

**NOISE IMPACT ASSESSMENT**

**FOR**

**POWER SCAFFOLDING SUPPLIES LIMITED**

**RELATING TO A PROPOSED**

**STRATEGIC HOUSING DEVELOPMENT**

**AT**

**BELGARD ROAD AND AIRTON ROAD, TALLAGHT, DUBLIN 24**

25<sup>th</sup> September 2019



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## 1.0 INTRODUCTION

This noise impact assessment report been prepared by *Byrne Environmental Consulting Ltd* on behalf of the Applicant, Power Scaffolding Supplies Limited and presents an assessment of the potential noise impacts on the receiving environment associated with the construction and operation of a proposed strategic housing development at Belgard Road and Airton Road, Tallaght, Dublin 24. In addition, this report also assess the inward noise impact that road traffic will have on the proposed development.

The development will consist of the demolition of the existing industrial buildings on site (4,800 sq m) and the construction of 2 No. blocks comprising 328 No. apartments (93 No. 1 bed, 222 No. 2 bed and 13 No. 3 bed), ancillary residential support facilities and commercial floorspace measuring 31,147 sq m gross floor space above a single basement measuring 5,861 sq m.

Block A is part 5 to part 7 No. storey building (13,710 sq m) over basement comprising 149 No. apartments with class 3 office space (222 sq m). Block B is a part 6 to part 9 No. storey over basement block comprising 179 No. apartments, 2 No. double height class 1/2 commercial/retail units (354 sq m), café/restaurant (313 sq m), creche (360 sq m), internal residents amenity area (644 sq m) at ground floor including reception (37.7 sq m), residents lounge (91.3 sq m), private dining area (52.6 sq m), We Work space (45.5 sq m), games room (47.3 sq m) and gym (80 sq m) and communal lounge (220 sq m) at 6th floor level (17,437 sq m).

The development also consists of the provision of a landscaped courtyard; public plaza at the corner of Airton and Belgard Road; pedestrian access from Airton Road to the Technological University campus; balconies; landscaped roof terrace at 6th floor level (7<sup>th</sup> Storey) of Block B (671 sq m); 184 No. car parking spaces at basement level including 14 No. club car spaces; 727 No. basement and surface bicycle parking spaces; 4 No. motorbike parking spaces; bin storage; boundary treatments; green roofs; hard and soft landscaping; plant; lighting; Vodafone cabin sub-station; ESB sub-stations, switch rooms and generators; and all other associated site works above and below ground.

The purpose of this Noise Impact Assessment is two-fold:

**1** To assess the inward noise impact on the proposed residential aspect of the development from road traffic on the Airton Road and the Belgard Road and from the commercial/retail aspect of the development.

**2** To identify all potential noise sources associated with the construction and operational phases of the proposed development and to determine the extent of the potential noise impact on the closest receptors located in proximity to the development and to provide noise control and management solutions as part of the design of the development to ensure that the construction phase or operational phase of the development does not have an unacceptable noise or vibrational impact on any local third party property.

## 2.0 EXPERIENCE OF IAN BYRNE MIOA (MEMBER OF THE INSTITUTE OF ACOUSTICS)

The noise impact assessment was prepared by Ian Byrne, Principal Acoustic Consultant of Byrne Environmental Consulting Ltd who is Member of the Institute of Acoustics (MIOA) and meets the criteria for a “competent person” as defined by the EPA in their 2016 EPA publication, “Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)”.

Ian Byrne has 22 years’ experience as an acoustic consultant providing acoustic monitoring, assessment and management services and has direct experience in the preparation of Noise Impact Assessments for various residential, commercial and hotel developments in Dublin.

## 3.0 SITE LOCATION & CONTEXT

The subject site is located at the junction of Airton Road and Belgard Road, in Tallaght, Dublin 24. The area in the vicinity of the site is principally comprised of commercial activities including the logistics

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Noise Impact Assessment

facility, Trulife to the east, The Technological University Tallaght's sports grounds to the south east, an EIR telecommunications facility to the south and traveller residential development further to the south. Belgard Road borders the site to the west and Airton Road to the north. A large data centre is located on the opposite side of Airton Road to the north of the site.

