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Our ref: P18-122-R04
18 December 2018

By email only: Kate.Holden@pegasusgroup.co.uk

Dear Kate

Re: Newgate Lane, Fareham – Initial Aircraft Noise Assessment

I write further to our visit to the above site to undertake a survey of aircraft noise levels associated with Solent Airport, and the potential impact of this upon the proposed residential developments at Newgate Lane.

This has been undertaken further to comments made by Craig Perkins, Senior Environmental Health Officer at Fareham and Gosport, with regard to the application for the site known as Land At Newgate Lane (North) Fareham, as per P/18/1118/OA, but applies also to proposed development at the adjacent site known as Land At Newgate Lane (South) Fareham.

Further to correspondence with Mr Perkins, an initial aircraft noise assessment has been undertaken, as follows:

The site was attended over the period 0900-1300hrs on Friday 14 December 2018. The weather during the survey was dry and cold, with a light easterly wind, typically not exceeding 4m/s. These wind conditions were specifically selected to result in take-offs and landings at Solent Airport to be in an north-easterly direction, hence with aircraft taking off towards the development site. This was found to be the case, with all aircraft the banking northwards on reaching an appropriate altitude. This is hence anticipated to represent the worst-case conditions at the site.

Short-term noise measurements were undertaken at a single location to the eastern end of Woodcote Lane, approximately 20m to the east of the junction with the old Newgate Lane, each coinciding with an individual take-off movement, hence with measurement samples of duration typically 30-40 seconds. This is considered representative of a worst-case location on the South site, and hence is also a robust assessment location for the more distant North site.

All noise measurements were undertaken using a Bruel & Kjaer 2260 Type 1 Integrating Sound Level Meter (serial no. 2467014) calibrated using a Bruel & Kjaer Acoustic Calibrator, Type 4231 (serial no. 2389221). Calibration checks were carried out before and after the monitoring period, and no variation in the calibration levels was observed. The measurement microphone was fitted with a windshield and mounted at about 1.8m above local ground in free-field conditions.

Over the course of the monitoring period, a total of 19 aircraft take-offs were observed. Two of these take-offs were helicopters, and these followed essentially the same route as all fixed-wing aircraft, banking north shortly after take-off.

It is believed that two of the aircraft undertook around 4-5 circuits, performing touch-and-go exercises, such that the measured data set contains multiple examples of certain aircraft and only single examples of others.

Although all observed aircraft were small, a range of sizes was noted. The smaller aircraft would typically bank northwards prior to reaching the noise measurement location, hence not directly over-flying the site, and the larger aircraft would maintain the take-off path for longer, hence directly over-flying the noise measurement location and banking northwards more centrally over the two sites, with other examples in-between the two. Also, where multiple take-offs were measured for certain aircraft, some variation in path was noted (including altitude when passing over the measurement location and point of banking northwards) leading to some variation in measured noise levels even for the same aircraft performing essentially the same manoeuvre.

The measured noise levels for each take-off observed over the monitoring period are set out in Table 1.

Table 1 : Measured Aircraft Take-off Noise Levels

Time	Type	Noise Level	
		dB L_{Amax}	dB L_{AE} (SEL)
09:35	Helicopter	71	79
10:04	Fixed-wing	74	83
10:49	Helicopter	75	82
11:02	Fixed-wing	78	85
11:04	Fixed-wing	56	70
11:06	Fixed-wing	74	80
11:17	Fixed-wing	72	80
11:22	Fixed-wing	77	83
11:26	Fixed-wing	73	80
11:30	Fixed-wing	75	82
11:35	Fixed-wing	75	82
11:39	Fixed-wing	68	76
12:00	Fixed-wing	73	80
12:06	Fixed-wing	72	79
12:13	Fixed-wing	68	76
12:19	Fixed-wing	70	78
12:25	Fixed-wing	71	79
12:44	Fixed-wing	82	88
12:50	Fixed-wing	79	86
		Logarithmic Average >>>	**82**

Table 1 indicates that the Sound Exposure Level (SEL) for aircraft take-off events was found to be in the range 70-88dB L_{AE}, with a logarithmic average of 82dB L_{AE}.

