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London Luton Airport Expansion

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**8.132 Written Question Responses - Applicant's
Response to Comments by The Harpenden Society,
LADACAN and NEF**

Infrastructure Planning (Examination Procedure) Rules 2010

Application Document Ref: TR020001/APP/8.132

The Planning Act 2008

The Infrastructure Planning (Examination Procedure) Rules 2010

**London Luton Airport Expansion Development Consent
Order 202x**

**8.132 Written Question Responses -
Applicant's Response to Comments by
The Harpenden Society, LADACAN and NEF**

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1 INTRODUCTION

1.1 Purpose

- 1.1.1 This document provides the Applicant's response at Deadline 6 to the comments made by The Harpenden Society, the Luton And District Association for the Control of Aircraft Noise (LADACAN) and New Economics Foundation (NEF) on the answers provided by the Applicant in response to the Examining Authority's (ExA) first set of Written Questions.
- 1.1.2 Questions directed to parties other than the Applicant have not been addressed, neither have responses provided by other parties – unless the Applicant initially provided a comment which was considered relevant to the question being asked.
- 1.1.3 Where the Applicant disputes comments made by the Interested Party, this document will provide an explanatory rebuttal as to why there is a difference of opinion. The Applicant has responded only to parts of the submissions made by the Interested Party which it considers warrants a response. If a new issue has not been raised, then a further response has not been provided, however this does not represent acceptance or agreement by the Applicant of the point raised.

1.2 Structure

- 1.2.1 Table 1.1 sets out the Written Questions initially issued by the ExA and the Applicant's answer, along with the comments made by The Harpenden Society, LADACAN and NEF at Deadline 5 and the Applicant's response to this at Deadline 6.

Table 1.1: Applicant's response to comments on Written Question responses – The Harpenden Society

Ref. No.	The Harpenden Society Comment at D5	Luton Rising Response at D6
SE1.2 Out-commuting		
1.	In their response to this question (REP4-067) LR submitted 2 tables showing data from the 2021 census which purports to compare the level of out-commuting from Luton to the average for England, and suggested these tables demonstrated that out-commuting in higher paid jobs is greater in Luton than in England.	The views of the Harpenden Society on out-commuting are noted. These comments need to be viewed in the broader context of the economic strategies for Luton, as set out in Section 2.4 of the Need Case [AS-125] , in particular specific targets to create more high value jobs and the recognition of the specific role that the airport plays within the Luton Investment Framework (see paragraph 2.4.29 of the Need Case) with its potential to: <i>“create thousands of jobs and attract aerospace, engineering and advanced manufacturing businesses, specialist support services for airline/airport operations and associated leisure, hotel and catering businesses.”</i>
2.	We do not believe the tables can be relied upon to draw this conclusion. The data is drawn from the 2021 census which of course was completed during a Covid lockdown and shows, quite understandably, a very high level (21% in Luton and 32% in England) of “works mainly from home”. The comparable figures for “works mainly from home” in the 2011 census were 7% for Luton and 11% for England (this is shown in the attached spreadsheet). Whilst a change in this percentage was expected given societal changes over the last 10 years, the Office for National Statistics advised that the 2021 census data for distance travelled would have “limited utility in measuring...travel patterns” because of the lockdown (and associated restrictions). Using the 2021 census data to measure out-commuting produces unreliable results.	
3.	The 2011 census data shows (per the attached spreadsheet) that the proportion of higher paid jobs out-commuting from Luton was not dissimilar to England (that’s the first three occupation categories and skilled trades) which we don’t find surprising – people commute long distances across the country as evidenced by the crowded road and rail networks. Interestingly, comparing Luton to the East of England in 2011 shows Luton’s out-commuting to be quite a lot less than the East of England as a whole.	
4.	In addition, as with almost all economic analyses that LR has submitted, they don’t address causation i.e. why do people out-commute in the first place and more particularly why, according to LR, do higher paid people do so? As the 2011 census data shows all occupations out-commute in Luton and England at a consistent rate (and the East but with more variability compared to Luton and England) indeed the only material (greater than 10% points) difference appears to be that Luton elementary occupations out-commute much more than elementary occupations do across England – the exact opposite of LR’s claim.	
5,	In summary, LR are using unreliable data to make a claim that has no foundation. Furthermore, because LR haven’t addressed the question of how many higher paid jobs airport expansion will bring out of the alleged 4,200 jobs that will be created in Luton no reliance can be placed on any claim that growth at the airport will change out-commuting or indeed change the number of higher paid jobs as a proportion of all jobs either in Luton or compared to England. Given the small numbers likely to be involved we expect the change to be minimal. What is clear is that growth at the airport will make it more difficult to bring demonstrably higher paid industries such as financial services, life sciences and technology jobs into Luton as there will be no land left to accommodate their needs (as well as airport related environmental factors that will deter businesses).	
6.	Separately, LR rising in their response to this question refer the ExA to Appendix 11.1 (of the Environment Statement) produced by Oxford Economics (“OE”) to show that jobs at the airport tend to be higher paid than equivalent jobs in the economy as a whole. The only reference to this in the OE report is on page 17:	

