

NPS Consultation Response: **Thematic Paper**

Surface Access

May 2017

Key Points:

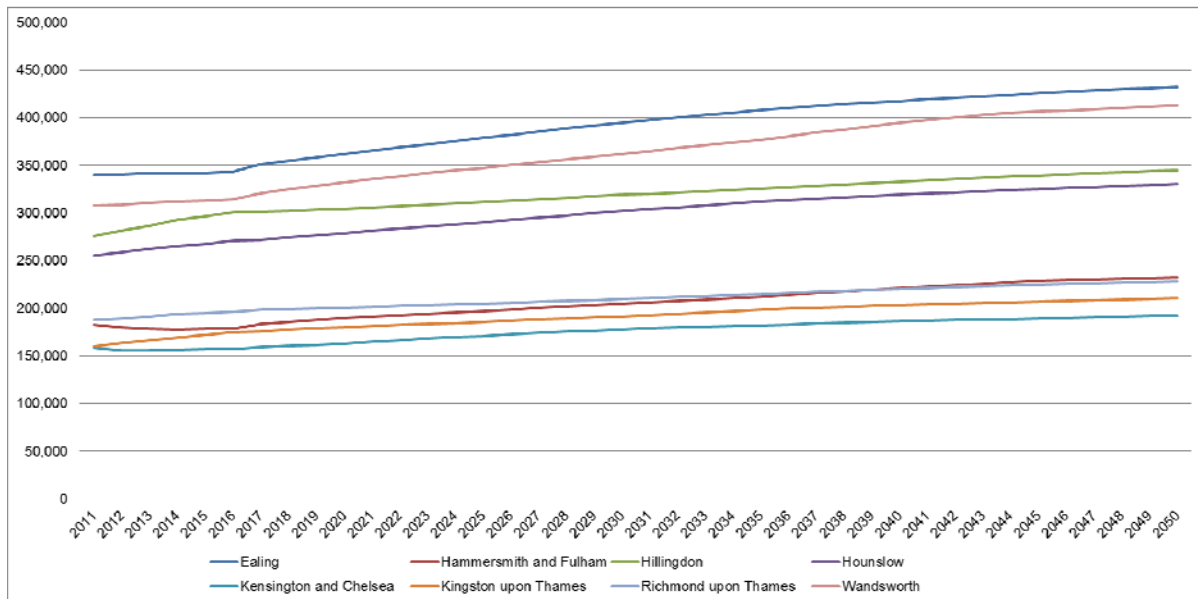
- The NPS fails to provide a credible plan for how the 173,000 additional daily trips by passengers and staff to an expanded Heathrow will be accommodated on the surface transport network.
- The NPS includes the HAL aspiration for there to be no increase in airport related highway traffic but fails to make this a requirement for the scheme, or to hold HAL accountable for achieving it.
- Our modelling shows that even with the committed and assumed schemes detailed in the NPS there will be a significant increase in highway traffic to and from the airport. Indeed we estimate an increase of around 72,000 Heathrow passenger and staff related highway trips causing congestion and delays for both airport and non-airport users.
- If there is to be no increase in airport related highway traffic for passengers and staff, this would mean that as many as 65 per cent of people accessing the airport would need to use public transport – an increase of around 200 per cent in public transport demand. Yet the NPS contains no commitment or funding for any new public transport infrastructure to accommodate these trips.
- Analysis undertaken for TfL indicates that to achieve a 65 per cent public transport mode share requires a sizeable road user access charge by HAL, coupled with significant investment in public transport infrastructure.
- Despite stating that freight capacity will double, the NPS has no plan for addressing the surface access impacts of increased freight.

1. Context

- 1.1 Rising population and employment levels and a growing economy will lead to more cars on the roads and more residents travelling on the public transport network in West London even without a third runway.
- 1.2 The latest GLA projections are that the population in the boroughs around Heathrow

are expected to grow by over 24% between 2015 and 2050 to 2.39 million¹. This forecast is shown in Figure 1.

