the calculation of an economic value that is ascribed to carbon emissions as taken from the GHG assessment, the difficulties in assessing how economic activity may result in welfare effects apply similarly to any further assessment of carbon effects. There is “insufficient evidence” available to enable a “reasoned conclusion” that an increase in economic activity such as addition trade or tourism will identifiably increase carbon emissions and therefore amount to a “likely” effect, or a likely significant effect. Any attempt to provide such reasoning would be based instead on conjecture. Further, the Applicant does not consider that there is any methodology that would allow for any such effect to be assessed.
- 3.1.14 The Applicant has however considered the contrary view – that it is at least possible to say that increased trade or tourism (to take the main examples from the NEIA) would be likely to increase carbon emissions in some form. Even if this conclusion were to be reached, it does not of itself mean that any such effects would be significant, or that any GHG assessment could go further than recognise that the effects may exist, without providing a detailed reliable assessment. If an ES is to provide only the information that may “*reasonably be required to reach a reasoned conclusion*” on what putative carbon effects may be, this will affect what any assessment can do. This may mean that there is insufficient evidence to assess them in any acceptably quantified manner.
- 3.1.15 In **The Applicant’s Response to ExQ2 – Climate Change and Greenhouse Gases** [REP7-079] the Applicant noted that the **Needs Case: Appendix 2 - The Economic Impact of Gatwick Airport – A Report by Oxford Economics** [APP-252] considers connectivity benefits resulting from the Project and their relative effect at a national level - on UK GDP - finding that the Project would

have a maximum 0.15% effect as at 2038. As set out above, this is based on productivity benefits that flow from the increased connectivity that the NRP will bring so it may arise without significant additional resources as inputs, but as a worst case it would require similar inputs.

- 3.1.16 The Applicant does not consider that this effect reliably translates into a carbon calculation. No other party has suggested a methodology which could be deployed. However, to address the challenge that there is wider economic activity arising from the Project that might result in further GHG emissions beyond those assessed, then this gives some (albeit unreliable) indication of the order of carbon effects resulting from that additional economic activity, which does not suggest that such effects would be significant at a national level. If it were assumed that this indication of a national-level economic effect had a correlative effect on national carbon emissions, the additional effect on the calculations carried out by the Applicant and summarised above would not be significant and would not change the outcome of the GHG assessment, which is unsurprisingly dominated by the aviation emissions correlated with carbon emissions resulting from the Project.
- 3.1.17 For completeness, as the Applicant explained in **The Applicant's Response to ExQ2 – Climate Change and Greenhouse Gases** [\[REP7-079\]](#) the local economic assessment is based on a combination of employment figures (from which wage information across different sectors is drawn to assess direct effects), input-output modelling including the use of multiplier calculations (to consider indirect and induced effects having regard to profits and wages generated in the UK from supply-chain spending) and a local employment to air traffic elasticity (to assess total net impact and allow catalytic effects to be calculated).
- 3.1.18 These calculations do not translate into carbon emissions. The fact that the assessment estimates these effects, founded on employment figures, does not mean that the calculations can be taken to convert into further carbon emissions as effects of the project. The creation of these jobs does not necessarily or reliably correlate with further carbon emissions which can be meaningfully assessed; nor do any broad multiplier or elasticity assumptions employed in the assessment to generate economic values, as explained further in [\[REP7-079\]](#). Other economic sectors will in any event have their own carbon reduction strategies.
- 3.1.19 This assessment focuses on the net effects at sub-national spatial scales (i.e. after taking account of deadweight, displacement, multiplier effect etc). There is



no assessment at the national level that takes account of deadweight, displacement etc. There is therefore no means of estimating at a national level what the net impacts are in terms of jobs and GDP. There is therefore no means of estimating what increases in GHG emissions might arise from national economic activity increases attributable to the Project. An assessment of GHG emissions based on the sub-national economic analysis would miss the fact that some activity (and therefore emissions) are effectively being moved from one location to another, rather than being additional GHG emissions arising from the Project. This helps confirm how the local economic impact cannot be used to justify the allegation that further GHG assessment should be carried out.

## 4 Responding to key points from submissions

### 4.1 Overview

4.1.1 For completeness, in this section the Applicant addresses representations on GHG assessment made mainly by the following three parties:

- Legal Partnership Authorities [[REP8-161](#)]
- CAGNE [[REP8-143](#)]
- GACC [[REP8-152](#)]

### 4.2 Legal Partnership Authorities

4.2.1 The submission acknowledges that the Applicant has provided additional information to support the assessment of inbound flights within the Deadline 7 submission.