Ref. No.	The Harpenden Society Comment at D5	Luton Rising Response at D6
	<p>2.3 WAGES PAID BY AIRPORT EMPLOYERS</p> <p>The gross wage bill of London Luton Airport workers was estimated by applying sector-specific average wages for the East of England to each worker included in our employment estimate.^{21,22} On this basis it is estimated that those employed at London Luton Airport received £449 million in wages in 2019.</p> <p>This suggests an average wage for London Luton Airport workers of £41,100, which is 34% above the national average of £30,700, and 27% above the average for Luton as a whole, as published by the ONS.²³</p>	<p><i>estimating the Jobs and GDP impact for the base year for the direct, indirect and induced impacts of the Airport's operations. Genecon have checked the results against publicly available data and all the estimates appear reasonable."</i></p> <p>The comparison between average wages and those of airport employees by local authority area or study area are set out in Table 10 of the Oxford Economics Report [APP-079].</p>
7.	<p>OE's estimate is calculated by applying "sector-specific average wages for the East of England". OE do not explain why "sector-specific" wages are a good proxy for Luton Airport workers. There is an attempt to explain how the detailed job types at Luton Airport have been mapped onto SIC codes (as the specific codes don't exist) in Appendix 1 of OE's report but there is no attempt to assess whether the approach is valid – it's just assumed to be. However, it generates a very significant difference between Luton Airport workers wages compared to Luton's other wage earners. For the estimate to be relied upon OE need to demonstrate why it is a valid relationship. The reason for the alleged higher wage for a Luton Airport worker could just as easily be (and more likely in practice) that wages generally in Luton are low compared to the regional averages in the sectors used to calculate the Luton Airport worker average. There's no reason to think that's not a credible answer as other economic indicators, e.g house prices are considerably lower in Luton than the surrounding area (£283k vs £405k for the East of England (£360k for Bedfordshire as a whole) – sourced from Rightmove website 14/11/2023)</p>	
8.	<p>Furthermore, OE then calculate, based on this estimate, that the total wage bill for people living in Bedfordshire, who work at Luton Airport, is £194 million.</p>	
9.	<p>However, on page 14 they claim:</p> <p><i>On this basis we estimate that 58% of London Luton Airport employees lived in Bedfordshire (Fig. 6)—within which the airport is located. Of these, an estimated 3,100 lived in Luton Borough itself. A further 3,200 lived in other parts of Bedfordshire. The Hertfordshire districts just to the south of Luton are also home to a relatively high concentration of people working in businesses at London Luton Airport: 1,200 employees live in Dacorum, St Albans or North Hertfordshire.</i></p>	
10.	<p>Thus 6,300 Luton Airport workers live in Bedfordshire. At an average wage of £41,100 this would equate to £258.9 million of wages, yet OE's say it's £194 million on page 17. One of the figures isn't right? Coincidentally, £194 million divided by 6,300 is £30,790, closer to the national average (and slightly below the figure claimed for Luton as a whole).</p>	
11.	<p>We do not believe that the OE analysis demonstrates that Luton airport jobs are higher paid than equivalent jobs in the economy as a whole. We doubt it given the fact that some of the £45 million force majeure payment was designed to bring airport workers wages up to the level of the living wage.</p>	
12.	<p>Given wages are a key component of GVA/GDP (depending on which measure you use) we question whether these latter numbers are valid.</p>	

Ref. No.	The Harpenden Society Comment at D5	Luton Rising Response at D6
13.	With respect to the ExA's second question, LR have just provided a list of "forward looking" possibilities. Nothing is evidenced – indeed most of the proposals for developing other industries in Luton are being severely curtailed to provide the space for airport development and the Enterprise Zone systematically dismantled. We doubt any of the businesses referred to, many of which already exist and will provide similar services to other UK airports in any event, would see Luton as a location magnet (given the environmental constraints).	It is acknowledged that the response to SE.1.2 set out a list of future potential opportunities that could be attracted consequently upon growth at the airport. It is not possible to evidence these further as attracting such activities is, in large part, dependent upon future growth at the airport. The remaining land within the reconfigured Green Horizons Park will provide a location for such activities and LR does not accept that there would not be other regeneration sites within Luton and surrounding areas suitable for such activities. The Applicant considers that the catalytic benefits of expansion to 32 mppa should be given full weight in the planning balance.
14.	Regrettably, yet again, LR are unable to evidence the economic benefits/need it claims the airport will either generate or fulfil. We don't doubt that building and operating a second terminal will generate some additional GVA/GDP IF the demand is there (and we note that LR is hedging its bets on that by delaying T2) but what is clear, as it was for the 19 million Inquiry, the numbers being quoted are unreliable.	
15.	Furthermore, the proposed 10+ year gap between any granting of permission and the commencement of operations un Phase 2 means that any forecast economic benefits are highly uncertain and, quite reasonably, we respectfully suggest, should be heavily discounted in assessing the planning balance.	

Table 1.2 Applicant's response to comments on Written Question responses - LADACAN

PINS Ref.	LADACAN Comment at D5	Luton Rising Response at D6
REP4-060		
NO.1.11	<p>Fleetmix – larger aircraft</p> <p>The ExA asked <i>“whether use of larger aircraft in future scenarios would lead to different modes of operation at the airport e.g. due to runway length or flight profiles and if so how this would affect the conclusions of the ES”</i>.</p> <p>The Applicant has chosen only to answer the question very narrowly, by interpreting the word “modes” in an aviation-technical sense of “modal split” between east/west operations, thereby evading providing the requested information about operational differences of such aircraft due to runway length or flight profiles.</p> <p>To assist the ExA we note that there is no assessment of the operating noise or the operational constraints imposed on wide-bodied jets by the relatively short runway length of 2160m at Luton, compared to 3900m at Heathrow, 3000m at Stansted, and 3310m at Gatwick.</p> <p>Nor does any assessment take account of the need for noisier operating procedures on arrival. Wizz Air pilots have advised the London Luton Airport Consultative Committee Noise and Track Sub-Committee that higher flap settings are required when A321 aircraft approach Luton, to help slow the aircraft due to the relatively short runway length.</p> <p>We also note that the Luton runway length may not be adequate for safe departure of a fully laden (passengers, luggage and fuel) Airbus A321 and pilots may need to assign a weight limit depending on stage length (ie distance to destination), which has an effect on economics. Such issues are made worse by hot weather and less dense air.</p> <p>We further note that larger and heavier aircraft create more airframe noise on arrival, and more heavily laden aircraft tend to climb more slowly on departure (all else being equal) and therefore generate more ground noise, than lighter aircraft.</p> <p>Finally, we note that aircraft are officially certified for noise during tests involving various flight phases, and this information is publicly available, therefore could be provided to show the certified noise comparison between typical types operating at Luton currently, and those proposed for the long-haul flights in the future.</p> <p>The question asked is very pertinent to noise impacts for a number of reasons, and we urge the ExA to press the Applicant for a more complete, helpful and properly evidenced response.</p>	<p>The effect of larger aircraft and runway length on the flight profile/procedures and noise emissions of aircraft is taken into account in the noise assessment in Chapter 16 Noise and Vibration [REP1-003] of the ES through the noise model validation process in which the modelled flight profiles and noise data for aircraft are adjusted to match radar data and noise measurements of actual flight operations of aircraft at the airport. The model validation has been agreed as appropriate with all of the Host Authorities and the Civil Aviation Authority in their Statements of Common Ground [TR020001/APP/8.13 – 8.18 and TR020001/APP/8.10].</p>
NO.1.12	<p>The question highlights disparities in the declared percentages of new generation aircraft between different responses provided in REP1-023.</p> <p>The answer is again unhelpful. REP1-023 advises RR-0289 <i>“In 2023, approximately 40% of the fleet are made up of new generation aircraft”</i> (PDF p66). The very next response,</p>	<p>There is a difference in the fleet transition seen in summer 2023 and the cumulative percent over the year to date, as at summer 2023, as the introduction of new generation aircraft at the airport accelerated into the summer. It is correct that the proportion of new generation aircraft operating commercial passenger flights in summer 2023 was approaching 40% but that the cumulative percentage to that date was c.31%. The</p>

