

The Mayor of London's response to the Airports Commission consultation on shortlisted options

Assessment of consistency with Appraisal Framework

Review Note

February 2015

1. Context: the Appraisal Framework

- 1.1. The Appraisal Framework was drawn up the Commission and subject to public consultation in January 2014 and as such should form the basis of any assessment.
- 1.2. Each of the Commission's assessment modules has been reviewed against the Appraisal Framework to assess the degree of consistency and therefore determine whether or not the assessment undertaken by the Commission allows for a full and comparative assessment of short-listed options. Where it is noted that additional assessment is required for a full assessment to be made, this has been indicated.
- 1.3. Whilst the Commission are to be commended on the extensive and wide-ranging volume of work that they have conducted, they recognise the limitations at this stage in assessing each of the three shortlisted options in a way that is fully compliant with Appraisal Framework requirements.

2. Overview of this review note

- 2.1. This review seeks to be a constructive tool in establishing how robust each assessment made by the Commission for the consultation has been. It looks to identify areas of work that do not appear to have been fully assessed, and where further work, in accordance with the Commission's Appraisal Framework, would serve to greatly strengthen the Commission's final recommendation.
- 2.2. In drawing conclusions from this review we acknowledge that not every element of the appraisal framework was intended by the Commission to be compulsory. In some instances it has not been possible to determine whether an element is intended to be 'core' or supplementary, although in general we would consider that an assessment which is fully consistent with all elements of the Framework will result in a more comprehensive assessment of airport options.

2.3. The review tables that follow below summarise the results, and they assess the consistency between the Commission's Appraisal Framework and Consultation Assessment by using the following categories:

(Approach could be Insufficient to make a robust comparison of airport options)



Not consistent with framework approach

- The analysis does not appear to have been presented as defined;
- A reason may or may not be given for exclusion; or
- Insufficient detail for a comparative assessment.

Partially consistent with framework approach

- Partial analysis appears to have been undertaken; or
- Insufficient data, analysis or commentary has been presented for a full assessment.

Consistent with the framework approach

- The analysis is consistent with the framework approach, although further analysis may still be required for overall comparative conclusions to be drawn.

(A more acceptable approach has been undertaken to assess airport options)

01a Strategic Fit: spatial and socio-economic

| Appraisal Framework Method | Review Comments | Assessment |
|--|---|-----------------------------|
| <p>Commission will assess how each proposal can support wider spatial and socio-economic development strategies, and long-term socio-economic developments – for example future population projections, other strategic infrastructure projects or local government strategies such as the London Plan (in conjunction with the Economy, Local Economy and Community modules).</p> | <p>The assessment provides a comparison of expansion proposals against existing spatial and socio-economic development strategies. It is not clear what consideration has been given to future population projections and other long term challenges.</p> | <p>Partially consistent</p> |
| <p>...an assessment of the extent to which these benefits, and any wider economic or social impacts, are in line with relevant long-term development strategies</p> | <p>Assessment is limited to those policies aligned with the expansion proposals. This appears to result in insufficient consideration being given to wider spatial, regeneration and environmental policies.</p> | <p>Partially consistent</p> |
| <p>...scrutinise the potential impacts of each proposal in light of how they can support wider spatial and socio-economic development strategies</p> | <p>Assessment is limited to those policies aligned with the expansion proposals. This appears to result in insufficient consideration being given to wider spatial, regeneration and environmental policies.</p> | <p>Partially consistent</p> |
| <p>The Commission will also consider how each proposal may facilitate addressing various socio-economic developments, such as growth and shifts of future population in London and the UK</p> | <p>Assessment fails to consider long term challenges and how expansion proposals can contribute / respond to long term challenges beyond those already being planned for.</p> | <p>Not consistent</p> |

01b Strategic Fit: competition and connectivity

| Appraisal Framework Method | Review Comments | Assessment |
|---|--|----------------------|
| To provide additional capacity that facilitates connectivity in line with the assessment of need; | | Consistent |
| To improve the experience of passengers and other users of aviation; | Insufficient distinction between improvements and beneficiaries thereof. | Partially consistent |
| To maximise the benefits of competition to aviation users and the broader economy; | Requirement implies 'optimal outcome' which was not explored or analysed, only few options with inherent limitations. | Partially consistent |
| The Strategic Fit assessment will propose and assess a range of future developments in the aviation sector, which will be based on a set of proposal-specific scenarios, additional to those mentioned in the assessment base case. | The range of scenarios used in this assessment could have been wider, although it is appreciated that the Commission's assessment is based on a common set of scenarios. | Partially consistent |
| The proposal-specific scenarios will be developed to a greater level of detail than that presented in the <i>Interim Report</i> as setting them out for each of the short-listed options will enable the Commission to make robust assumptions about the set of airlines that may be affected and their plausible strategies towards airport expansion. | Greater detail has been considered and defined, although the likelihood of scenarios could be considered further | Consistent |
| The Commission wishes to further this assessment, in particular by considering how each proposal can facilitate the delivery of national and regional connectivity | Connectivity is considered and monetary values are assigned to the benefits offered by the 6 industry response scenarios identified. | Consistent |
| assess the level of future aviation demand expected within the South East airport system and across the UK using the DfT aviation demand model | Does not appear to consider the new DfT forecasts produced. Appears to have ignored future impact of new Istanbul 150mppa airport. | Partially consistent |
| ...assess the impact of the proposal on air passenger traffic and connectivity across the UK airport system (at regional and other London airports), this might include night flights and impacts on different | DfT forecasts consider UK inter-airport traffic. Appears to be limited assessment of night flights. | Partially consistent |

| Appraisal Framework Method | Review Comments | Assessment |
|--|---|----------------------|
| market segments (e.g. short-haul vs. long-haul, business vs. leisure, etc.); | | |
| determine a range of strategies that airlines may take when new capacity is provided, including reactions to changes in airport charges (with focus on different price sensitivities of the low-cost and legacy carriers) and other factors, and how this may affect aviation users through changes in fare levels and international and regional connectivity | The documents do consider various strategies for airline responses to various growth scenarios. | Consistent |
| assess the potential competition outcomes for each short-listed option, taking into account current and possible future regulatory regimes | Potential competition is reviewed and assessed. Although, the only consideration of a different regulatory regime is to state that no meaningful change is expected and further detail may be required. | Partially consistent |
| Through a greater understanding of airline behaviour, and application of market-specific scenarios, the Commission will consider how additional capacity can best facilitate enhanced connectivity. | The assessment considers the impact on connectivity but no clear recommendations or best options are identified. | Partially consistent |
| estimating how each scheme could: affect competition among airports and airlines, including where competition is enhanced or where anti-competitive outcomes might be realised; | The assessment has been carried out but no clear conclusions on which scheme and traffic scenario delivers the best result have been made. | Partially consistent |
| estimating how each scheme could: affect the users and providers of aviation services; and | This is covered within the assessment | Consistent |
| estimating how each scheme could: make mitigations or enhancements to optimise any new market structure created | The flexibility of the schemes is covered and the ability to handle different markets is considered. Appears to lack details on the mitigations or enhancements. | Partially consistent |

02 Wider Economy

| Appraisal Framework Method | Review Comments | Assessment |
|---|---|----------------------|
| ...will be based on a variety of techniques and will provide the Commission with a scheme-specific assessment | The assessment of takes into account different dimensions of wider economic impacts, providing outputs for each of the shortlisted options. | Consistent |
| The Phase 2 appraisal of the economy impacts will examine a change in aviation capacity on aviation users and providers, as well as associated direct and wider impacts transmitted through the economy. | The assessment considers the wider economic impacts for each of the air travel demand scenarios (for each airport) identified by the Commission. | Consistent |
| Impacts on the aviation user and provider will include assessments of: <ul style="list-style-type: none"> • how delays in the UK airport system might change; • how passenger 'surplus' and airports/airlines 'surplus' might alter or be transferred; and • what the impact on the air freight industry could be; • impacts on the aviation user and provider will include assessments of; | Whilst the assessment assesses these in relation to each of the identified areas, concerns have been identified about the way impacts have been identified and their consistency with best practice guidance. | Partially consistent |
| The connectivity impacts associated with a change in capacity that have a direct and wider impact on the economy will be considered where possible. Assessment will include impacts associated with changes in FDI, trade and tourism, and examine how these filter through the economy to affect productivity and other spill overs. | Whilst the effects outlined have been considered, the way in which the impacts of these on the wider economy have been assessed raises a number of uncertainties and limitations. | Partially consistent |
| The analysis underpinning the assessment of economy impacts will be based on a set of detailed demand forecasts. | The analysis of wider economic impacts has taken account of a range of demand forecasts produced by the Commission. | Consistent |
| The methodology for assessing the impacts of additional capacity on the economy is based broadly on that presented in the Interim Report but with a more comprehensive set of impacts included. | Whilst a more comprehensive assessment of impacts has been included, the approach (using an S-CGE) model etc. is based on a significantly different methodology to that in the Interim Report. Neither approach is without its limitations. | Partially consistent |

| Appraisal Framework Method | Review Comments | Assessment |
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| Transport Economic Efficiency | | |
| The Commission aims to supplement this transport economic efficiency analysis... to provide a more detailed and dynamic picture of how providers and users of aviation might be affected. This will include a level of market segmentation to better understand the passenger types and other market segments affected. | Assessment supplemented by S-CGE approach which provides a more dynamic picture of the effects as well an indication of the market breakdown. However, a number of concerns with the approach have been raised, identifying uncertainties and limitations. | Partially consistent |
| The Commission, building on previous research, will consider and develop a framework to better consider the impacts on the air freight industry. | The assessment of freight is not explicitly included within the assessment of economic welfare effects, nor is it used as an input to the CGE modelling.. | Not consistent |
| Delay Impacts | | |
| In Phase 2 the Commission will build on this preliminary analysis to gain a better understanding of the reliability impacts and to build in proposal-specific assumptions. | Additional assessment has been undertaken. | Consistent |
| Direct impact on businesses | | |
| econometric and general equilibrium modelling may be taken further, including looking at the potential to carry out such assessments on a location-specific basis. This scope of this work is likely to be based upon impacts on trade, foreign direct investment and tourism, as these were found to be the most significant aspects associated with GDP to be affected by changing air connectivity. | S-CGE modelling has been undertaken taking into account impacts identified. Whilst the results are disaggregated at a national / regional level, they have not been considered on a location-specific basis. | Partially consistent |
| Wider impacts on the economic environment | | |
| The Commission is planning to build on the work it has already undertaken to better understand how aviation connectivity can impact upon the wider economy. Similarly to the assessment of direct impacts on business, more detailed segmentation analysis or econometric and general equilibrium modelling may be used to assess these wider impacts. | S-CGE modelling has been undertaken taking into account impacts identified including wider economic impacts. However, the approach excludes key assessment areas identified within the WebTAG definition of wider economic impacts. | Partially consistent |
| Outputs of the Assessment | | |
| Where possible all impacts on the economy will be monetised, though in | Value for Money Assessment under the Economic Case appears incomplete with | Partially consistent |

| Appraisal Framework Method | Review Comments | Assessment |
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| some cases a qualitative assessment will be required where the impacts are difficult to quantify. | a number of gaps under both a CC and CT scenario. Whilst some of these are explained, others are not. | |

