Consultation on a draft revised UK Air Quality Plan for tackling nitrogen dioxide

Department for Environment Food & Rural Affairs
Department for Transport
Response from Richmond Heathrow Campaign
15 June 2017

Introduction

1. This is the written response of the Richmond Heathrow Campaign (RHC) to the Department for Environment, Food & Rural Affairs (Defra) and the Department for Transport (DfT) on their consultation titled '*draft revised UK Air Quality Plan for tackling nitrogen dioxide'*. We have no issue with our response being published.

2. RHC represents three amenity groups in the London Borough of Richmond upon Thames: The Richmond Society, The Friends of Richmond Green, and the Kew Society, which together have over 2000 members. The members of our amenity groups are adversely affected by noise from Heathrow Airport's flight paths, poor air quality and road and rail congestion in west London. We acknowledge Heathrow's contribution to the UK economy and seek constructive engagement in pursuit of a better Heathrow. We are an active participant in the Heathrow Community Noise Forum.

3. RHC's principle concern is with Heathrow and the adverse economic and environmental impact of any Heathrow expansion. Our response therefore focusses on the impact Heathrow has on air quality and in particular the NOx pollution from road traffic accessing Heathrow, which is the main source of NOx concentrations in the area around Heathrow. Having said this, we recognise the consultation is about the UK and we suggest that the issues we raise in connection with London and Heathrow are probably relevant to other areas across the UK and hence to the overall UK Air Quality Plan.

4. We believe it would be preferable to aim for a better Heathrow rather than bigger Heathrow and to capitalise on the world beating advantage of London's five airports, in particular by improving surface accessibility to all five airports, which would be a major benefit to users and to reducing air pollution. Our approach is to continue supporting the case for no new runways in the UK which is a position fully supported by the Airports Commission's evidence in comparing the Do-minimum option and the Heathrow Northwest Runway Option (NWR). In addition to the economic benefits from this approach it also avoids increasing NOx emissions and concentrations that arise with expansion.

5. Over recent years we have undertaken extensive research on Heathrow and submitted a large number of papers to the Airports Commission (the Commission) and others - all of which can be found at www.richmondheathrowcampaign.org and www.rhcfacts.org.

6. In preparing our response we have taken into account the Final Report of the Airports Commission 2015, the subsequent publications by the Government and particularly those published along with the announcement of the Government's preferred option in October 2016 and the several reports published with this consultation on 5 May 2017 - these being the *'Consultation Document', 'the draft UK Air Quality Plan for tackling Carbon Dioxide'* referred to here as the draft Plan and *'the Technical Report'*. We have also taken into account reports by Parliament's Environmental Audit Committee and several recent High Court Judgements.

continued/

7. The structure of our response is in the form of four annexes.
   - Annex A Air Quality Objectives
   - Annex B Metrics and Air Quality Model
   - Annex C Draft Air Quality Plan ("draft Plan") Mitigation Proposals
   - Annex D Response to Formal Consultation Questions

8. We have chosen this approach in order to focus and comment on specific issues which are not easily addressed within the structure of the formal questions. We have made no comment on a number of the formal questions; this is not to say the questions are unimportant but rather that our priorities are in specific areas addressed by Annexes A, B and C and we have not had the time and resources to respond in certain areas - for example: Government funding.

Summary Key points:

Air Quality Objective

1. Air Quality is a serious health issue.
2. The Final Air Quality Plan should seek to balance NO2 and CO2 constraints on economic growth with recognition that the extra electricity generation to replace fossil fuels used in transportation will be large and potentially polluting. This issue is avoided in the draft Plan.
3. The current Air Quality objective is deficient in three areas: thresholds, granuality and uncertainty of future compliance. It is too weak to deal with the NO2 problem.

Noise Metrics and Air Quality Model

4. It has not been possible to establish from the draft Plan the size and nature of the NO2 problem.
5. The draft Plan fails to make explicit the application of the proposed mitigation measures to specific sensitive locations or hot spots - especially the major hot spots such as London and Heathrow surface access.
6. Heathrow has made offers in connection with a proposed third runway that rely heavily on modal shift to public transport as a means of reducing NO2. The draft Plan fails to make mention of Heathrow and makes inadequate mention of modal shift to public transport.
7. Evidence from the Airports Commission demonstrates that the extent of Heathrow modal shift required to satisfy the air quality objective is very high and results in the need for a substantial increase in public transport capacity and hence required funding. None of this is addressed by the draft Plan but should be.
8. It is unacceptable that a decision by parliament and government should be made on Heathrow expansion before the air quality issue is addressed.

