



**INDUSTRIAL PROPERTY INVESTMENT
FUND (IPIF)
CRUSADER INDUSTRIAL ESTATE
HERMITAGE ROAD, HARINGEY**

**REVIEW OF NOISE IMPACT
ASSESSMENTS FOR OMEGA WORKS A
& B**

DECEMBER 2023



the journey is the reward

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Industrial Property Investment Fund (IPIF)
Crusader Industrial Estate
Hermitage Road, Haringey
Review of Noise Impact Assessments for Omega Works A & B

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1 Introduction

- 1.1 Mayer Brown Limited (MBL) has been appointed by Industrial Property Investment Fund (IPIF) to provide an initial review and comment on two noise impact assessment reports provided by Acoustic Consultants LTD (ACL) in relation to planning applications HGY/2023/0570 and HGY/2022/4310, known as Omega Works A and Omega Works B respectively.
- 1.2 IPIF owns the Crusader Industrial Estate, 167 Hermitage Road, N4 1LZ, which is located immediately north of the Omega Works A & B development site, as shown in Figure 1.1. The sites are all located within the local authority of London Borough of Haringey (LBH).
- 1.3 Savills Planning has, on behalf of IPIF, submitted initial comments to LBH noting amongst other things noise as a potential issue.
- 1.4 The following review of the two noise impact reports relates solely to noise and does not take into consideration any other disciplines, which would require separate review, if necessary.
- 1.5 The documents being reviewed are:
 - Noise Impact Assessment – Omega A, 167 Hermitage Road, Haringey (ref. 9661/JL – June 2022)
 - Noise Impact Assessment – Omega B, 167 Hermitage Road, Haringey (ref. 9661/JL – June 2022)

In addition, information from the following documents have been considered and relied upon:

- Omega Works A, 167 Hermitage Road, London, N4 1LZ – Planning Statement, February 2023 (Collective Planning Reference JF/RE/0139)
- 0092_Omega Works B Design & Access Statement, September 2022 (revised February 2023) prepared by the DHaus Company Ltd

Omega Works A & B Developments

- 1.6 The Omega Works A & B are mixed-use residential led developments. The development sites are located in a pre-dominantly industrial area, as indicated on Figure 1.1, with the Crusader Industrial Estate and the Arena located immediately north of the proposed developments. Immediately to the south, east and west residential dwellings dominate the surroundings. Haringey Warehouse District is located further to the south / south-east.
- 1.7 Traffic on the surrounding local road network, the A503, overground rail and great northern rail together with existing industrial/commercial uses dominate the current ambient acoustic environment.
- 1.8 Omega Works A is proposed as:
- “Redevelopment of the site for a mixed-use scheme comprising of employment use (use Class E), 8 warehouse living units (sui-generis use class) and 76 residential units (use class C3. Together with associated landscaping, cycle storage, 9x accessible car parking spaces, children’s play space and waste and refuse areas.”*
- 1.9 It is proposed to be delivered by retention of the two-storey façade fronting Hermitage Road, and construction of three new blocks referred to as Blocks A, B and C, with Block B & C having up to seven floors and roof level.
- 1.10 Blocks B and C share site boundary with the Crusader Industrial Estate.
- 1.11 Omega Works B is proposed as a redevelopment with:
- “Retention of the existing building facades along with partial demolition of the site to create a new mixed use scheme with six storeys of residential and commercial accommodation.”*
- “The proposed scheme includes provision of 673.5 m² of commercial floorspace and a total of 36 new residential apartments.”*
- 1.12 Both developments are proposed to have commercial units at ground floor and first floor.



Figure 1.1: Site Location (ref. 0092_OmegaB Design & Access Statement, Feb 2023)



Figure 1.2: Omega Works A & B (ref. 0092_OmegaB Design & Access Statement, Feb 2023)

2 Review of Noise Impact Assessments

2.1 Acoustic Consultants LTD (ACL) has been appointed to provide two noise impact assessments in relation to the planning applications for Omega Works A & B. The two reports are:

- Noise Impact Assessment – Omega A, 167 Hermitage Road, Haringey (ref. 9661/JL – June 2022) – hereafter Omega A NIA
- Noise Impact Assessment – Omega B, 167 Hermitage Road, Haringey (ref. 9661/JL – June 2022) – hereafter Omega B NIA

2.2 In the following table a high-level review (with associated comments) is provided in relation to the reports. It should be noted that the review and comments are in relation to noise and vibration issues only.

