CAA CAP 1871; Economic Regulation of Heathrow Airport; Consultation on Early Costs of Expansion

Response by Teddington Action Group

February 2020

Introduction

This response to CAP 1871 is submitted by Stephen Clark MA(Cantab), David Gilbert BSc, PhD, MBA and Joan McIntyre on behalf of Teddington Action Group (TAG). TAG is a founder member of Heathrow Community Noise Forum, its members have presented to the Transport Select Committee and the All Party Parliamentary Group on Heathrow and contributed to ICCAN's Review of SoNA published in December 2019.

Response to CAP 1871

CAP 1871, which is very narrow in its scope, is underpinned by a range of false premises, lacks a robust evidence base and does not reflect a balanced view of the project from a national or consumer perspective.

What is now required is a comprehensive and objective review of the Heathrow Expansion project, in the context of an examination of all the risks, including in relation to the DCO outcome (including potential judicial challenges), potential cost and programme overruns, Heathrow Airport Limited's (HAL) ability to finance the whole project, an agreed allocation of funding surface access costs and whether national economic and consumer interests are really being protected by incurring additional expenditure in relation to additional planning and enabling development 'early costs' at this stage. The CAA should not have discounted scenario 4 as these issues were not addressed. These omissions would be a requirement of any full project review.

Reflecting consumer interests and the national economic interest

Heathrow expansion is based on an outdated concept of a hub airport, which it is intended would dominate the UK aviation market. This is inappropriate in current circumstances for a number of reasons that go to the heart of the economic case:

- Consumer benefits would actually be **better achieved by promoting competition between UK airports**, rather than the creation and reinforcement of an effective private sector monopoly at Heathrow, which the break-up of BAA was designed to avoid.

- It is now clear that UK aviation capacity will be heavily constrained by climate change considerations. **The UK faces a choice between consolidation at Heathrow or balancing growth across its regional airports**.

- A balanced approach would have a range of benefits, including **refocussing the national economy away from concentration in and dependency on London and the South East**, towards the midlands, the north, Scotland, Wales and Northern Ireland. This would be in accordance with the direction of national policy and priorities following the 2019 General Election result.

- **Consumers** (and freight users) do not wish to travel the length and breadth of the country to get to and from Heathrow. They **wish to use their most convenient local airport at the lowest cost**. Changes in the aviation model, with the growth of new plane types allowing long-distance point to point routes – and competition between airports - will meet their needs best. These factors are not addressed in CAP 1871 which takes a blinkered approach to what consumers want and what is in the national interest.

- Not only will a **balanced use of available capacity** across UK airports be better for users and the economy, these benefits **can be achieved much more quickly and at far less risk** and cost than Heathrow expansion.

- Further, Heathrow already has some of the highest user fees of all major international airports, which can only increase if the huge costs of expansion are recovered from passengers and freight users through the RAB model. **Heathrow's extremely high user costs will increasingly become a major burden on consumers and the national economy**.

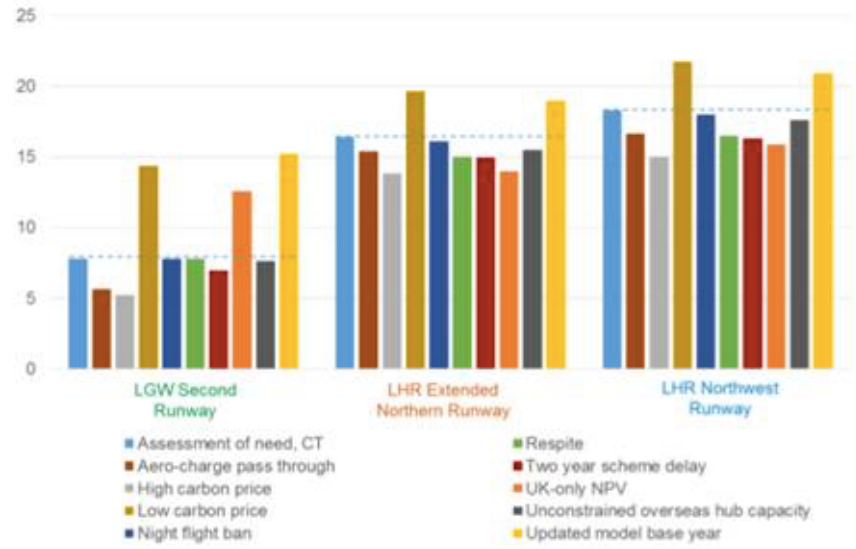
- **Concentration of UK aviation activity at Heathrow will also reduce national resilience**, should a major terrorist attack or other incident occur at Heathrow.