Figure 1: Population change in the boroughs around Heathrow up to 2050



Source: GLA Interim 2015-based Demographic Projections. Local authority population projections - Trend projections, central migration scenario

- 1.3 To accommodate this expected growth, TfL is investing in and delivering new public transport capacity, including the new Elizabeth Line and the upgrade of the Piccadilly line, as well as improvements to the bus and cycle provision in west London.
- 1.4 The NPS should be demonstrating how the additional trips generated by a third runway at Heathrow could be accommodated alongside this growing non-airport related demand. Heathrow expansion cannot be considered in isolation from the growth already anticipated for London.

Demand assumption

- 1.5 It is standard practice to assess the impacts of any development, large or small, based on it operating at full capacity (assuming no legal restrictions on using that capacity are being proposed). Yet the NPS relies entirely on the work undertaken by the Airports Commission (AC), which only assessed the surface access impacts of a partially utilised three-runway Heathrow, operating at 125mppa – rather than the 148mppa which the AC declared as the total capacity of an expanded Heathrow. In this way, the NPS analysis significantly underestimates the likely impacts of an expanded Heathrow.
- 1.6 The NPS reports the AC finding that an expanded Heathrow would see the airport operating at around 80-90% capacity by 2030². Moreover, this is an average capacity figure, which means that the utilisation will be even higher at certain times of the day,

¹ GLA Interim 2015-based population projections – Central Forecast
² Draft NPS, Appraisal of Sustainability, Appendix B, Table 9, page 22

in part coinciding with the peaks on the surface access network. As such, full utilisation can be expected to be reached between 2030 and 2040. On this basis, the modelling undertaken for TfL has assessed expansion based on a fully utilised runway in 2031, to ensure a realistic scenario is captured.

- 1.7 The surface access demand forecasts are very sensitive to the proportion of transfer traffic assumed – i.e. those airport passengers not using surface access. The AC assumed 33 per cent and the TfL modelling has adopted a similar figure³. The transfer share would be expected to fall as the airport nears capacity and it is possible that surface access demand might have been underestimated by both the AC and TfL in this regard.
- 1.8 It should also be noted that by modelling 2031 – rather than 2041 – the TfL modelling omits a decade of background growth and so plays down the overall impact on the surface access network.
- 1.9 Taking together these considerations – and in the absence of any interim limits on the airport’s movements or passenger throughput being proposed – the TfL approach of modelling a fully utilised three-runway Heathrow in 2031 is a sound basis on which to assess and analyse its surface access impacts.

2. Increasing traffic levels with an expanded Heathrow

- 2.1 Heathrow is the largest generator and attractor of trips in west London and there are currently around 235,000 daily passenger and staff trips to the airport⁴. With a third runway the number of daily trips by passengers and staff to the airport is expected to increase by 74 per cent, to around 408,000⁵.
- 2.2 The NPS states its aspiration that for an expanded Heathrow, there will be no additional landside airport-related highway traffic compared to today⁶. This is essential if a third runway is not to worsen the air quality around Heathrow, which already breaches limit values, nor erode the future improvements that are expected to be gained for the benefit of public health.
- 2.3 Analysis undertaken for TfL shows that of the 235,000 current daily trips by passengers and staff to Heathrow around 144,000 are by car and taxi and 91,000 by public transport⁷. This constitutes a combined public transport mode share for passengers and staff of 39 per cent.
- 2.4 Therefore, in order to meet the NPS aspiration of no increase in airport-related highway traffic, the number of passenger and staff car/taxi trips needs to remain at

³ This compares with 30 per cent today – HAL website <http://www.heathrow.com/company/company-news-and-information/company-information/facts-and-figures>

