

**PROPOSED RESIDENTIAL DEVELOPMENT, CHEQUERSFIELD, WELWYN GARDEN CITY  
NOISE ASSESSMENT ADDENDUM – RESPONSE TO EHO COMMENTS  
SEPTEMBER 2018  
OUR REF: 22573/09-18/6271**

**Introduction**

Mewies Engineering Consultants Ltd (M-EC) has been commissioned by Taylor Wimpey (North Thames) to provide an addendum to the Noise Assessment produced for the planning application for a small section of land off Chequersfield, Welwyn Garden City. Planning Permission 6/2018/1519/MAJ is concerned with the “...erection of 30 residential units and associated vehicular access, associated ancillary and enabling works”.

A full noise assessment for this planning application was produced in May 2018 (M-EC report ref. 22573/05-18/5014). Comments have been received by the Environmental Health officer, regarding a number of items within this report, namely:

Noise from Trains along the adjacent train line

*Noise from trains has been assessed by the acoustic consultant, and results show that internal noise levels can meet those within BS8233 and the WHO Guidelines for Community Noise.*

*In line with the report, we would expect the glazing scheme to be chosen that takes into account the measured L<sub>Amax</sub> noise levels, and mechanical ventilation will be required to ensure properties don't overheat in the summer months.*

*There is some confusion over the design of the development. The acoustic report states that there will be no balconies. However, other information now states that there will be balconies, and close to noise sources.*

*The outdoor amenity spaces, in this case balconies will need to meet the 55 dB WHO Guidelines for Community Noise and we would expect information to be provided to support this.*

Noise from commercial/industrial units and electricity substation

*The acoustic report does not mention noise from the commercial/industrial units, or the electricity substation to the north of the site.*

*There is some concern, especially during unsocial hours that these units may impact on the amenity of the future development, especially as being only a 50m distance to the boundary. Instance of max noise levels were highlighted in the report, and attributed to railway noise with a few outliers which were unaccounted for and the concern is that some of these may be due to the industrial units.*

*We would want to see this assessed before permission is granted and would recommend refusal before this is has taken place.*

The existing site is currently arable land, located approximately 1.9km south from Welwyn Garden City town Centre. The south of the site is bound by Chequersfield, with dwellings and flats that have recently been constructed as part of a separate application. The north, east and west of the site are bound by arable land. Beyond the immediate boundaries, a railway track lies. To the west of the site. An industrial estate is located to the north, and Chequers (A1000) is located to the east, providing access to the town centre.

This Addendum provides a summary of the updated noise survey and the assessment, to satisfy for the EHO's concerns.

***Noise from Trains along the adjacent train line***

Based upon Drawing number LSD209-02-01 Rev E, it appears that there are a number of balconies facing towards the railway line. The results of our recent monitoring, at Positions 1 & 3, indicate that the 55 dB(A) limit, as specified by BS8233: 2014 and WHO Guidelines for Community Noise, will not be exceeded, as indicated in Table 1 below:

**Table 1 – Recent monitoring results**

Monitoring Position	Measured $L_{Aeq,T}$ / dB(A)	Highest measured $L_{max}$
1	54	80 dB(A)
2	50	-

Position 1 was located at the western corner of the site. Position 3 was located at the eastern corner of the site, along the northern boundary. As Position 1 was located at the closest point on the site to the railway line, it can be seen that even if the balconies were located at the extreme western point on the site, closest to the railway line, the measured average noise levels do not exceed the upper limit of the external amenity space noise level guidance within BS8233: 2014 and WHO Guidelines for Community Noise. Therefore, there is no reason, based upon the measured results, why balconies cannot be located here.

The highest  $L_{max}$  noise level measured on-site was 80 dB(A). Within the original report, the calculated maximum noise level at the closest façade, was 81 dB(A). Therefore, the glazing specification within the original report also applies at this development as well. It is interesting to note that the highest measured level and the calculated façade level in the original report are almost identical; this lends a significant degree of confidence to the original calculations.

As to whether or not mechanical ventilation is required, this would depend upon whether or not the ventilation strategy is to provide rates to meet Part F without the need to open windows. We would not advocate the windows be sealed, in order to give the user overall control. However, this is considered to be outside the remit of M-EC, and should be confirmed by a qualified SAP consultant.

***Noise from commercial/industrial units and electricity substation***

Previous work undertaken at other sites near to substations, has revealed that the hum generated is around the 100Hz frequency band. This has been independently verified to us by UK Power Networks, based upon their own significant involvement with noise assessments of substations and new residential developments.

NANR45 provides the relevant guidance with respect to the procedure for the assessment of low frequency noise disturbance (University of Salford). It should be noted that this document does not provide a prescriptive indicator of nuisance, but rather gives a set procedure to help people to form their own opinion(s). Notwithstanding this, we have carried out a high-level assessment of the perceived issue, just to provide an objective perspective on this:

- The 100Hz frequency band has a wavelength of 3.4029m;
- It has a  $\frac{1}{2}$  wavelength of 1.707145m; and
- It has a  $\frac{1}{4}$  wavelength of 0.850725m.