Mitigation measures proposed by the Draft Air Quality Plan

9. The introduction of Clean Air Zones managed by local authorities is the main proposal. Such zones can accelerate the reduction in NO2 through a series of measures . But they still leave substantial levels of NO2 in later years.
10. We doubt local authorities have the capacity to implement adequate measures to reduce NO2.
11. We doubt the use of a Clean Air Zone or speed measures by Highways England will have sufficient impact in countering the increase in surface access NO2 from expansion of Heathrow.
12. The several other proposed measures have relatively small impact on reducing NO2.

Peter Willan
Chair, Richmond Heathrow Campaign
willan829@btinternet.com

ANNEX A

Consultation on a draft revised UK Air Quality Plan for tackling nitrogen dioxide

Air Quality Objective

1. **The Impact of NO2 pollution on health**. The draft Plan says *'Poor air quality is the largest environmental risk to public health in the UK. It is known to have more severe effects on vulnerable groups, for example the elderly, children and people already suffering from pre-existing health conditions such as respiratory and cardiovascular conditions. Studies have suggested that the most deprived areas of Britain bear a disproportionate share of poor air quality'.* We concur with this assessment and add that the pollutants cause greatest harm where they accumulate close to a sensitive "receptor" such as a school, and are not dispersed, particularly if exposure extends over a period of time – for example averaged over a year. It has been estimated that around 9,000 lives are lost a year in London caused by air pollution and that this could be costing the UK £20 billion a year in health and other issues.

2. **Sustainable transport**. We recognise that there needs to be a balance between economic growth and environmental cost. Furthermore, there are trade-offs between environmental costs. For example, switching road vehicles from fossil fuels to electric power reduces NO2 pollution but electric power has to be generated and transmitted. A substantial increase in electricity generation will be required and this may still rely on fossil fuels with resultant CO2 emissions and a negative impact on climate change. Furthermore, electricity transmission losses can be as high as 30%. Producing hydrogen fuel requires high amounts of electricity, so again there may be a CO2 cost. On page 90 of the Technical report it is said that *'The current assessment does not consider the impact of GHG emissions from the additional electricity consumed by the BEVs, as these are included in the cost of electricity through its inclusion in the EU emissions trading scheme.'* We do not agree with this approach. It would be most unfortunate if the pressure to switch transport fuels had an unaccounted hidden cost from increased CO2 which repeated the mistake of encouraging a switch from petrol to diesel. Carbon already constrains aviation growth and a balance needs to be struck between an NO2 constraint applied to airports' surface access and a carbon constraint applied to flights and surface access. This context is not provided by the draft Plan but needs to be in the Final Plan.

3. We consider the Air Quality objective in the light of comments made in paras 1 and 2, above. The draft Plan says in para 20 ***'The focus of this plan is on government's most immediate air quality challenge: to reduce concentrations of NO2 around roads. The aim is to achieve the statutory limit values for the whole of the UK within the shortest possible time.'*** Broadly, we concur with this objective as far as it goes and note the operative word is 'reduce' so that an increase in NO2 would be contrary to the stated objective. Also, any lengthening of time to meeting the statutory limits would be contrary to the objective.

4. We note that the Airports Commission's stated objective in appraising air quality was "*to improve* air quality consistent with EU standards and local planning requirements' (our italics). The National Planning Policy Framework (NPPF) states that sustainable development should contribute to *reducing* pollution (our italics) . The National Policy Statement for National Networks, specific to nationally significant infrastructure projects, requires the Secretary of State to "give air quality considerations substantial weight".

5. Therefore, on the face of it the draft Plan is consistent with the air quality objectives in Planning law in seeking to reduce air pollution. However, we have three important reservations with the Air Quality objective as stated and propose the following changes:

a. **Thresholds.** It has already been proven that particulates (PM10 and PM2.5) have no lower limit value that can be said to avoid harm to human health. While research has not yet proven the same causal link for NO2, the evidence is heading towards demonstrating that NO2 levels below the statutory limits can also be harmful, especially to the vulnerable. We do not accept that once statutory exceedences are eliminated that there is no harm to health from lower levels of NO2. We propose that the Air Quality objectives should go further than the statutory threshold and seek to reduce NO2 levels whatever they might be and not just those above the statutory limits. We suggest eliminating exceedences should be the first priority, reducing levels from above to below the statutory limits should be the second priority and reducing levels already below the statutory limits to still lower levels should be the third priority.

b. **Granuality**. The UK is divided into 43 zones for monitoring and control in order to satisfy the Air Quality objectives. The statutory limit values apply to the highest value at any location within each zone. We understand this is the Government's interpretation of the law. However, it tends to let those locations within a control zone that are below the highest exceedences off the hook. Within the London agglomeration, the highest exceedences are in the centre of London along Marylebone Road and Oxford Street. We do not agree with the Government's interpretation of the law, and we contend that lesser exceedences (and indeed lesser levels of NO2 below limit values, given point (a) above)) also need to be the subject of a reduction objective. We see no justification at all for locations around Heathrow being allowed to increase their NO2 levels, and especially exceedences where they occur, on the grounds that they are still below the highest exceedences elsewhere in the London zone and that it is only the latter that are subject to legal compliance.