⁴ SDG Heathrow Airport Expansion: surface access assessment

⁵ SDG Heathrow Airport Expansion: surface access assessment

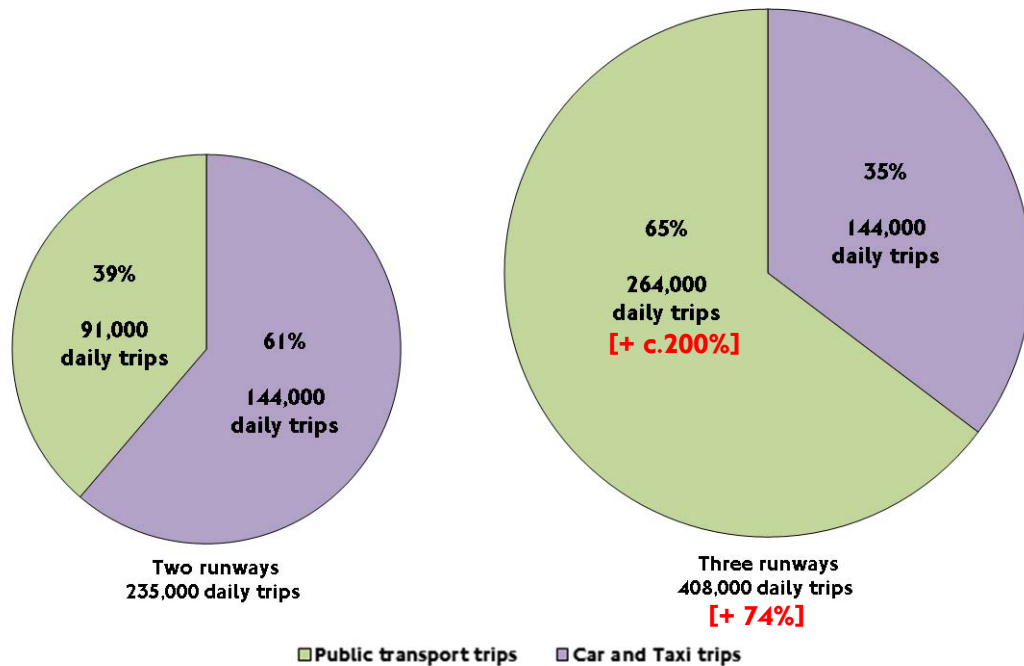
⁶ Draft National Policy Statement, section 3.49 and 5.16

⁷ The public transport mode share estimates includes ‘other’ modes such as cycling and walking

around 144,000 with a third runway⁸.

- 2.5 This means, of the 408,000 daily trips forecast for the airport with a third runway, 264,000 need to be made by public transport. This translates to a mode share of 65 per cent for public transport – a very significant increase on today. This is set out in Figure 2 below.

Figure 2: Mode share for passengers and staff – current mode share and expansion with no increase in airport related traffic



- 2.6 The above chart clearly illustrates the significant step change required in order to keep airport related traffic at today's levels, as well as the very significant increase in trips that will need to be accommodated on the public transport network.

3. The surface access package in the NPS

- 3.1 In order to achieve a 65 per cent public transport mode share for passengers and staff and accommodate an increase in public transport trips of around 200 per cent, there needs to be new investment in enhanced public transport capacity. However the NPS has no commitment nor funding for any new public transport schemes.
- 3.2 Instead the NPS concludes that the only surface access schemes required for Heathrow are the changes to the highway network required to physically enable the larger airport footprint. The most notable of these is the placement of the M25 in tunnel under the new runway but it also includes diversions of the A4 and A3044.

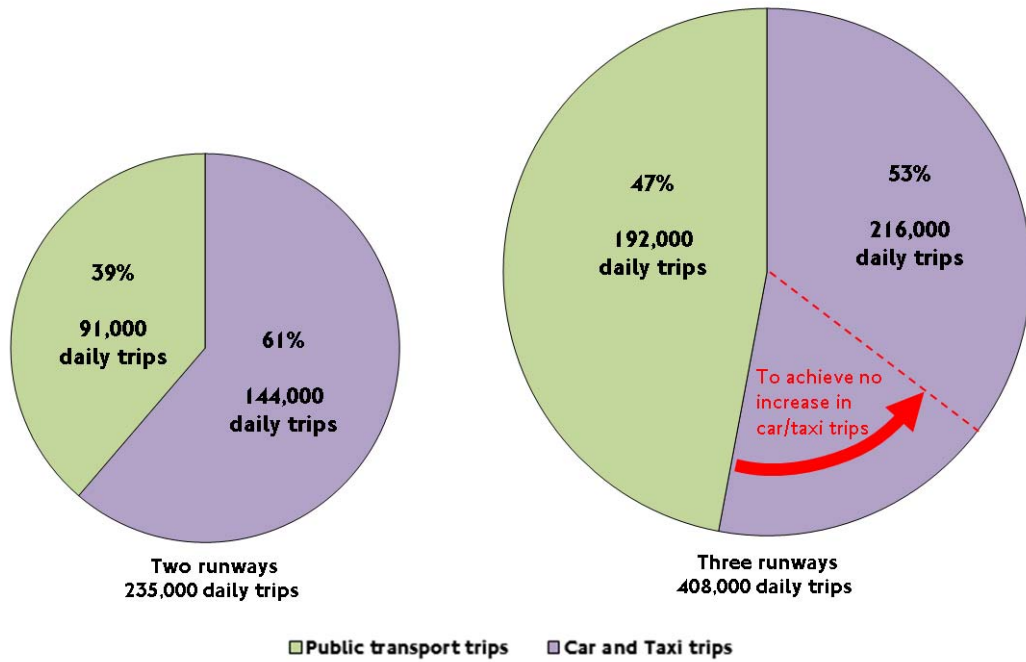
⁸ The aspiration for no increase in highway traffic implies a limit on vehicle movements, while the TfL modelling focuses on highway trips (per passenger). Our analysis indicates that these are broadly similar but this will need to be considered further when the requisite detailed surface access analysis is undertaken.