PINS Ref.	LADACAN Comment at D5	Luton Rising Response at D6
	<p>again to RR-0289 states “By summer 2023, approximately 40% of the fleet is made up of new generation aircraft.” But in response to RR-1416 it states “This fleet transition has been observed in 2023 where, to date, approximately 31% of the fleet are made up of new generation aircraft.” (PDF p266). Since that response is dated August, which does correspond to summer, there is a clear disparity.</p> <p>To assist the ExA, we note that the Quarterly Monitoring Report produced by the Airport Operator for Q2 2023 shows a total of just 26% new generation aircraft.</p> <p>Our own observations from the Airport’s online flight tracking system is that in August 2023 the proportion of new generation aircraft was around 30%. The Airport Operator is due to publish its Q3 2023 Quarterly Monitoring Report shortly and this will give an accurate impression, but the Applicant’s figures appear over-optimistic and we urge the ExA to press for more clearer and properly evidenced information.</p>	<p>transition of the fleet to new generation aircraft has continued into the winter and is currently running at 38.9% of the passenger aircraft fleet. The key point is that this rate of fleet transition is consistent with the anticipated pace of fleet modernisation anticipated in the fleet mix projections used for environmental assessment purposes for the DCO.</p>
NO.1.13	<p>Estimates of the noisiness of future aircraft types clearly influence modelling and assessment in two ways. The Applicant chooses to describe only one viewpoint.</p> <p>If future aircraft are modelled to be less noisy than they turn out to be, there will be an understatement of future noise in the modelling. Applicants tend to describe such an approach as “robust and a reasonable worst-case” as the Noise Envelope limits are set to a more conservative value.</p> <p>There is a risk, however, that if the aircraft turn out to be noisier than expected, as indeed the A321neo has proved to be at Luton. By the time the issue was uncovered, the aircraft was already operating, and the airline had created schedules and sold tickets. The Airport Operator first claimed the aircraft were on a “noisy route”; then that it is a matter beyond their control and they are putting pressure on the aircraft manufacturers but are being ignored; then that they are accumulating data to send to the CAA for analysis and are too busy to release it to us (LADACAN requested it). Nothing has emerged for some 2 years and the issue drags on and is not resolved.</p> <p>It is worth noting that future designs involving open rotors are expected to be noisier than current designs.</p>	<p>This response does not take into account the forward planning process of Green Controlled Growth which requires the consideration of the current noise performance of aircraft to be taken into account in capacity declarations and slot allocation through the setting of QC budgets (as confirmed at Issue Specific Hearing 9, the Applicant will update Green Controlled Growth documents at Deadline 7 so that this is required regardless of whether the airport is above a Level 1 Threshold or not).</p>
NO.1.15	<p>If the Applicant is modelling the noise impacts based on the default load factor of 65% then the modelling is likely to be inaccurate and under-represent the noise. The Luton Airport operator has quoted load factors of 80% or more.</p> <p>We urge the ExA to press for reliable data to be obtained from the Operator, and for it to be used in the noise modelling.</p>	<p>It is not correct that the Applicant is modelling the noise impacts based on the AEDT default load factor of 65%. The model validation process adjusts the flight profile and noise data for aircraft to take into account the flight profiles and noise emissions due to aircraft load factor (among other parameters), i.e. the default data is not used.</p> <p>Load factors are not expected to materially change over time or with the Proposed Development, see paragraph 6.6.15 and 6.6.16 of the Need Case [AS-125]. However, if load factors were to change such that they influence the aircraft flight profile or noise emissions, this would be accounted for in the annual noise model validation process.</p>
NO.1.20	<p>News reports indicate a 10% reduction in capacity of the Wizz fleet due to engine issues with neo aircraft. This is a factor which the Applicant has not commented on.</p>	<p>The reductions in capacity are temporary whilst the engine issues are resolved by the manufacturer, Pratt & Whitney. It is not considered that these issues will persist and impact on the achievability of the DCO forecasts in the key assessment years.</p>

Table 1.3 Applicant’s response to comments on Written Question responses - New Economics Foundation

No.	NEF Comment at D5	Luton Rising Response at D6
Climate impacts have been underestimated		
2.	<p>The Applicant’s response to written questions reveals that 47% of the additional carbon emissions created by the proposed scheme between 2025 and 2050 fall within the Non-Traded Sector. As others have noted, CORSIA presently has no meaningful impact on UK aviation emissions. This means that under current policy, there are no caps or mitigations in place on a cumulative forecast of an additional 2.7 million tonnes of CO2 over the period.</p>	<p>Aviation emissions overwhelmingly fall within the traded sector – while a significant proportion of <i>increased</i> emissions do fall outside the traded sector, the Applicant notes that a large majority of flights from Luton Airport go to destinations covered by the UK ETS, with over 75% of total aviation emissions in the Core Planning Case being controlled by this cap and trade system.</p> <p>A very large majority of the remainder fall under CORSIA, with aircraft operators required to offset or reduce emissions above a baseline. The interaction between these market-based mechanisms remains to be fully clarified; it is likely that UK ETS will apply to all flights to EEA destinations, with CORSIA applying to flights outside of EEA but also to destinations covered by CORSIA membership; together, these schemes will apply to the overwhelming majority of emissions, but given that the growth in flights to destinations outside the EEA is not anticipated until the late 2030s, the precise mix of destinations in terms of whether they would be covered by CORSIA cannot be known at this point in time.</p> <p>The UK Government is working to fully integrate CORSIA into its aviation decarbonisation policy framework, and has been negotiating to uphold the environmental integrity of CORSIA at its first Periodic Review. They will continue to support and strengthen the scheme through later Periodic Reviews. The government has also drafted legislation amending the existing Air Navigation (CORSIA) Order 2021 to provide legal certainty to aircraft operators around the offsetting requirements for UK-administered airlines. The UK government has stated that further legislation will be required to implement CORSIA’s offsetting requirements for the full duration of the scheme. The government has also pledged to conduct further consultation on CORSIA, including its interaction with the UK ETS, with a target of having all legislation to implement CORSIA in place by 2024.</p> <p>The Applicant agrees with the assumption in the NPPF that both the UK ETS and CORSIA will operate effectively as emissions control mechanisms.</p>
3.	<p>This has key ramifications for the Applicant’s economic assessment. The Applicant has claimed at various points that carbon costs can be ignored in the cost-benefit analysis because they are already accounted for in the forecasts. As it turns out, around half of the scheme’s emissions are not within the Traded Sector. As a result, they are not accounted for by any mitigation and guidance states that they must be included as a scheme cost within the primary cost-carbon benefit analysis. The Applicant has assumed in their forecast modelling that in the future these non-traded sector emissions will be charged to airlines (i.e. priced-in). However, under current policy they are not, as such this assumption does not permit exclusion from the cost-benefit analysis. To do so would contradict all government appraisal guidance. These residual emissions have a social welfare cost which must be recognised in the appraisal.</p>	<p>It is important to note that the carbon costs allowed for in the demand forecasts do not relate directly to CORSIA or UK ETS costs as they reflect values trending towards the BEIS target appraisal values for carbon costs, consistent with the assumptions used by the Department for Transport in their demand forecasts for Jet Zero (see Need Case [AS-125], at paragraph 6.3.9). These BEIS target appraisal values are defined by BEIS as “<i>This involves setting the value of carbon at the level that is consistent with the level of marginal abatement costs required to reach the targets that the UK has adopted at a UK and international level.</i>” (Ref 1)</p> <p>Given that the growth in flights to destinations not covered by the UK ETS is minimal at Phase 1, costs above the minimum CORSIA price are assumed to apply in the relevant years of the demand forecasts as set out in the Department for Transport’s <i>Jet Zero: further technical consultation</i> at Annex B (Ref 2).</p> <p>Furthermore, the latest WebTAG Guidance (Ref 3) is specific at paragraph 3.3.3 that double counting of carbon costs that have already been accounted for in the demand forecasts should be avoided and that the values have to be adjusted downwards in any</p>

