

## Heathrow Hub Submission

If you hold any more detail please elaborate and provide more details on the following subjects:

Terminal planning	Response
<ul style="list-style-type: none"> <li>- Airport/Terminal Concept of operation</li> <li>- Pier sizing</li> <li>- Terminal sizing</li> <li>- Aircraft stands - Number and size</li> <li>- Public Transport nodes connection to terminal entrances</li> <li>- Road connection to terminal entrances</li> <li>- Landside inter-connections</li> <li>- Passenger flows within the terminal</li> <li>- Departure hall</li> <li>- Check-in facilities</li> <li>- Security</li> <li>- Emigration</li> <li>- Retail offering</li> <li>- Airside departure hall and lounges</li> <li>- Immigration</li> <li>- Baggage Reclaim</li> <li>- Customs</li> <li>- Arrivals hall</li> <li>- Off pier Coaching gates</li> <li>- Airside passenger movement</li> <li>- Transfer: Inter-terminal connections</li> <li>- Transfer: Intra-terminal connections</li> <li>- Transfer bags: Inter and intra-terminal</li> <li>- Arrival Bags</li> <li>- Departure bags</li> </ul>	<p>The general approach is as set out in 3.4.2 of our submission and is to create a large coherent site into which a terminal of the size and scale of the existing Terminal 5 can be placed.</p> <p>Such a terminal contains all the features described.</p> <p>Transfer between terminals is facilitated by maintaining the spine through the airport.</p> <p>Between GA/01 Rev 05 and GA/01 Rev 06 we indicate an area where expansion could be accommodated to develop additional capacity if required.</p>
<ul style="list-style-type: none"> <li>- Phasing and integration of existing infrastructure</li> </ul>	<p>The terminals are separated to facilitate construction with the exception of a central area to provide a node for access at the APM station.</p>

Airfield Planning	Response
<ul style="list-style-type: none"> <li>- If available, please provide details of all Declared Distances and the dimensions of stopways and RESA's.</li> </ul>	<p>Northern Runways</p> <p>Planning based on no displacement of thresholds, no stopway, and clearway to the localiser (see GA/21)</p> <p>This gives TORA/LDA/ASDA = 3000m and TODA = 3300m.</p> <p>The southern runway would be as existing although we note that HAL are proposing displaced thresholds. We would consider reducing LDA to 3000m by displacing thresholds to make the landing runways identical.</p>
<ul style="list-style-type: none"> <li>- If available, please provide set of Obstacle Limitation Surfaces including the Obstacle Free Zone and confirm the extent of penetrations.</li> </ul>	<p>Detailed work on the surfaces is not available although indications of the locations of surfaces are on the sections.</p>
<ul style="list-style-type: none"> <li>- If available, please confirm the limitations on building heights imposed by the Obstacle Limitation Surfaces.</li> </ul>	<p>The runway extension is on significant fill and therefore outside the strip/approaches/take-off climb areas, surfaces are generally similar or higher than the existing. This indicates that OLS impacts of buildings and operations are similar to existing.</p>
<ul style="list-style-type: none"> <li>- If possible, please confirm the limitations on airport operations imposed by the Obstacle Limitation Surfaces.</li> </ul>	
<ul style="list-style-type: none"> <li>- If possible please confirm what is the impact to the Transitional surface over the remaining properties in Poyle. Please provide details of infrastructure in these areas which could obstruct the approach surface.</li> </ul>	<p>The runway extension is on significant fill and therefore outside the strip/approaches/take-off climb areas, surfaces are generally similar or higher than the existing. (See for example the Long Section along the M25 (GA/22) which provides a near cross section on the runway.)</p> <p>An initial look at the levels indicates building heights of approx 20m are feasible in the Poyle area taking into account the general ground level and the height of the runway above general ground level.</p>
<ul style="list-style-type: none"> <li>- If possible please confirm the Impact of OFZ over the remaining properties in Poyle. Please provide details of infrastructure in these areas which could obstruct the approach surface.</li> </ul>	<p>We are not sure we understand the question. Our understanding is that the OFZ deals with obstacles close to the runway and is not intended to govern control of buildings etc. There appears to be an error in the latest edition of CAP168 which gives the side slope of the OFZ as 1:30 rather than the 1:3 of Annex14 (and earlier versions of CAP 168).</p>
<ul style="list-style-type: none"> <li>- Please confirm the provision for de-icing facilities.</li> </ul>	<p>We consider that the general approach to de-icing will be similar to that of HAL.</p>