The Air Quality objective needs to be revised to clarify this situation so that each and every location in the UK is singularly controlled and subject to a legal requirement that NO2 be reduced in the shortest possible time. The objective should also ensure that displacement of pollution from one sensitive location to another is prohibited and only permitted where the displaced concentration does no harm. An analogous situation occurs with aircraft noise where the many people recently affected by changes in aircraft noise have voiced concern at the use of averaging metrics. In the case of air pollution the impact needs to be managed on a street by street basis and not just in terms of averages over large areas, such as the London agglomeration area. We note that in Fig 2 page 6 of the draft Plan, the UK emissions of NOx are shown as decreasing from around 1,800,000 metric tonnes in 2000 to around 900,000 metric tonnes in 2015 and that between 2010 and 2015 there was a decrease of 19% in NOx emissions. While not unhelpful, these figures give no effect to the granuality of the NOX impact on people. The draft Plan is largely deficient in providing sufficient granuality. There is no attempt to apply the objectives to the granuality needed within by far the most polluted UK zone, London, which is a major failing of the draft Plan. This needs to be remedied so that objectives and targets are defined for each location where there is an exceedence or likely to be one in the future.

c. **Satisfying the Objective - future compliance and uncertainty**. It is not clear that when the Air Quality objective refers to reducing NO2 in the shortest possible time what might be the base level of NO2 against which a reduction is measured and from what date is the 'shortest possible time' measured and when might the objective be met. Presumably compliance is based on factual evidence at a particular time, whereas the satisfaction of the objective applies to both the present and predicted future. The objective would not be satisfied if compliance were not expected to be met at some future date. This is an important distinction between compliance and objective, both of which need to be satisfied.

The draft Plan is deficient in not converting the broad objective into meaningful targets for compliance in the shortest possible time and at each sensitive location across the UK. There is no target time-table for compliance by each of the 43 zones let alone the UK as a whole. The only figures estimated for the future of each zone are in Annex L Table 1 page 81 of the draft Plan. These are unmitigated predictions (i.e. assuming only mitigation already in place). The estimates do attempt to account for updated real world diesel vehicle NO2 (post Volkswagen scandal) but do not include any of the mitigation options proposed in the draft Plan.

6. **Statutory NO2 Limit Values**. We refer in this response to the statutory limits on nitrogen dioxide (NO2) concentrations. The limit values are based on the World Health Organization (WHO)'s air quality guidelines. The Hourly mean limit value is 200 micrograms per cubic metre (ug/m3) not to be exceeded more than 18 times a calendar year. The Annual mean limit is 40 ug/m3.

ANNEX B

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Metrics and Air Quality Model

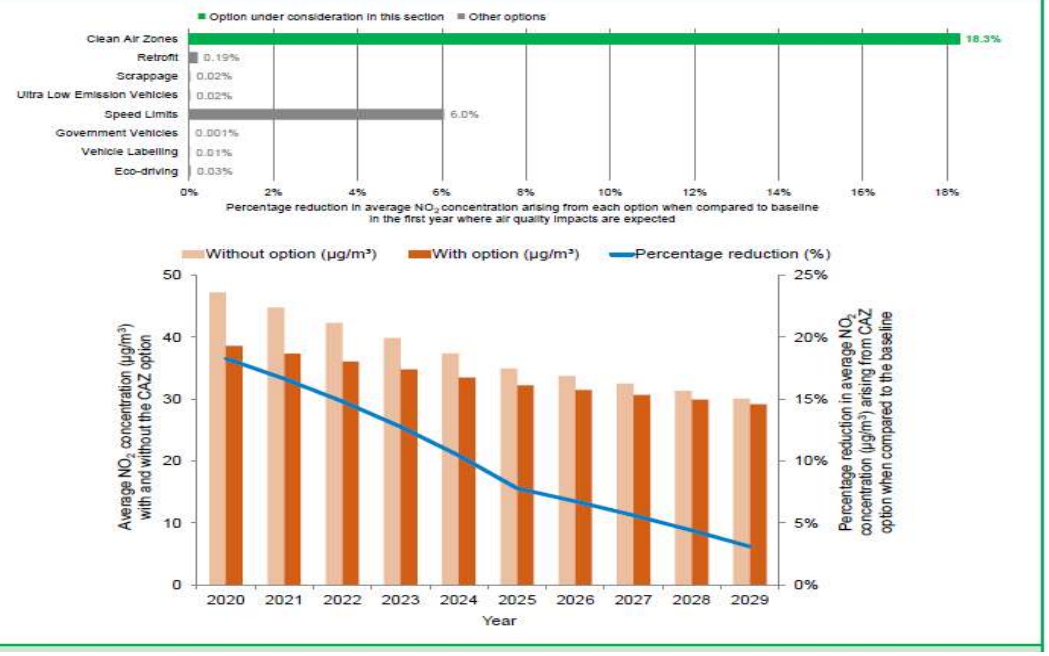
1. **Metrics.** We have already discussed in Annex A (objectives) the failure of air quality metrics averaged over a large area to highlight pollution hot spots. We also note there is still doubt about revised diesel car real world NO2 metrics and changes in peoples' behaviour needed to reduce NO2 emissions.