  Heathrow's own plans for a third runway and the build-up of flight numbers have also evolved considerably since the AC's study and the presentation of the ANPS to Parliament. A **slower growth** in Air Traffic Movements (ATMs) is now being suggested (than modelled by the DfT). In addition, freight has reduced 7.4% year on year recently, so there is no need for extra freight capacity (see table below). As a **consequence of these factors the net present value of the project is now substantially reduced.**

Heathrow freight figures (metric tonnes)						
	Jan-20	Jan-19	% difference	Feb 19 to Jan 20	Feb 18 to Jan 19	% difference
UK	58	36	60.6	608	862	-29.4
EU	6,595	7,361	-10.4	93,628	108,683	-13.9
Non-EU Europe	3,387	4,627	-26.8	55,764	57,445	-2.9
Africa	6,635	7,473	-11.2	92,505	90,967	1.7
North America	42,540	47,739	-10.9	559,798	616,631	-9.2
Latin America	3,930	4,220	-6.9	54,071	52,735	2.5
Middle East	19,820	19,975	-0.8	258,918	256,127	1.1
Asia / Pacific	32,929	39,331	-16.3	457,290	513,945	-11
Total	**115,894**	**130,762**	**-11.4**	1,572,582	1,697,396	**-7.4**
Source of data :https://www.heathrow.com/company/investor-centre/reports/traffic-statistics						

- UK plc was promised a new runway by 2026 under the Heathrow expansion plans put to Parliament. The promoters dismissed the idea that it would be delayed and a strategic plank of the former Secretary of State's case for Heathrow was that it would deliver earlier value over other options. However, the DfT's own analysis shows that a 2-year delay would reduce the value of the project by around £2bn. This is an enormous amount given the mid NPV value was around £1bn. The present project is now therefore net negative to UK plc. The Table below is an extract from the DfT's 2017 'Updated Appraisal Report, Airport Capacity in the South East'. In addition to indicating the £2bn 'hit' from a two year delay, it also shows a further potential loss of £2bn relating to Respite not working as envisaged (Heathrow has not completed any research in relation to the effectiveness of the reduced amount of Respite that would be available, nor established its flight path strategy) and a £3bn impact of high carbon price (something that is looking increasingly likely given increasing recognition of carbon's impact on climate change).

Figure 10.3 Direct economic benefits quantified through the central case (FRSR) and DfT further sensitivities (present value, 2014 prices, £bn)



Having regard to the above considerations it is imperative that the purported benefits to consumers and the national economy that Heathrow's backers have asserted over many years should come under detailed re-examination in the light of all of the current circumstances before the Government exposes itself and the travelling public to ever greater costs and risks.

Even using the CAA's own narrow analysis of the impact of deferral of claimed consumer and economic benefits, Heathrow Expansion now clearly has a negative net value to the nation. This is before further cost increases and delays emerge, which based on past experience will be inevitable as a major infrastructure project such as this is progressed. The fact that allocation of responsibility for surface access costs (which will be very substantial) has not been agreed is a sure sign of things to come.

Validity of cost estimates of and the programme for Expansion

Based on the experience of practically every other comparable national infrastructure project, it is extremely likely the overall budget cost and implementation timetable will be exceeded – by considerable margins. This would lead to reduced economic benefit and instead the need for direct or indirect Government support.

Although the Independent Fund Surveyor has apparently advised the total budget of £14 billion (2014 prices) remains applicable, this looks highly questionable in the light of;

- Experience of major infrastructure schemes such as HS1, HS2, the Channel Tunnel and Cross Rail, which have all overrun massively on budget and timescale.

- The questions the IFS itself raises in relation to the achievability of the original target opening date.