No.	NEF Comment at D5	Luton Rising Response at D6
		appraisal so as to include only the residual amounts. This is material given the use of values trending to the BEIS appraisal values within the demand forecasts.
4.	The Applicant continues to resist the inclusion of inbound flight emissions. This is despite the BEIS guidance we have shared twice before, which the Applicant has ignored, which states that they should be included in the valuation process.	Carbon costs have not been applied anywhere in the GHG assessment as this is not required for an EIA. Best practice has been applied in only assessing emissions from departing flights; all flights are associated with exactly two airports, so Luton's fair share is established by only looking at outbound flights. This is in line with the "fair share" approach taken by the UK government when reporting national emissions under the requirements of the UN Framework Convention on Climate Change (UNFCCC) to avoid any double counting. This approach is also endorsed by the Committee on Climate Change.
5.	However, to remove all doubt from the issue, the DfT have now released a new 'Forthcoming Change Notice' on the TAG aviation chapter which confirms this position, and also confirms that this was <u>already</u> the Green Book position [emphasis added]: <i>"Unit A5.2 will also state that, in line with HM Treasury Green Book appraisal guidance, any UK specific scheme or policy will require all associated changes in emissions to be appraised, which means that changes in emissions from flights both arriving and departing into the UK will need to be appraised. In some circumstances, there may be evidence that a UK-specific scheme or policy has displaced emissions from elsewhere within the sector."</i> (PDF p.7) – DfT (2023) Forthcoming Change to TAG. 19 th October 2023.	<p>Whilst this change is prospective, it is important to note that this change will also require displacement effects to be taken into account and also that care must be taken not to double count the effects for emissions already covered by the UK Emissions Trading Scheme. Prior to the paragraph cited by NEF the 'Forthcoming Change Notice' states clearly that <i>"It will also acknowledge that traded sector emissions will risk double counting emissions from within the traded sector due to existing carbon pricing mechanisms, and will recommend that analysts make an adjustment to avoid such double counting using appropriate data and assumptions about current and future traded carbon prices."</i></p> <p>Given the inclusion of these carbon costs trending to long term abatement costs within the demand forecasts, such issues of double counting, as well as displacement, would be applicable and it is far from certain that the effect would be to increase the residual carbon costs to be considered in any appraisal, if one was required. Rather the updated WebTAG guidance (Ref 3) would tend to reinforce the view that the Applicant is correct (paragraph 8.6.5 of the Need Case [AS-125]) that carbon cost should be omitted from the socio-economic cost benefit analysis.</p>
6.	This Notice from the DfT reflects the fact that this is a project appraisal and impact assessment and -not- a national emissions accounting exercise.	For the reasons already explained in Section 1 and Section 7.1 of REP2-038 , there is no requirement for a WebTAG appraisal of an airport expansion project funded from airport profits as distinct from investment directly by the public sector. The socio-economic cost benefit analysis provided was submitted as part of a broadly based economic impact assessment so as to provide additional information to assist the decision maker and was expressly not a WebTAG appraisal.
7.	If this appraisal is to follow best practice, the Applicant should set out their estimate of the emissions from, and the carbon cost of, inbound flights.	See above response to point 6.
8.	For completeness, the Applicant should also apply the 1.7x multiplier, recommended by DESNZ in its document <i>2023 Government Greenhouse Gas Conversion Factors for Company Reporting</i> (p.107) to account for non-carbon emissions. This document presents the "current official set of UK government conversion factors" (p. 14) for use by organisations and companies. It should be noted that the 1.7x multiplier (i.e. 70% of carbon impacts) is a highly conservative estimate of the potential scale of damage, the 2023 DESNZ report highlights that the latest research could suggest a multiplier as high as 3.0x in the worst case (see DESNZ, 2023, p.103-107). Figure 10.4 of the 2023 CCC Progress Report to Parliament (p. 273) also highlights that the 1.7x multiplier is at the very bottom end of the range of potential climate impacts from noncarbon gases.	<p>At present there is no consensus as to the multipliers that should be used. It is clear from <i>Jet Zero Strategy: One Year On</i> (page 33) (Ref 4), that substantial uncertainty remains as to how such effects might be quantified:</p> <p><i>"Undertake further work on how non-CO₂ impacts could be monitored and included in the UK ETS, in line with our aim to price aviation's non-CO₂ climate impact once scientific understanding and consensus permit."</i></p> <p>This position is confirmed in the latest WebTAG appraisal guidance (Ref 1) at paragraph 3.3.3, which makes clear that, in the light of the uncertainty, it is acceptable for such additional emissions to be considered qualitatively as they are in Chapter 12. Greenhouse Gases [REP3-007] of the ES. This response is without prejudice to the Applicant's view that a full WebTAG appraisal is not required for a planning application in any event.</p>