Vehicular traffic is the dominant existing noise source throughout the day and night in the area.

Road traffic noise generated by cars, vans and trucks dominate the noise climate along the northern and western boundaries of the subject site.

The monitoring of third-party buildings and property during the construction phase of the development, given their proximity to development works, will require noise and vibration monitoring systems to be installed at a number of locations to ensure that works can be effectively managed to ensure adverse impacts do not occur to third party properties.

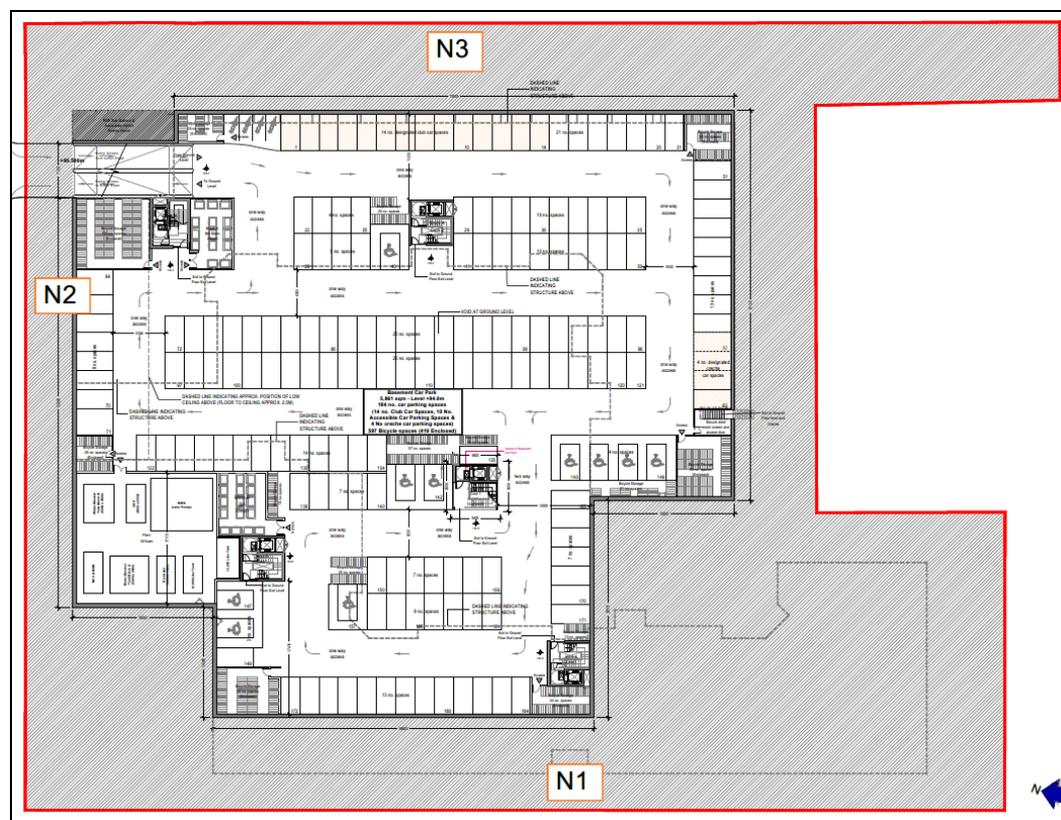
This report includes a description of the existing ambient noise climate in the vicinity of the subject site, a description of how the proposed development may impact existing ambient noise levels and the mitigation measures that shall be implemented to control and minimise the impact that the development may have on ambient noise levels.

In addition, this report also assesses the inward noise impact that external road traffic noise sources may have on the internal environments within the residential units.