- An increase in the DCO Planning Cost budget (Category B) of around 100% between 2018 and 2019. The reasons for the increase in Category B Planning Costs are not investigated or interrogated in either this CAP or the previous CAP 1819 – this leads to a credibility gap regarding other fundamental assumptions around overall cost, programme and deliverability more generally.

- The fact that surface access costs and their financial responsibility are unresolved has direct and major implications regarding scheme credibility. **This aspect alone could lead to a difference of £5 – 10 billion, which could fall back on the UK Government**.

- The absence of provision in Heathrow's expansion cost estimate for the Communities Compensation Fund. The extent and timing of this liability has not been addressed, notwithstanding the recommendations of the Transport Select Committee in relation to the adequacy of compensation and insulation packages.

It seems unjustifiable that with these levels of uncertainty regarding the deliverability of the scheme - and without full Treasury Green Book sensitivity testing (for example in relation to optimism bias) - the CAA is recommending acceptance of any increase in Planning and other Early Costs.

Lack of a balanced risk assessment

CAP 1871 does not carry out a full risk assessment as such, instead working on a form of regression analysis within narrow confines of estimates of potential consumer benefits and perceived impact of delay (as noted above based on highly challengeable assumptions). The CAP approach is to seek to identify a 'breakeven probability' of a successful DCO that would make consumers indifferent to the choice of Scenario in relation to Early Cost recovery. This is not a robust evidence-based approach.

In particular CAP 1871 para 1.30 states in relation to its analysis;

- 'it does not take account of the value of being able to take account of new information that may emerge between now and the decision on HAL's DCO application' -------- 'or if information emerged reducing confidence in the overall programme, spending could be curtailed (beyond what has already been incurred) or halted'.

- 'as noted above, it provides no additional information on the probability that HAL will be granted a DCO and will proceed with the expansion programme'.

To reinforce the importance of the omission in CAP 1871's analysis it should be noted that a number of more recent section 6 judicial challenges have been submitted in respect of the ANPS.

In other words, the actual risks to the deliverability of the project are not investigated, interrogated or subject to realistic sensitivity testing.

In practice **there are very significant risks to both the DCO and the subsequent delivery of the project that have not been considered, notwithstanding that the CAA is recommending proceeding with increased exposure to consumers and potentially more directly for the UK Government**.

These risks include:

General;

- Overall project costs increasing significantly – please see above.

- Failure to agree an equitable allocation towards surface access costs and a substantial proportion of these enabling costs which are needed primarily for Heathrow to expand falling back on the UK Government.

- Ability and/or willingness of Heathrow's owners to secure funding/financing for what will be an extremely risky project (HS1 created the precedent of the Government having to step in in such circumstances). Heathrow's principle managing shareholder, Ferrovial, has very recently raised questions as to whether it will wish to proceed in the light of current circumstances.

DCO related;

When the Transport Select Committee examined the draft NPS, its report made 25 recommendations many of which relate to the DCO, only one of which was accepted unequivocally by the former Secretary of State, Chris Grayling, at the time the ANPS was presented to Parliament. However, a commitment was given by the SoS to examine many of these in detail at the DCO, so there remain many areas of substantial risk.

An initial Judicial Review relating to the adoption of the ANPS on the basis of an inadequate/incomplete evidence base has been referred to the High Court and then referred to the Court of Appeal and its decision is awaited. As the matter is so contentious this court's decision may itself be taken to appeal to the Supreme Court – and it is highly likely that given the glaring gaps in the evidence base regarding health, air quality and climate change that further legal challenges will be made in relation to the DCO.

- Fundamentally it is extraordinary that a project of this significance for public health and the environment has reached this stage **without any specific Heathrow related health impact assessment**. This will be required for the DCO full Environmental Assessment as between 2 and 4 million people will be affected by Heathrow expansion's adverse health impacts. It is self-evident that if such a study is undertaken objectively and independently this will be a very major risk to the project.

- **Air Quality** – the latest evidence in relation to Particulates, especially **ultrafine particles**, shows considerable health risks are likely to emerge at DCO stage. The **effect of these has not been assessed by the DfT or Heathrow**. Kings College London has recently published a report highlighting the risks – please see Appendix A.