- 3.3 The NPS relies on existing committed public transport schemes to accommodate Heathrow expansion, notably the Elizabeth line and the Piccadilly line upgrade. This undermines the intention behind these schemes which is to accommodate the non-airport background demand growth.
- 3.4 The NPS mentions that both the Western Rail Access and the Southern Rail Access will support expansion, though it does not specify either as required for expansion. Neither scheme is committed or funded, nor has either started the formal consents process. In short, each is far from certain in its delivery.
- 3.5 Western Rail Access was initially quoted as costing £500-600m but a cost review undertaken for TfL indicates the Network Rail scheme is likely to cost around £1.6bn. The Southern Rail Access is still in early stages of development and the proposals currently being considered by Network Rail struggle to address the capacity constraints on the Windsor Lines. It is probable that they will require diverting services from Windsor and Reading via the slower Hounslow route and removing all direct services from Waterloo to Chertsey and Addlestone. The Airports Commission (AC) estimated that a minimal Southern rail link to Staines would cost £0.5bn, but even the least comprehensive scheme being examined by Network Rail would cost around £1bn, according to work undertaken for TfL.

Modelling the NPS package

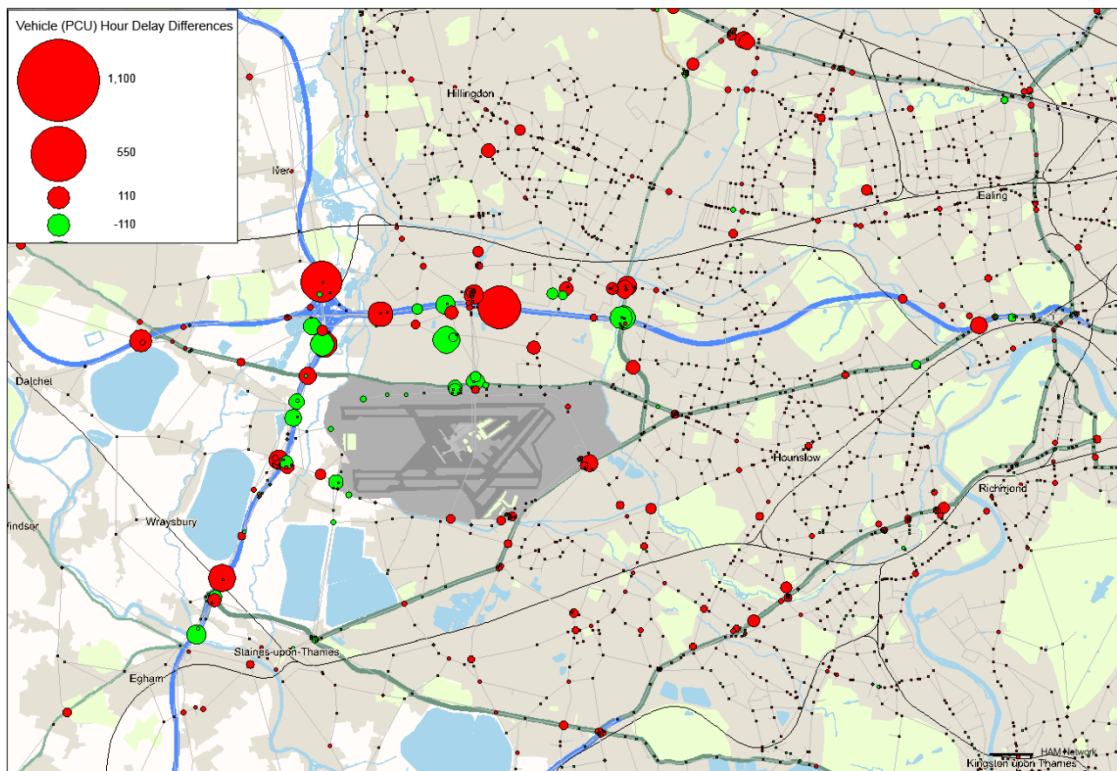
- 3.6 Modelling of the proposed airport expansion has been undertaken for TfL with the committed and assumed schemes. The committed schemes include those schemes which are committed regardless of expansion, including the Piccadilly line upgrade, and the opening of the Elizabeth Line and HS2. It also includes the schemes identified by the NPS as required for expansion, namely the highway network changes needed to accommodate the physical footprint of the expanded airport, including diversion of the M25, A4 and A3044. The assumed schemes are those schemes referenced by the NPS but for which there is no commitment nor funding, namely the Western Rail Access and Southern Rail Access schemes.
- 3.7 The modelling shows that, with these committed and assumed schemes in place, around 47 per cent of airport passengers and staff would travel by public transport. This is an improvement on today's 39 per cent but still some way short of the 65 per cent that would be required to hold airport passenger and staff related highway trips to current levels. This is illustrated in Figure 3 below.