Review and Comments

2.3 The review and comments are summarised in **Table 2.1** below.

Issue / Paragraphs	MBL Comments
General observation • The two reports are identical with the exception of title, the development description and associated figures.	While there is, in principle, nothing wrong with re-using text and report templates where applicable, it is noted that certain references to the Omega A development is retained within the Omega B NIA where it is not appropriate.
Survey methodology	The overall principle of the survey methodology is standard in nature and does not deviate significantly from industry good practice. It can be argued that a survey lasting only one day is not truly representative of the existing acoustic environment. It is acknowledged that sometimes practical limitations dictate how long a survey can be carried out for. However, in this instance, it does not appear that there were any safety (or other) concerns/constraints in leaving the sound monitoring equipment unattended on site for a longer period of time. Therefore, it appears, in principle, the equipment could have been deployed for an extended duration, allowing for a more detailed and robust survey to be undertaken on which the assessment could have been based. It is also noted that it appears that no specific measurements or observations were made in

	relation to the activities within the Crusader Industrial Estate. Only a tail lift delivery is noted and included in the assessment. This cannot be considered representative of the activities occurring daily at the Crusader Industrial Estate. Therefore the survey has not fully covered potential noise from the industrial uses.
Guidance Documents	The reports refer to the relevant policies and British Standard documents normally used. While not a mandatory requirement, the guidance provided in relation to new residential dwellings ProPG¹ has not been mentioned or referred to.
Assessment methodology	As per the above the overall assessment methodology is in accordance with normal industry standard. There has been an assessment of the suitability of the proposed developments for residential use based on 3D noise modelling. The modelling has apparently been calibrated to the measured data. While the approach is not uncommon and the results do show the tail lift delivery to the unit within the Crusader Industrial Estate, it is not clearly stated that it is included. Nor is it entirely appropriate to include and assess the noise from the delivery in this manner. Limiting plant noise emission criteria has been identified for plant associated with the commercial uses of the proposed development, in accordance with the relevant standard.
Results	Calculations of the required façade mitigation have been carried out in accordance with relevant guidance. The results of the calculations do not seem unreasonable; however, these have not been reviewed in detail and verified by MBL.
Crusader Industrial Estate	The reports do not assess the activities or the potential plant/equipment noise from the Crusader Industrial Estate. The baseline sound survey did not include attended measurements of any potential activities, or even observations of these. The reports acknowledge the existence of the industrial uses surrounding the sites, but no further comments are made in relation to the potential

¹ Institute of Acoustics, Association of Noise Consultants, Chartered Institute of Environmental Health "ProPG: Planning & Noise – Professional Practice Guidance on Planning & Noise, New Residential Development", May 2017

	impact that these uses may have on future residential occupiers of the proposed developments.
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Table 2.1: High-level Review and Comments

- 2.4 It should be noted that paragraphs 7.133 to 7.135 of the Omega Works A, 167 Hermitage Road, London, N4 1LZ – Planning Statement, February 2023 (Collective Planning Reference JF/RE/0139) comments on the potential noise impact, which has been addressed in relation noise from the proposed development on surrounding noise sensitive receptors.
- 2.5 Paragraphs 7.136 to 7.140 within the same document addresses the Agent of change principle. However, it is only stated that:
- “ ...the proposals have been designed to ensure Crusader Industrial can continue to operate in its same way. The façade facing Crusader will not have any balconies and the windows will be double glazed, with additional insulation to ensure the noise impacts from the industrial estate are mitigated.”*
- 2.6 However, this is incorrect when consulting the planning drawings, and not acknowledged through the planning statement. There appear to be balconies facing both the access road and directly overlooking the Crusader Industrial Estate. Therefore, an assessment of potential noise impact on the external amenity areas, such as but not limited to balconies should be carried out. This is normally a requirement of both BS 8233:2014 and ProPG.
- 2.7 The assessments provided in Omega A NIA and Omega B NIA have been undertaken in accordance with BS 8233:2014², which technically only applies to traffic noise sources and not industrial sources.
- 2.8 A full assessment in accordance with BS 4142:2014+A1:2019³ has not been done to demonstrate that sufficient mitigation measures are implemented to reduce the risk of complaints from future occupants of the residential units within Omega Works A & B.
- 2.9 It should be noted that the upper floors of both developments have a direct line of sight to the whole of the Crusader Industrial Estate and thus have no natural screening from any noisy activities or plant/equipment currently associated with the operation of the estate.