2. **Statutory NO2 compliance**. We understand from the draft Plan (Table 2) that in 2015 two of the 43 UK zones failed the Hourly limit - one being the London zone - and 37 failed the Annual limit (again one being the London zone). These are concentration limits as opposed to emissions. We understand that the UK complies with international NO2 emission limits and with particulate concentration limits. Hence our focus is on NO2 concentration. All zones but London are predicted to have concentrations of NO2 below the statutory limits by 2026; this is before any of the mitigation proposals in the draft Plan.

3. The draft Plan does estimate the reduction in NO2 for each of the proposed mitigation options - comparing the Do-minimum case with each mitigation option. But the results are far too generalised for the Consultation reader to apply to each zone and their pollution hot spots and no attempt has been made to do so in the draft Plan itself. The Final Plan needs to be far more granular because that is the nature of air pollution.

2. This is illustrated by the chart below extracted from the Technical Report. The chart shows the impact of introducing Clean Air Zones (CAZ), which according to the draft Plan would have by far the largest mitigation of any of the mitigation options. In the Do-minimum case the vehicle fleet change reduces the NO2 Annual mean concentration from around 47 micrograms per cubic metre (um/m3) in 2020 to around 30 um/m3 in 2029. The statutory limit is 40 um/m3. The CAZ reduces the NO2 by around 8um/m3 in the first year compared to the Do-minimum but the impact diminishes each year. In effect, the CAZ accelerates the reduction in NO2 but in the longer term has little impact as the vehicle fleet trends towards zero emission vehicles. The residual NO2 levels may still be too high at a number of hot spots.

Figure 4.6: Reduction in average NO_2 concentrations arising from the implementation of the charging CAZ option



3. But there is no explanation in the draft Plan as to the impact of a CAZ on any specific location. For example London is predicted to have an annual mean NO2 level of 103 um/m3 in 2017. But how a CAZ would lead to compliance and when is not discussed in the draft Plan. Similarly, locations around Heathrow are not examined. The outcomes for each option are too generalised to avail of proper assessment of the UK's pollution hot spots.

4. Furthermore, the draft Plan does not provide estimates of the uncertainty and confidence levels applied to estimates at each location. The draft Plan and Technical Report do discuss uncertainty. But we should remember that the Government predicted UK NO2 compliance by 2010 and then by 2015. Even an optimistic view of the draft Plan suggests compliance will not be before 2025 and London compliance may not be before 2030. Past estimates of compliance must surely lead to scepticism with regard to current predictions. The draft Plan frequently caveats its estimates by saying they are initial or could be significantly adjusted in due course.

5. **Forecast NO2 levels to 2030 - London.** The draft Plan reports that London is certain to have the highest concentrations of NO2 in the UK in 2017 and will be substantially in breach of the statutory annual limit and the statutory hourly limit. London is predicted to have at least one location with an annual mean concentration of 103 ug/m3 compared to the next worst polluted area of West Midlands Urban Area with 60 ug/m3 (Annex L Table 1 page 81 of the draft Plan). The following table is an extract from this table. The estimates do not include any mitigation proposed by the draft Plan but include mitigation already in place. The diesel vehicle emission standards have been revised to real world road conditions following the Volkswagen scandal.

Table 1: Local authorities with roads with concentrations of NO2 forecast above legal limits based on initial modelling (subject to change) and assuming no additional measures. All figures are provided in ug/m3 and 40 ug/m3 is the statutory annual mean limit value for NO2. Note - excludes any roads managed directly by Highways England, Transport Scotland, Welsh Government and Transport Northern Ireland

Annual mean NO2 ug/m3	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Greater London Authority	103	96	90	84	78	72	66	59	53	51	48	46	43	41

6. **Forecast NO2 levels to 2030 - Heathrow**. Heathrow is not mentioned in any of the Consultation documents and it appears Heathrow expansion is not considered by the draft Plan, which is very remiss. While the concentrations near Heathrow are not the highest in London they substantially exceed the statutory limits and with the expansion of Heathrow there is the risk that any steps taken to reduce NO2 will be more than offset by pollution from the increased road traffic accessing Heathrow.

