ACP-2019-01 London Stansted FASI-Stage 2 Develop & Assess Points Requiring Clarification

Para 3.7.1 of the Initial Options Appraisal (IOA) Report states that if the Do-Minimum is implemented there will be "little change when compared to the lateral track flown by aircraft in today's operation [i.e. the do-nothing baseline]". However, the IOA shows a difference of up to 1000% between the Do-Nothing baseline and the Do-Minimum for some design options. Please therefore clarify the difference in overflight between the Do-Nothing baseline and Do-Minimum options (see examples below in Table 1). Similar discrepancies have been identified for the fuel burn and greenhouse gas assessments within the IOA (e.g. SID RWY22 North).

Table 1

	Population Overflown		
	Do Nothing	Do Minimum	Difference
SID RWY22 West	7923	3292	-4631
SID RWY22 East	2095	4608	2513
SID RWY22 South	2696	29444	26748

1.1. For all IOA 'do nothing' options, overflight assessments were carried out based upon the modal track (the path most commonly flown, derived from actual radar data), both in terms of lateral path and vertical profile.

1.2. In contrast, the three 'do minimum' examples referenced above (SID RWY22 West, SID RWY22 East and SID RWY22 South) are designed as PBN replications and assuming a minimum climb gradient of 6%.

1.3. Therefore, whilst it is correct to say that there should be "little change when compared to the lateral track flown by aircraft in today's operation", the vertical profiles being considered may differ. This has a consequential impact on overflight, fuel burn and greenhouse gas assessments.

1.4. While the 'do minimum' designs assume a minimum climb gradient of 6%, in practice (in the case of the three examples above) the 'do nothing' climb gradient is greater than 6%.

1.5. Since the dimensions of the overflight 'envelope' (as opposed to lateral track), are dependent upon the rate of climb, the difference in climb gradients between the 'do nothing' and 'do minimum' has meant that the 'do nothing' (steeper climb) envelope widens more quickly and is rather shorter than that of the 'do minimum' (shallower climb). Similarly, since the fuel burn and greenhouse gas assessments are derived from this geometry, they exhibit similar characteristics.

1.6. The effect of this, is that whilst the lateral tracks remain broadly similar between 'do nothing' and 'do minimum', the population 'overflown', fuel burn and greenhouse gas emissions may not.

1.7. SID RWY22 South warrants further explanation. This design envelope is based around the existing LAM SID, which is almost exclusively used by aircraft positioning from STN to other local airports (typically LTN).

1.8. As a result, aircraft using this SID seldom attain heights above 4,000 feet, before starting their descent. To produce a modal departure track to 7,000 feet was therefore not a practical proposition, nor an accurate representation of current operations. In this instance therefore (for 'do nothing' only) our overflight assessment was truncated to 4,000 feet. The effect of this when compared to a 'do minimum' extended to 7,000 feet is to present a disproportionate difference between the 'do nothing and 'do minimum'. To illustrate the effect of this difference we have calculated the population overflown by the do minimum option, when it is also truncated at 4,000 feet. The population overflown is reduced to 4,368.

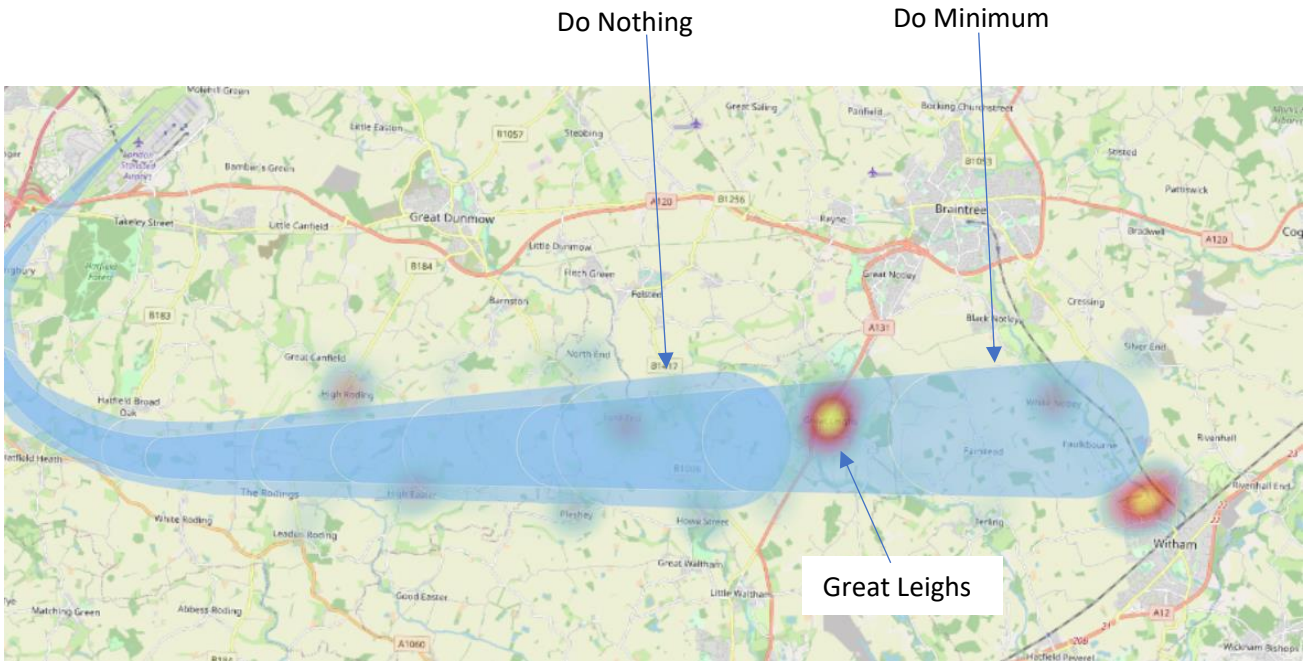
1.9. Looking forward, it is intended that the routes within this envelope will not be limited in this way and may be more widely used. Hence, all other options in the envelope have been assessed to 7,000 feet.