² British Standard 8233:2014 “Guidance on sound insulation and noise reduction for buildings”

³ British Standard 4142:2014+A1:2019 “Methods for rating and assessing industrial and commercial sound”

3 Conclusion

- 3.1 Mayer Brown Limited (MBL) has been appointed by Industrial Property Investment Fund (IPIF) to review and comment on two noise impact assessment reports provided by Acoustic Consultants LTD (ACL) in relation to planning applications HGY/2023/0570 and HGY/2022/4310 known as Omega Works A and Omega Works B respectively.
- 3.2 The review has the following conclusions:
- While the reports in general follow the industry de-facto standard for noise impact assessments and feasibility studies for residential developments, there are a few issues which, if it had been addressed more thoroughly, could have provided a more robust assessment.
 - With regard to the baseline sound survey, it would have been beneficial to have a longer unattended survey period and to have some attended short-term measurements and observations of the typical activities at the Crusader Industrial Estate.
 - The assessment addresses the potential impact from traffic noise sources but does not adequately take into account the potential noise impacts from the Crusader Industrial Estate and other industrial/commercial uses in the surrounding area.
 - The reports provide a feasibility assessment for residential suitability but take into account the potential impact of traffic noise sources. The reports do not fully consider and/or assess the activities at the Crusader Industrial Estate.
- 3.3 Based on the above conclusions of the initial review, it is recommended that additional information, in the form of a BS 4142:2014+2019 assessment of potential noise impact from the Crusader Industrial Estate upon the Omega Works A and B developments is undertaken, and if required, details on proposed mitigation measures should be provided. This would include a new baseline sound survey over an extended period of time and attended measurements of activities / operations occurring at the Crusader Industrial Estate. The additional work would provide a more robust understanding of the existing acoustic environment and a comprehensive assessment upon which the local planning authority could make their decision.

Appendix A: Acoustic Glossary

General

A vibrating surface or turbulent fluid flow will cause pressure fluctuations in the surrounding air. These pressure fluctuations are perceived by the human ear as “sound”.

Measurement Units

The human ear can detect sound pressures as low as about 20 μPa , and can tolerate (for short periods) sound pressures as high as 200 Pa, an amplitude range of 10 million times. To take account of this huge amplitude range, sound pressure levels (often written in “acoustic shorthand” as SPL or Lp) are quantified using a logarithmic scale, the decibel (dB) scale. This is based on a reference pressure of 20 μPa , thus a sound pressure of 20 μPa would equate to 0dB and a pressure of 200Pa would equate to 140dB.

Frequency (Pitch) Characteristics

The sound received at any particular location is not solely influenced by the sound pressure level, the frequency characteristics (pitch) of the noise is also an important factor. Noise audible to a human (with “normal” hearing), typically covers the frequency range 20 Hertz to 20,000 Hertz. Hertz (Hz) are defined as the number of times the sound pressure fluctuates in one second. “Low” pitched sounds fluctuate less times per second than “high” pitched sounds. Whilst humans are capable of detecting a wide range of frequencies, the ear is not equally sensitive to all frequencies – the ear is most sensitive at frequencies towards the middle of the audible range and less sensitive to the lower and higher frequencies.

To take account of this frequency response, sound pressure fluctuations are normally quantified by applying a frequency-weighting network or filter which simulates the frequency response of the ear. In essence, this means that more significance is given to the frequencies at which the ear is most sensitive and less significance to those at which the ear is less sensitive. Noise measurements relating to human reaction are generally made using an “A-weighting” network. These measurements are reported as A-weighted decibels or dB(A). The A-weighted sound pressure level is written in “acoustic shorthand” as L_A.