7. First flight from a third runway at Heathrow is predicted in 2025 when the unmitigated NO2 level in the London zone is estimated in the draft Plan to be 53 ug/m3 (see above table). According to the earlier chart on CAZ mitigation the reduction might be of the order of 3 ug/m3 in 2025 but this is highly uncertain because the CAZ outcome is generalised and not specific to London. By 2027 the London level decreases to 48 ug/m3 with perhaps a further 2 ug/m3 from a CAZ. Our understanding of the draft Plan is that other mitigation is not expected to change these estimates significantly.

8. It may well be the case that a third runway can not be used because of the exceedences above the statutory limit of 40 ug/m3. A two year delay would wreck havoc with Heathrow's project economics. We are very concerned that the draft Plan fails to address this issue but also that a draft National Policy Statement is being finalised before this matter is addressed. Indeed the Heathrow expansion may be put before Parliament late 2017 before the Air Quality issues are

addressed, which we believe would be wholly unacceptable.

9. The subject of air quality around Heathrow is bound up with the surface access question as follows:

10. **What is the traffic demand in the region of Heathrow?** Demand is made up of (a) background demand and (b) Heathrow specific demand. While Heathrow demand may be relatively small compared to background demand, it can be critical at peak times and when demand is near to or exceeds capacity. Heathrow demand includes terminating passengers, staff and freight.

11. Background demand is growing (based on population growth of 37% in London as a whole between 2011 and 2050 according to the London Plan). It is not clear whether the draft Plan adequately takes population growth into account.

12. With NWR expansion, Heathrow terminating passenger demand is forecast by the Airports Commission to grow from 52 million passengers per annum (mppa) in 2011 to 65 mppa in 2030, 94 mppa in 2040 and 105 mppa in 2050 (Assessment of Need carbon capped). These figures are shown in the following table.

Heathrow Passengers and Modal share - NWR Option				
	2011	2030	2040	2050
Terminating Passengers mppa note (a)	52	77	94	105
Promise 1: modal share increase:				
Modal share: public transport	40%	50%	55%	55%
Public transport (passengers)	21	39	52	58
Car (passengers)	31	38	42	47
Promise 2: no more cars than today (pax equivalent):				
Modal share: public transport Required	40%	60%	67%	70%
Public transport (passengers)	21	46	63	74
Car No more cars on the road (passengers)	31	31	31	31
Note (a): Airports Commission Assessment of Need carbon capped.				

13. Heathrow's first promise is to achieve 50 % public transport by 2030 and 55% by 2040. This still results in a 22% increase in road users between 2011 and 2030 and a 35% increase by 2040. We cannot see how air quality targets will be met even were this modal shift achieved. Furthermore, the figures depend on a significant shift in peoples' behaviour towards public transport. Even if they wanted to shift, we doubt there will be the public transport capacity unless considerably more is spent than the £5.7 billion estimated by the Commission.

14. The second promise is that there shall be no more cars than today. In the above table we assume that the number of passengers per car remains little changed. The modal share of public transport would need to increase to 60% (cf 50%) by 2030, 67% (cf 55%) by 2040 and 70% by 2050. The modal shift would be unprecedented by a wide margin compared to that achieved anywhere else in the world. The public transport capacity would have to be increased by two times by 2030 and by three times by 2040, which we do not believe can be achieved without the cost of between £15 bn and £20 bn.

15. Staff numbers tend to be proportional to passenger numbers, so are likely to grow from a base of around 84,000 in 2011. Freight is also expected to grow at similar rates and be a major contributor to surface access demand.

16. The draft Plan does not consider in any detail the modal shift as a mitigation option, which given the reliance by the Government on this mitigation in the Heathrow proposal is surely a failure of the draft Plan.

17. Surface access demand depends on Heathrow's catchment area and on where people travel to and from within that area. Rail transport projects - HS2 and the Western Rail Access projects - will substantially increase the catchment area to the north and west of the country according to the Commission.

18. The way people choose to travel - the modal share of total demand - is especially important. This means the proportions travelling by road (car and bus) and by rail (network rail, over-ground and underground). Behaviour change and interventions such as congestion charging zones can have an effect on people's choices. However, the promises by Heathrow have not been fully assessed and are not binding.