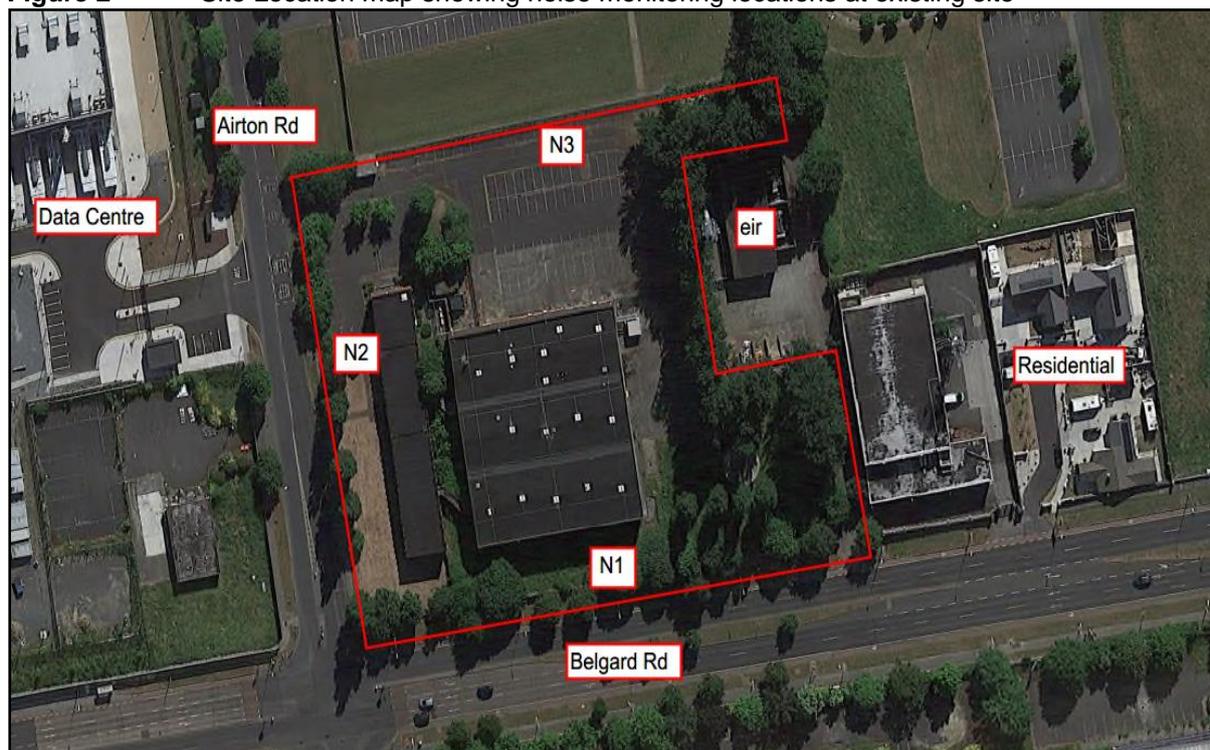
As the development will include retail space the impact of activities such as early morning deliveries are also considered.

Figures 1 & 2 presents images of the existing and proposed site and the surrounding area and identifies the baseline noise monitoring locations N1 - N3.

**Figure 1** Site layout showing noise monitoring locations at proposed development site



**Figure 2** Site Location map showing noise monitoring locations at existing site



#### 4.0 BASELINE NOISE ASSESSMENT METHODOLOGY

The methodology used to measure and assess the existing ambient noise climate in the vicinity of the subject development site was conducted with reference to;

*ISO 1996-1 216 Acoustics – Description, Measurement and Assessment of Environmental Noise Parts 1-3*

2016 EPA publication, “*Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)*.”

*TII’s 2014 Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes.*

The baseline noise environment was assessed on 21<sup>st</sup> and 22<sup>nd</sup> February 2019 by conducting a series of noise surveys at the proposed facades of the residential development (shown as N1, N2 and N3 in Figure 1 above) of the building at 1<sup>st</sup> floor level as 1<sup>st</sup> floor apartments will experience the highest impact of road traffic noise.

Noise levels were noted to decrease by <1dB(A) at 2<sup>nd</sup> Floor height.

The TII Guidance document recommends that attended 24-hour baseline noise measurements are conducted to ensure the integrity of the measurement results and that noise measurements are conducted in different locations to obtain a geographical spread of noise levels within a scheme.