Figure 3: Mode share for passengers and staff – current mode share and expansion with Committed plus Assumed schemes



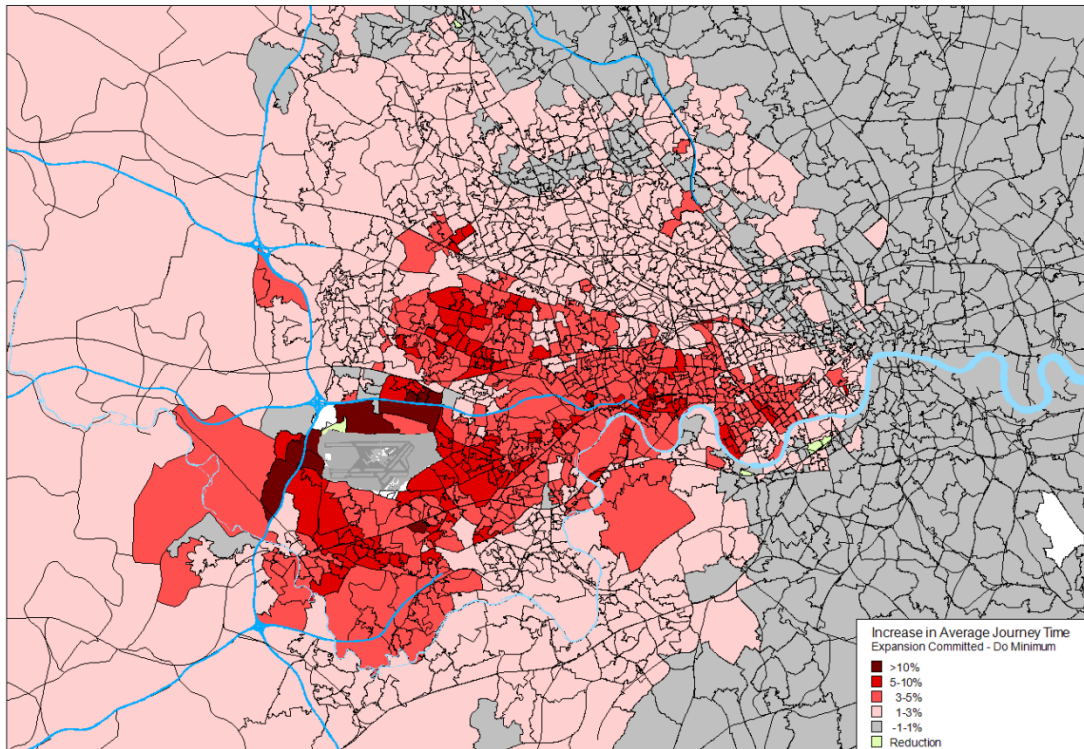
3.8 A 47 per cent airport public transport mode share would result in over 215,000 airport passenger and staff highway trips – an increase of around 50 per cent. This would cause worsening congestion on the roads around Heathrow, lead to increased delays for both airport and non-airport road users and worsen air quality. Figure 4 below shows the forecast change in junction delay between the Committed plus Assumed schemes versus no expansion. Although there are some improvements in highway network delay (green on map below) on some of Heathrow’s access roads following expansion, overall, delay increases across a wide area and will impact both airport and non-airport road users (red on map below).