1.10. In the specific case of the SID RWY22 South 'do minimum' option, the effect of using different cut-off heights has been further exacerbated by the relatively shallow, 6% minimum climb gradient, as described above. In order to provide further clarity in relation to the SID RWY22 South 'do minimum' option, the below update to your Table 1 shows the overflight assessment for an additional scenario, which truncates the 'do minimum' option to 4,000 feet to reflect the 'do nothing' scenario. This provides further clarity as to the apparent discrepancy, for comparative purposes only.

Table 2

	Population Overflown			
	Do Nothing	Do Minimum	Do Minimum (truncated)	Difference
SID RWY22 West	7923	3292	N/A	-4631
SID RWY22 East	2095	4608	N/A	2513
SID RWY22 South	2696	29444	N/A	26748
SID RWY22 South	**2696**	**N/A**	**4368**	**1672**

SID RWY22 EAST



1.11. To illustrate the above explanation as to climb gradients, the above map shows that the 'do minimum' track has a lower rate of climb to 7000ft than the 'do nothing', which makes the overflight path longer. As a result, the path then flies over Great Leighs, causing the difference in population overflown for this SID.

'*Please provide a rationale why a Do-Minimum Option was used as a baseline within the Design Principle Evaluation to assess design options against DP Change, DP Noise 1, DP Noise 3 and DP Balance'.*

2.1. CAP1616 provides guidance on the appropriate baseline for the options appraisal process, which has been closely followed by STN at Step 2B as reported in the IOA. However, the DPE is not part of the options appraisal process. Rather, it forms part of Step 2A. As such, CAP1616 does not specify the appropriate baseline to inform the DPE where one is required.

2.2. This is logical, given the extent to which a baseline is required for comparative purposes during the DPE will depend on the nature of the design principles selected by a particular sponsor. By way of an example at STN, DP Safety represents an absolute, such that it does not require comparison – a proposal will either be safe or not. In contrast, DP Change, DP Noise 1, DP Noise 3 and DP Balance all require a comparator in order to provide a meaningful evaluation of design options against the design principles. This allows design principles that reflect a degree of change to be understood.

2.3. As the DPE is required to evaluate how the identified design options have responded to a sponsor's particular design principles, the choice of the baseline for the DPE is necessarily guided by those design principles. At STN, the key consideration for each of the design principles requiring a comparator was the number of people overflown - i.e. the number of people overflown where minimal changes are undertaken and the number of people overflown when the project is implemented. As a result, the below analysis in relation to DP Change applies equally to the use of the do minimum comparator for DP Noise 1, DP Noise 3 and DP Balance.

2.4. As for the other design principles at STN, DP Change was adopted in response to stakeholder feedback received during Step 1B. Stakeholders understood that the switch-off of the DVOR network and the subsequent transition to performance based navigation (PBN) would necessitate a degree of change and generally supported this. However, they felt that the route structure at STN was long standing and that people were accustomed to where aircraft flew. As such, they considered that for any changes to the areas overflown to be made, it would be appropriate to establish a clear and objective benefit in doing so, as captured in DP Change.

2.5. The do minimum options are, by definition, the minimum level of change that is necessary to respond to the switch off of the DVOR network. As such, taking into account the stakeholder feedback in respect of the transition to PBN, a do minimum baseline was used during the DPE to provide an appropriate and consistent comparator to evaluate the design options against DP Change, DP Noise 1, DP Noise 3 and DP Balance.

2.6. STN considers that the Do Minimum provides the appropriate baseline for use during the DPE, particularly as the introduction of PBN and replacement of DVOR can reasonably be anticipated as part of the context for the proposals.

2.7. CAP1616 requires that the design options are evaluated *'in a fair and consistent manner'* (Section 2, paragraph 128). Comparing the characteristics of the route options identified to the do minimum scenarios has enabled STN to meet this requirement.