In addition to the specific aircraft take-off noise measurements, some sample ambient noise level measurements were undertaken, both over short 30-40 second samples as per the aircraft movements, and also over slightly longer 5-minute periods. On the basis of these measurements, the ambient noise in the absence of aircraft noise was typically about 52dB $L_{Aeq,T}$ at the monitoring location, which is away from major roads.

Also, in addition to the aircraft taking-off, some very occasional other small airborne aircraft were observed from the measurement location, which may or may not have been associated with Solent Airport, and possibly preparing to land. Noise from these did not significantly impact the general ambient road traffic noise from the surrounding network, and no landing noise was noted.

It is understood that Solent Airport is restricted by the following planning condition: "*The total number of aircraft movements at the site shall not exceed 40,000 per annum. With the exception of emergency related movements associated with the Maritime and Coastguard Agency Search and Rescue service which may operate 24 hours a day there shall be a maximum of 10 aircraft movements a day after sunset, with no aircraft movements between the hours of midnight and sunrise*."

It is also understood that the vast majority of movements, if not all, occur during the daytime only, based on seasonal timings, and that sometimes flying is curtailed due to weather conditions.

In terms of appropriate noise criteria, British Standard 8233: 2014 Guidance on sound insulation and noise reduction for buildings, which carries the full weight of an adopted British Standard, recommends guidance on design criteria for acceptable noise levels within residential accommodation, including internal daytime noise levels of 35dB $L_{Aeq,16hr}$ within living rooms. Regarding outdoor living areas (i.e. gardens), BS 8233 states that "*it is desirable that the external noise level does not exceed 50dB $L_{Aeq,T}$, with an upper guideline value of 55dB L_{Aeq}, which would be acceptable in noisier environments. However, it is recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas such as city centres or urban areas adjoining the strategic transport network, compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, developments should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited*".

In order to provide an indicative estimate of the annual average daytime noise level, a calculation has been undertaken based on the scenario that the full allowance of movements occurs over the course of a year, and that these occur only in easterly mode. Of course, this will not realistically be the case, and a more typical split is 70% westerly / 30% easterly, but the calculation has been undertaken on this basis as these are the conditions for which the source noise level data, anticipated to represent the worst-case conditions, have been acquired.

As such, an annual average daytime $L_{Aeq,16hr}$ aircraft noise level has been calculated based on the logarithmic average of all measured samples of SEL (L_{AE}) for aircraft take-offs, and considering 16hrs x 365days as the time reference, and 20,000 as the number of events, given that the remaining 20,000 of the annual allowance would be landings and would not be expected, based on this assessment, to contribute to the overall noise level.

The calculation of indicative estimate of the annual average aircraft noise level is 52dB $L_{Aeq,16hr}$.

Noting that this is based on the maximum number of annual movements, based wholly on an easterly operational mode, rather than the actual situation, it is likely that the actual annual average aircraft noise level would be lower, however it is recognised that there is also a degree of uncertainty in this due to the relatively small sample of aircraft sampled.

Notwithstanding, it is considered that the calculated value provides a reasonable basis for assessment of the likely impact. As such, noting that the calculated indicative annual average aircraft noise level is of the same value as the typical ambient noise at the monitoring location and also noting that the aircraft noise level, and also the cumulative overall daytime noise level, would not be expected to exceed the BS 8233 upper guideline value for noise in gardens.

The findings of this assessment also indicate that no additional mitigation will be necessary to adequately control internal daytime noise levels, as standard thermal double glazing and non-acoustic trickle vents will be adequate in that regard.

As such, the conclusion based on the above initial assessment is that no significant noise impact attributable to Solent Airport is anticipated at the two development sites.

Yours sincerely,
For Hepworth Acoustics Ltd

Graham Bowland
Technical Director