03 Local Economy

| Appraisal Framework Method | Review Comments | Assessment |
|--|--|-----------------------------|
| <p>Business corridors, such as the Thames Valley corridor and the Gatwick Diamond area, as well the local and wider area that could potentially be affected, will be analysed.</p> | <p>The local assessment areas assess potential impacts within the M4 Corridor and Gatwick Diamond but appears to fail to consider the impacts on the wider London area (particularly outer west London Boroughs) which are also likely to experience significant change. The assessment also fails to identify the potential implication of airport expansion options on London's Opportunity Areas as defined in the London Plan.</p> | <p>Partially consistent</p> |
| <p>The Commission will look at whether proposals have a viable workforce and skills base to enable them to operate effectively and to maximise local benefits.</p> | <p>The assessment looks at the available workforce and skills base and their compatibility with future airport requirements.</p> | <p>Consistent</p> |
| <p>The Commission's analysis of the local and wider impacts resulting from an airport expansion will focus on business and employment, housing, land development and other impacts, such as pressure on local services, facilities and amenities.</p> | <p>The Commission's assessment looks at employment and housing, as well as additional demand for other local services – although the latter is more limited and focused on school provision rather than a full range of social infrastructure requirements. However the Commission only consider Direct/Indirect/Induced employment and not wider catalytic impacts.</p> | <p>Partially consistent</p> |
| <p>The appraisal will focus on the impacts on businesses, employment, housing and services over the short term (initial years following opening), medium term (~20 years after opening) and long term (~50 years after opening). Building phase impacts will also be assessed.</p> | <p>Impacts of airport expansion are assessed over the stated periods.</p> | <p>Consistent</p> |
| <p>The appraisal will consider the impacts of airport expansion on the local area, along with impacts relating to areas surrounding any other significantly affected airports in the South East and wider UK.</p> | <p>It is assumed that the assessment of impacts in those areas surrounding other airports in the South East and the rest of UK forms part of the S-CGE – though this relates more to assessment of wider economic impacts at a sub-regional / LEP area rather than local economic impacts per se.</p> | <p>Consistent</p> |
| <p>The analysis will aim to identify the potential changes in the composition</p> | <p>The assessment identifies potential changes in employment sectors at various</p> | <p>Consistent</p> |

| Appraisal Framework Method | Review Comments | Assessment |
|--|---|----------------------|
| of local businesses and the business environment. | stages before and after expected runway opening. | |
| Analysis of employment will be broken down by: <ul style="list-style-type: none"> • direct • indirect • induced • catalytic | Whilst the assessment considers DII jobs at the local level, the assessment of catalytic jobs is assessed as part of the S-CGE and can only be disaggregated to the national and regional level – the scale and nature of catalytic jobs are therefore not considered at the local level. | Partially consistent |
| The analysis will identify the net additional labour demand that cannot be met in the local or wider area. | Local employment impacts (DII) are only expressed in gross additional, not net additional terms. | Not consistent |
| The analysis will aim to indicate how much of the pressure on the housing market can be met from the existing stock in the local and wider area...by bringing vacant units back to use and by assessing household projections against residential developments in the pipeline. This analysis will aim to identify the net additional housing demand that cannot be met in the local and wider area. | The analysis does not identify the net additional housing demand in terms of cumulative need arising from airport expansion on top of 'background' need arising from high levels of projected population growth. The assessment also fails to assess additional housing demand potentially resulting from local catalytic impacts. | Partially consistent |
| It will also consider the social infrastructure that will be required to support any net additional housing demand and the extent to which new population associated with any option can be accommodated into the local area. | The Commission's assessment looks in part at additional demand for other local services. However, this focuses largely on school provision rather than a full range of social infrastructure requirements. | Partially consistent |
| The analysis will identify the scope for potential new commercial and residential development required and estimate whether it could plausibly be delivered in the local area – potential risks may include constraints on development, such as insufficient land available to develop or local opposition. [Scale, type and location of land to be considered in Place] | The assessment identifies the necessary development requirements (though not fully). Whilst consideration has been given to potential delivery risks, the approach is oversimplified and risks are likely to be significantly understated. | Partially consistent |
| ... will highlight the risks and associated pressures on public services resulting from urbanisation, and will identify potential mitigations to these risks and pressures. | Not clear where the assessment considers the risks / pressures on public services or opportunities to mitigate these. | Not consistent |

04 Surface Access

| Appraisal Framework Method | Review Comments | Assessment |
|--|--|----------------------|
| The Commission will wish to see schemes which demonstrate that, as far as possible, they provide both the ability and the incentives for passengers and workforce to use sustainable forms of transport on their way to or from the airport. | Have not assessed the proposal's sustainability beyond 2030. Conclusions on sustainability cannot be drawn from a short-term assessment. | Not consistent |
| The Commission will look at the implications of schemes' surface access plans for these other users, in terms of both capacity and cost. This assessment will take into account both impacts during the construction period and impacts after new airport capacity comes into operation. The Commission will consider the impacts of schemes upon freight networks, examining whether surface transport proposals meet the needs of air freight users and the extent to which air freight would impact on surface transport networks, e.g. disruption or congestion. | Have not assessed proposal's impact on non-airport users of the transport network beyond 2030. Conclusions cannot be drawn from a short-term assessment. Little analysis of impact during construction period. No analysis of impact on air-freight or other freight services. | Not consistent |
| The Commission will look at whether proposals provide good accessibility from a wide range of origin points, including London, the South East and the rest of the UK. The Commission will consider the airport's surface access catchment area alongside its workforce strategy to consider whether the two are aligned. | Analysis conducted although it is unclear that the road and rail assignment models represent the latest future demand and capacity estimates (e.g. based on the latest population forecasts). | Partially consistent |
| While in the case of more distant regions it may be sufficient to demonstrate that proposals provide the capacity for domestic air links, in other cases it will be necessary to demonstrate that they would provide good surface transport links for users from other UK cities and regions. The impacts of surface transport links for regional connectivity will factor into the Commission's consideration of this issue as part of the strategic fit module. | Analysis on the surface access performance of long distance travel to/from other UK cities and regions not completed. | Not consistent |
| In particular, the outputs of the surface access module will inform the Local Economy Impacts, Air Quality, Place and Cost and Commercial Viability modules (though others will also be affected). | Having not assessed the proposal's surface access impact beyond 2030, the surface access module is incomplete and cannot inform be used to other modules. | Not consistent |
| The assessment will consider the modal split of different surface access transport. | Work has been carried out to consider future modal split – however, the mode shift appears optimistic and work done to date may underestimate demand. | Partially consistent |
| The assessment will identify the impacts of the surface access strategies on the local and wider | Some work has been done to consider the impact of the proposals on transport links and | Partially consistent |

| Appraisal Framework Method | Review Comments | Assessment |
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| area. | non-airport demand in 2030. However, a long-term impact study beyond 2030 has not been carried out and some of the analysis undertaken may contain out-of-date and low background demand forecasts – although source data is unclear (Brighton Mainline – LGW analysis) | |
| <p>The assessment will seek to establish:</p> <ul style="list-style-type: none"> • credible surface access propositions for each scheme under consideration; • the modal share likely to result from those propositions; • any factors that may produce more sustainable outcomes within a particular transport mode; • the impacts of the proposition on existing surface transport flows and the local economy; and • the number of people able to reach the airport using surface transport using a variety of modes, within set journey times. • Surface access propositions may be refined in light of emerging conclusions from Cost and Commercial Viability, Environment and other appraisal modules. | <p>Until a long-term appraisal is conducted, to 2040-50, it cannot be concluded that the surface access propositions are credible. For the 2030 appraisal, the evidence that a sustainable mode share can be achieved is inadequate. Further validation of the model is required.</p> <p>The impact of airport expansion on non-airport users of the transport network has not been properly assessed. More up-to-date background demand forecasts and assignment modelling is required.</p> <p>Journey time and catchment area analysis has been conducted, but only for the short-term.</p> | Partially consistent |
| <p>The Commission will construct a range of surface access strategies for each scheme, drawing in part upon materials submitted to it by proposers as part of the updated scheme design. These strategies will allow the Commission to test a range of options relating to different aspects of its objectives, including (but not limited to):</p> <ul style="list-style-type: none"> • the passenger throughput required to support the scheme's stated capacity; • the cost of delivering infrastructure and services required to support the scheme; • the cost to the traveller and the potential impacts of this upon the utilisation of the proposal; • comfort and convenience for the traveller; • reliability and resilience of surface transport links; • the range of origin and destination points accessible; • journey times to major population centres and implications of end to end journeys • impacts upon levels of congestion; • impacts upon the local economy and communities; • consequent environmental impacts, such as air quality, noise and carbon; | <p>The Commission underestimates passenger and staff surface access demand for both Heathrow and Gatwick by around 25%.</p> <p>The appraisal only evaluates the cost of infrastructure required to support schemes on opening, 2030.</p> <p>The level of service analysis of the proposals in 2030 suggest congested highways and crowded rail links to/from the airports. This also represents low levels of reliability and resilience. This will impact journey times and the local economy/communities. This assessment is incomplete.</p> <p>A surface access assessment to 2030 is insufficient to inform the long-term environmental impacts of the proposals.</p> | Partially consistent |

| Appraisal Framework Method | Review Comments | Assessment |
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| <ul style="list-style-type: none"> the particular needs of users of air freight; the particular needs of airport workforce; | | |
| <p>For each proposal, this module will produce:</p> <ul style="list-style-type: none"> an optimised surface transport package; indicative public transport mode share figures; an assessment of the impacts of the surface transport package upon existing traffic flows; and isochrones illustrating journey times and catchment areas for passengers and freight. | <p>Without assessing the performance of the package of transport measures beyond 2030, it is not possible to assess how 'optimised' it is or estimate future public transport mode share. It is also not possible to assess the proposal's impact on future non-airport users of the highway network.</p> <p>Some work has been done on illustrating journey times for passengers, but not freight.</p> | <p>Not consistent</p> |

05 Noise

| Appraisal Framework Method | Review Comments | Assessment |
|---|--|-----------------------------|
| <p>The Phase 2 noise appraisal will be underpinned by detailed contour maps based on a selection of average and frequency based noise measures. To model these measures the Commission will use the CAA's Air Noise Contour (ANCON) model.</p> | <p>The consultation presents all noise runs in contour map format and assesses six metrics – ERCD carried out the modelling.</p> | <p>Consistent</p> |
| <p>Noise emissions will be assessed based on the net national impact of each scheme (i.e. comparing absolute number of populations affected and considering the net change in the number of people affected at stated thresholds of noise).</p> | <p>Noise has been assessed on a national basis. However, the information associated with reduction in noise/ATM's at other airports contributing to the national noise assessment was published so late (20th Jan) in the consultation process to not be of constructive use. The Commission should have published all the data at the start of the Consultation period or should reset 3rd February deadline every time they issue further information.</p> | <p>Partially consistent</p> |
| <p>In addition, specific nuances of noise impacts will be assessed at a local level, considering background noise levels. As well as air noise (take off and departure, approach and landing), an assessment of ground noise (including contributions from reverse thrust, taxiing, hold, APU use and engine testing) will be included. These data will be used to identify the impacts from noise and estimate changes in areas of land, number of people, households and other amenities (such as schools) that are affected by aircraft noise including any that are newly exposed to or removed from aircraft noise at a given threshold.</p> | <p>Assessment at a local level provided area, population, households and sensitive buildings within contours. Though no assessment/comment against existing ambient noise levels. There is a lack of detail provided on those newly affected. How many new people and sensitive building are affected by each scenario and measure modelled?</p> | <p>Partially consistent</p> |
| <p>The costs and benefits of a scheme's noise impact and proposed mitigation measures will be monetised, and effects on annoyance, sleep disturbance, health and quality of life will be described.</p> | <p>Monetised using WebTAG approach. No description beyond monetised figures on effects each option would have on health, annoyance or sleep disturbance.</p> | <p>Partially consistent</p> |
| <p>The impact of noise on areas of tranquillity, heritage or landscape importance are considered in the Place module. The impacts of noise on ecosystems are considered in the Biodiversity module. The impacts of noise on quality of life are further explored in the Quality of Life</p> | <p>Noise on tranquil areas not considered within the Place module nor the Noise module. Noise on Ecosystems not considered within the Biodiversity module nor the Noise module. Some assessment of noise has taken</p> | <p>Partially consistent</p> |