19. The draft Plan's Clean Air Zones are unlikely to have much impact on controlling pollution from Heathrow surface access. Heathrow's passengers who live in a relatively low emission zone are unlikely to scrap their car or spend money on a retro-fit just because once a year they might use Heathrow to go on holiday. The draft Plan's estimates of the effect of congestion charging are not sufficient to mitigate materially the impact of Heathrow expansion. Where strategic highways are concerned it is doubtful that Highways England can achieve much through speed controls.

20. The Commission in our view significantly under-estimated surface access demand in its original analysis. Our view continues to be that the demand estimates remain unrealistically low and that the modal shift to public transport is over optimistic. It is particularly important to consider the peak hour demand and segments of the road and rail networks that are overloaded. For example, the morning peak hour 2-way Heathrow demand was estimated by the Commission in its original projections to be a total of 20,000 trips in 2030 compared to TfL's estimate, when the airport is subsequently full, of 35,000 trips, which is 75% greater. Similar disparity arose in the underlying road and rail demand. The Commission estimated 12,300 road trips, while TfL estimated 23,900 trips. The Commission estimated 7,400 rail trips while TfL estimated 11,500 trips.

21. **What is the Capacity of road and rail serving Heathrow ?** The surface access capacity predicted by the Commission and Government update comprises a Core baseline and an Extended transport baseline which together are expected to be in place by 2030. The Core baseline includes Heathrow Express, London Underground Piccadilly line, Crossrail and HS2 with Heathrow passengers connecting at Old Oak Common. For roads, it includes "smart motorway" upgrades to certain junctions on the M23, M25 and M3. The Extended baseline includes Western Rail Access (WRA) to Heathrow. Two additional schemes that are not included in the baselines are a Southern Rail Access (SRA) linking Staines to Waterloo via Richmond and increased Crossrail frequency. These are allocated to the Heathrow project rather than to background demand.

22. We conclude that the original Commission projections of capacity for Heathrow expansion projects would not be sufficient. So far our analysis of the updates by the Government suggests there is still a lack of capacity. For example, the WRA has still to be funded and the SRA (previously known as Airtrack) ran into considerable problems when last considered because of the impact on the several level crossings that would have to be closed for more of the time with consequential impact on local traffic and pollution. Demand for seating capacity on segments of

the Piccadilly line and Crossrail far exceeds the available seating capacity. While this might be a lesser problem for non-airport users, Heathrow's passengers may have luggage, have long flights ahead or behind them, and include families with children. By 2030, with or without a third runway, overall rail access to Heathrow (including Crossrail, underground and Heathrow Express) does not improve for 8 London boroughs, and marginally reduces for 15 boroughs. Only 8 boroughs are likely to experience any improvement. We are concerned that the SRA will be over-crowded, especially from Richmond to Waterloo and in peak hours.

23. **Inadequate capacity leads to road congestion and pollution.** The cost of inadequate surface access is significant in terms of overcrowding on the rail system, less convenience and comfort and congestion and pollution on the road network. Furthermore, with pollution subject to statutory limits it is quite possible that Heathrow will not be able to make full use of an additional runway. It is not clear what service level is being considered in the planning - low, intermediate or high. This considerably alters the cost.

24. Depending on how quickly Heathrow's NWR fills up, the shortage of surface access capacity could become even greater after 2030. Unfortunately, modelling by Heathrow and the Commission ceased after 2030.

25. **What's the capacity cost and how can funding be shared.** The Commission estimated the surface access investment required for servicing an expanded Heathrow would be £5.7 billion. But TfL believe the sum required will be up to £20 billion. The Commission estimated that HAL would need to find as much as £34 billion to finance a third runway and ongoing cash outflow, excluding the funding of surface access. It is not clear from the Commission, Heathrow and importantly the draft NPS and associated material who is expected to fund the surface access and what proportion can Heathrow pass on as charges. But it is clear from the Commission's reports that it thinks even without the surface access funding, the markets may find it difficult to fund the size of investment required. It could prove unacceptable economically and politically for the State to fund the scheme as direct grants or by guarantees.

26. In our view, the draft Plan fails to deal with the Heathrow surface access use and capacity issues. The cost and who will pay for the surface access investment necessary to facilitate reduced air pollution to below legally binding limits and provide adequate service levels on road and public transport has not been dealt by the draft Plan. The mitigation steps proposed generally are not only insufficient but our confidence in their effective implementation is low.

27. Findings for the Commission on the levels of continued air quality non-compliance, as a result of Heathrow expansion that are contained in the Jacobs report for the Commission, cast doubt on the deliverability of the air quality mitigation proposed by Heathrow. Of the 8 mitigation measures proposed for Heathrow NWR, the report suggests 5 are questionable (see para 5.6.3, pages 72-76 of the Jacobs report).