Variation of Sound with Time

It will be appreciated that the sound pressure level of most noise sources will fluctuate with time. In order to take account of the way in which the human ear perceives noise, it is normal for the sound pressure level to be quantified using a time weighting network, to mimic the speed of response of the human ear. The standardised setting for most types of noise is a “Fast” time weighting.

The manner in which sound fluctuates with time can also influence the subjective manner in which noise is perceived. Noise can be continuous (showing no significant variation with time as in the case of a fan), intermittent (i.e. the noise is transient in it’s nature, such as a train pass-by) or impulsive (i.e. there is a sudden build up of noise - this can range from “clanking” types sounds as might be experienced next to railway goods yard or a high energy discharge such as an explosion)

Measurement of Sound

Sound pressure levels are measured using equipment comprising a pressure-sensitive microphone, associated amplifier, frequency weighting network, time weighted network and output indicator. In its simplest form this is a small hand-held instrument called a sound level meter. More sophisticated instrumentation (a sound level analyser) is also available which allows the real-time output of the frequency characteristics of the sound to be quantified.

Comparison of Sound Levels

To put the significance of noise measurement into context, the following Table presents the A-weighted sound pressure level of some typical sources:

Sound Pressure Level, dB(A)	Typical Noise Source . Activity
160	Saturn Rocket Taking Off
140	Military Jet Taking Off at 30m
100	Nightclub
90	Heavy goods vehicle driving past at 7m
80	Busy urban road
70	Domestic vacuum cleaner at 3m
60	Busy office environment
55	Normal speech at 1m
40	Whispered conversation at 2m
30	Bedroom at night (BS 8233: 1999)
20	Remote country location
0	Threshold of hearing – a very eery silence

Addition of Sound Levels

It is important to note that the use of a logarithmic scale to describe noise does not allow normal arithmetic addition. This means that two noise sources each generating a level of, say, 60dB(A) will not generate a combined sound level of 120dB(A). The values must be added logarithmically, which would actually yield a combined sound level of 63dB(A) in this example.

Subjective Perception of Sound Levels Changes

With regard to the human perception of sound level changes, the human ear:

- Cannot generally perceive a sound level difference of less than 3dB(A)
- Will perceive a sound level difference of 4-5dB(A) as “noticeable”
- Will perceive a sound level difference of 10dB(A) as a doubling (or halving) of loudness.

Acoustic Terminology

As stated previously, most sources of noise will fluctuate with time. In order to characterize such noise, it is therefore normal to represent the noise climate using a variety of noise parameters and statistical indices. The most commonly adopted noise parameters are described below:

$L_{Aeq,T}$	This is the equivalent continuous A-weighted sound level measured over a specified time period "T". This is the notional continuous sound level which, over the time T, contains the same amount of energy as the actual fluctuating sound being measured. This parameter is widely accepted as being the most appropriate noise descriptor for most environmental noise and the effects of noise on humans.
$L_{Amax,fast}$	This is maximum A-weighted sound pressure measured with a fast frequency response recorded during the stated measurement period. It is typically used to characterise the highest sound level caused during a noise event.
$L_{A90,T}$	This is the A-weighted sound pressure level exceeded for 90% of the specified time period "T". It is normally used to describe the underlying background noise level of an environment since it inherently excludes the effects of transient noise sources.

Noise Rating (NR) Level

When describing noise from building services installations, it is common to express noise levels in terms of a Noise Rating (NR) Level. The NR level is determined by plotting the measured frequency spectrum of a noise against a series of reference curves, which roughly approximate to equal loudness values. This method permits higher sound levels at low frequencies corresponding to the sensitivity of the human ear. The NR level is defined as the value of the highest curve "touched" by the plotted frequency spectrum. For typical sources of building services noise, the overall A-weighted sound level is numerically around 5-6dB higher than the NR level of the noise.