- **Impact of Climate Change** – the Committee on Climate Change has specifically advised that having regard to carbon limits signed up to by the UK Government, **expansion of Heathrow leaves very little room for expansion of any other UK airport**. This will also be examined in detail at the DCO particularly as the assumptions underpinning the AC and ANPS were also based on carbon traded rather than limited approaches. Please also see Appendix A.

- **Noise** – the evidence base which was used for the ANPS and Heathrow's own DCO PEIR consultation in 2019 is based on the CAA's Survey of Noise Attitudes, **SoNA** 2017. However, SoNA is **wildly out of step with WHO Environmental Guidance**

2018, which recommended far lower levels of noise as being acceptable than suggested by SoNA. This raises fundamental questions concerning Heathrow's proposed health and environmental evidence base as well as **whether it should be considered as 'an appropriate local study**' in the context of an Environmental Assessment. SoNA (which was designed as a national rather than local study and which did not consider known impacts such as change and 'lower level' aviation noise) was reviewed by the newly created Independent Commission on Civil Aviation Noise (ICCAN) in 2019. Its initial scoping report on SoNA, issued just prior to the end of last year, recommended that SoNA 17 should be subject to full review and this is about to commence. It is **not appropriate that the DCO should be decided before this review (which has major public health implications) has been completed** and UK policies updated. The DfT has advised that it will not be in a position itself to review SoNA before 2022 i.e. not in time for the DCO submission, the associated consultation processes and the currently proposed date for the DCO Inquiry. It is clear that SoNA is not an appropriate local study – it was intended to reflect 'static' conditions, cover the whole of the UK and did not address airspace change. Even within London its survey indicated huge unexplained inconsistencies – for example at the same noise level no one in Slough was highly annoyed by aviation noise whilst in Richmond 28% objected to the same level of exposure.

- **Cost benefit analysis** – arising from the absence of a Heathrow related health impact study, WHO ENG 2018 updated guidance on community noise and ICCAN's initial review of SoNA it is clear that the economic cost benefit tool used by DfT to assess Heathrow Expansion, webTAG, will need to be subject to comprehensive review (this has already been accepted by the DfT). Whether or not this will be undertaken in time for or come under consideration at DCO, it is self-evident that it is not appropriate at this stage to commit the country and the travelling public further to a project where the health and environmental implications are substantially untested, unknown and unquantified.

- **Absence of flight path information** – the environmental impacts of Heathrow expansion will only become known when actual final flight paths reflecting a third runway (involving 54% increase in ATMs) and revised airspace arrangements over London and the South East are determined. The present strategy adopted by Heathrow, the DfT and the CAA is to deal with these only after the DCO has been approved under the Airspace Change Process (ACP). Given the acknowledged delay to the 3rd runway programme and the impacts on the lives of 2-4 million residents in Heathrow's hinterland - DfT's own study indicates £2bn impacts depending on how Respite is applied - at present neither researched nor known - **it is unjustifiable that the DCO and the ACP processes should be dealt with separately**. The two processes should be merged even if this leads to deferring the date of the DCO even further than currently envisaged.

- **Impact of extremely concentrated flight paths over densely populated residential areas**. In addition to a 54% increase in ATMs and the fact Heathrow already causes approximately 30% of all aviation noise impacts in Europe, the new flight paths associated with an expanded Heathrow will be based on Performance Based

Navigation (PBN). When subject to a limited trial around Heathrow in 2014 these caused a huge backlash from communities and the trials had to be abandoned early. Use of PBN at Gatwick led to challenge at the Court of Appeal. The impact of PBN (known as NextGen) in the US has been disastrous, indicating the total unacceptability of this form of flying over densely populated residential communities. In the US this has led to a Governmental Audit Office Report (September 2019) and direct challenges by Senators and Congressmen to the FAA (US equivalent to the CAA) at the end of 2019. Links to the Audit Report and the political challenge are appended (B and C). These issues will be addressed and contested at the DCO leading to high degrees of risk for Heathrow expansion and ongoing legal challenge.