28. Heathrow does not have a direct rail link so freight is transported by road. A 100% increase in freight would cause considerable road congestion and additional pollution.

29. The construction phase of a third runway and related facilities must surely add significantly to air pollution during construction.

ANNEX C

Consultation on a draft revised UK Air Quality Plan for tackling nitrogen dioxide

Draft Air Quality Plan Mitigation Proposals

1. The draft Plan options are summarised in the following table taken from the Technical Report page 10.

Table Ex.3: Summary of analysis results for each option to improve UK air quality

Brief description of option	First year NO_2 concentration reduction[I]	Total reduction in NO_x emissions[II]	Net present value[III]
Clean Air Zones[IV] Expansion from 5 CAZs, plus London, to a further 21	8.6µg/m³ in 2020	24kt over ten years	£1,100m
Retrofit Retrofitting of buses, HGVs and black cabs between now and 2020	0.09µg/m³ in 2019	10kt over ten years	£270m
Scrappage National scrappage to electric cars and vans	0.008µg/m³ in 2020	0.4kt over ten years	-£20m
Ultra Low Emission Vehicles (ULEVs) Provide additional support to purchasers of ULEVs	0.008µg/m³ in 2017	2kt over ten years	-£20m
Speed Limits[V] Reduce average speeds from 70 to 60mph on sections of motorways with poor air quality	Up to 2.5µg/m³ in 2021	Up to 0.05kt over ten years	-£25m to -£32m
Government Buying Standards Encouraging purchases of new petrol cars instead of diesel cars	0.0005µg/m³ in 2018	0.1kt over ten years	£0.13m
Vehicle Labelling Air quality emissions information on new car labels	0.004µg/m³ in 2018	0.7kt over ten years	£12m
Influencing Driving Style Training and telematics for 100,000 car and van drivers (<0.5% of fleet) by 2019	0.01µg/m³ in 2019	0.35kt over ten years	£12m

[I] Reduction in average NO_2 concentrations in the first year where air quality impacts are expected to arise as a result of the implementation of the option. This is relative to the baseline projection for the option in the particular year specified.
[II] Total reduction in NO_x emissions resulting from this policy option over its ten-year appraisal period. This is in comparison to the baseline projection for the option over the same ten-year appraisal period.
[III] A discount rate is used to convert all costs and benefits to 'present values' so that they can be compared. The net present value calculates the present value of the differences between the streams of costs and benefits associated with the option.
[IV] Clean Air Zones are assumed to be implemented in 27 non-compliant areas in 2020. This represents the average reduction in the maximum concentration for these areas in 2020.
[V] Speed limit impacts are shown just for the <1% of motorway projected to be in exceedance in 2021. These impacts cannot be extrapolated to other roads. All impacts related to air quality are expressed as 'up to *x*' because there is uncertainty over the modelling approach in relation to vehicle speed. The air quality impact of this option is calculated on the assumption that traffic on failing motorway links is travelling at the same speed as the national average (for the type of motorway). It is possible that highly polluted motorway links are busier and more heavily congested, and that average speeds on them are lower. In this case, a change in the speed limit may have little impact on air quality – because cars are already travelling at speeds below the limit. Work is ongoing to improve our understanding of speeds on these links.

2. In broad terms we support these measures. The main point we make is that the impact appears to be very small. Current UK NOx emissions are around 900,000 metric tonnes a year. The aggregate reduction is just under 40,000 metric tonnes over 10 years. Admittedly the former figure is total UK NOx emissions while the latter is reduced emission at sensitive locations to which the mitigation measures are applied. The draft Plan predicts the unmitigated Do-minimum case, as illustrated in the chart in Annex B of our response and we comment there on the impact of the CAZ - the measure with the largest benefit. The CAZ usefully accelerates the reduction in NO2 but does not reduce the NO2 in the longer term since the vehicle fleet itself changes to less polluting vehicles.

3. **Clean Air Zones (CAZ)**. The measures it is suggested by the draft Plan that Local authorities might take are as follows:
   a. Encouraging the uptake of Ultra Low Emission Vehicles;
   b. Infrastructure changes;
   c. Retrofitting the most polluting vehicles; or
   d. Promoting public transport, cycling and walking.

4. We have serious doubts as to the ability of many local authorities to influence the change to ULEVs or to retro-fitting. Yes, they can introduce charging zones to disadvantage the more polluting vehicles but we see little evidence as to the effectiveness of any local measures. Perhaps the most effective action is for buses and taxis to be changed to less polluting types. But surely this is more in the hands of the Government than local authorities. The local authorities have very limited resources.