| Appraisal Framework Method | Review Comments | Assessment |
|---|---|----------------------|
| module. | place within the Quality of Life module. | |
| The aviation noise implications of a scheme will be considered on both a national and local level. Noise will be assessed for each option in relation to two base cases. | Noise has been assessed on a national and local level. However, assumptions regarding other airports within the national assessment are lacking therefore difficult to judge whether the assessment is credible. At least two cases are explored. | Partially consistent |
| The national (or 'system-wide') assessment will be measured in relation to the Commission's 'do-minimum' scenario which captures, as far as possible, the predicted future levels of airport traffic at different airports, and the areas of land and numbers of houses contained within stated noise levels. The do-minimum will also account for predicted fleet mix and technological improvements to the aircraft fleet. | Assessment was carried out on a national level but as mentioned above, no information provided as to the assumptions at other airports across the UK e.g. Fleet mix, ATM's No adoption of future noise minimisation measures, such as curved flight paths and displaced touchdown thresholds, which are unrelated to the delivery of a new runway. | Partially consistent |
| The local assessment will function in a similar way to the national assessment, but will consider in greater detail the statistics and changes to noise environments in and around short-listed airports, including particular areas of tranquillity, potential future land uses and surface access noise. Therefore, whereas the national assessment only considers statistics and changes to aircraft noise, a local assessment will also be made in relation to existing background noise. | No information regarding tranquil areas, a lack of assumptions around future growth and no assessment carried out on surface access noise. No assessment undertaken against existing ambient noise levels in local areas. No adoption of future noise minimisation measures, such as curved flight paths and displaced touchdown thresholds, which are unrelated to the delivery of a new runway. | Not consistent |
| Changes to the national and local noise environment will be modelled against these base cases. The overall modelling assessment will progress in the following stages: <ul style="list-style-type: none"> • an assessment of aviation noise impacts associated with a scheme (including any other airport sites affected); • for the local assessment, a high level consideration of changes to surface access noise, modelled where a 25% or greater change in traffic flow is expected; • the estimation of the propagation of | <ul style="list-style-type: none"> • The assessment doesn't appear to have taken into account other airport sites affected/ consequences on airspace etc. • No assessment has been provided on surface access noise • Assessment has been carried out although data used is not consistent | Not consistent |

| Appraisal Framework Method | Review Comments | Assessment |
|---|--|-----------------------------|
| <p>emissions from all identified sources, including accounting for local meteorology, within pre-defined study areas;</p> <ul style="list-style-type: none"> • an exposure assessment to determine the population and amenities (comprising schools, hospitals, community centres and places of worship) exposed to changes (positive or negative) to the relevant base case; • an estimate of how the spatial and temporal impacts of airport related ground noise will be minimised through reference to change in air traffic movements and runway location. | <p>with data (ATMs, fleet mix) used within Promoters' submissions</p> <ul style="list-style-type: none"> • Assessment has been carried out on sensitive buildings • The change in ground noise has been described in relation to ATM's and new runway/terminal operations. | |
| <p>The implications of different applications of respite will be fully considered in relation to all of the above.</p> | <p>Respite has only been assessed for Heathrow options. One respite option was tested for each of Heathrow NWR and Heathrow ENR along with capped and traded scenarios.</p> <p>A 3.5° degree glide path has been used for Heathrow NWR but not the others.</p> | <p>Partially consistent</p> |
| <p>Aviation noise will be assessed for both take-off and landing, accounting for engine and airframe noise, and will be evaluated using the metrics displayed in the table below. Given the large volume of data collected here, while the full range of assessments will be required for the purposes of monetisation, the Commission will use its judgment as to how this information can be best interrogated and displayed for public consultation.</p> | <p>All metrics quoted within the framework are presented within the Noise assessment</p> | <p>Consistent</p> |
| <p>Additional work may be undertaken by the Commission in relation to specific options and configurations of options (for example, examining noise at particular times of day). Equally, the Commission may decide to undertake additional modelling in line with other noise metrics discussed in its summer 2013 discussion paper <i>Aviation Noise</i>.¹¹ Where this does occur this analysis will be presented alongside the above assessments.</p> | <p>No specific times or metrics were assessed, however the wording, 'may', suggests it is optional. This work should be carried out prior to making recommendation to government.</p> | <p>n/a</p> |
| <p>Noise impacts will be modelled over a 60 year appraisal period.</p> | <p>Monetisation has been carried out over a 60 year period but population/noise exposure has been reported for 2030, 2040 and 2050.</p> | <p>Partially consistent</p> |

| Appraisal Framework Method | Review Comments | Assessment |
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| <p>Noise assessments are particularly sensitive to assumptions used when modelling the impacts, most significantly:</p> <ul style="list-style-type: none"> air traffic forecasts and the associated projections made about changes in fleet mix (in this case to include the fleet-specific noise characteristics); arrival and departure flight tracks, which influence significantly upon those affected and upon the shape of noise contours; allocation of operations to runways and flight tracks (for example whether a runway is operated in segregated or mixed-mode); modal split assumptions; and assumptions on changes to housing and population over time. <p>As options develop, the Commission will work with aircraft manufacturers and other groups to develop appropriate assumptions and sensitivities in these areas. The Commission will also be working with advisors to develop option-specific plans for airport and airspace operations, to feed into the noise modelling process.</p> | <p>NATS, CAA, promoters and consultants all fed into the assumptions made. Considerably different assumptions have been made in relation to fleet mix than the promoters – it is unclear whose assumptions are the most likely. It would be more transparent if the promoters published arrival and departure movements by aircraft type by time interval using a consistent set of future aircraft names / categories.</p> | <p>Partially consistent</p> |
| <p>To deal with sensitivities which might exist in the noise modelling, when calculating noise impacts the Commission will seek to provide a range of outputs to reflect any uncertainty.</p> | <p>Different levels of sensitivity testing was carried out for each airport location.</p> | <p>Partially consistent</p> |
| <p>All aviation noise assessments will aim to be consistent, as appropriate with the assessment practices and procedures specified by the Environmental Noise (England) Regulations 2006 as amended and the European Commission’s Environmental Noise Directive.</p> | <p>As outlined above, different scenarios based on different assumptions were assessed in some cases. However, the approach and procedures used for the noise assessments in each case is consistent.</p> | <p>Partially consistent</p> |
| <p>Modelling aviation noise will be undertaken using the ANCON model.</p> | <p>ANCON model was used</p> | <p>Consistent</p> |
| <p>In addition, the Commission may also undertake supplementary modelling work on the Federal Aviation Authority’s Integrated Noise Model (INM).</p> | <p>No supplementary modelling was carried out, but was an optional statement INM was only used for National assessment.</p> | <p>n/a</p> |
| <p>Outputs of the assessment</p> | | |
| <p>The results of the noise assessment undertaken will include:</p> <ul style="list-style-type: none"> absolute numbers and change in the number of people exposed to aviation | <ul style="list-style-type: none"> Absolute numbers in national change was reported Absolute numbers of sensitive buildings were reported on a local | <p>Consistent</p> |

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| <p>noise nationwide;</p> <ul style="list-style-type: none"> absolute numbers and change in the number of amenities exposed to different noise levels (e.g. schools, hospitals, community centres, places of worship, etc.); absolute land area and change in the land area affected by noise; and a discussion of likely impacts on local noise environments. | <p>level</p> <ul style="list-style-type: none"> Change in land area was reported on a local level Brief conclusion on impacts doesn't go into detail about impacts such as night flights, loss of sleep to population etc. Lack of results detailing the number of new and existing people and sensitive buildings affected. | |
| <p>These outputs will be complemented with appropriate noise contour maps. In addition, noise assessment will produce:</p> <ul style="list-style-type: none"> a sustainability assessment against this module's stated objective; and monetisation of stated noise impacts. | <ul style="list-style-type: none"> Contour maps provided No sustainability appraisal Monetisation provided | Partially consistent |
| <p>The Commission will monetise impacts in all areas detailed below, using them to calculate a range of monetised impacts to suit a central scenario and a range around it:</p> <ul style="list-style-type: none"> Monetisation of amenity or annoyance impacts will be undertaken using the WHO (2011) disability-adjusted life-years (DALY) approach, based on relevant level of daytime L_{Aeq}16h noise exposure. Monetisation of sleep disturbance will be undertaken using the methodology presented in WHO (2011). This is based on a relevant level of L_{Aeq}8h Night noise exposure. Some additional analysis will also be undertaken to monetise hypertension impacts (specifically acute myocardial infarction, stroke and dementia) as presented in ERCD Report 1209. It is based on the relevant levels of L_{eq} noise exposure, combining 16-hour daytime and 8-hour night time metrics to obtain an un-weighted 24-hour noise exposure metric. | <ul style="list-style-type: none"> Annoyance monetised based on WHO burden of Disease from Environmental Noise however altered the methodology to predict just day time annoyance to avoid double counting with sleep disturbance which was also monetised. Sleep disturbance, AMI and Hypertension were based on ERCD 1209 methodology | Consistent |

06 Air Quality

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| <p>The Phase 2 air quality appraisal will calculate emissions from each scheme's airport and associated surface access.</p> | <p>Emissions calculated and compared to National Emissions Ceiling Directive Limits, including surface access emissions</p> | Partially consistent |

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| | from a simplistic static (no composition, speed limits only, no ARN) non-dynamic surface access traffic modelling excluding mitigation. | |
| Local scale dispersion modelling will be undertaken to identify the concentrations of pollutants produced in the local area, and any resultant impacts on health and likely exceedances of EU limit values. | Local scale dispersion modelling has not been undertaken for any emissions source. | Not consistent |
| Scheme contributions to exposure of the population to pollution at a national scale will also be calculated. | The technical report includes National assessment of the emissions ceiling contribution from each scheme, but not the population exposure per unit emission. | Not consistent |
| As a minimum, modelling will be conducted for initial operations and mature operations phases. | Projections are made for 2025, 2030, 2040 and 2050 although the methodology is limited by availability of data for these years. Full assessment of mature operation phases have not been undertaken as potential changes in infrastructure (such as alterations to the M23 slip) have not yet been assessed. | Partially consistent |
| The construction phase is not required to be modelled explicitly as part of this high level appraisal. However, useful information on the length of time and likely scope of effects will be recorded, together with any relevant mitigation measures. | Construction impacts have not been recorded – no detail on length of time, or mitigation is provided – just the assumption that best practice will be followed. | Not consistent |
| The cost of any increases in exposure to pollution will be monetised, and health impacts considered. | The initial estimates of changes in emissions with proposed the schemes have been used to monetise the impacts – however the concentrations, exposure and health impacts have not been explicitly calculated this stage. | Partially consistent |
| The Commission will refer to the supplementary Green Book guidance as published by Defra to value changes in air quality for both local and national assessments. | | |
| calculation of all changes in emissions arising from the operational impacts of a scheme, including those related to air transport, surface transport and airport operations, using vehicle fleet and infrastructure data, levels of use, and standardised emission factors | An initial assessment of the impact of the proposals on emissions has been made, but: <ul style="list-style-type: none"> • this is limited by the use of the 'static' traffic model, and • Aircraft emissions estimates use reference values for the LTO - not airport specific and available data on emission rates and Times in Mode • LTO emissions based on simple | Partially consistent |