Figure 4: AM Peak Hour Junction Delay Change (2031 Expansion Committed plus Assumed versus No expansion) - vehicle weighted delay in hours



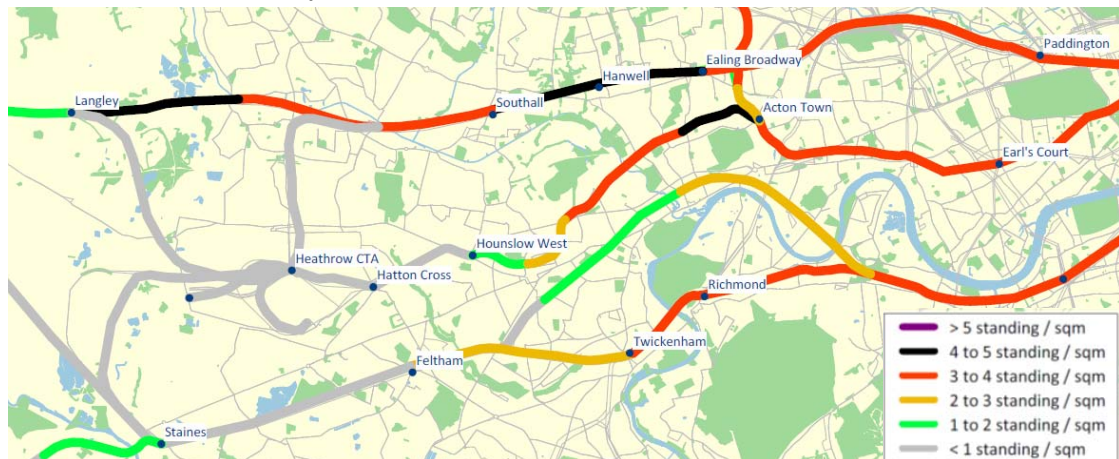
3.9 The network delays result in an increase in average journey times across West London and beyond, as per Figure 5, which shows the change in journey times for non-airport traffic as a weighted percentage change for trips originating in each zone.

Figure 5: Change in average journey times for non-Heathrow trips (2031 Expansion Committed plus Assumed versus No expansion, AM peak hour 8-9am)



- 3.10 Even with the inadequate mode shift to public transport achieved by the committed plus assumed schemes, the increase in public transport journeys to and from the airport will cause additional crowding on the network. Passengers – many of whom will have luggage – and staff will compete for space with other public transport users. The NPS offers no new investment in public transport capacity. The result will be a worsening public transport provision and uncomfortable, increasingly unreliable journeys for all users, particularly in the peak times.
- 3.11 The modelling analysis for 2031 expansion, with committed plus assumed schemes, found that there would be heavy crowding on the Elizabeth line and Piccadilly line and also crowding on the Windsor Line, as illustrated in Figure 6 below.