Overall conclusion

- It is clear that the Heathrow's 3rd runway project should now be the subject of a thorough review. This should be undertaken on a comprehensive, fresh and objective basis. Critically, this should be done before the Government exposes itself or Heathrow's customers to the risk of substantial additional cost. There are major unresolved issues such as how the UK will develop all of its regional airports in the context of climate change driven carbon limits and achieve a balanced national economic strategy addressing the need for growth in the midlands, north, Scotland, Wales and Northern Ireland, which has now been reflected in the recent General Election result.

- On the basis of the DfT's own financial analysis the NPV to the UK of Heathrow expansion is already negative, and on the basis of unknowns identified and quantified by the DfT in 2017 and in the light of experience of other major infrastructure projects, the negative figure could rise very considerably. The unresolved allocation of surface access costs alone will have a massive impact on the project's national value.

- The benefits to consumers reflected in the CAA's analysis are highly questionable and largely generated by Heathrow and its backers. Expansion of Heathrow will restrict competition between UK airports and create an effective private sector monopoly for this airport. Changes in the aviation model mean that a third runway is not necessary, rather it will come at a cost to aviation in other parts of the UK. A third runway, should it ever be built, will come to be regarded as a very expensive national vanity project.

- The narrow approach undertaken in CAP 1871 is not appropriate. The out of hand dismissal of Scenario 4 (Heathrow immediately halting all activities including preparation of its DCO application) is not justified. The risks and impacts associated with the project have not been fully or properly assessed.

- If the project is allowed to proceed, particularly without a comprehensive review at this stage and given current knowledge, there are huge risks to the economy,

consumers, the public purse, health and the environment – the further the Government allows the project to be progressed with this approach, the more it will be exposing taxpayers and consumer interests to significant risk and potential harm, permitting more 'good money to be spent after bad'

Appendix A; DCO Risks

TAG assessment of latest evidence in relation to air quality and carbon limits

Air Quality

The effects of aircraft (as opposed to land vehicles going to and from the airport) are not assessed properly by Heathrow, the CAA or the DfT. A huge problem and illegal levels of air pollution are being disguised. Heathrow state in their DCO Consultation that

> "Aircraft flying into and out of the airport do not have a significant effect on air quality in the local area. This is because aircraft are so high that emissions are dispersed before reaching on the ground"[1]

That is manifestly untrue.

Hudda et al in 2014[2] found that emissions blew downwind from airborne approaching and departing aircraft so that there was detected at least a 2-fold increase in particulate concentrations over baseline concentrations during most hours of the day, in an area of about 60 km2 that extended to 16 km downwind, and a 4 to 5-fold increase to 8–10 km downwind. The synopsis of the report stated that:

> "These results suggest that airport emissions are a major source of particulate number concentration in Los Angeles that are of the same general magnitude as the entire urban freeway network. They also indicate that the air quality impact areas of major airports may have been seriously underestimated".

Particulates, which are tiny particles of soot emitted from the combustion process, have been found to be particularly harmful to humans. The Hudda study also showed elevated levels of NO2 downwind from aircraft as well, contradicting evidence of our Department of Transport

Keuken et al in 2015[3] took measurements at Adamse Bos, located 7 km from Schiphol, Amsterdam, and in 2012 at Cabauw, a regional background site 40 km south of Schiphol. Particulate concentrations increased during periods in which the wind direction was from Schiphol: at Cabauw by 20% and at Adamse Bos by a factor of three, from 14,100 (other wind directions) to 42,000 cm3 between 06.00 and 23.00. The size distribution of Schiphol-related particulate number concentration was dominated by ultrafine particles, ranging from 10 to 20 nano metres

Riley et al in 2016[4] found a similar situation at Hartfield Jackson airport Atlanta.

Hudda[5] in 2018 did another study at Boston finding that jet engine exhaust is a significant source of ultrafine particles, and aviation-related emissions can adversely impact air quality over large areas surrounding airports.

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[1] Heathrow Expansion Consultation PEIR Non-Technical Summary page 28

[2] Hudda 2014 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4215878/

[3] Keuken 2015 https://www.sciencedirect.com/science/article/abs/pii/S1352231015000175?via%3Dihub

[4] Riley 2016 https://www.sciencedirect.com/science/article/abs/pii/S135223101630348X

[5] Hudda 2018 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5822220/#!po=0.746269

In 2019 Zhou et al[6] in China did a study finding that civil aircraft emissions during landing and take-off are important air pollutant sources, but have been given insufficient attention in China.