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| | <p>indicative plane types (passenger and cargo) - does not follow required ICAO level of detail</p> <ul style="list-style-type: none"> airside emissions take no account of future FEGP and PCA | |
| <p>the estimation of the dispersion of emissions from all identified sources, accounting for local meteorology, within pre-defined study areas to give total pollutant concentrations</p> | <p>Local scale dispersion modelling has not been undertaken for any emissions sources, when this would be possible for all except surface access.</p> | <p>Not consistent</p> |
| <p>an assessment to determine the population exposed to the local air quality impact of the scheme;</p> | <p>Not undertaken due to lack of dispersion modelling to assess local air quality. Furthermore future development that may add or remove public exposure within the study areas has not been assessed.</p> | <p>Not consistent</p> |
| <p>an assessment of risks of exceeding EU limit values using the Government's national air quality compliance assessment</p> | <p>The Government's national air quality compliance assessment (PCM modelling) has been undertaken based on the static traffic model data available to date - though this will need to be repeated as the input data is refined by the dynamic model, and the assessment has used an out of date version of PCM.</p> | <p>Partially consistent</p> |
| <p>The emission sources directly modelled for an assessment will include:</p> <ul style="list-style-type: none"> aircraft-related emissions, including engine exhaust emissions in the landing and take-off cycle below 915m (3000 feet) including take off, landing, approach and idle; Auxiliary Power Unit emissions; surface access emissions on major road networks and railways, including engine exhaust emissions; fugitive PM emissions from brake and tyre wear; emissions from Ground Support Equipment; and non-airport related sources in the local area surrounding the airport | <p>All airport related sources of emissions have been included in the assessment, but several sources are only at stage 1 levels of data not stage 2:</p> <ul style="list-style-type: none"> Aircraft emissions estimates use reference values for the LTO - not airport specific and available data on emission rates and Times in Mode LTO emissions based on simple indicative plane types (passenger and cargo) - does not follow required ICAO level of detail airside emissions take no account of future FEGP and PCA <p>Non-airport related sources in the local area have only been accounted for through consideration of the national inventory therefore the impact of the proposals on total vehicle flows, congestion and speeds on the local roads</p> | <p>Partially consistent</p> |

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| | have not been considered. | |
| <p>The geographical scope of the assessment is defined as the airport boundary and environs, high risk zones on the lines of route of any new proposed surface access, and any high risk areas on existing surface access routes where significant changes to traffic flows are predicted (this is typically defined as changes in Annual Average Daily Traffic flow of more than 5% and changes in peak traffic flows of more than 10%).</p> | <p>Assumes airport emissions are dispersed broadly within the confines of the airport – counter to best practice which shows demonstrable signals out to up to 1.4km from the airport source.</p> <p>High risk zones are considered – as well as the entire extent of Jacobs’s traffic data network, which presumably covers the necessary geographic scope – although the final traffic modelling would confirm this</p> | <p>Consistent</p> |
| <p>The population exposed to the air quality impact of the scheme will be calculated by determining the number of properties located within affected areas. The Commission will use the methodology in WebTag guidance from the Department for Transport as a basis for determining property numbers within the vicinity of affected roads.</p> | <p>Not undertaken at this stage</p> | <p>Not consistent</p> |
| <p>Air quality assessments are particularly sensitive to future projections of vehicular surface access, aircraft fleet mix and turnover, the future uptake of new vehicle and fuel technologies, projections of non-airport emissions, projections of future housing and other urban developments, influence of climate change and meteorology. Sensitivity analysis will be constructed for these variables as appropriate.</p> | | |
| <p>The dispersion models used will be proven as fit for purpose and will be subject to verification against quality controlled monitoring data.</p> | | |
| <p>All assessments will be conducted in accordance with the processes, practices and datasets specified in Local Air Quality Management, Technical Guidance LAQM.TG (09). Further guidance, specifically for assessing the impact of air quality at airports, is available from the International Civil Aviation Organization (ICAO).¹⁶ The approach taken should, where possible, be based on the ICAO</p> | <p>Detailed dispersion modelling has not been undertaken as required by LAQM.TG(09).</p> <p>ICAO ‘sophisticated’ level has not been used.</p> | <p>Not consistent</p> |

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| <p>'sophisticated' level, except where source activities have been screened as being not significant.</p> | | |
| <p>Modelling of emissions may make use of the following datasets and toolkits, and where special assumptions might be taken into account – for example, the effect of slower climb rates on emissions at take-off – this should be made clear:</p> <ul style="list-style-type: none"> • ICAO Emissions Factor Databank – this databank contains information on exhaust emissions of aircraft engines. Additional emission factors on airport operations are available from the US Federal Aviation Administration. • Emissions Factor Toolkit – a spreadsheet tool that allows the calculation of road traffic exhaust emissions for different vehicle categories and splits, at various speeds, and on different road types. • Emissions Factor Database – this database contains the emissions factors used in the UK National Atmospheric Emissions Inventory, as well as factors specially designed for local inventories. • National Atmospheric Emissions Inventory – an inventory of many sources of emissions including roads and airports for the UK. • London Atmospheric Emission Inventory – a detailed emission inventory for the Greater London area, including road traffic flows. | <p>Key - ICAO 'sophisticated' level has not been used for airport emissions calculations.</p> <p>Emissions Factor Toolkit v5.2 used, which contained overly optimistic assumptions on the update of Euro 6/VI vehicles in future years – therefore emissions may have been underestimated.</p> <p>National Atmospheric Emissions Inventory has been used for total UK mass emissions baseline calculations and non-airport related local sources</p> <p>The London Atmospheric Emission Inventory has not been used</p> | <p>Partially consistent</p> |
| <p>National air quality background concentration maps for years through to 2030 are available from the Department for Environment and Rural Affairs (Defra) in a 1x1 km grid.</p> | <p>Does not appear that these are used.</p> | <p>Not consistent</p> |
| <p>Outputs of the assessments shall include:</p> <ul style="list-style-type: none"> • air quality pollutant concentration maps of all locations substantially influenced by the scheme; • the number of properties and population where air pollutant concentrations | <p>Concentration maps, numbers of properties and population affected, and changes in concentrations were not produced as dispersion modelling has not been undertaken.</p> | <p>Not consistent</p> |

| Appraisal Framework Method | Review Comments | Assessment |
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| <p>improve, worsen or stay the same;</p> <ul style="list-style-type: none"> the changes in local pollutant concentrations between the Commission's 'do-minimum' and scheme options, in initial operation years and mature operation years; monetisation of health impacts and environmental damage; assessment against the stated sustainability objective; and assessments of other potential air quality mitigation measures proposed by scheme promoters in their updated scheme designs. | <p>The changes in emissions have been monetised, but not considering the full impact pathway (excluding buildings, acute and chronic exposure, and ozone).</p> | |
| <p>In addition, this assessment will consider potential breaches of the UK's emissions ceilings. Assessment should consider in particular the risk of any exceedances of emissions ceilings, as well as their projected severity and duration, and the magnitude and severity of any health impacts.</p> | <p>The risk of exceeding the National Emissions Ceiling Directive targets has been assessed (and the contribution of the proposals to the emissions/exceedence in 2030). However any increase in the duration of the exceedence due to the proposals has not been considered. Neither have the potential health impacts been considered.</p> | <p>Partially consistent</p> |
| <p>Schemes will need to demonstrate how they expect to be able to operate within the UK's emissions ceilings and contribute to overall compliance with relevant European and national legislation and requirements</p> | <p>Demonstrates scheme impact on UK's emissions ceilings, but has not considered compliance with ambient air quality limits whatsoever.</p> | <p>Not consistent</p> |
| <p>The outputs of the assessment shall include:</p> <ul style="list-style-type: none"> the changes in national pollutant concentrations between the Commission's 'do-minimum' and scheme options, in scheme initial operations and mature operations phases as a minimum; monetisation of health impacts and environmental damage; and assessment against the stated sustainability objective. | <ul style="list-style-type: none"> Concentrations have not been calculated. Monetisation has only considered emissions and not followed the full impact pathway approach at this stage. Sustainability objectives are not explicitly mentioned in the report. | <p>Partially consistent</p> |

07 Biodiversity

| Appraisal Framework Method | Review Comments | Assessment |
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| <p>Outline</p> <p>The first assessment will identify the sites of particular biodiversity interest, such as designated sites of international, national and local importance, and protected and priority species and habitats, present in the areas around airport schemes. Where necessary, the Commission will embark on a process of habitat screening.</p> | <p>Gaps have been identified in the coverage of protected species, including omission of any form of “habitat screening” for potential for protected and notable species.</p> | <p>Partially consistent</p> |
| <p>Environmental capital will be assigned to these resources, correlating to the level of protection they are placed under in international, European or national legislation, or local protection policies.</p> | <p>Levels of protection are discussed. It is noted that the BCSA refers to an SSSI from which there will be land take as a statutory locally designated site, a typographic error that should be corrected to read “nationally” (paragraph 11.1, Heathrow NW Runway).</p> | <p>Consistent</p> |
| <p>The inherent impact of a scheme on the biodiversity of these sites will be estimated, at a strategic level.</p> | | <p>Partially consistent</p> |
| <p>The second assessment will consider at a high level the impact on Ecosystem Services, as defined in Natural England’s ‘National Character Areas’ (NCA) publications. These documents provide profiles of the UK’s 159 areas, including their biodiversity and ecosystem characteristics, and provide a strategic context for any potential infrastructure development.</p> | | <p>Partially consistent</p> |
| <p>These Ecosystem Services assessments will cover the broad geographical area surrounding an airport (in other words, they will not be restricted to the sites of particular biodiversity interest). The value of an Ecosystem Services approach is that it enables a wider range of impacts on ecosystems and the benefits they provide to society to be captured and considered than a simple biodiversity assessment.</p> | <p>Due to the newly evolving practice of Ecosystem Service Assessment, this review has focused on the biodiversity assessment.</p> | <p>Consistent</p> |
| <p>For both assessments impacts will be assessed against the defined sustainability objectives.</p> | <p>Issues identified above affect the robustness of this assessment.</p> | <p>Partially Consistent</p> |
| <p>The assessments will consider the full</p> | <p>On bird strike, Jacobs assess impacts in a</p> | <p>Partially</p> |

| Appraisal Framework Method | Review Comments | Assessment |
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| <p>range of ecological impacts including those of incidences of bird strike, changes to an area's air quality, changes to an area's noise exposure, and changes to the water environment.</p> | <p>way that is inconsistent with the approach they took for the Inner Thames Estuary and also focus more on the safety implications of bird strike than the impacts on rare birds.</p> <p>On air quality, Jacobs makes assumptions in the absence of specialist studies. The paragraphs with regard to air quality and designated sites advise that further studies are needed for Gatwick options and that reassessment will be needed after ongoing local authority monitoring for Gatwick, yet Jacobs make judgements in the absence of the conclusions of such. Jacobs' paragraphs 2.2.2 for Heathrow Northwest Runway, and 2.3.2 for Heathrow Extended Northern Runway state "... Whilst Jacobs accepts the potential for air quality effects to habitats at these SSSIs, which is likely to require further detailed assessment, it is considered unlikely these effects will be significant. In light of the absence of more detailed information, Jacobs also concurs with the promoter's assessment of the potential effects of increased levels of air pollution. Jacobs agrees that the South West London Waterbodies SPA vegetation and invertebrate communities could be adversely affected by nitrogen deposition (with a consequent effect on gadwall and shoveler numbers...."</p> | <p>Consistent</p> |
| <p>Potential mitigation strategies which fall outside of scheme promoters' central Environmental Strategy will be documented, and post-mitigation impacts will be defined. Mitigations will be costed, and the achievability of suggested mitigations will be assessed.</p> | | <p>Partially Consistent</p> |
| <p>Assessment <i>Assessment base case</i> The assessment baseline of the first biodiversity assessment will be defined by identifying all biodiversity features of</p> | <p>Features are identified, but there are gaps in desk study data and in the consideration of the potential for protected species to be present.</p> | <p>Partially Consistent</p> |

| Appraisal Framework Method | Review Comments | Assessment |
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| <p>international, national and local importance that may be affected by the airport schemes, comprising biodiversity protected in:</p> <ul style="list-style-type: none"> • European Legislation: • Sites that have the same protection as sites in European Legislation: • National Legislation: • Regional and Local Legislation or Action Plans: | <p>NB: There appears to be a typographic error in the BCSA, which refers to an SSSI from which there would be land take as a statutory locally designated site, a typographic error that should be corrected to read “nationally” (paragraph 11.1, Heathrow NW Runway).</p> | |
| <p>The assessment baseline of the second biodiversity assessment will be defined by identifying the performance of the identified Ecosystem Services within the context of the NCA. Assessments may also consider the ecological opportunities identified in the NCA.</p> | <p>Due to the newly evolving practice of Ecosystem Service Assessment, this review has focused on the biodiversity assessment.</p> | <p>Consistent</p> |
| <p>Assessment of impacts to biodiversity features</p> <p>With regard to the first assessment, biodiversity effects will be assessed firstly in terms of the environmental capital of the biodiversity feature likely to be affected, comprising;</p> <ul style="list-style-type: none"> • susceptibility of the feature to the change being proposed • replaceability, importance and value of the feature. | <p>Susceptibility, replaceability and value are considered in the assessment.</p> | <p>Consistent</p> |
| <p>And secondly the nature of the effect likely to occur, comprising:</p> <ul style="list-style-type: none"> • the magnitude of effects of the airport scheme development, based on the scale of predicted change- this includes consideration of the airports’ operations, and therefore the ecological impacts of bird strike, the ecological impacts of noise and the ecological impacts of changes to air quality; • the duration of the effect; and • the reversibility of the effect. | <p>Magnitude, duration and reversibility are considered in the assessment.</p> | <p>Consistent</p> |
| <p>Professional judgement on the available scientific evidence will be used to provide reasoned and expert opinions on these criteria. Appropriate consideration will be given to receptor pathway links between habitats.</p> | <p>Gaps in data and some of the assumptions made, limit the consideration given to receptor pathway links. For example, assumptions are made about the results of future studies on air quality.</p> | <p>Partially Consistent</p> |