Figure 6: Forecast crowding on key rail corridors serving Heathrow, 2031 Expansion 'Committed' plus 'Assumed', Eastbound AM peak hour 8-9am



The surface access requirement in the NPS

- 3.12 While the NPS repeats HAL’s aspiration for no increase in highway traffic, the mode share criteria it actually specifies as a requirement of the scheme are weaker, namely, a passenger public transport mode share of at least 50% by 2030, and at least 55% by 2040 for passengers – and a 25% reduction from the current baseline of all staff car trips by 2030, and a reduction of 50% by 2040 from 2017 levels. This would still result in tens of thousands of additional car and taxi trips compared to current levels, short of the aspiration for no increase in passenger and staff highway trips.
- 3.13 Crucially, it is not at all clear how these requirements would be achieved. Staff can be especially challenging to switch to public transport, and despite HAL’s efforts to date, it has had limited success. It is hampered by the significant proportion of airport staff who are not directly employed by HAL, as well as shift patterns which make the car more appealing for many.
- 3.14 In any case, it is clear that the package of committed plus assumed schemes would fall short of achieving even these, less challenging, targets.

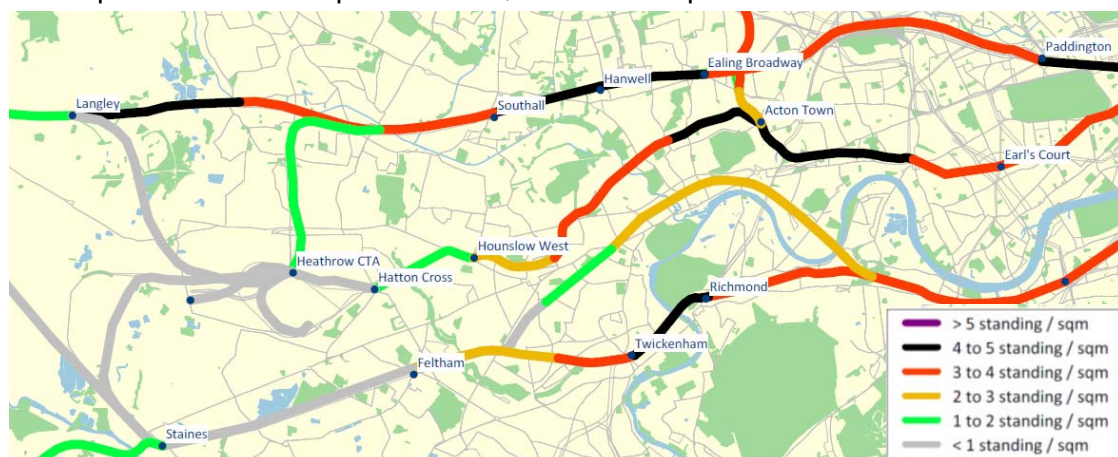
4. Achieving no increase in highway trips

- 4.1 The HAL aspiration for there to be no increase in airport related traffic is essential for expansion to be delivered in a way that does not impact highway users and air quality. The roads around Heathrow are already congested, with the traffic contributing poor air quality and breaches of NO₂ limit compliance. If airport related traffic was to increase as a result of a third runway there would be impacts on airport users, non-airport users and local communities alike; with delayed journeys, increasing congestion and worsening air quality.
- 4.2 In addition to new public transport infrastructure, there is also a case for a road access charge at Heathrow. This was considered by the Airports Commission (AC) who stated that “the introduction of such a scheme should be considered to help

ensure that road traffic to and from the airport does not cause unacceptable impacts on local air quality or road congestion”⁹. The AC’s analysis suggested a road access charge of £40 for passengers including taxis, or of £20 for passengers if staff were also subject to demand management measures¹⁰. The NPS repeats this finding of the AC although it is unclear if it endorses it¹¹. Initial analysis undertaken for TfL confirms that a similar scale of road user charge by HAL would be required, of at least £50 per passenger car and taxi vehicle trip, if traffic is to be held at current levels.

- 4.3 However, if Heathrow does successfully deter airport users from using car and taxi modes, there still remains the challenge of accommodating the large increase in demand for public transport - an increase of 170,000 from today. If only committed and assumed schemes are implemented, by 2031 both airport and non-airport rail users will suffer considerable additional levels of crowding on all rail connections to the airport. Figure 7 illustrates that following expansion and assuming Heathrow achieves no increase in airport related traffic rail services will be crowded by 2031.