The principle noise descriptors that were measured to characterise the existing ambient noise climate were as follows:

$L_{Aeq}$ :	The equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period.
$L_{A10}$ :	The sound level that is exceeded for 10% of the sample period. It is typically used as a descriptor for traffic noise.
$L_{A90}$ :	The sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.
$L_{Amax}$ :	The instantaneous maximum sound level measured during the sample period.
$L_{den}$	Day-evening-night indicator 24hrs
$L_{day}$	Day indicator 07:00hrs – 19:00hrs
$L_{night}$	Night indicator 23:00hrs – 07:00hrs
$L_{evening}$	Evening indicator 19:00hrs – 23:00hrs

The daytime period for the purposes of this report is defined as 07:00hrs – 19:00hrs, evening 19:00hrs – 23:00hrs and night time is defined as 23:00hrs – 07:00hrs.

### Noise Measurement Instrumentation

Noise measurements were made using calibrated *Bruel and Kjaer 2250 integrating sound level meters* which were calibrated at 94 dB prior to and after use using a calibrated acoustical calibrator model *Cirrus 511ES*. The sound level meters are Class 1 instruments which is in accordance with IEC 61672-1:2013 regulations. The sound level meters used for the surveys were fitted with *B&K UA1401* outdoor monitoring windshields.

## 5.0 BASELINE NOISE SURVEY RESULTS

Ambient noise levels were measured between 12<sup>th</sup> – 13<sup>th</sup> February 2019 during appropriate meteorological conditions.

With regard to the consistency of the recorded noise levels at each of the monitoring locations over the 24-hour measurement periods it is considered that the measured noise levels are accurate and representative of the impact that road traffic noise has on the development site.

**Table 1** Baseline Noise Survey Results 1<sup>st</sup> Floor level

Location	Existing Noise Levels 19.10.18	
	Night time 23:00 – 07:00hrs	Daytime 07:00 – 19:00hrs
N1 Belgard Rd site boundary	55 - 64 dB(A) $L_{Aeq,15min}$ 85 dB(A) $L_{Amax}$	63-65 dB(A) $L_{Aeq,60min}$ 90 dB(A) $L_{Amax}$
N2 Airton Rd site boundary	56 - 64 dB(A) $L_{Aeq,15min}$ 80 dB(A) $L_{Amax}$	62 - 64 dB(A) $L_{Aeq,60min}$ 86 dB(A) $L_{Amax}$
N3 Western site boundary	49 - 59 dB(A) $L_{Aeq,15min}$ 72 dB(A) $L_{Amax}$	55 - 58 dB(A) $L_{Aeq,60min}$ 78 dB(A) $L_{Amax}$

**Table 2** Lden & Lnight values

Location	Lden dB
N1 Belgard Rd site boundary	65
N2 Airton Rd site boundary	63
N3 Western site boundary	55

## 6.0 DISCUSSION OF RECORDED NOISE LEVELS

The recorded noise levels demonstrate that the noise climate at the development site is significantly impacted by existing road traffic noise from the adjacent Belgard and Airton Roads.

N1 Noise levels along the western site boundary are 65 dB  $L_{den}$  as a result of the proximity of the Belgard Road to the closest proposed residential units.

N2 Noise levels along the northern site boundary are 63 dB  $L_{den}$  as a result of the proximity of the Airton Road to the closest proposed residential units

N3 Noise levels along the eastern site boundary are 55 dB  $L_{den}$ . The impact of traffic noise is lesser at this location compared to N1 and N2. HGV movements associated with the adjacent logistics facility were observed to occur and contribute to the noise climate at the eastern boundary.

### Local Aircraft Noise

It is noted that the subject site is not located within the Casement Aerodrome inner horizontal surface. During the baseline noise surveys aircraft movements associated with Casement were observed in the distance and it was noted that they had a minor and infrequent impact on the ambient noise climate. Road traffic on the Belgard and Airton Road dominated the noise climate at the site. The proposed mitigation measures will be sufficient to ensure that aircraft noise does not have an adverse noise impact within the proposed residential units.

