Stage 5 Clarification Questions for ACP 2018-65
Supplement – Stansted Climb Performance Evidence Issue 1.2

#	Submission Document Name, Page/Para	Question/Issue	Tech/Conslt/ Env/Econ/ ATM/IFP/ General	Date of response	Response – State if and where a submitted document will be changed.
1	Para 4.5.	Can you confirm that the data, to show how the departures climbed, is taken from radar and shows the departing aircraft's mode C? If this is true then in order for an aircraft to be considered as having passed through a level, the mode C must show 400ft in the required direction, as per CAP493 Para 10C.1(3). Please provide us with evidence of how many aircraft, based on mode C, can be considered to have passed through the levels at the gates.	Tech/Gen/ATM/Env	10/11/2021	

Can you confirm that the data, to show how the departures climbed, is taken from radar and shows the departing aircraft's mode C?

The flight data points are sourced from NATS' radar data repository. It is Mode S vertical position reporting based on the Standard pressure setting 1013.2hPa, which was then converted to altitude using the relevant QNH, and subsequently rounded down to the nearest 100ft (for example, a converted altitude of 2999 would be rounded down to 2900). This is commonly referred to as Mode Charlie Altitude.

Please provide us with evidence of how many aircraft, based on mode C, can be considered to have passed through the levels at the gates.

This is a summary (below). Greater detail will be published in an updated issue of the Stansted SID Climb Performance supplement (Issue 1.3).

Gate 1 (3,000)		%
3,300-	42	0.9%
3,400+	4,761	99.1%
Total	4,803	100.0%

Gate 2 (4,000)		%
4,300-	317	5.6%
4,400+	5,341	94.4%
Total	5,658	100.0%

Gate 3 (3,000)		%
3,300-	522	3.8%
3,400+	13,248	96.2%
Total	13,770	100.0%

Gate 4 (4,000)		%
4,300-	252	1.8%
4,400+	13,416	98.2%
Total	13,668	100.0%

Gate 5 (3,000)		%
3,300-	0	0.0%
3,400+	557	100.0%
Total	557	100.0%

Gate 6 (3,000)		%
3,300-	2	1.0%
3,400+	204	99.0%
Total	206	100.0%

Gate 7 (3,500)		%
3,800-	0	0.0%
3,900+	66	100.0%
Total	66	100.0%

Flight data points in 121 days	
38,728	
Total meeting/exceeding	
37,593	
Overall proportions	
Under-performing	2.9%
Meeting or exceeding	97.1%

In our previously issued documents we stated that a 200ft under-performance can be considered as having met the Gate altitude. We contend this is reasonable, but for the avoidance of doubt this clarification will analyse the data as per your query, as follows:
If the flight data point meets or exceeds the Gate altitude plus 400ft, then it meets CAP493's Mode Charlie level assessment criterion for passing through a level.

It remains possible that one, some or all under-performing flights could have made the Gate altitude by trading airspeed for height gain, and it is also possible that the vertical reporting under-reads (i.e. the aircraft is higher than its Mode Charlie Altitude data point) as often as it may over-read. Also, as previously noted, the altitude conversion was rounded down to the nearest 100ft, so approximately half the data points are likely to be closer to the next highest 100ft instead of the next lowest. This would lead to some aircraft achieving the altitude with no change to thrust settings.

In the supplement document we also include comparison flights, illustrating data points from similar flights using the same aircraft type on the same day, or data points from the exact same flight using the same type on adjacent days. These comparison flights met or exceeded the gate altitude by at least 400ft.

We contend that 97.1% meet or exceed the gate altitudes. The proportions under-performing remain small (c.2.9%). We contend that environmental impacts may occur due to thrust setting changes in order for this small proportion of flights to acquire a small vertical distance, and that those impacts would be neither discernible nor measurable (including biodiversity and tranquillity).

A new issue of the Stansted SID Climb Performance Evidence supplement will be published, Issue 1.3, using the CAP493 analysis criterion.