Figure 7: Forecast crowding on key rail corridors serving Heathrow assuming no extra highway trips, 2031 Expansion ‘Committed’ plus ‘Assumed’, Eastbound AM peak hour 8-9am



- 4.4 The investment in public transport is important to provide capacity for those shifting from cars and taxis, as well to encourage them to do so. Rail is key to this, and requires both Western Rail Access as well as a variant of Southern Rail Access that can provide both connectivity and capacity. Unlike the Network Rail proposal which relies on the congested Windsor Lines, constrained by its level crossings, a direct connection to South West Main Line (SWML) is likely to be required, one which can provide both new connectivity and new capacity.
- 4.5 Also required is investment in bus and cycle priority measures in the key corridors connecting the airport. The NPS fails to mention travel by bus which is an important mode, particularly for staff accessing the airport from corridors not served by rail or undertaking shift work. Cycling and walking should also both be integral to plans to

⁹ The Airports Commission, Final Report, section 14.80

¹⁰ Appraisal Framework Module 4, Surface Access: Demand Management Study, Airports Commission, May 2015, section 3.3.15

¹¹ National Policy Statement, section 5.28

improve the sustainability of access to the airport, particularly for staff.

- 4.6 Based on the assessment to date, we estimate that a surface access investment of £10-15bn will be required to enable a third runway at Heathrow airport. The breakdown of costs are included in Table I below¹². Further work must be undertaken to understand the detail of the schemes required. This is essential if Londoners are to have any confidence that the building of a third runway won't severely impact the transport network of west London.

Table I: Estimate costs for the highway and rail schemes required for a third runway

	Cost (£bn)
Highway	
3rd Runway - Highway enabling works (AC estimate)	2.3
Airport bus and cycle priority & capacity enhancement	1.6
Additional highway junction and capacity enhancements	0.5
Total	4.4
Rail	
Southern Rail Access <i>direct to South West Main Line</i>	5.1
Western Rail Access	1.6
Total	6.6

- 4.7 With this level of public transport investment to provide new capacity combined with road user charging by HAL, a mode share of 65 per cent for passengers and staff could potentially be achieved.
- 4.8 If the aspiration for no increase in highway trips is to be credible, the NPS should publish robust analysis and fix a 65 per cent public transport mode share as an explicit criterion. The NPS should also set out the scale of airport public transport demand expected together with the investment required to accommodate it. Robust evidence of the airport's ability to achieve this mode share shift should also be published, together with clear guidance on a road access charge. The NPS should also state how much the surface access proposition will cost and how it will be funded. It should also make clear how any mode share commitment is monitored and enforced.
- 4.9 Currently, there is no explanation as to how HAL will be held accountable if the aspiration for no increase in highway trips is not achieved. Without such accountability, airport staff and passengers, as well as non-airport users will suffer increased congestion and crowding and worsening delays while public health

¹² The highway costs were estimated using per km costings from recent TfL bus, cycle and walk schemes and do not include future inflation. The rail costs were estimated by a cost consultancy, whose technical note is to be made available with this consultation submission.

outcomes would suffer from the deterioration in air quality.

5. Freight and induced demand

- 5.1 The NPS largely excludes freight and induced demand from its consideration of surface access and as such underplays the impacts of expansion on the highway network.
- 5.2 One of the key economic benefits claimed for a third runway at Heathrow is that freight capacity will double. The NPS fails to acknowledge the impact of this increase. There is no assessment of what this means for freight vehicle movements to and from the airport and its impact on the highway network. Communities are particularly concerned about the impact of increasing heavy goods vehicles on local roads.
- 5.3 Nor is there any attempt to reduce the freight travelling by road. Projects in Europe and elsewhere are developing onward distribution of freight from airports by rail. The EuroCarex project, linking Paris CDG airport by rail to European cities including London, is an example of such a scheme in the early stages of development. The NPS should be requiring HAL to make meaningful steps to progress such activity that could deliver some mode shift for freight.
- 5.4 Analysis undertaken for TfL found that if the no increase in airport-related highway trips is interpreted to include freight – and assuming no mode shift in freight – a public transport mode share in the region of 69 per cent for passengers and staff would have to be achieved.
- 5.5 The NPS also ignores the increase in travel demand arising from the additional ‘induced’ employment and population growth which it counts in its economic benefits analysis. The extra travel demand that this growth will generate will have an impact on congestion, air quality and crowding on the transport network.