In 2019 Austin et al[7] from Washington State University led a study which found that communities underneath and downwind of jets landing at Sea-Tac Airport at Seattle are exposed to a type of ultrafine particle pollution that is distinctly associated with aircraft

In June 2019 Roy Harrison[8] from Birmingham University led a study of air quality in London scanning particulate sizes in London and found an elevation in nucleation mode particles associated with winds from the west which was concluded to result from emissions from London Heathrow Airport, despite a distance of 22 km from the central London sites

In 2019 Kings College London[9] published a report on ultrafine particles being blown downwind from 4 international airports including London, finding particulates being blown in significant quantities from Heathrow into central London.

The specialist air quality unit of DEFRA recognises the risk of particulates from aircraft saying in their 2018 report to DEFRA that

> "at a location such as Heathrow Airport, where aircraft tend to approach the airport from the east (flying over the London conurbation), there is potential for considerable exposure to UFP [ultrafine particles] from aircraft".[10]

Heathrow themselves "monitor" air quality around Heathrow (but not further into London). They have four sites; Harlington, Bath Road (LHR2), Longford and Oaks Road. They are all directly to the north or the south of the runways – none are underneath a flight path. The last annual published results are for year-end 2018; they show PM 2.5s at an annual mean of less than 10 micrograms per cubic metre. However, look at the hourly maxima and the level goes up to over 60 micrograms and with Harlington to over 76 micrograms per cubic metre[11]. While expecting hourly maxima to be greater, this level of difference gives a serious indication of the prevailing wind blowing particulates well away from the receptors with only a temporary change of wind blowing them over the receptors when the wind changes. If the receptors were put underneath the flight path, the annual mean results would most likely be very much increased – to an annual mean probably well over 20 micrograms, the permitted amount under the EU Regulation 2008/50 and way above the WHO recommended limit of 10 micrograms. The EU Regulation 2008/50 also provides that there must be a target year on year reduction of PM2.5s. At a level of 20 micrograms per cubic metre the target yearly reduction is 20%. Any operations or alterations that lead to an increase in PM2.5s are unlawful, therefore. At present neither Heathrow, the CAA nor the DfT nor any other government department have tested for emissions under the flight paths of aircraft landing or departing from Heathrow. This is an extraordinary state of affairs.

The devastating effects of fine particulates in the air are all too easy to see from the research carried out. Fine particulates alone kill some 29,000 people in the UK per year[12].

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[6] Zhou in 2019 https://www.sciencedirect.com/science/article/pii/S0269749119306797

[7] Washington state university 2019 https://deohs.washington.edu/mov-up

[8] Roy Harrison, Birmingham University 2019 https://www.atmos-chem-phys.net/19/39/2019/

[9] KCL report on ultrafine particles 4 cities including London https://www.sciencedirect.com/science/article/pii/S016041201931832X?via%3Dihub

[10] DEFRA Ultrafine Particles (UFP) in the UK https://uk-air.defra.gov.uk/library/reports.php?report_id=968

[11] Heathrow Airwatch section 4.1 2018 Annual report http://www.heathrowairwatch.org.uk/documents/Heathrow_2018_Annual_Report_Final.html

[12] Royal College of Physicians Every breath we take: the lifelong impact of air pollution https://www.rcplondon.ac.uk/projects/outputs/every-breath-we-take-lifelong-impact-air-pollution

Research at Queen Mary's University[13] has found that particulates have been present in the placentas of expectant mothers and affect the unborn foetus, thus passing on the effects to the next generation. The University of Bern investigated the effect of exhaust particles from aircraft turbine engines on human lung cells[14] stating:

> "As a result, scientific research of the particulate matter from air traffic is important for the development of environmental standards in the aviation sector. When inhaled, these nanoparticles -- like those from other combustion sources - efficiently deposit in the airways…….if the inhaled particles manage to overcome these defence mechanisms, due to their structure or physico-chemical properties, there is a danger for irreparable damage to the lung tissue."