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| <p>With regard to the second assessment, on Ecosystem Services, impacts will be assessed at a high level in terms of the two key drivers of ecosystem change:</p> <ul style="list-style-type: none"> • land use change, resulting from construction of infrastructure (airport and surface access); and • hydrological change and pollution, resulting from changes in surface access and air traffic. | <p>Due to the newly evolving practice of Ecosystem Service Assessment, this review has focused on the biodiversity assessment.</p> | <p>Consistent</p> |
| <p>Outputs of the assessment With regard to the first assessment, impacts and opportunities for biodiversity features will be captured via the sustainability assessment process.</p> | <p>Jacobs identified a likely requirement for Appropriate Assessment under the Habitats Regulations for the two Heathrow options. This is not reported in the Sustainability Assessment.</p> | <p>Not Consistent</p> |
| <p>Costs of environmental mitigations will be captured and assessed. In addition, potential environmental mitigations which fall outside of promoters' central cases will be costed, and an assessment made as to their deliverability.</p> | <p>Costings are provided. The weaknesses in analysing impacts can have a knock on effect increasing uncertainty in estimating costs.</p> | <p>Partially Consistent</p> |
| <p>With regard to the second assessment, impacts on Ecosystem Services will be captured via the sustainability assessment process.</p> | <p>Due to the newly evolving practice of Ecosystem Service Assessment, this review has focused on the biodiversity assessment.</p> | <p>Consistent</p> |

08 Carbon

| Appraisal Framework Method | Review Comments | Assessment |
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| <p>The net change in carbon emissions (i.e. greenhouse gas emissions or CO_{2e} including CO₂, N₂O and CH₄) resulting from an airport scheme will be assessed relative to baseline carbon emission forecasts. Carbon emissions will be assessed on a national basis. Appropriate sensitivities will be applied to calculations, leading to net changes in carbon being expressed as a range. The assessment period is 60 years.</p> | <p>CO₂ given as additional to baseline. National CO₂ figure for ATMs given along with annual and 60 year total.</p> <p>CO₂ based on one 'carbon capped' scenario for each airport.</p> <p>The range is expressed within the monetisation values results due to uncertainty in values. Therefore is not a range of CO₂ emissions.</p> | <p>Partially consistent</p> |
| <p>Carbon emissions will be measured in accordance with HM Government's appraisal guidance produced by the Department for Energy and Climate Change (DECC).</p> | | <p>Consistent</p> |
| <p>Five areas are identified where carbon emissions may change as a result of an airport scheme:</p> <ul style="list-style-type: none"> • increased airport capacity leading to a net change in air travel; • departure and arrival route changes through altered flight operations; • construction of new facilities and surface access infrastructure; • airside ground movements and airport operations; and • changes in non-aviation transport patterns brought about by a scheme's surface access strategy i.e. passenger surface access journeys to and from a UK airport; and, where possible, freight journeys. | <p>Yes</p> <p>Insufficient data to assess</p> <p>Yes based on costs for master plan (does this include paving over M25)</p> <p>Yes</p> <p>Yes</p> | <p>Partially consistent</p> |
| <p>The Commission expects scheme proposers to build carbon mitigation into their schemes wherever possible, particularly in the construction and operation of new facilities and surface transport. Any additional potential carbon mitigations will also be assessed.</p> | <p>Mitigation is discussed for each airport although not quantified or 'assessed'.</p> | <p>Partially consistent</p> |
| <p>Carbon emissions are the main pollutants assessed for the five areas identified above, quantifying and valuing the impacts. Non-CO₂ impacts are described but are not quantified in this assessment.</p> | <p>Non carbon impacts do not appear to have been discussed or quantified. Para 2.2.8: 'The appraisal does not attempt to consider aviation non – carbon impacts (such as redactive forcing)'</p> | <p>Not consistent</p> |
| <p>The Commission's demand forecasting and</p> | <p>Yes, demand forecast consistent</p> | <p>Consistent</p> |

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| assessment of need for additional capacity measure the carbon impact of additional flights to/from and within the UK. The change and rate of change in aviation carbon emissions relative to the baseline demand forecast will be assessed. | with assumptions within noise assessment. | |
| Given that these scenarios form the framework of the Commission's assessment of need for additional aviation capacity, the increase in carbon emissions from greater aviation capacity will be approximately similar for the different airport schemes. However, there may be relative differences between airport schemes and surface access strategies in relation to carbon impacts as a result of construction and operational procedures. | Yes, different assumptions for surface access, ATMs etc. assessed for each airport. | Consistent |
| Assessment Base Cases | | |
| <p><i>Increased airport capacity leading to a net change in air travel</i></p> <p>The 'do minimum' will use carbon emissions from the forecast of UK aviation demand under present-day capacity scenarios, taking into account the limitations to runway and terminal capacity at UK airports (the 'capacity constrained scenario'). The 'do-minimum' scenario considers:</p> <ul style="list-style-type: none"> • the maximum use of existing infrastructure; • infrastructure schemes and changes to airport masterplans that are already in the planning pipeline and are to be delivered by 2020; • incremental growth to full potential long-term capacity by 2030; • terminal capacity increasing incrementally to service additional runway capacity; and • no further changes beyond 2030. | Text for HAL states 'there will be significant construction under do minimum scenario' (page iv Baseline Report). However, no CO ₂ e associated with construction is given in 2030, 2040 or 2050 volume estimates, a total of 13,514,607 tCO ₂ e given over the 60 year period. | Partially consistent |
| The demand forecast modelling constrains 2050 flight operation emissions to 2005 levels, 37.5 MtCO ₂ . This is in line with the Committee on Climate Change's advice in 2012, which suggested an appropriate planning assumption was for UK aviation emissions in 2050 to be around 2005 levels. | Yes | Consistent |
| <p><i>Departure and arrival route changes through altered flight operations</i></p> <p>The carbon emissions for flight operations are included in DfT's carbon emissions in the forecasts described above.</p> | Local approach/departure route changes not included but destination route changes are. | Partially consistent |

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| <p><i>Construction of new facilities</i></p> <p>This baseline will identify carbon emissions from current plans for infrastructure development, which are not part of the airport scheme. In addition, the 'do minimum' will consider the nature of the land that might be developed, for example, development of carbon sinks.</p> | <p>Yes, looks at airport masterplans. However, CO2e is not quantified for periods (2030,2040,2050) nor does it provide detail as to the type of land developed.</p> | <p>Partially consistent</p> |
| <p><i>Airside ground movements and airport operations</i></p> <p>This 'do minimum' will identify carbon emissions for airside ground movements and airport operations. This will be derived from airports' current operations.</p> | <p>Yes – pro rata</p> | <p>Consistent</p> |
| <p><i>Changes in non-aviation transport patterns</i></p> <p>DfT's aviation modelling also comprises the National Air Passenger Allocation Model. Carbon emissions from surface access are not included in DfT's UK Aviation Forecasts publication – however, emissions can be estimated from this model.</p> | <p>Yes, surface access assessed, however, assumptions associated with sensitivity on 2030 PT mode shift are considered to be optimistic</p> | <p>Consistent</p> |
| Assessment detail | | |
| <p>The carbon emissions from an airport scheme will be estimated in the five areas identified and compared to the relevant baseline described above.</p> | | <p>Consistent</p> |
| <p><i>Increased airport capacity leading to a net change in air travel</i></p> <p>DfT's UK Aviation Forecasts present how carbon emissions are forecasted, and the assumptions used as part of this forecast. This approach will be used to measure carbon emissions from additional ATMs. This will be supplemented by sensitivity analyses (for example, on technological developments, behavioural change and other assumptions about the future).</p> | | <p>Consistent</p> |
| <p><i>Departure and arrival route changes through altered flight operations</i></p> <p>Emissions from circling and delay are calculated using an 8% uplift on flight distance and are included in aviation carbon emissions. Airport-specific changes to flight operations will be modelled to estimate the change in carbon emissions.</p> | <p>Insufficient data on departure/arrival route changes to assess</p> | <p>Not consistent</p> |
| <p><i>Construction of new facilities and surface</i></p> | <p>Yes, however, not a lot of detail</p> | <p>Partially</p> |

| Appraisal Framework Method | Review Comments | Assessment |
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| <p><i>access infrastructure</i></p> <p>Carbon emissions over the construction period only will be estimated. This includes both on- and off-site emissions, from the construction to the carriage of construction materials. Defra/DECC's GHG Conversion Factors for Company Reporting will be used to inform the carbon emissions factors for the calculations. Some of the emissions (for example, in construction materials) may be embedded emissions.</p> | <p>provided on construction. Is based on the cost of construction.</p> | <p>consistent</p> |
| <p><i>Airside ground movements and airport operations</i></p> <p>These will be extrapolated from the airport's current ground movements and operations data.</p> | | <p>Consistent</p> |
| <p><i>Changes in non-aviation transport patterns</i></p> <p>Where possible, the net change in carbon emissions from surface transport to/from the airport will be quantified. The relevant marginal emissions factors will be used. DfT will provide information on appropriate carbon emission factors for High Speed Rail, classic rail and London Underground lines.</p> <p>Once the net change in carbon emissions for each area identified resulting from a scheme is measured (e.g. in tonnes (tCO₂e) or million tonnes (MtCO₂e) of equivalent mass of carbon emissions), these emissions will be given a monetary value using carbon prices published by DECC. The changes in carbon emissions must be mapped to either the traded (EU ETS), or non-traded sector.</p> | <p>Assesses 2008 mode share and a sensitivity of estimate future mode share.</p> | <p>Consistent</p> |
| Outputs of the assessment | | |
| <p>The assessment of the carbon impacts of an airport scheme will produce:</p> <ul style="list-style-type: none"> the absolute quantity of carbon emissions from the five areas identified above, with splits between the traded and non-traded sectors, where relevant; the net change in carbon emissions of the schemes, including their surface access strategies, relative to the appropriate baseline; a monetary valuation of the net change in | <p>Due to uncertainties the assessment covers emissions from four areas and assumes a carbon capped scenario for each airport.</p> | <p>Partially consistent</p> |

| Appraisal Framework Method | Review Comments | Assessment |
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| <p>carbon emissions; and</p> <ul style="list-style-type: none"> an assessment of the details of any further carbon mitigation and adaptation measures that may be proposed by scheme promoters. | <p>Monetisation presents a wide range of values due to uncertainty</p> <p>A short discussion is provided on further carbon mitigation.</p> | |