5. London is perhaps an exception, where the Mayor does have resources and authority to change buses and taxis.

6. We doubt a CAZ around Heathrow will have much effect in reducing NO2, since passengers accessing Heathrow would be infrequent users of the zone. There would probably be greater effect on staff and freight.

7. The draft Plan is bereft of any solutions for access to Heathrow. HAL's proposals are for a modal shift to public transport but we very much doubt the estimates and question how on earth will the public transport capacity be provided and funded. The draft Plan makes no mention of this situation.

8. **Retro-fit**. We query whether this option will materialise to the extent predicted.

9. **Other Six options.** The other six options listed have relatively small impact on NO2.

10. **Fleet Adjustment Model (FAS)**. It would have helped a better understanding of the draft Plan if it had contained rather more detail from the FAS. The number of vehicles, the distance travelled and the NO2 by type in the Do-minimum and for each of the options

would provide a useful and in fact an essential set of forecasts. Preferably this would be for each of the exceedence locations to provide the granuality discussed in Annex A. Even if only in aggregate for the UK as a whole, FAS forecast would provide essential context.

11. The draft Plan does provide detail on funding from Government but it requires the reader to pull together the detail and try and relate it to the overall impact of the proposed measures. We are not in a position to comment on the costings and webTag valuations, given the lack of detailed information in the draft Plan. However, we have commented in Annex B on the investment required for Heathrow's surface access if pollution is to be contained.

12. As said in Annexes A and B we believe it is a serious failing of the draft Plan and Consultation not to have examined in detail the London situation and that of Heathrow and its potential expansion. Both of these have major impact on overall UK NO2 pollution.

ANNEX D

Consultation on a draft revised UK Air Quality Plan for tackling nitrogen dioxide

Response to Formal Consultation Questions

	Question	Richmond Heathrow Campaign Response
1	How satisfied are you that the proposed measures set out in this consultation will address the problem of nitrogen dioxide as quickly as possible?	1. In Annex A we explain why we believe the Air Quality Objective is deficient and too week and accordingly does not adequately address the NO2 problem. 2. In Annex B we seek to establish the size and nature of the NO2 problem but find the draft Plan substantially deficient in this regard. The draft Plan lacks detail on London and Heathrow expansion which are two major sources of NOs. Heathrow is not even mentioned in the draft Plan and accompanying documents. 3. In Annex C we briefly examine the proposed mitigation measures and find that the main proposal for Clean Air Zones is not likely to adequately address specific exceedences and that Local Authorities do not have the authority and resources to implement the measures. 4. There is not sufficient detail to assess the costs of mitigation and funding proposed. In one specific instance, the mitigation of pollution from Heathrow surface access, the £15bn to £20bn cost estimated by TfL is not even considered by the draft Plan.
2a	What do you consider to be the most appropriate way for local authorities in England to determine the arrangements for a Clean Air Zone, and the measures that should apply within it?	No comment
2b	What factors should local authorities consider when assessing impacts on businesses?	No comment

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3a	How can Government best target any funding to support local communities to cut air pollution? What options should the Government consider further, and what criteria should it use to assess them?	No comment
3b	Are there other measures which could be implemented at a local level, represent value for money, and that could have a direct and rapid impact on air quality? Examples could include targeted investment in local infrastructure projects.	No comment
3c	How can Government best target any funding to mitigate the impact of certain measures to improve air quality, on local businesses, residents and those travelling into towns and cities to work? Examples could include targeted scrappage schemes, for both cars and vans, as well as support for retrofitting initiatives.	No comment
3d	How could mitigation schemes be designed in order to maximise value for money, target support where it is most needed, reduce complexity and minimise scope for fraud?	No comment
4	How best can governments work with local communities to monitor local interventions and evaluate their impact? The Government and the devolved administrations are committed to an evidence-based approach to policy delivery and will closely monitor the implementation of the plan and evaluate the progress on delivering its objective.	No comment

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5	Which vehicles should be prioritised for government-funded retrofit schemes? We welcome views from stakeholders as to how a future scheme could support new technologies and innovative solutions for other vehicle types, and would welcome evidence from stakeholders on emerging technologies. We currently anticipate that this funding could support modifications to buses, coaches, HGVs, vans and black cabs.	Buses and taxis
6	What type of environmental and other information should be made available to help consumers choose which cars to buy?	No comment
7	How could the Government further support innovative technological solutions and localised measures to improve air quality?	No comment
8	Do you have any other comments on the draft UK Air Quality Plan for tackling nitrogen dioxide?	We have discussed the draft Plan and particular aspects that are relevant to us in Annexes A, B and C. We respectfully ask Defra and the DfT to consider our comments in these Annexes.