Far from pollution of the air with fine particulates improving, it is reported that Public Health England recorded the fraction of mortality in London due to particulates actually rose from 6.4% to 6.5% from 2016 to 2017 and from 5.6% to 6.4% from 2015 to 2016[15]. Ranzani[16] et al have reported that ambient fine particulate matter air pollution was associated with low bone mineral content and bone mineral density. This is likely to be transferred from one generation to the next where pregnant mothers are exposed to particulates. Professor Mina Gaga, President of the European Respiratory Society has said:

> "This new research suggests a possible mechanism of how babies are affected by pollution while being theoretically protected in the womb. This should raise awareness amongst clinicians and the public regarding the harmful effects of air pollution in pregnant women. We need stricter policies for cleaner air to reduce the impact of pollution on health worldwide because we are already seeing a new population of young adults with health issues."[17]

It is abundantly clear, we suggest, that neither Heathrow, the CAA, nor the Department of Transport have even scratched the surface of researching the health effects of expanded Heathrow operations. This not only includes a third runway but includes any airspace change that will lead to an increase in the number of flights in and out of the airport. Some Londoners – and not just those close by - will be given a death sentence by Heathrow expansion.

Climate Change

The Committee on Climate Change and others have written much on the requirements to reduce the combustion of fossil fuels in order to reduce the emission of greenhouse gases, the most notable one being carbon dioxide (CO2).

And also the Committee on Medical Effects of Air Pollution (COMEAP) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/304641/COMEAP_mortality_effects_of_long_term_exposure.pdf

[13] Research of Queen Mary's University Hospital https://www.qmul.ac.uk/media/news/2018/smd/first-evidence-that-soot-from-polluted-air-may-be-reaching-placenta.html

[14] University of Bern https://www.sciencedaily.com/releases/2019/05/190516114627.htm

[15] Report of Public Health England in the Evening Standard https://www.standard.co.uk/news/london/death-risk-from-londons-toxic-air-sees-utterly-horrifying-rise-for-second-year-running-a4167216.html

[16] Ranzani https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2758211

[17] See Research of Queen Mary's University

Heathrow claims that it will be "carbon neutral" by 2050 but then in the small print we realise that the statement excludes all aircraft operations. Airlines are sufficiently worried to say that they will be carbon neutral by 2050[18].

However, this depends on substantial offsetting, which is something that the Committee on Climate Change ("CCC") have specifically advised against[19]. Lord Deben, the chair of the CCC has specifically advised the Government on behalf of the CCC that expansion of Heathrow leaves very little room for expansion of any other airport[20]. The problems of offsetting have been recited many times before by many people. There is no guarantee that the program of capture (e.g. tree planting) will be completed. The carbon capture may well be required for other activities (e.g. offsetting emissions generated for power supplies). Carbon capture occurs over some 30 to 50 years whereas the emissions from aviation occur in one flight. The plants, peat bogs, trees might become damaged (they could burn down or die or be cut down). In the event that they are damaged, they become carbon emitters causing more damage as they emit the carbon that they have captured over the years.

Aviation causes particular damage to climate change. Not only are there the traditional greenhouses gases like CO2 but other gases when emitted at high altitude, which cause a greenhouse effect and assist the warming of the planet. One of the most notable is water, which exists in the engine exhaust. Condensation occurs and droplets form to act as magnifying glasses for the heat. Water vapour disperses more quickly than CO2, but it is continually replenished from engine exhausts. The estimate is that the non-CO2 emissions from aircraft double the greenhouse effect of aircraft over just CO2 alone[21].

Electric aircraft are not expected to become operational to any great extent until well after 2050 – after the date by which we need to become net zero. The CCC have specifically advised that offsetting will not be possible and yet the industry still pretends that it can go on without change and expand.

Quite simply, it can't.