No.	NEF Comment at D5	Luton Rising Response at D6
		<p>The use of a multiplier of 1.9 was considered and rejected in the High Court in connection with the Bristol Airport appeal [Bristol Airport Action Network Coordinating Committee v Secretary of State for Levelling up, Housing and Communities [2023] EWHC 171 (Admin), paragraph 202]:</p> <p><i>“However much the claimant may seek to invoke the BEIS 1.9 multiplier, there is very far from being any scientific consensus that it is a relevant tool in determining non-CO2 emissions from aviation, other than in the context of company reporting.”</i></p>
9.	<p>The Climate Change Committee’s position on the assessment of non-CO2 is also stronger, stating:</p> <p><i>“No airport expansions should proceed until a UK-wide capacity management framework is in place to assess annually and, if required, control sector CO2 emissions and non-CO2 effects.”</i> (CCC 2023 Progress report to Parliament, p.15)</p>	<p>NEF neglects to refer to the Government’s Response to the Climate Change Committee’s June 2023 Progress Report (Ref 5), which rejected its approach to airport capacity expansion (see previous response to ISH2 at REP4-074).</p>
10.	<p>Given that the application of the multiplier is an incredibly simple step, recommended as a sensitivity test by the DfT TAG guidance, and by DESNZ, there is no plausible reason why the Applicant would <i>not</i> do this step other than to obscure the scheme’s potential negative impacts</p>	<p>There is currently no justification for applying such a multiplier.</p>
Correcting the cost-benefit analysis for overseas impacts		
11.	<p>NEF raised this issue in our first Written Representation (para 65). The Applicant is wrong to imply it was raised belatedly.</p>	<p>Noted.</p>
12.	<p>The Applicant has helpfully provided the relevant TAG guidance on the treatment of non-UK residents (Doc 8.107, para 2.1.4, p. 1). This guidance only serves to reinforce NEF’s point and highlight the flaws in the Applicant’s costbenefit analysis. The TAG guidance clearly sets out two options:</p> <p>a. It is preferable to present a cost-benefit analysis which focuses only on welfare impacts on UK residents. <i>The Applicant is deficient here as they have included benefits to foreign residents.</i> Note that this does not contradict other guidance which states that foreign impacts <i>should still be reported separately.</i></p> <p>b. As a second, less preferential option, all scheme impacts, regardless of the location of impact, can be presented. <u>The Applicant is deficient here as they have not included greenhouse gas emissions which will be the responsibility of foreign governments</u> (they have also not included non-carbon climate impacts).</p>	<p>On page 4 of his response [REP5-081], Dr Chapman seeks once more to suggest that benefits to overseas users should be excluded from any consideration of the socio-economic benefits. Notwithstanding the Applicant’s previous comments as regards the appropriateness of WebTAG as a tool in considering the Proposed Development, these issues have already been addressed in the Applicant’s previous response to NEF at Deadline 4 [REP4-096], at paragraphs 2.1.3 to 2.1.6. The Applicant’s response remains the same. It would only be sensible to exclude benefits to foreign residents if <u>all</u> costs and benefits can be disaggregated between those associated with UK and non-UK users and this is <u>not</u> possible. Contrary to Dr Chapman’s statements in paragraph 15, it is not possible to robustly estimate key costs associated with UK and non-UK users. This primarily relates to the cost of construction and the costs of carbon.</p> <p>It is not necessary to allow for the costs of greenhouse gas emissions within the cost benefit analysis for the reasons set out above. In any event, it is important to note that carbon costs have been applied to both inbound and outbound passengers for the purpose of preparing the demand forecasts so have already been accounted for.</p>
13.	<p>In either case, the Applicant’s analysis is deficient, and <u>clearly overstates the scheme’s benefit.</u></p>	<p>Given the above, the Applicant does not agree with this assertion. Please refer to the response provided at point 12 above.</p>
14.	<p>We can make a simple modification to the Applicant’s analysis to remove the benefits arising to overseas residents, as shown below in Table 1. We have also controlled for the fact that almost half of the scheme’s carbon cost is in the non-traded sector and therefore falls within the core cost-benefit assessment. These changes result in a negative net present value (NPV) for the scheme, worth -£621m, when all non-traded carbon and non-CO2 impacts are accounted for. This includes applying the conservative non-CO2 multiplier (1.7x) which is recommended by the DfT in the Aviation TAG unit as a sensitivity test, and by BEIS/DESNZ in its carbon valuation and greenhouse gas emissions reporting guidance document.</p>	<p>For the reasons set out in responses above, the Applicant does not accept the validity of NEF’s reworking of the socio-economic cost benefit analysis.</p>