4.2.2 Regarding the request to update the GHG tables in accordance with further analysis contained in recent submissions by the Applicant, this has been done above.

4.2.3 As regards contextualisation of inbound aviation emissions, as summarised above it is inappropriate to contextualise international inbound emissions against the UK Carbon Budgets when these emissions are outside the scope of emissions that the Carbon Budgets are intended to monitor and manage.

4.2.4 As noted in the JLA submission the Applicant sought to contextualise international inbound emissions by considering a global contextualisation exercise (which is wholly in line with IEMA guidance and wholly appropriate). The JLAs both acknowledge the limitations in existing guidance as to how to

contextualise international aviation emissions while failing to provide a reasonable alternative. The proposal that the UK Carbon Budget levels, and an indicative 5% quantitative threshold of these, should form an absolute quantitative threshold for assessing significance of any aggregation of emissions is incorrect as set out in Section 2.3 above.

- 4.2.5 It is precisely the lack of an absolute quantitative metric for assessing the significance of GHG emissions that leads to the IEMA's direction that an appropriate geographical or sectoral trajectory be used for contextualising, and that is what was set out by the Applicant in the Deadline 7 submission by comparing those international aviation emissions outside of the UK emissions reporting framework against a global sectoral context.
- 4.2.6 The argument for the inclusion of domestic inbound emissions – which do fall within the scope of the Carbon Budgets – in contextualisation is noted. This has been set out above. As can be seen, the inclusion of inbound domestic aviation emissions is small and does not change the conclusions of the assessment.
- 4.2.7 The JLAs further challenge that a contribution of 0.11% to global emissions for inbound cannot be used to conclude they are not significance. As noted in the Deadline 7 submission this represents the total aviation emissions arising from the Project and, as noted, more than half of these (all domestic and outbound aviation) fall within the scope of the national budget (and subject to measures consistent with Jet Zero). At worst the international inbound emissions that might fail to fall under the control regime of the respective origin country would equate to approximately 0.055% of global emissions, and many of these (especially those falling under European trading schemes) already exist within either a cap-and-trade system (EU ETS) or CORSIA. This wider context further supports the conclusion that the inbound aviation emissions are of a level that can be considered not significant.
- 4.2.8 The acknowledgement that the updated approach to well-to-tank is appropriate is welcomed.
- 4.2.9 The Applicant would also seek to draw attention to the conclusion of the JLAs' quantification exercise based on their own set of numerical assumptions, that concludes that the overall Project impact is less than 5% of the UK carbon budget for the latest carbon budget period<sup>6</sup>.

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<sup>6</sup> The JLA submission refers to "the 2038 UK carbon budget" which is interpreted as referring to the 2033-2037 UK carbon budget (the Sixth Carbon Budget).

### 4.3 CAGNE

- 4.3.1 Within the response are contained Points 4-12 relating to implications of the Finch decision primarily on the assessment of GHG emissions.
- 4.3.2 **Para:** Regarding the incorporation of inbound emissions within Tables 16.9.9 / 16.9.10 / 16.9.13 these are included above representing the inclusion of inbound domestic emissions. As set out there, this does not include the contextualisation of inbound international aviation emissions against the UK Carbon Budgets given this is not methodologically appropriate.
- 4.3.3 **Paras 6 and 7:** The point incorrectly seeks to equate the definition of scope of the UK Carbon Budgets (defined in line with the UK's international agreements on the attribution of responsibility of emissions to signatory countries) with the set of methodological assumptions within modelling of aviation emissions (which aligns with the modelling assumptions used by UK Government for the development of sector trajectory). Jet Zero has provided the modelling assumptions to estimate future emissions from UK aviation. The carbon budgets represent future limits on emissions, they do not specify the route that must be taken to achieve them. Further, IEMA is clear that contextualisation needs to be carried out in a way which considers GHG emissions within the overarching framework for their management. The argument as to why GHG emissions that fall outside the scope of UK Carbon Budgets should not be compared to those budgets is reiterated above.
- 4.3.4 **Para. 8:** comprises several points. Initially, however, it contends that the contextualisation of aviation should increase from 0.11% to 0.16% but this is incorrect – the figure produced by the Applicant is 0.13% when well-to-tank emissions are allowed for. Further:
- 4.3.5 **Para. 8a:** the rationale for concluding 'not significant' in terms of the contribution of the Project to overall aviation levels is addressed above. The Applicant disagrees with this characterisation of the overall global emissions.
- 4.3.6 **Para. 8b:** it is not clear why further contextualisation is required beyond what is presented in the ES, which aligns with IEMA guidance.
- 4.3.7 **Para. 8c:** this appears to be a criticism of the Applicant relying on the assumptions within JZ to all flights considered within the assessment of total emissions, including inbound international emissions. This has been addressed above. It is considered appropriate to assume that inbound emissions will arise under similar conditions of technological development at Jet Zero; and it is appropriate to contextualise against a similar ICAO scenario.