09 Water and Flood Risk

| Appraisal Framework Method | Review Comments | Assessment |
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| BASELINE | | |
| Requires baseline to be set to determine how flood risk would develop incorporating climate change in the absence of the scheme. | <p>The approach to the baseline in the AC document generally follows the appropriate approach, however there is a lack of supporting data to validate the assumptions made for the current and future baseline.</p> <p>Comparison to the details provided in the promoter submissions does not appear to be robust (especially for Gatwick).</p> | Partially consistent |
| Requires baseline to consider local plans (e.g. local flood risk management strategies) to confirm future baseline | Baseline reports identify specific flood defence schemes in the local areas, however there is no confirmation of wider flood risk management plans for the catchments impacted. | Partially consistent |
| ASSESSMENT | | |
| A strategic assessment of the potential risk of flooding is required. | For climate change influences, uses fluvial change factors rather than rainfall - potentially underestimating future baseline flows. Future baseline flood risk may be underestimated, impacting on the assumptions/ conclusions relating to performance of the mitigation measures. | Partially consistent |
| Requirement to appraise water quantity | <p>There is uncertainty built into the baseline as it is estimated from passenger projections for 2025/2026 'do minimum' baseline.</p> <p>The report builds each scenario with a deterministic estimate of future water use. It would have</p> | Partially consistent |

| Appraisal Framework Method | Review Comments | Assessment |
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| | <p>been more robust to have some consideration of the uncertainty bounds around this, i.e. the scenario within the context of it's 'worst case' and 'best case' bounds. As such, the uncertainty within the longer appraisal period (2085) increases potentially affecting the sustainability of the proposals.</p> | |
| <p>Expected climate change</p> | <p>Lack of the basic understanding of expected climate change e.g. increased extremes and variability. No consideration of the impact of climate change on future demand (should refer to UKWIR, 2013). Missing references to key sources of information, to corroborate climate change assumptions adopted e.g. UKCP09 projections. Stated that climate change will affect both surface and ground water - but no explanation of how /whether this will be seasonally variable.</p> | <p>Not consistent</p> |
| <p>Schemes should demonstrate that an airports water use is carefully integrated into the existing needs and demands of the local environment and that water consumption is sustainable, including in terms of future urbanisation.</p> | <p>There is no consideration of the impact of climate change and additional water use from increased passengers, process water use etc. on existing airports' own boreholes and rainwater harvesting. The difference between the promoters and the Commissions' total annual consumption in 2025 is concerning and larger than the proposed savings via water efficiency measures. Water efficiency targets are not based on a robust sample, and conclusions drawn are suspect - If</p> | <p>Not consistent</p> |

| Appraisal Framework Method | Review Comments | Assessment |
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| | <p>this was statistically assessed it is likely that this reduction in water use would be within the natural variability of the inter-annual water use.</p> <p>No attempt to put the scale of the development into context with other pressures within the catchment.</p> | |

10 Place

| Appraisal Framework Method | Review Comments | Assessment |
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| <p>Assessment base case</p> <p>The Commission's base case considers the future of an airport scheme's proposed location in the absence of any airport development, other than that currently planned.</p> | <p>There is no additional airport development other than that currently planned considered in the base case</p> | <p>Consistent</p> |
| <p>The base case will be based on Natural England's 'National Character Area' publications, which provide profiles of the UK's 159 areas, including their landscape and townscape settings and heritage assets.</p> | <p>The base case is based on the National Character Area publications.</p> | <p>Consistent</p> |
| <p>Assessment detail.</p> <p><i>Development</i></p> <p>The type of land that will be developed will be classified by its land use and cover. This classification can be based on the National Land Use Database (NLUD), which categorises land as follows: agriculture and fisheries, forestry, minerals, recreation and leisure, transport, utilities and infrastructure, residential, community services, retail, industry and business, vacant and derelict, defence and unused land.</p> | <p>The figures within the report identify land use as per the National Land Use Database (NLUD). However areas of undevelopable land within the airports such as adjacent to taxiways and runways has been identified as "agriculture and fisheries" which is likely to misrepresent the amount of agriculture land affected by the schemes.</p> | <p>Partially consistent</p> |
| <p>Further details on different land use and definitions of land cover can be found in the NLUD. GIS mapping can also be used to understand the type of land surrounding an airport</p> | <p>The report indicates that virtually no GIS mapping has been obtained from local planning authorities. The supplementary study of planning documents of local planning authorities in a 15km radius of the airport schemes to identify future baseline land use appears to have omitted a number of relevant planning authorities, especially around Heathrow. Supplementary information on major planning applications has not been obtained.</p> | <p>Not consistent</p> |
| <p>The local economic impacts, such as changes to commercial and residential land use and changes to land values, are captured in the Local Economy Impacts</p> | <p>These are not included in the Place assessment.</p> | <p>Consistent</p> |

| Appraisal Framework Method | Review Comments | Assessment |
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| module. | | |
| <p>The quantity of land, how such land is used and changes in such use will be identified. The resulting impacts from changing the land use will be assessed, considering the direction and magnitude of the impacts. The Commission is interested in how proposals will mitigate the impact of developing land of high value.</p> | <p>The quantity of land is identified, along with changes in use from the identified baseline. However, the baseline does not fully represent the currently available future baseline as it does not take account of most locations which have been identified in local plans as subject to future development, nor does it identify major extant or submitted planning applications.</p> | <p>Partially consistent</p> |
| <p><i>Landscape, townscape and waterscape</i> 10.13 Closely related to the assessment of the type of land developed, the landscape, townscape and waterscape affected will include assessing, where appropriate:</p> <ul style="list-style-type: none"> • topography/hydrology – the height, form and patterns of the ground and hydrology where appropriate; • land cover – the pattern of vegetation; • layout, density and mix of buildings, and their architectural style; • sense of tranquillity • light pollution; • culture – forms of landscape for culture and human interaction; • cultural spaces and human interaction; and • beauty. | <p>The assessment of these aspects has been undertaken to a greater or lesser extent.</p> <p>The assessment did not consider culture and cultural spaces.</p> <p>The assessment overlaid the predicted noise levels on the CPRE’s tranquillity mapping but did not seek to quantify these changes in tranquillity in terms of acceptability or nuisance, or the level at which a landscape character area may be significantly affected.</p> | <p>Partially consistent</p> |
| <p>The assessment will consider the direct impacts (such as the construction of a new feature on the landscape) and the indirect impacts of how people engage with the feature (such as loss of tranquillity or light pollution).</p> | <p>The report states that no attempt is made to quantify these changes in tranquillity in terms of acceptability or nuisance, or the level at which a landscape character area may be significantly affected.</p> | <p>Not consistent</p> |
| <p>Natural England’s Landscape Character Assessment (LCA) guidance and existing local character assessments, including Areas of Outstanding Natural Beauty and National Parks, will be used to articulate landscape character, identifying features which give a locality its ‘sense of place’ and pinpoint that which differentiates it from neighbouring areas. The 2013 Guidelines</p> | <p>The LCA guidance was used to undertake the assessment.</p> | <p>Consistent</p> |

| Appraisal Framework Method | Review Comments | Assessment |
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| <p>for Landscape and Visual Impact Assessment may also be used in the assessment. Additional datasets that are useful for this assessment are listed below.</p> | | |
| <p>The methodology for assessing impacts on tranquillity from aircraft noise will involve overlaying maps showing flight paths below an altitude of 7,000 feet with the Campaign to Protect Rural England's (CPRE) national tranquillity maps, to illustrate areas where low-flying aircraft impact on landscapes and sites of tranquillity. In a similar manner, light pollution impacts on townscape could be assessed using CPRE's Dark Skies report.</p> | <p>This was undertaken and reported.</p> | <p>Consistent</p> |
| <p>Reference should be made to the latest Planning Practice guidance which supports the National Planning Policy Framework. This will be considered in the context of local planning policy for subjects such as Greenbelt impacts.</p> | <p>This was undertaken and reported</p> | <p>Consistent</p> |
| <p><i>Heritage</i> In terms of historical assets, English Heritage has a range of useful information on historic buildings, landscapes and places, and archaeological remains. The National Heritage List for England is the official, up-to-date database of all nationally designated historic places including:</p> <ul style="list-style-type: none"> • listed buildings; • scheduled monuments; • protected wreck sites; • registered parks and gardens; • registered battlefields; • World Heritage Sites; • applications for Certificates of Immunity; and • current Building Preservation Notices. | <p>The National Heritage List for England list was consulted and reported on</p> | <p>Consistent</p> |
| <p>Relevant Historic Landscape Character information should also be used. In terms of archaeological remains (both visible and invisible), information from English Heritage Archives can be used. Designated</p> | <p>Information was obtained and reported on</p> | <p>Consistent</p> |

| Appraisal Framework Method | Review Comments | Assessment |
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| Conservation Areas can be identified from English Heritage and local Councils. | | |
| CPRE's tranquillity maps also identify designated heritage assets located within tranquil areas, highlighting those that may be particularly susceptible to noise intrusion. | This was considered and reported on | Consistent |
| The assessment will identify the heritage assets affected including historic landscape and archaeological remains and how this may impact on culture, considering the scale of the impact. | This was considered and reported on | Consistent |
| <p><i>Waste</i></p> <p>The construction phase of an airport scheme will generate substantial waste materials. The Engineering Plans provided by scheme promoters require them to identify a waste management plan, including details of a contamination assessment and how any contaminated elements will be removed, transported and disposed of.</p> | <p>This was considered and reported on, although assumptions were required to be made to ensure all three schemes proposals were similar in nature.</p> <p>Heathrow Hub scheme provided insufficient detail for a robust assessment.</p> | Partially consistent |
| As the operations of an airport produce substantial waste as well, it is also important to understand the waste management of the operational side of the scheme proposal. | <p>This was considered and reported on, although assumptions were required to be made to ensure all three schemes proposals were similar in nature.</p> <p>Heathrow Hub scheme provided insufficient detail for a robust assessment.</p> | Partially consistent |
| <p>Datasets</p> <p>The following datasets can be used for the appraisal:</p> <ul style="list-style-type: none"> • National Character Areas, Natural England; • Landscape Character Assessment, Natural England; • Local Authority local plans; • 2013 Guidelines for Landscape and Visual Impact Assessment; • National Land Use Database: Land Use and Land Cover Classification, 2006; • National Heritage List, English Heritage; • Historic Landscape Characterisation, | The Jacobs report indicates that virtually no GIS mapping has been obtained from local planning authorities. The supplementary study of planning documents of local planning authorities in a 15km radius of the airport schemes to identify future baseline land use appears to have omitted a number of relevant planning authorities, especially around Heathrow. | Partially consistent |

| Appraisal Framework Method | Review Comments | Assessment |
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| <p>English Heritage;</p> <ul style="list-style-type: none"> • Designated Conservation Areas, English Heritage and local Councils; • Archaeological landscapes, English Heritage Archives • Aviation sensitivity maps, Natural England; • National tranquillity maps, CPRE; • Geographic Information System (GIS) data and mapping; and • Ordnance Survey maps. | | |
| <p>Outputs of the assessment</p> <p>The assessment of the impacts of an airport scheme on the local place will produce:</p> <ul style="list-style-type: none"> • a range of maps overlaid to build up a picture of impacts on the local and wider area; • an assessment of the type and quantity of land developed (classified by its use and cover), and the direction and magnitude of the impacts of changing land use; • an assessment of the landscape, townscape, waterscape and heritage assets affected, considering the scale and importance of the places and features; and • an assessment of a scheme's waste management plans, and their potential impacts on environmental or other factors. | <p>The outputs of the assessment were as stated, although the detail didn't match the requirements in earlier paragraphs in some cases.</p> | <p style="text-align: center;">Partially consistent</p> |