Therefore, any proposed development that sits comfortably within either these exact dimensions, or multiples of them, has an increased chance of having a standing wave(s) being produced. The measured distance between the substation and the site boundary is approximately 50m. The distance to the nearest residential façade is a further 10m away from the substation i.e. 60m from the substation. Based upon the wavelength of the 100Hz

frequency band, and the measured distances to the nearest residential façade, it is concluded that there exists no possibility of a standing wave being created.

For reference, the Table below indicates the frequency bands for the first five axial modes of the 100Hz band, based upon 'typical' room sizes:

**Table 2: First five axial room modes for 100Hz frequency band**

Bedroom (4m x 2.9m x 2.7m – w x l x h)	Living Room (3.5m x 5.7m x 2.7m – w x l x h)
42.5Hz (height)	29.9Hz (length)
58.7Hz (length)	48.6Hz (width)
63Hz (height)	59.7Hz (length)
85.1Hz (width)	63Hz (height)
117.3Hz (length)	89.5Hz (length)
126Hz (height)	97.2Hz (width)
127.6Hz (width)	119.4Hz (length)
170.1Hz (width)	126Hz (height)
176Hz (length)	145.8Hz width)
189Hz (height)	189Hz (height)
234.7Hz (length)	194.5Hz (width)
252.1Hz (height)	252.1Hz (height)

As can be seen from above, no modes exist at exactly 100Hz. Admittedly there are a few that get quite close, but standing waves are extremely frequency dependent, and if the distances and/or dimensions do not match exactly, no standing wave(s) will be produced.

Measured survey results at the site, as shown in Table 3 below, indicate that noise from the substation is likely to be audible but not measurable.

**Table 3: Summary of measured sound levels**

Location	Duration (minutes)	L <sub>Aeq,T</sub> dB(A)
Location 1	120	54
Location 2	30	56
Location 3	30	50

- Location 1: Measured at approximately 50m from the substation.
- Location 2: 2m from the southern boundary of the substation.
- Location 3: located approximately 3m from the carriageway edge of Chequersfield, adjacent to the eastern boundary.

As can be seen by the results in Table 2, measured sound levels at locations 1 and 2 vary by approximately 1 dB. Interpreting this, it means that there is very little measurable variation in noise level across the distance between the substation and the site boundary. Therefore, any noise from the sub-station at the location of the closest residential façade, is masked entirely by the surrounding ambient noise climate. It can therefore be said that the resultant noise level from the substation, in isolation, will be significantly below this measured level.

In point of fact, and as paragraph 4.2 Note 3 of NANR45 states, “...if the...100Hz...band exceeds the reference curve, this may be due to road traffic”. For clarification, the reference curve in NANR45 is reproduced below, in Table 4:

**Table 4: NANR45 Reference curve**

Hz	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
dB, Leq	92	87	83	74	64	56	49	43	42	40	<b>38</b>	36	24

As can be seen, the reference level at 100Hz is 38 dB  $L_{eq}$ ; the measured level at 100Hz was 60 dB  $L_{eq}$ . Therefore, it cannot be said, with any great degree of significance, that the level measured, contains any low frequency contributions from the sub-station, due to the presence of the nearby roads. Therefore, based upon the location of the development site i.e. in close proximity to a busy road network, as well as a busy railway line, if a problem at 100Hz were perceived to exist, it would be very difficult to discern, with any degree of confidence, where and what the actual source of the noise would be, and where it would be coming from.

Notwithstanding the above, based upon the measured data, as well as the statements indicated previously, it is considered that any noise from the substation will not cause any significant issues at site.

#### Commercial/Industrial Noise

In terms of the commercial units to the north of the proposed development site, no activity was witnessed, or could be discerned from the measured results, that would indicate it would be the cause of any of the 'significant noise events' alluded to by the EHO in the comments.

The only commercial unit that could be considered to have a direct impact upon the proposed development site, belongs to Easymix Concrete, approximately 50m to the north of the site, directly adjacent to the substation. The remaining units are more than 250m from the closest site boundary and, judging by the number of tyres that can be seen behind the units in the most recent aerial photography of the site, it is unlikely that any noise from these units would be audible at the closest development site boundary.

It is understood that Easymix Concrete supplies and delivers ready-mixed concrete and mortar, for both commercial and domestic applications. Their opening hours are understood to be:

- Mon – Fri      0700 – 1730
- Saturday      0700 – 1330
- Sunday        Closed

Looking at the above, it is clear that the company do not operate during the night-time i.e. 2300 – 0700 hours. Therefore, it can be argued that a night-time noise assessment is not required, as it would not pick up anything of great significance from this general direction.

The 'outliers' referred to by the EHO are addressed in the previous report for the site (paragraph 5.3 of M-EC report 22573/07-17/5014). Indeed, it is explicitly stated that the highest recorded levels are attributable to dog walkers i.e. they are transient in nature, and highly localised, and should therefore not be taken forward for assessment.

Report Prepared By:



Daniel Newbery, BSc AMIOA

Report Checked by:



IOA

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