<div><div>-</div><div>- Please advise if an isolated parking position is provided and its proposed location (for parking of aircraft subject to unlawful interference).</div></div>	<div><b>Response</b></div> <div>We would such aircraft to be parked in a position similar to those existing.</div>																									
<div><div>-</div><div>If available, please provide HHL’s view of future aircraft development (size and weight) over the next 40 years and how these can be accommodated within the development proposals.</div></div>	<div>We have estimated the movements by aircraft type for 2030 and 2050 which are used in the traffic forecasts that we have submitted to the Commission. These are shown in the table below, with the breakdown of aircraft code types in 2012.</div> <div><table><tr><td></td><td colspan="4">Movements by Aircraft Type</td></tr><tr><td></td><td>Code C</td><td>Code D</td><td>Code E</td><td>Code F</td></tr><tr><td>2012</td><td>269</td><td>43</td><td>152</td><td>7</td></tr><tr><td>2030</td><td>332</td><td>6</td><td>286</td><td>20</td></tr><tr><td>2050</td><td>315</td><td>0</td><td>351</td><td>34</td></tr></table></div> <div>As the table shows, we expect the phasing out of Code D aircraft (primarily B757 and B767s) at Heathrow to be largely complete by - at the very latest and probably much earlier - 2030.</div> <div>It is expected that Code C aircraft will be dominated in the short/medium-term by the existing variants of the B737 and Airbus A320 family of aircraft. As Boeing and Airbus launch their B737 MAX and A320neo aircraft in the second half of this decade it is expected that these types will be dominant types operating in short-haul markets for the forecast period. These two new variants are likely to have a product cycle of up to 20 years.</div> <div>We expect Code E aircraft to increase their share of movements at Heathrow. As is the case with the short-haul aircraft, we envisage Boeing and Airbus remaining as the dominant suppliers with the B777 and B787 and the A350 being the most popular types which will largely replace over time the B747-200/300/400 fleets.</div> <div>Our forecast also sees increasing movements being taken up by Code F aircraft, notably the Airbus A380 and to a lesser extent the Boeing 747-8.</div>		Movements by Aircraft Type					Code C	Code D	Code E	Code F	2012	269	43	152	7	2030	332	6	286	20	2050	315	0	351	34
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Airspace – where clarification is required:	Response
<ul style="list-style-type: none"> <li>- Runways operating modes appear to provide no/limited northerly respite: is this correct? If not please explain how northerly respite is provided</li> </ul>	<p>We have a number of runway operating modes defined in the submission. The 'northern relief' mode aims to provide an increase in noise relief by allowing for deep landings on the northern runway (using 09L and 27Rext). This will reduce the noise caused by arrivals on the population under the approach paths. We are considering the feasibility of using the northern runway (09L and 27Rext) predominantly for departures during the northern relief periods with the southerly runway being used for arrivals with the occasional heavy departure interleaved into the traffic sequence. We need to consider the impact of this concept on overall capacity and noise.</p>
<ul style="list-style-type: none"> <li>- What would the impact of the third runway on Northolt– notably around missed approach on new runway?</li> </ul>	<p>We have not explicitly considered the impact on Northolt of Heathrow Hub, although this will be an operational environment factor in our hazard analysis. We will be considering the design of the missed approach procedure (particularly for 09Lext) and its potential interaction with Northolt but we do not necessarily expect it to be any more problematic than the current procedure for 09L. We believe this is an issue affecting any new Northern Runway at Heathrow. It is also worth noting that in our last meeting with the AC we were directed 'not to consider Northolt as a design driver' for our submission, so we will need clarification as to whether this operating environment aspect should still be included in the hazard analysis.</p>
<ul style="list-style-type: none"> <li>- Does the scheme assume one ILS localiser at each end of each (3,000m) runway or one at each end of total concrete? If latter, what is the impact of beam disturbance/perturbation on landing aircraft from take-off of departing aircraft. Are any mitigations suggested for this? Does scheme require GBAS to remove this issue?</li> </ul>	<p>We assume an independent ILS localiser/glidepath system for each runway end within the HH concept. Localisers for 27R and 09L will be sited in the area between the northerly runways. In the future when GBAS equipage in the Heathrow fleet is sufficiently high we may be able to replace the ILS with GBAS but we make no assumptions about the need for it. This will be an operational environment factor in our hazard analysis to confirm the mitigating factors that will reduce risk associated with this positioning.</p>

-	<b>Response</b>
- How can simultaneous and independent operations for all three runways be made compliant with SARPs?	<p>We have yet to find any 'show-stoppers' in the SARPS, or other regulatory material, that would prevent the simultaneous and independent operation of all three runways, but are still finalising the concept of operation. Were we to identify potential issues we expect to be able to make a risk based argument as to why the concept is safe to operate and will be presenting that to the CAA for review.</p> <p>Regarding independent arrivals, are we assuming these will already be in operation in 2020 or introduced under the HHub? Note that ICAO SOIR 9643 requires a human monitor of runway centre lines, which we will of course have to replace with an auto-conformance monitor for LHR.</p> <p>Please note that Helios are commissioned to carry out an intensive programme of work, including liaison with CAA integrated with their timescales, over the next few months, and this will produce a a safety assessment in line with the UK CAA's expectations for their Preliminary Safety Review. This will ensure that the arguments and evidence are available to the CAA to satisfy them that the concept can be acceptably safe in principle.</p>