No.	NEF Comment at D5	Luton Rising Response at D6																																															
	<p><i>Table 1: Revised scheme net present value (NPV) to UK residents over 60 year appraisal period</i></p> <table border="1"> <thead> <tr> <th>Impact</th> <th>Notes</th> <th>UK Value (£m)</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Journey time savings</td> <td>UK Business</td> <td>£271</td> </tr> <tr> <td>UK Leisure</td> <td>£17</td> </tr> <tr> <td>Total</td> <td>£288</td> </tr> <tr> <td rowspan="3">Air fare savings</td> <td>UK Business</td> <td>£571</td> </tr> <tr> <td>UK Leisure</td> <td>£1,539</td> </tr> <tr> <td>Total</td> <td>£2,110</td> </tr> <tr> <td>Airport profits</td> <td></td> <td>£45</td> </tr> <tr> <td>Air passenger duty</td> <td></td> <td>£259</td> </tr> <tr> <td>Construction costs</td> <td></td> <td>-£1,527</td> </tr> <tr> <td>Non-traded carbon costs</td> <td></td> <td>-£721</td> </tr> <tr> <td>Traded carbon costs</td> <td></td> <td>-£814</td> </tr> <tr> <td>Non-traded non-CO2 costs</td> <td>DESNZ 1.7x multiplier</td> <td>-£1,075</td> </tr> <tr> <td colspan="2" style="text-align: center;">Totals</td> <td></td> </tr> <tr> <td colspan="2">Net Present Value including non-traded carbon costs</td> <td>£454</td> </tr> <tr> <td colspan="2">Net Present Value including non-traded carbon and non-CO2 costs</td> <td>-£621</td> </tr> <tr> <td colspan="2">Net Present Value including traded and non-traded carbon and non-CO2 costs</td> <td>-£1,435</td> </tr> </tbody> </table>	Impact	Notes	UK Value (£m)	Journey time savings	UK Business	£271	UK Leisure	£17	Total	£288	Air fare savings	UK Business	£571	UK Leisure	£1,539	Total	£2,110	Airport profits		£45	Air passenger duty		£259	Construction costs		-£1,527	Non-traded carbon costs		-£721	Traded carbon costs		-£814	Non-traded non-CO2 costs	DESNZ 1.7x multiplier	-£1,075	Totals			Net Present Value including non-traded carbon costs		£454	Net Present Value including non-traded carbon and non-CO2 costs		-£621	Net Present Value including traded and non-traded carbon and non-CO2 costs		-£1,435	
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15.	<p>The Applicant objects to such a move ostensibly because <i>“it is simply not possible to identify all impacts on non-UK residents”</i> (doc 8.107, para 2.1.5). This is odd. It is perfectly possible to make a robust estimation of such impacts. Airport profits and Air Passenger Duty accrue in the UK. Construction costs also accrue in the UK. Construction costs may be passed to passengers via ticket prices, but the Applicant has already completed the job of accounting for, and splitting air fare impacts between UK and foreign residents. Climate (carbon) costs can either be assigned by national emissions accounting responsibility (i.e. inbound vs outbound flights), or if this is not satisfactory, they can be assigned based on the proportion of passengers who are domestic versus foreign residents. Both options involve simple calculations. In Table 1 we have opted to split present climate costs by national government responsibility. Presenting climate costs split by passenger residency would <u>worsen</u> the scheme’s final net present value as significantly more UK residents fly from Luton Airport than foreign.</p>	<p>See response to point 12 and other responses above.</p> <p>In the case of construction, there are two key points. Dr Chapman first of all suggests that it is easy enough to say that construction costs accrue to the UK because, presumably, that is where the airport is based. This seems to completely ignore the fact that who actually bears the costs of construction will depend on the financial structure of how the airport is operated in the future. Currently, the airport is operated under a concession agreement, with Aena (a Spanish company) and Infrabridge (a division of a US company) holding that concession through to 2032. By way of example, therefore, currently, any such construction costs would be funded initially by overseas entities before being recovered from all users of the airport, UK or foreign. Secondly, and perhaps even more importantly, it is clearly not possible to robustly divide the construction costs between facilities associated with UK passengers’ use of them and foreign passengers’ use of them. Either way, quantifying the construction costs in the way Dr Chapman suggests is simply not possible.</p>																																															
16.	<p>Finally, we would like to re-emphasise the Applicant’s own point, which explains why it is still important to take account of carbon costs which occur within the <u>Traded Sector</u> (and hence why government guidance emphasises that such costs should still be presented): <i>“Investment will also be required to ensure that carbon emissions from the Proposed Development are compliant with the objective of reaching Net Zero. This, again, reflects a cost to society, as these resources could be used for other activities.”</i> (Need Case para 8.6.1, p. 204)</p>	<p>Similarly, Dr Chapman seems to ignore the fact that carbon emissions relate to flights and not passengers. Every flight has a mixture of UK and foreign passengers on it and in many cases unless that were so, the flight would not be commercially viable and would not operate. Hence, trying to disaggregate between emissions relating to UK passengers and those relating to foreign passengers is not possible. One would not occur without the other in most cases. Therefore, again, the costs associated purely with foreign users cannot be established and the benefits to them should not be excluded.</p> <p>In paragraphs 16 to 19, Dr Chapman revisits the importance of including traded carbon values within the cost benefit analysis. The Applicant has already responded to this point in paragraph 3.1.2 of its previous response to NEF at Deadline 4 [REP4-096]. The Applicant would note again the point that the costs associated with traded emissions are already internalised within the demand forecasts and hence it is not appropriate to include</p>																																															

No.	NEF Comment at D5	Luton Rising Response at D6
		them within the cost benefit analysis. This is a point that Dr Chapman has previously accepted, see paragraph 13 of REP3-131 .
17.	Another way to frame the cost of these additional traded-carbon emissions is as a factor that will increase competition in the carbon market and drive up the cost of ETS carbon permits for other regulated businesses – a cost to wider society.	This is accounted for by adopting the Jet Zero carbon assumptions that trend towards the BEIS target appraisal values.
18.	The scheme's NPV is further negative (-£1,435m) if the costs of traded carbon are considered.	For the reasons set out above this NPV estimate is not considered valid. Further, it should be noted that as a privately funded scheme, whether or not investment into the Proposed Development is prudent is not a matter to be assessed in this Examination – only whether there is a reasonable prospect of funds being available. This has been demonstrated through the Funding Statement [REP5-009] .
19.	The scheme cost-benefit analysis still lacks consideration of costed noise and air quality impacts which would likely drive its net present value into further negative territory. In the Gatwick Airport case, the Airport's consultants monetised these impacts and placed their net present value at around -£92m (London Gatwick, Economic impact of the Northern Runway Project: national impact assessment, p. 7-53). The equivalent figure for Luton should be added to the core cost-benefit analysis.	For the reasons already explained, the socio-economic cost benefit analysis is presented as part of the economic impact assessment. The noise impacts have been fully considered in Chapter 16 Noise and Vibration [REP1-003] of the ES. As there is no requirement for a full WebTAG appraisal for this project, there is no requirement for the inclusion of noise or other environmental costs.
Cost-benefit analysis is key to aviation/airports policy		
20.	It is a central principle of government aviation policy that costs and benefits must be weighed up. NEF is in agreement with York Aviation in their recent (November 2023) evidence to the London City Airport Planning Appeal where they state: <i>"It was an important principle of the APF [Aviation Policy Framework] that the costs, particularly environmental costs of airport development, should be balanced against the benefits of growth."</i> And that: <i>"The concept of balancing benefits and costs is reiterated in the MBU [Making Best Use] policy."</i> (Proof of Evidence of Louise Congdon, p.12)	Noted.
21.	The relevant paragraph of the APF states: <i>"The aviation sector is a major contributor to the economy and we support its growth within a framework which maintains a balance between the benefits of aviation and its costs, particularly its contribution to climate change and noise"</i> (APF para 5, page 9)	
22.	The government has set out, in TAG and the Green Book, an established, best practice, methodology for the task of weighing up the proportionate balance of scheme benefits against environmental costs such as climate change and noise.	For the reasons explained in previous responses, there is no requirement for a WebTAG appraisal in respect of a planning application for airport expansion.
23.	All additional emissions have a societal cost, even those which fall within any emissions envelopes set out in government documents such as Jet Zero. <u>Nowhere in government policy is there any indication that government sanctions the removal of greenhouse gas costs from the best-practice appraisal, and cost-benefit analysis, of an individual scheme.</u> To do so would be an extremely unusual and inappropriate deviation from government appraisal guidance.	The benefits and costs of the Proposed Development have been fully set out in the application documents. There is no requirement for a monetised appraisal of all of these costs and benefits. See REP2-038 .
WebTAG provides the framework for a robust cost-benefit analysis		
24.	The Applicant's appraisal documents are clearly deficient against the best practice standard set out in TAG across a range of areas. The Applicant continues to avoid the implications of this deficit by making demonstrably false statements regarding the applicability of TAG (WebTAG).	For the reasons set out above, there is no requirement for a full WebTAG appraisal in relation to a planning application for airport development where the full range of impacts have been assessed in the ES. This was covered in REP4-038 .