- 4.3.8 Para. 8d:** contextualisation against ICAO provides the most appropriate contextualisation for global aviation emissions that has been identified. No other party has yet to offer an alternative approach (beyond using the UK carbon budgets that, as set out above, are wholly inappropriate).
- 4.3.9 Paras 9-12:** these paragraphs include further submissions on the implications of the Finch judgment as regards the assessment of economic effects and their relationship with the GHG assessment.
- 4.3.10** Para. 10 refers to the judgment as establishing that “*where an effect has not been screened out, information must be provided in the EIA process to explain why there is not a settled methodology or there is insufficient evidence to determine whether the effect is likely, and so will not be assessed, in order that the public can understand and engage with what is being asserted*”. If the Applicant has understood this formulation, it appears to involve some internal contradiction, in suggesting that “*where an effect has not been screened out*” (i.e. that it falls for assessment within an ES as a likely significant effect), that there must still be information provided within the ES to explain that there is insufficient evidence to determine whether the effect is likely (i.e. that it is not to be treated as a likely significant effect). It is unclear exactly how this is said to reflect the Finch judgment, which refers to “*insufficient evidence*” as a basis for concluding that likely effects do not arise and “*there is no requirement to identify, describe and try to assess*” such a putative effect: para. 77.
- 4.3.11** In any event, if that formulation is intended to mean that the ES, as consolidated in relation to this Project, should explain why there is no settled methodology or insufficient evidence to enable a determination of whether the effect is likely, the Applicant considers that it has done so.
- 4.3.12** In so far as this issue is raised in the context of economic effects, the Applicant is unaware of any methodology which would enable the indirect, induced or catalytic effects considered in the local economic impact assessment to be considered in terms of GHG emissions. The same position applies in respect of the economic activity considered in the NEIA. In both cases there is insufficient evidence to allow for a reasoned judgment on the likelihood of carbon effects arising from the economic activity considered in those assessments, beyond the GHG assessment already undertaken. The Applicant has also gone on to state that even if the view were taken that further carbon emissions resulting from indirect economic effects of the Project were somehow to be regarded as likely, this would still affect the nature and extent of any assessment and there is still no reliable way to calculate what those effects would be; and even taking

productivity gains at a national level as an indicator of related carbon emissions, these would not be significant or affect the conclusions of the GHG assessment.

4.3.13 CAGNE suggest that there is a clear causal connection between the harms from GHG emissions and economic cost, and a very well understood methodology for calculating those costs, which should have been applied. They refer to NEF's submissions at [\[REP1-241\]](#) §3.16 et seq. It is not clear from this reference what exactly is being referred to, but the Applicant notes that these paragraphs generally raise detailed points relating to the costing of GHG emissions, including allowing for inbound flights, the costs of non-CO<sub>2</sub> impacts, the calculation of traded-sector emission costs and the calculation of CORSIA-liable emissions. These points relate to ascribing an economic value to environmental costs under the TAG methodology. They do not raise any allegations about the scope of the GHG assessment itself as regards indirect effects which have not been assessed, or otherwise imply that there are further GHG emissions which ought to be considered, beyond those which the Applicant has assessed as set out above. The attribution of economic value to environmental costs under the specific TAG methodology relies on information from the GHG assessment and does not purport to provide a methodology for assessing the likely significant carbon effects of a Project.

4.3.14 Para. 11 also seeks to draw an analogy with the oil extraction in Finch by contending that it is equally inevitable that additional flights will cause GHG emissions and there is an equally well-established methodology for measuring such emissions. The Applicant has never disputed that additional flights will cause GHG emissions and has assessed the emissions generated by such flights. The proposition that "*Finch applies with full force to the instant application*" does not otherwise suggest any further indirect effect of the Project that requires additional GHG assessment in accordance with any established methodology.

