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Topic Paper 7:

1.0 Introduction

1.1 The Crawley Borough Local Plan, through Policy EC4 and the accompanying Noise Annex, seeks to manage the relationship between development and

1.2 Where exposure to noise becomes noticeable or significant, this can result in unacceptable the impacts can become far-reaching, fundamentally affecting quality of life, and potentially resulting in serious health and stress related problems, amenity issues, and negative impacts on productivity and learning. For these reasons, it is fundamental that the relationship between noise sources and noise sensitive development is effectively and appropriately managed through the Local Plan.

1.3 There is a growing amount of research relating to the health impacts of noise, and on the dose response (reaction to increasing noise exposure) relationship between noise and health. Recent studies have identified a number of causal links between noise exposure and health impacts. These themes are drawn together in key two documents; The Health Protection Agency (HPA) summary document *Environment Noise and Health in the UK* (2010); and through the work of the government-appointed Airports Commission in *Discussion Paper 5: Aviation Noise* (2013) including *Aircraft Noise Effects on Health* by Dr. Charlotte Clarke, Queen Mary, University of London, for the Airports Commission (2015).

1.3 Through these documents, it is possible to identify three specific areas in which adverse effects of noise exposure can impact on populations and individuals, these being Amenity and Quality of Life, Health, and Learning. This Topic Paper summarises the current evidence in relation to each, setting out the rationale for the noise policy and standards relating to noise from transport sources that are set out in the Local Plan. The Paper also sets out a more detailed commentary on the justification for the approach taken by the Local Plan in relation to noise from aviation sources.

2.0 Effects on Amenity and Quality of Life

2.1 This form of noise impact may typically affect people in two ways: annoyance, and sleep disturbance.

2.2 Annoyance is considered to manifest itself when noise impact disturbs a distraction whilst resting (Airports Commission, 2013). As such, annoyance will typically increase as noise exposure increases, though changes in pitch and intermittency can also increase annoyance.

2.3 The *Aviation White Paper* (2003) found the onset of community annoyance to occur at 57dB L_{Aeq16hr}, a figure that originates from the 1982 Aircraft Noise Index Study (ANIS).

2.4 Over time, individual aircraft have become quieter, but have increased in number. The *Attitudes to Noise from Aviation Sources in England* study (ANASE), DfT, 2007) demonstrated that the number of aircraft had a greater impact on annoyance than increasing average noise levels¹. This suggests

¹ Some aspects of the ANASE methodology have been questioned at peer review.

that the level for the onset of community annoyance may actually occur below 57dBA, and that the impact of higher levels of noise may be greater than previously thought. This follows research published by the European Commission with the Environmental Noise Directive (END) in 2002 which showed that equivalent levels of Aircraft Noise created greater annoyance than other modes of transport.

- 2.5 More recent research (*ERCD CAP1506 Survey of noise attitudes 2014*;

impaired reading comprehension and recognition memory in children exposed to aircraft noise.

- 4.5 The Airports Commission (2013) notes that the productivity impacts of noise are more secondary in nature, and are linked to effects previously discussed, including sleep disturbance, health impact, links between academic performance and noise, and impacts in terms of workplace distraction.
- 4.6 There is also a significant financial cost to noise and, in November 2014, DEFRA published *Environmental Noise: Valuing impacts on Sleep Disturbance, annoyance, productivity and quiet*. This estimated the cost alone

5.6 The original Planning Policy Guidance 24 (1994) had already recognised that *should be regarded as a desirable upper limit for major new noise-sensitive* Road and Rail were set at higher levels (63dB & 66dB) respectively. The reasoning for having a lower noise level for aircraft noise than for other transport sources was due to the fact that road and rail noise generally only affects the façades facing the source, with the buildings acting as a noise barrier and so shielding the far side of the dwelling, creating lower noise levels for that façade and any external amenity space. In the case of aircraft noise, all façades of a dwelling, its external living space and the whole surrounding neighbourhood are affected by the high levels of noise. There is ultimately no escaping the noise, apart from inside the dwelling with the windows closed.

5.7 The WHO published new Envir

limited effect. The only option with residential developments is to restrict the whole development to the 60dB $L_{Aeq,16hr}$ contour so that residents are not