No.	NEF Comment at D5	Luton Rising Response at D6
25.	<p>The November 2022 update to the Aviation unit of TAG revised the wording of the opening page. This revision made it clearer than ever before that TAG is applicable to private sector development contexts. It states that the DfT:</p> <p><i>“expect this guidance to be useful to other appraisal practitioners considering the impacts from non-government aviation interventions”</i></p> <p>This can be directly contrasted with the Appellant’s claim in their latest rebuttal of NEF analysis (doc 8.107) which states <i>“WebTAG is not useful in this case”</i> (para 10.1.2, p. 10). The Appellant’s position is evidently out of step with the DfT.</p>	
26.	<p>This view is also out of step with consultants working for other airports. Gatwick Airport’s ongoing DCO application states [emphasis added]: <i>“a TAG welfare analysis is considered as a useful framework to assess and present the economic impacts (costs and benefits) of the Project that are additional at the national level.”</i> (London Gatwick, Economic impact of the Northern Runway Project: national impact assessment, para 3.2.3, p. 3-11).</p>	<p>The Applicant is aware that Gatwick Airport has submitted an assessment that includes elements of a full WebTAG appraisal but considers that the circumstances of that case are different as Gatwick Airport is, in essence, seeking to present its runway development proposal as an alternative, at the national level, to the development of a third runway at Heathrow as supported in the Airports National Policy Statement. This differs from the purpose of the economic impact assessment for the Proposed Development which sets out to inform the consideration of costs and benefits at a local and sub-regional level primarily.</p> <p>The Applicant also notes that NEF has criticised the Gatwick appraisal in its relevant representation on that application (Ref 6), noting that it is <i>“unusual”</i>.</p>
27.	<p>The Government’s introduction to TAG on its website states:</p> <p><i>“Projects or studies that require government approval are expected to make use of this guidance in a manner appropriate for that project or study. For projects or studies that do not require government approval, TAG should serve as a best practice guide.”</i> (DfT, Transport Analysis Guidance, 2022)</p>	<p>See responses above. The Applicant has addressed NEF’s points in REP2-038 and REP4-096.</p>
28.	<p>This DCO application requires government approval. TAG is the standard to which the appraisal should be held.</p>	
29.	<p>NEF notes the difference between a local planning application and a DCO. We would suggest that given the more direct involvement of central government in the determination of a DCO, a tighter role for TAG than that set out by the Planning Inspectors in the previous Bristol and Luton cases might be appropriate.</p>	
30.	<p>That said, NEF finds the previous statements made by the Planning Inspectors in their Bristol and Luton reports to be at odds with the government’s position on the issue. In the Luton case, the inspectors wrote:</p> <p><i>“The Bristol appeal decision noted that as such assessments were to support a Government intervention and as there was not one, then the absence of a WebTAG assessment did not weigh significantly against that development”.</i></p>	
31.	<p>NEF believe this statement to be incorrect, as there was in fact a ‘government intervention’ at stake. To understand what represents a ‘government intervention’ we can look at advice from the Office for Fair Trading, which provides guidance on the role of “Government in Markets – Why competition matters – a guide for policy makers” (2009). This document sets out <i>“the rationale for government intervention in markets”</i>. This document clearly sets out how government <i>“interventions”</i> in markets include putting in place <i>“rules and regulations that determine appropriate conduct of firms and individuals”</i> (p. 1). The rules put in place to restrict air traffic movement at an airport clearly represent one such example. Government approval of an airport expansion application represents an intervention via a change to the regulations permitting air traffic movements.</p>	

No.	NEF Comment at D5	Luton Rising Response at D6
32.	<p>The Inspectors continue...</p> <p><i>“There are basic difficulties when the WebTAG approach is applied to proposals such as this one. The process is about identifying value for money where public money is being expended and it has to monetise impacts when spending public money in order to understand which policies and projects deliver better value for money.”</i> (Report to the Secretary of State, May 2023, para 8.177, p.55) This view is shared by the Applicant (doc 8.107, para 10.1.2, p. 10)</p>	
33.	<p>This represents an incorrect understanding of the function of TAG. The inspectors state that TAG is <i>“about identifying value for money where public money is being expended”</i>. <u>This is incorrect</u>. TAG, explicitly, addresses all interventions which ‘require government approval’. As set out above, there are many types of intervention which <u>do not</u> involve expenditure of public money.</p>	
34.	<p>At paragraph 3.2.11, the Aviation Unit of TAG specifically provides advice on the design of a cost-benefit analysis when a scheme is privately financed. The DfT state: <i>“Since aviation investment is most commonly paid for by the private sector, it is also necessary to include private financing costs in the total scheme costs”</i> (p. 7). If TAG is not intended for the appraisal of private sector investments, why is this advice provided?</p>	
35.	<p>Further underscoring the wider applicability of TAG than just contexts of public expenditure, the introduction to the aviation unit of TAG (A5.2) states [emphasis added]: <i>“The DfT regards this unit as best practice for the appraisal of an aviation intervention and would assess the merits of any aviation intervention against this benchmark”</i> (p.3). Clearly, the DfT would assess “any” aviation intervention against TAG, the best practice benchmark. This would therefore include private sector-sponsored airport expansions. The Aviation unit of TAG makes repeated reference to ‘aviation interventions’. At <u>no point</u> is the guidance limited to the expenditure of public funds.</p>	
36.	<p>The Planning Inspectorate’s prior position on TAG has had damaging consequences, allowing sub-par economic appraisal to go unchallenged and thereby propagating poor projections leading to misinformed decision making.</p>	
37.	<p>For example, in their Luton report, the Inspectors state at para 8.178:</p> <p><i>“This was just an appraisal of climate change costs and had not been compared to benefits of the proposal including the GVA. However, even taking these costs at face value at their highest, the discounted GVA of the scheme would far exceed those costs”</i></p> <p>This demonstrates a fundamental misunderstanding of appraisal best practice. GVA and climate change (carbon) costs are not appropriate figures for comparison. Rightly, GVA is not included in the cost-benefit analysis presented by York Aviation for this application, nor was it included in the Gatwick DCO application. This is because carbon costs form part of the welfare-based analysis of benefits and costs. GVA is not a welfare-based measure. This is explained in detail in TAG Unit A2.1. The comparison made by the Inspectors is not appropriate and, if TAG guidance had been given adequate consideration, this error would not have occurred.</p>	
Equity has not been adequately assessed		
38.	<p>The Applicant’s failure to accept WebTAG as best-practice guidance, and the requisite appraisal framework in this context leaves a range of critical issues unassessed.</p>	<p>These comments appear to be predicated on the assumption that those passengers flying from London Luton Airport have salaries higher than the national average. This is not true. The 2019 Civil Aviation Authority Survey Report (Ref 7) at Table 10.10 shows the average household income for leisure passengers using the airport of £51,065, which is lower than the average UK household income for 2019 of £61,098 (ONS data).</p>
39.	<p>Taking the issue of equity. In their response to written questions on socioeconomic effects (doc 8.81) the applicant has directed the inspectors to their Equality Impact Assessment (doc 7.11) in response to the inspectors’ question about the equity of economic impacts.</p>	