#### 4.4 GACC

4.4.1 GACC provide several challenges that have been addressed previously and provides a summary of the six considerations that it sees the ExA to consider (Page 12):

- a) *Include the significance of (departing) flights and surface transport*
- b) *Include arriving as well as departing flights*
- c) *Include calculation of non-CO<sub>2</sub> impacts of flights*
- d) *Consider a scenario without Jet Zero assumptions holding.*
- e) *Increase the aviation impacts of the Project in line with the York Aviation*

*estimate of the future baseline of 57 mppa and northern runway increasing this to 75-76 mppa by 2047; and  
f) include well-to-tank emissions.*

- 4.4.2 **Point a:** the rationale for the modelling approaches on flights and surface transport are articulated elsewhere; the GHG assessment is consistent with wider modelling approaches;
- 4.4.3 **Point b:** this has been addressed above.
- 4.4.4 **Point c:** relates to arguments for seeking quantification of non-CO<sub>2</sub> impacts that have previously been argued in **ES Chapter 16: Greenhouse Gases** [\[APP-041\]](#) paras 16.4.12-14, and in Point 14 within [\[REP4-036\]](#).
- 4.4.5 **Point d:** the rationale for including the methodological assumptions from Jet Zero has been previously set out in **ES Chapter 16: Greenhouse Gases** [\[APP-041\]](#) paras 16.4.53 to 16.4.56.
- 4.4.6 **Point e:** the impact of York Aviation scenarios on the GHG assessment have been addressed in the **Response to Rule 17 Letter – Future Baseline Sensitivity Analysis** [\[REP7-073\]](#), section 5.4.
- 4.4.7 **Point f:** consideration of Well-to-tank is set out above and in the updated tables.
- 4.4.8 Further, the Applicant would note that while GACC have sought to suggest various deficiencies in the calculation and assessment methodologies, incorporating several methodological steps that are not accepted by the Applicant as set out in **The Applicant's Response to Deadline 4 Submissions** [\[REP5-072\]](#) paras 3.5.66-77, their conclusion remains an upper maximum of 4.4% of the 2038 carbon budget arising from the Project. This is still below the indicative threshold quoted within the IEMA guidance as the level at which emissions from a project might materially affect achievement of the carbon budget.

## 5 Revised table from REP4-020

- 5.1.1 REP4-020 set out the approach to consideration of well-to-tank emissions within the assessment, and included several tables. In light of the inclusion of inbound flights (domestic and international) within assessment considerations, and additionally including emissions associated with waste incineration, the total GHG emissions are increased. The updated Table 1 from the **Supporting Greenhouse Gas Technical Notes** [\[REP4-020\]](#) is presented below. Note that:

- direct aviation emissions are doubled from the 18.520 MtCO<sub>2e</sub> value presented in the **Supporting Greenhouse Gas Technical Notes** [REP4-020] Appendix B Table 1 to reflect the inclusion of inbound flights; and
- the ABAGO uplift from WTT is changed significantly due to the inclusion of direct waste emissions from incineration that do not have an equivalent WTT factor.

**Table 4 Total GHG emissions, and total WTT emissions, for the Project between 2018 and 2050<sup>7</sup>**

	Emissions excluding WTT (MtCO <sub>2e</sub> )	Additional WTT emissions (MtCO <sub>2e</sub> )	Emissions including WTT (MtCO <sub>2e</sub> )	% change
Aviation	37.040	7.649	44.689	20.65%
Surface access	0.380	0.043	0.423	11.26%
ABAGO	0.069	0.001	0.070	1.04%
Construction	1.155	0.087	1.242	7.56%
<b>Total</b>	<b>38.644</b>	<b>7.779</b>	<b>46.424</b>	<b>20.13%</b>

- 5.1.2 Table 2 from the **Supporting Greenhouse Gas Technical Notes** [REP4-020] has not been updated as this provided a scope of emissions that aligned with the UK carbon budgets; by including all inbound international aviation the scope of emissions now extends globally and no longer represents the scope of the UK carbon budgets. For this reason it has not been updated.
- 5.1.3 The table at Para 1.4.7 within the **Supporting Greenhouse Gas Technical Notes** [REP4-020] is updated in full in Table 3 earlier within this document.

<sup>7</sup> Replacing [REP4-020] Appendix B Table 1.