Airborne Sound Insulation Measurement Parameters

The ability of a building element to reduce airborne noise can be described by a number of different parameters relevant to both laboratory and on-site performance evaluation. In general, the higher these values, the better the resistance of the construction to the transmission of airborne sound. The most commonly used parameters include:

R_w	The " Weighted Sound Reduction Index " (R_w) is a single value measure of the intrinsic sound reduction capabilities of a construction, as measured in an acoustic laboratory. Measurement values are determined in accordance with the BS EN ISO 10140 series of standards and weighted in accordance with BS EN ISO 717-1: 2013.
R'_w	The " Weighted Apparent Sound Reduction Index " (R'_w) is a single value measure of the apparent sound reduction capabilities of a construction, when installed on-site (which will normally be some way lower than the laboratory value due to less favourable installation conditions, the quality of workmanship, etc.). Measurement values are determined in accordance with the BS EN ISO 10140 series of standards and weighted in accordance with BS EN ISO 717-1: 2013. In practice, the R'_w of a construction can only be reliably determined if "direct" sound transfer through the partition can confidently be taken as the dominant noise transfer path (i.e. there is no "flanking" sound transmission).
D_w	The " Weighted Sound Level Difference " (D_w) is a single value measure of the on-site sound reduction between two rooms. This value inherently includes "direct" sound transmission through any separating construction and "flanking" transmission through other building elements.

Measurement values are determined in accordance with BS EN ISO 140-4: 1998 (for Building Regulations compliance purposes) or BS EN ISO 16283-1: 2014 and weighted in accordance with BS EN ISO 717-1: 2013.

$D_{n,fw}$	The " Weighted Normalised Flanking Level Difference " ($D_{n,fw}$) is a single figure measure of the sound reduction between two rooms solely due to sound transmission through a specified flanking path. This parameter is frequently used to provide an indication of the sound reduction capabilities of suspended ceiling and raised access floor constructions where there is common void between adjacent rooms or as a measure of sound that may be transmitted between rooms through external curtain walling. Measurements are undertaken in accordance with BS EN ISO 10848-2: 2017 and weighted in accordance with BS EN ISO 717-1: 2013.
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Impact Sound Insulation Measurement Parameters

Some building elements also have the potential to generate "impact" noise, for example due to human "footfall" on floor structures, or the impact of rainfall on lightweight roofing components. A variety of parameters are again available to define the amount of noise likely to be generated. In general, the lower these values, the less sound the construction will generate as a result of impacts. Typical measurements parameters include:

$L_{nT,w}$	The " Standardised Impact Sound Pressure Level " is a "single number" rating describing the intrinsic impact sound insulation capabilities of a construction (such as a floor system) as measured in an acoustics laboratory. Values are determined in a vertical sound transmission suite by locating a "tapping machine" in the upper room of the suite and measuring the amount of sound radiated by the floor in the room below. Measurement values are determined in accordance with the BS EN ISO 10140 series of standards and weighted in accordance with BS EN ISO 717-2: 2013.
$L_{n,fw}$	The " Normalised Flanking Impact Sound Pressure Level " is a "single number" rating describing the amount of flanking sound that would be transmitted to an adjoining space (separated by a partition) due to impacts on the test sample. It is, for example, used to indicate the amount of noise that may be generated due to footfall noise on a raised access floor system. Values are determined in a horizontal sound transmission suite by locating a "tapping machine" one side of a separating partition built off the test sample and measuring the amount of noise radiated by the floor in the adjoining space on the other side of the partition. Measurement values are determined in accordance with BS EN ISO 10848-2: 2017 and weighted in accordance with BS EN ISO 717-2: 2013.

Room Acoustic Measurements

T	The " Reverberation Time " (T) of a room is defined as the time taken for the sound energy produced by a source Time (RT) to decay by 60 dB after the source has been switched off. The reverberation time of a space can be calculated by considering the volume of the room and the areas and sound absorption qualities of room surface finishes. Small, "soft" rooms tend to give low reverberation times, whilst large, "hard" rooms tend to give long reverberation times.
α_p	The " Practical Acoustic Absorption Coefficient " (α_p) is a measure of how much sound energy is absorbed by a building element at a particular frequency, as measured in accordance with BS EN ISO 354: 2003.
α_w	The " Weighted Absorption Coefficient " (α_w) is a single figure measure of the overall sound absorption capabilities of a building element determined in accordance with BS EN ISO 11654: 1997.