[18] See for example the report in the Guardian of the 4th February 2020 at https://www.theguardian.com/business/2020/feb/04/uk-air-industry-sets-zero-carbon-target-despite-70-more-flights

[19] CCC report to Parliament 2019 at page 65 https://www.theccc.org.uk/publication/reducing-uk-emissions-2019-progress-report-to-parliament/

[20] Letter Lord Deben to Grant Shapps https://www.theccc.org.uk/publication/letter-international-aviation-and-shipping/

For example see Carbon Brief article at https://www.carbonbrief.org/explainer-challenge-tackling-aviations-non-co2-emissions

Appendix B; DCO Risks

Impact of highly concentrated PBN flight paths - US experience

Link to US Government Office Report on NextGen (PBN)

https://www.oig.dot.gov/sites/default/files/FAA%20Metroplex%20Program%20Final%20Report%5E08-27-19.pdf

Letter from US Congressmen and Senators to the FAA dated 20 December 2019

Congress of the United States

Washington, DC 20510

December 20, 2019

Hon. Stephen M. Dickson
Administrator
Federal Aviation Administration
800 Independence Avenue SW
Washington, DC 20591-0004

Dear Administrator Dickson:

We are writing on behalf of hundreds of thousands of Americans who continue to suffer the effects of the FAA's NextGen program.

As you know, since its introduction of Metroplexes in 2010, the FAA has concentrated flight paths over neighborhoods, schools, and national monuments in order to make the airspace more efficient. This heavy air traffic produces constant noise and particulate matter that has yet to be deemed safe by the FAA or any other government agency. The noise created by the frequency of flights – in some areas beginning before 6:00 a.m. and continuing every few minutes until midnight or later – has had a devastating impact on residents' quality of life. The FAA has yet to make any significant changes to the disruptive flight paths. In fact, communities, cities and states around the country, including in and around the District of Columbia, Phoenix, Boston, San Francisco, Los Angeles, Seattle, Denver, New York, and the State of Maryland, have taken legal action as a result of the FAA's failure to adequately address community concerns.

A report by the U.S. Department of Transportation's Office of Inspector General dated August 27, 2019 entitled *FAA Has Made Progress in Implementing Its Metroplex Program, but Benefits for Airspace Users Have Fallen Short of Expectations* raises serious questions about the efficacy of the FAA's NextGen program. Among these concerns are limited estimates of annual benefits, inaccurate information published by the FAA about the advantages of Performance Based Navigation, and inadequate documented evidence to measure progress.

According to the section of the report entitled "Metroplex Benefits to Airspace Users Have Fallen Well Short of Predictions, and There Is No Consensus on Actual Benefits Achieved," the FAA estimates that NextGen implementation has saved airlines only $31.1 million annually, which is roughly half of its initial minimum estimate. Of the seven completed Metroplex locations, only one achieved fuel savings benefit expectations. Even more concerning, the FAA published conflicting information about these savings on its website. For example --

> "[The] FAA has posted the benefits estimate of $2.0 million from the design team for Northern California rather than the negative $7.7 million benefits, even though this is a completed site…Unclearly or inaccurately reporting Metroplex benefits limits Congress and the Department's ability to assess the progress of the program for purposes of providing and allocating funds, and industry stakeholders may not be able to rely on FAA reported benefits to effectively plan for the investments required to equip aircraft operating in the NAS [National Airspace System]."

The FAA claims that other operational benefits such as increased safety have also been achieved, but, according to the report, this claim remains unsubstantiated because the "FAA has not established a process to measure or track these additional operational benefits because it states these benefits are difficult to quantify." It is also important to note that the FAA has yet to quantify the harm to health and property that the NextGen program has created for residents and wildlife living beneath concentrated flight paths.

We are concerned that the NextGen program has failed to meet the bare minimum standards for success. Currently, the FAA continues to introduce and implement concentrated flight procedures with Performance Based Navigation throughout the country. The FAA boasts profits for airlines, shipping companies, and other industry stakeholders[1], but the burden of noise, health risks, and declining property values falls on the backs of hard-working Americans. We urge the FAA to fast-track the development of new flight paths in all Metroplexes and at other airports with NextGen procedures that will significantly disperse air traffic and raise aircraft altitudes.

We would appreciate your review of the enclosed report and a detailed timeline of your plan to implement procedures that will mitigate harm to the communities we represent. We look forward to your prompt response.

Sincerely,

Chris Van Hollen
United States Senator

Kamala D. Harris
United States Senator

Benjamin L. Cardin
United States Senator

Edward J. Markey
United States Senator

Jamie Raskin
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[1] Federal Aviation Administration. Fact Sheet – NextGen. (November 26, 2019). https://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=24434

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