No.	NEF Comment at D5	Luton Rising Response at D6
40.	An Equality Impact Assessment (EqIA) is not comparable with the distributional analysis methodology which is recommended by TAG. A TAG distributional assessment would provide important, higher quality, information, to the Inspectors.	The Applicant does not consider that a further equity assessment is necessary.
41.	The EqIA provides a qualitative, and somewhat speculative assessment of how certain groups with protected characteristics might be impacted by individual aspects of the proposal. A TAG distributional assessment would present the actual distribution of the quantified economic impacts, and particularly claimed benefits, at the core of the scheme's economic case.	
42.	For example, the largest claimed benefit of the proposed scheme is the reduction in ticket prices (air fares) passed to leisure travellers. This is worth £1.5bn to UK residents in Net Present Value in the Applicant's cost-benefit analysis. Travel time savings are also key. We do not know how these claimed benefits are distributed, whether they accrues to wealthier or poorer households, or whether they bias towards particular age groups, genders, and racial groups. Given the Airport's pre-existing knowledge about its passenger base, and the type of future routes that would be served (including increasing long-haul) such a calculation should be relatively simple. A methodology is set out in detail in TAG Unit A4.2.	
43.	Had the Applicant also calculated monetised noise and air quality impacts, following best practice in appraisal, it would also have been possible to assess the distribution of those costs across society, also as per TAG Unit A4.2.	
44.	As it stands, NEF remains concerned that the majority of the scheme benefits (passenger air fare and travel time savings) accrue to wealthier travellers who take multiple flights per year, while the scheme costs skew towards less wealthy groups vulnerable to climate, noise, and air quality impacts.	
Business passengers and business productivity impacts are overstated		
45.	We appear to have reached an impasse on this issue. In their latest response to NEF the Applicant repeats its Figure 1.1 (doc 8.107), a figure which does not include changes prior to 2010, or post-2019. In doing so the Applicant hides the sizeable structural shift which took place following the 2007/08 recession, and the similar shift currently taking place following the pandemic. The Applicant's forecasts have not controlled for this shift	<p>The elasticities used to assess future demand cover a long period of time since the 1990s and allow for such structural shifts as NEF contends. On this basis the forecasts of future business travel demand are considered robust.</p> <p>It is not accepted that the estimates of business productivity effects rely on out of date relationships. The broad principles of this relationship are set out in a number of reports including:</p> <ul style="list-style-type: none"> • InterVISTAS in its work on the economic impact of airports in Europe for ACI EUROPE in 2015 also identified an elasticity of 0.05; • Research by Oxford Economics for Eurocontrol in 2005 identified an elasticity of around 0.06; • Research by PwC for the Airports Commission identified an elasticity of around 0.1; • As recently as September 2020, Oxford Economics for ATAG in its Aviation: Benefits Beyond Borders report has cited an elasticity of 0.05 for the link between productivity in the wider economy and air travel. <p>The Applicant does not accept NEF's position in relation to the Oxford Economics relationship and its appropriateness as a basis for assessing the business productivity impacts of the Proposed Development.</p>
46.	Contrary to the Applicant's forecast of significant underlying demand, given ongoing economic stagnation in the UK and global economies, and the accelerated growth of remote-working capacity, a reasonable forecast would suggest that there will not be significant additional business passenger demand until the mid-2030s at the earliest.	
47.	The wider shift away from business air travel in South East England is further evidenced in the recent moves by London City Airport and Southampton Airport to expand further into the leisure travel market, 1 as well as recent studies such as the 2023 Deloitte Corporate Travel Study which identified a "limited upside" to corporate travel	
48.	In any case, NEF has already provided robust evidence from the DfT that constrained airport capacity does not meaningfully constrain business passenger demand due to business passengers' higher willingness to pay than leisure travellers.	
49.	The outputs of the Applicant's analysis of business productivity, which relies on an out-of-date relationship, a methodology entirely detached from best practice guidance in TAG, and a growth forecast completely blind to emerging trends, cannot be relied upon.	

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- Ref 1 Department for Business, Energy & Industrial Strategy (2021) *Valuation of greenhouse gas emissions: for policy appraisal and evaluation*. Available online.
- Ref 2 Department for Transport (2022) *Jet Zero: further technical consultation*. Available online.
- Ref 3 Department for Transport (2023) *TAG Unit A5.2 Aviation Appraisal*. Available online.
- Ref 4 Department for Transport (2023) *Jet Zero strategy: one year on*. Available online.
- Ref 5 Department for Energy Security and Net Zero (2023) *Committee on Climate Change 2023 progress report: government response*. Available online.
- Ref 6 Planning Inspectorate (2023). *Gatwick Airport Northern Runway - Representation by New Economics Foundation*. Available online.
- Ref 7 UK Civil Aviation Authority (2019) *Passenger survey report 2019*. Available online.