11 Quality of Life

| Appraisal Framework Method | Review Comments | Assessment |
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| Identifying airport-sensitive determinants of quality of life. | The module presents an overview, mainly in the form of a table, detailing module outcomes and determinants of quality of life related to ONS measures of wellbeing. | Consistent |
| Drawing together the detailed assessments undertaken in other parts of the Framework to provide an overview of the impacts on quality of life. | While there is very limited discussion is provided in the business case and sustainability appraisal, this is not sufficient to satisfy this approach. | Not consistent |
| Assessing how schemes will take an innovative and integrated approach to managing these impacts and balancing the interests of various groups. | The module does paraphrase the promoter material, but not sufficiently to address the stated approach fully. There is no critical discussion with regards to proposed quality of life mitigations. | Partially consistent |
| Synthesise and summarise the impacts on quality of life captured elsewhere in the Commission's Appraisal Framework. | The module assessment does not synthesise, comment on, analyse or critically appraise the impacts of quality of life captured elsewhere. | Not consistent |
| The assessment will consider the impact of a scheme on the quality of life of a range of stakeholder groups in relation to a selection of quality of life indicators. | The analysis does broadly consider a number of stakeholder groups; however this is limited in extent and is not scheme-specific. | Partially consistent |
| Scheme-specific analysis of quality of life indicators. | Scheme specific analysis has not been undertaken, with the analysis stating that "the results are intended to be capable of being applied generally across the airport developments". | Not consistent |
| To present all of the Commission's analysis pertaining to quality of life into one area. | The module assessment does not synthesis, comment on, analyse or critically appraise the impacts of quality of life captured elsewhere. | Not consistent |
| The primary intention will be to explain, in a uniform, understandable manner, how an airport proposal may improve or detract from the quality of life of key stakeholder groups. | The module consists of detailed statistical analysis, supplemented by significant data appendices. However, it is not considered that the analysis undertaken is uniform, fully understandable or summarised sufficiently for all parties interested in the consultation. | Partially consistent |
| The quality of life module will draw together those impacts [PRESENTED IN | Further qualitative and qualitative analysis has not been conducted to a | Partially consistent |

| Appraisal Framework Method | Review Comments | Assessment |
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| OTHER MODULES] and add further qualitative analysis as to other impacts and the overall cumulative effect where this is possible. | level deemed sufficient to appreciate the cumulative impacts on quality of life. | |
| As a minimum, the Commission states that the quality of life assessment, “will consider the impacts defined in the noise, air quality, place and community assessments.” | The impacts of noise, air quality, place and community have not been considered in any sufficient level of detail within the technical assessment or wider consultation material. | Not consistent |
| The Framework also notes that there is scope to assess overall quality of life in terms of subjective wellbeing, using impact data from the Annual Population survey. | The analysis carries out a significant body of new analysis, expanding the field of wellbeing analysis related to airports (in general). | Consistent |
| The key output for the assessment will “include a summary of a scheme’s holistic impacts on quality of life.” | The holistic impact of a scheme’s impact on quality of life cannot be determined. | Not consistent |

12 Community

| Appraisal Framework Method | Review Comments | Assessment |
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| Where the demolition of homes is required, the Commission will examine the community impacts of this, including the potential for severing existing communities and the consequent implications for loss of community cohesion and reduced quality of life. | The module assesses the potential impact as a result of housing loss on severance and community cohesion (though there are concerns about the spatial definition of impact areas) | Consistent |
| The Commission will examine any consequent need for new housing construction, either to compensate for lost housing or to respond to urbanisation in the vicinity of the proposal, and how the impacts of this upon existing communities can be managed. | “wider knock-on effects, such as relocated households’ impacts on their local communities are not considered in detail...”. The impacts on communities outside of the immediate assessment area are ‘unclear’. | Not consistent |
| Schemes will be subject to an equalities screening, producing materials that would support a full Equalities Impact Assessment should one be deemed necessary. | Assessment has undertaken a high level EqIA screening (though the detail of such screening information has not been made available). The screening undertaken is not conclusive and further screening is required to understand whether or not there would be a disproportionate impact upon particular social groups. Is not sufficient to support a full EqIA. | Partially consistent |
| Determine how the airport scheme and its related surface access strategy impacts on the integrity, culture and structure of the local community surrounding the airport under consideration. | Assessment is focused on direct land take area only. Some limited high level commentary on the impact of housing and community facilities within immediate vicinity of airport but little in way of community structure or integrity. | Partially consistent |
| Assess the effectiveness of measures to mitigate potential negative effects of a scheme, as well as proposed positive actions to enhance equality outcomes. | High level consideration of proposed mitigation, though this is focused on promoter information. Insufficient consideration given to effectiveness of mitigation. | Consistent |
| ...qualitative assessment of the impact of airport expansion on the local community, exploring how potential changes will affect the everyday lives of local residents. | Whilst the assessment takes into account the impact of airport expansion, this is limited to the direct land take associated with the construction of the airport and fails to consider the wider community | Partially consistent |

| Appraisal Framework Method | Review Comments | Assessment |
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| | implications of others nearby. | |
| The baseline will provide an assessment of the local community historically, currently and how it is anticipated to evolve in the future, without the proposed airport development. | The baseline community profile relates only to the existing situation and does not consider historic or future trends | Not consistent |
| This will be informed by information from the Index of Multiple Deprivation (IMD), a published dataset that categorises local authorities in England in terms of levels of deprivation, combining a number of indicators that cover a range of economic, social and housing issues | It is not clear how the IMD dataset has been used and the majority of information relating to the existing community profile appears to be based on census data. Whilst information relates to social and economic indicators, these are limited and there is no consideration of housing issues – such as affordability | Partially consistent |
| In addition, some of the measures of the national wellbeing dataset produced by the ONS will be used, where local level statistics are available, focusing on the 'Where We Live' data | Baseline assessments and community profiles focused largely on demographic data – such as that produced by the ONS. There is no evidence of other qualitative data sets being used in establishing community profiles | Partially consistent |
| It will map the proposed airport scheme on to the local community area, identifying what will change; | Whilst the Annexes include mapping of community facilities, these are illegible and of little use. From what can be assessed, they appear to be mapped zonally, rather than identifying specific facilities. | Partially consistent |
| Engagement with a range of local stakeholders and subject matter experts will be essential to form a robust assessment. | There is no evidence that the Commission themselves have engaged with local stakeholders as part of this assessment. | Not consistent |
| A high-level severance assessment will be undertaken, which will examine barriers and opportunities...which prevent or enhance access to property, employment, community facilities, amenities and services. | Whilst severance is considered in relation to those communities within the direct land take area, impact for those outside and in the wider community is not assessed. | Partially consistent |
| The local community profile will examine the location of important community facilities, including GP surgeries, community centres, village halls, schools and educational facilities, local shops, churches and places of worship, parks, playgrounds and sport centres, and | A high level assessment identifies community facilities including social and environmental facilities. GIS mapping has not been undertaken to identify these specifically or to identify concentrations of potentially vulnerable groups. | Partially consistent |

| Appraisal Framework Method | Review Comments | Assessment |
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| transport (public and pedestrian circulation routes). GIS mapping may be used to plot the position of these community facilities, their catchment areas and locations of concentrations of potentially vulnerable groups. | | |

13 Cost and commercial viability

| Appraisal Framework Method | Review Comments | Assessment |
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| That assumptions regarding other charges (e.g. parking charges and surface transport fares) are credible and compatible with the usage of the airport in a manner that supports wider economic benefits. | While issues have been identified in the full review undertaken, overall the assumptions made appear to be credible. There are, however, a number of assumptions made that are a cause for concern. | Consistent |
| That public investment should represent value for money for the taxpayer. | Value for money has not been considered in any detail. This is a result of insufficient detail regarding public expenditure. | Not consistent |
| The appraisal will take into account the following: | | |
| The construction costs associated with airport infrastructure. | Jacobs carry out a full cost appraisal for airport and SA infrastructure. There is, however, concern over the inconsistency in some of the unit rates used. | Consistent |
| The cost of purchasing any land or infrastructure required either for construction or to enable the purchase of other airports for closure (where this is identified as necessary by the commercial viability assessment). | Land purchase is accounted for, although the validity of all assumptions has not been fully assessed as part of this review. | Consistent |
| The cost of operating and maintaining the airport infrastructure over the appraisal period. | Operational expenditure is considered by Jacobs. No detailed assessment with regards to the validity of this analysis has been undertaken. | Consistent |
| The cost of providing surface transport infrastructure and services, as determined by the surface transport assessment. | Surface access costs are included, however it is not clear if all elements have been appropriately considered, specified or costed (see Surface Access: Supplementary Note). | Partially consistent |
| The cost of compensating for any environmental or community impacts of the proposal, as identified by the various assessment modules under the environment and community assessment categories. | Environmental compensation and mitigation costs are included by Jacobs. | Consistent |
| The degree of public support and the impact of this support on public sector budgets and accounts, including any subsidies required to ensure overall commercial viability. | Although this is considered as a sensitivity test in the PwC main report, it is not covered in detail. For example the degree of public support does not appear to have been | Not consistent |

| Appraisal Framework Method | Review Comments | Assessment |
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| | established, subsidies do not appear to have been extensively explored. | |
| The degree of uncertainty surrounding each of the above and the consequent need to make adjustments for risk and/or optimism bias. | Jacobs present their calculations of Risk and OB. It is not clear if these are overly optimistic and risks are not discussed in sufficient detail. | Partially consistent |
| Other considerations | | |
| The Phase 2 assessment will also seek to define the likely commercial background and structure of parties who might be involved in the planning, delivery and eventual operation of any planned infrastructure investment. | The likely commercial background has been considered, although there is concern that the wider risks have not been fully appreciated. | Consistent |
| As part of this appraisal, outline financial models, including an integrated profit and loss, cash flow, and balance sheet, will be produced. Assumptions should be clearly stated and, where possible, be evidenced by comparison to the delivery of other infrastructure projects. This will allow for an assessment to be made of whether the assumptions in this area are credible. | Outline financial models have been produced, although limited comparison is made to other infrastructure projects. | Partially consistent |
| Using a similar approach, the Commission will also produce an indication of the year by year implications of each proposal for public accounts. | Although year by year analyses are fully presented. It is unclear the extent to which the public accounts need to be relied upon for financing. In particular it is not clear if all long-term requirements (2050+) for public finance have been considered. | Not consistent |
| Outputs of the assessment | | |
| For each proposal, the Commission seeks options of procurement and financing scenarios, with a recommendation of the 'most plausible', supported by a financial model and including: | Financing scenarios are considered. | Consistent |
| charges to airlines/passengers and impacts upon the airline market (expressed in terms of demand for capacity at the proposal, domestic UK alternative airports and other major European airports); | Considered by PwC, although the impact of these charges is not considered fully and it is not possible to draw conclusions on the risk of increased aero charges and the impact on financing. | Partially consistent |
| nature of any public support that may be required and implications for balance sheet treatment; | Mentioned by PwC in terms of surface access only. Other public support may be required. | Partially consistent |
| the degree of uncertainty related to each of the key modelling assumptions and the | Uncertainty is considered, in particular with aeronautical fees and | Consistent |

| Appraisal Framework Method | Review Comments | Assessment |
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| risk of significant variation over time stemming from this; | increased debt. | |
| the degree of overall risk that surrounds that 'most plausible' scenario; | Risks in financial terms (e.g. BBB+) are stated, based on professional judgement. | Consistent |
| identification of the nature of any related public support required (e.g. surface access funding); | Not considered fully | Partially consistent |
| any relevant evidence of deliverability based on the procurement and funding arrangements for other infrastructure proposals; | Considered by PwC | Consistent |
| for each scheme, an indicative Government spending plan, breaking down on a year by year basis the levels of capital and operational expenditure and the impacts on wider Government costs and revenues; | Not presented fully | Not consistent |
| an indication of the risks surrounding the assumptions in this spending plan and any additional allowance for this that should be made in cost estimates; | | |
| an assessment of whether this spending plan could be made compatible with domestic and European law; and | | |
| an assessment of whether the Government expenditure required would represent value for money. | | |

14 Operational Efficiency

| Appraisal Framework Method | Review Comments | Assessment |
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| <p>Capacity</p> <p>Schemes' assumptions of annual ATMs will be tested to ensure they are realistic considering airfield designs (stand and terminal capacity, runway configuration, mode of operation, and airside ground layout e.g. the location of rapid access taxiways, runway crossing points, among others). The forecast usage will be tested to ensure that operations can be sustained in a resilient manner. The scheme's ability to cater for a range of aviation users will also be considered, for example, whether the requirements of low cost carriers or freight operators are supported in scheme designs. The net impact on the capacity of the wider London airport system, including any reductions in capacity that may result at other airports, will also be considered as part of this.</p> | <p>This is done on the basis that all mitigations can be delivered within the timeframe, with no regard to cost or other constraints that might be entailed.</p> <p>No evidence that the claimed ATM capacities have been tested. They seemingly are accepted based on judgement.</p> <p>A particular gap is detailed consideration of stand demand which is one of the key drivers of space take in an airport master plan.</p> <p>Interactions with Northolt are not adequately assessed, acceptance that any issues can be completely mitigated.</p> | <p>Partially consistent</p> |
| <p>Safety and Security</p> <p>Airport designs will be considered against relevant safety and security standards, including those dictated by the DfT, the CAA and where applicable, ICAO, the European Commission and the European Aviation Safety Agency. All aerodromes and associated air traffic control provisions are expected to meet these standards if they are to be allowed to operate.</p> | <p>DfT, CAA, ICAO and EASA standards have been considered but further clarity required to demonstrate that all current standards have been considered.</p> | <p>Partially consistent</p> |
| <p>The Commission will expect schemes to produce no worsening of the current situation regarding airport and airline safety and security and will wish, where possible, to see evidence that proposals are compatible with improvements stemming from future developments in these fields.</p> | <p>No evidence that the Heathrow ENR scheme can achieve an acceptable safety case equivalent or better than the existing Heathrow operation regardless of any delay or capacity reduction during or resulting from the Safety Case development.</p> | <p>Partially consistent</p> |
| <p>The Commission will consult CAA aerodrome guidance, including CAP 791 and CAP 168, to assess scheme proposals but recognises that, with a substantial period of time until new infrastructure is</p> | <p>Current and future standards are discussed</p> | <p>Consistent</p> |

| Appraisal Framework Method | Review Comments | Assessment |
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| <p>delivered, there is a window during which standards may evolve to reflect technological and operational progress. The Commission is interested in how this might impact upon proposals.</p> | | |
| <p>The extent of changes to or new Public Safety Zones and any 1 in 10,000 individual risk contours will also be assessed.</p> | <p>Future PSZs have been considered and possible impacts identified.</p> | <p>Consistent</p> |
| <p>Whether proposals will require airspace change will also be considered to ensure airspace changes are not detrimental to safe operations for both the airport scheme and for other relevant airports.</p> | <p>The approach to airspace redesign is not consistent across all options, with some relying on more technological and operational improvements than others. Assessment based on judgement rather than analytical evidence.</p> | <p>Partially consistent</p> |
| <p>Efficiency The operational efficiency of the airfield designs will be considered by testing the feasibility of the airport infrastructure in supporting schemes' forecasts for expected ATMs. This will consider the likely future fleet mix, the runway configuration proposed – including whether it will support independent runways – landing systems, the airside ground layout proposed including stand and terminal capacity and location, and the capability of the airport scheme to support different modes of operation including segregated and mixed mode.</p> | <p>A full analysis of airfield operational efficiency requires fast time simulation of aircraft ground movement and runway operations. There is no evidence that this has been undertaken for either of the Heathrow options.</p> | <p>Partially consistent</p> |
| <p>Reliability and resilience. The reliability and resilience of airport schemes will consider the forecast utilisation of runways and other infrastructure, such as stands and terminals, and whether this utilisation will allow for resilient operations.</p> | <p>An assessment has been made but it fails to consider that any initial improvement in resilience disappears as the airport fills up; with the situation return to today's position within the medium term. No assessment of resilience for the period 2040 to 2050 when utilisation may be back in the 90 – 100%. ICAO recommends utilisation of 70% for hub airports.</p> | <p>Not consistent</p> |
| <p>This assessment will also consider the ability of scheme designs to offer 'reliable'</p> | <p>Preliminary assessment of MCTs undertaken consistent with the level</p> | <p>Partially consistent</p> |

| Appraisal Framework Method | Review Comments | Assessment |
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| <p>passenger connections by assessing whether terminal and stand configurations support acceptable transfer times for passengers and airlines.</p> | <p>of information supplied</p> | |
| <p>The scheme's resilience in the face of severe weather, e.g. low visibility, will also be considered, particularly in respect of the operational provisions which have been made to mitigate against these impacts. For example, if the proposal is located in an area that has historically experienced high levels of fog, flooding or strong winds, mitigation plans will be considered in dealing with this.</p> | <p>The extended northern runway proposals are not compatible with deep landings in low visibility operations as the CAA has assessed Runway 27R only to be capable of CAT I operations</p> | <p>Partially consistent</p> |
| <p>Scalability The Commission will examine whether schemes are compatible with a range of scenarios regarding fleet mix (for example, testing compatibility with different mixes of ultra wide-bodied aircraft) to support new commercial models the airport may wish to pursue, and</p> | <p>The schemes have been assessed against the various demand scenarios. Not sure what the Commission means by ultra wide bodied aircraft.</p> | <p>Partially consistent</p> |
| <p>potential changes in operating mode or airfield requirements particularly if further additional runways are considered necessary in the future to meet future demand for aviation.</p> | <p>The assessment of scalability is extremely brief spanning only one or two paragraphs at most in the technical reports and total excluded from the Commissions "Business Case and Sustainability Assessment" reports.</p> | <p>Partially consistent</p> |
| <p>The Commission will also examine compatibility with different mixes of hub and point-to-point traffic, low cost carrier traffic and mixes of long and short haul traffic.</p> | <p>The schemes have been assessed against the various demand scenarios. Not sure what the Commission means by ultra wide bodies aircraft.</p> | <p>Partially consistent</p> |
| <p>Airspace Airspace implications will be considered by the Commission as part of scheme assessments to ensure safe operations can be sustained. This will include considering the:</p> <ul style="list-style-type: none"> • airspace interactions between the proposed scheme and other airports; • whether efficient flight paths exist to | <p>Evidence from The CAA and NATS is based on judgement only.</p> <p>Considered, not robustly assessed</p> <p>Considered, not evaluated</p> | <p>Partially consistent</p> |

| Appraisal Framework Method | Review Comments | Assessment |
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| <p>and from the airport in question;</p> <ul style="list-style-type: none"> • the facilitation of routes, approaches and departures to mitigate noise impacts; • the integration of the airport proposal's lower airspace into medium and upper airspace; • the integration of the airport proposal with the European airspace network; and • whether the proposal is consistent with the principles of the Single European Sky | <p>Evaluated in the technical Noise report, but the Commission has accepted without any challenge the route of the proposers. No sensitivity testing has been completed.</p> <p>Qualitative evaluation only</p> <p>No evidence is provided by Eurocontrol. No evaluation of capacity to accommodate growth or need for neighbouring air navigation service providers to invest and expand their airspace capacity.</p> <p>No evidence or evaluation provided</p> | |

15 Operational Risk

| Appraisal Framework Method | Review Comments | Assessment |
|---|--|-----------------------------|
| <p>In the Phase 2 appraisal of operational risk, the inherent risk to airport operations of the following disruptive events, among others, will be captured:</p> <ul style="list-style-type: none"> • flooding; • power outages; • reduced fuel supplies; • terrorism attacks; • extreme weather events (including volcanic ash); and • adaptability to climate change. <p>The capability of schemes to prevent, absorb, adapt to, and recover from these risks will then be assessed. A residual risk will be calculated for each disruptive event in relation to each scheme.</p> | <p>The risks have been assessed but there is no clear identification of any calculation of the residual risk for each disruptive event in relation to each scheme.</p> | <p>Partially consistent</p> |
| <p>Impacts will be categorised at a local, regional and national level.</p> | <p>No evidence that the impacts have been categorised.</p> | <p>Not consistent</p> |
| <p>Additional mitigation strategies which fall outside of central scheme designs will be documented, and post-mitigation impacts will be defined for these strategies. Additional mitigations will be costed and the achievability of suggested mitigations assessed.</p> | <p>Further work, investment and mitigations are identified but the costs and achievability have not been declared.</p> | <p>Partially consistent</p> |
| <p>The inherent risk profile of disruptive events will be calculated in relation to the latest assessments undertaken in the locality of airport schemes (for example, the latest flood risk assessments for each area).</p> | <p>No evidence is provided in the technical paper that this has been considered.</p> | <p>Not consistent</p> |
| <p>In most instances, assessments will be undertaken on a qualitative basis, using expert judgement which takes account of relevant factors and datasets, such as those associated with strategic flood assessments.</p> | <p>The assessment is qualitative but there are no details as to what experts have been involved. We know that NATS wrote the airspace briefing paper.</p> | <p>Partially consistent</p> |
| <p>For risks associated with power outages and reduced fuel supplies, the airport's ease of access to fuel will be considered at a strategic level, in relation to the National Grid, UK refineries and associated infrastructure.</p> | <p>This has been covered.</p> | <p>Consistent</p> |

| Appraisal Framework Method | Review Comments | Assessment |
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| The Meteorological Office will be consulted with respect to weather forecasting and historical data for airport sites. | Details of the prevalence of fog is provided for both airport sites but there is no historical data for the other weather events considered – snow, storms, strong winds and flooding. | Partially consistent |
| Assessments will consider the consequences of a range of potential changes in the climate during the lifetime of the scheme | The Commission state this is covered in the climate change topic. | Partially consistent |
| Assessments will consider the resilience of schemes against the full range of risks listed in the National Risk Register | This has clearly been covered. | Consistent |
| Disruptive events do not necessarily occur in isolation and assessments will therefore consider how an airport will manage multiple disruptive events occurring simultaneously. | This is covered and is no different to the risk faced today. | Consistent |

16 Delivery

| Appraisal Framework Method | Review Comments | Assessment |
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| <p>The Commission's Assessment of Need has identified 2030 as the point by which one net new additional runway is required to prevent significant economic costs arising from capacity constraints. It is therefore important that schemes can demonstrate they are deliverable by this date.</p> | <p>This is done on the basis that all mitigations can be delivered within the timeframe, with no regard to cost or other constraints that might be entailed.</p> | <p>Partially consistent</p> |
| <p>Planning and construction phase – scheme promoters' assumptions regarding the likely timetable, engineering requirements, constraints and impacts for construction of both the airport and surface access infrastructure will be tested to ensure the realism of the timetable and approach proposed.</p> | <p>There is evidence of only cursory consideration of the issues.</p> | <p>Partially consistent</p> |
| <p>The risks of delay arising from other assessments, such as the environmental assessments, will also be considered as part of this work.</p> | <p>Though the risk of delay is noted, no attempt to evaluate this has been made.</p> | <p>Not consistent</p> |
| <p>Public engagement – this assessment will consider the key risks associated with delivery arising from the level of local and community support for the scheme.</p> | <p>Though promoter engagement is noted, no attempt is made to understand the effectiveness of the engagement or the key risks.</p> | <p>Not consistent</p> |
| <p>Transition – this assessment will consider the risks associated with transition and the approach to mitigating them. The assessment will also consider the sequencing of events and key dependencies on the effective transition from current operations to the future operations of the new airport infrastructure, ensuring that any impacts during transition are captured and mitigated.</p> | <p>No evidence is provided in the technical paper that this has been considered.</p> | <p>Not consistent</p> |
| <p>Any impacts on other airports in the London airport system will need to be properly understood and considered as part of the transition assessment, including any requirements to close or reduce the capacity of other airports.</p> | <p>Some analysis is cited but no evidence has been provided of consideration of other key issues previously raised, notably the risk of interaction between an expanded Heathrow and London City airport.</p> | <p>Partially consistent</p> |
| <p>Surface access – this assessment will also consider the effective delivery of schemes'</p> | <p>No evidence is provided in the technical paper that this has been</p> | <p>Not consistent</p> |

| Appraisal Framework Method | Review Comments | Assessment |
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| surface access strategies. In particular, this assessment will consider the planning, transition and delivery risks associated with surface access requirements. | considered, even for the limited surface access interventions envisaged by the Commission. | |