## 7.0 ASSESSMENT OF THE IMPACT OF EXTERNAL NOISE LEVELS ON PROPOSED RESIDENTIAL UNITS

The purpose of the ambient noise survey was to provide data on external ambient noise levels at the facades of the proposed residential development. It has been established that the northern and western facades of the development will be exposed to high levels of road traffic noise during both the daytime and night time periods given its location in a busy industrial and commercial area of Tallaght.

Guidance on internal noise levels for dwellings is contained within *British Standard BS 8233: 2014: Guidance on Sound Insulation and Noise Reduction for Buildings*. This British Standard sets out recommended noise limits for indoor ambient noise levels in dwellings as detailed in Table 3.

**Table 3** Recommended Indoor Ambient Noise Levels from *BS 8233: 2014*

Typical situations	Design Range, LAeq,T dB	
	Daytime LAeq,16hr (07:00 to 23:00hrs)	Night-time LAeq, 8hr (23:00 to 07:00hrs)
Living Room Resting	35	na
Dining room	40	na
Bedroom	35	30

With regard to the most sensitive time of the 24-hour day period, the internal noise level within a bedroom nighttime period between 23:00 – 07:00hrs should not exceed 30 dB which is therefore the design criteria for all residential units within the development.

In order to achieve the internal design criteria of 30 dB and with regard to the existing external noise levels associated with road traffic, the structural elements of the apartments must provide a high degree of acoustic insulation as discussed later in this report.

## 8.0 EXTERNAL & INTERNAL NOISE MITIGATION DESIGN MEASURES

To mitigate the traffic noise impacts on the proposed residential units within the scheme, mitigation measures will be incorporated into the design of the proposed residential units (mitigation by design).

External noise can enter rooms within dwellings through windows, ventilators, walls, roof and doors. In most cases, however, windows provide the main path and therefore, mitigation by design has focussed on this building element to ensure that the insulation is adequate.

All residential units with facades facing towards the Belgard Road and the Airton Road shall have acoustically rated high performing double/ triple pane window sets (inclusive of glazing, frames, seals and openable elements) to prevent the breakthrough of external noise. It is noted no groundfloor residential units front onto either Belgard Road or Airton Road.

All window sets should be tested for sound insulation in accordance with *BS EN ISO 140 and BS EN ISO 717*.

Given that there is an existing industrial facility located adjacent to the eastern site boundary and to ensure that any future industrial activity does not have an adverse noise impact on the eastern facades of the apartment buildings, all windows facing towards the facility shall have acoustically rated high performing double/ triple pane to prevent the breakthrough of external noise.

**Table 4** Window Sound Insulation performance requirements

Room	Octave Band Centre Frequency (Hz)					
	125	250	500	1k	2k	4k
Living	29	31	38	43	44	54
Bedroom	31	33	40	45	46	56

There shall be no standard passive air vents on any external walls to reduce the breakthrough of external noise. The apartments shall include noise attenuating ventilation systems.

**Table 5** Ventilation Sound Insulation performance requirements

Room	Octave Band Centre Frequency (Hz)					
	125	250	500	1k	2k	4k
Living	35	36	36	44	44	50
Bedroom	47	45	38	46	51	51

All residential units shall be constructed to ensure that they comply with *Department of the Environment, Building Regulations 2014, Technical Guidance Document E – Sound*. Table 6 provides detail on the recommended sound insulation values that shall be achieved to ensure acoustic privacy between adjoining residential units.

**Table 6** DOE Sound insulation values for internal party walls / floors

<b>Dwellings</b>	<b>Airborne Sound Insulation D<sub>nTw</sub> (dB)</b>	<b>Impact Sound Insulation L<sub>nTw</sub> (dB)</b>
Floors and Stairs	53	58
Walls	53	N/A

## 9.0 OPERATION NOISE IMPACT ASSESSMENT

### Retail

The commercial element of the development includes a café/restaurant and retail commercial units which will also have a potential noise impact on the residential aspect of the development, however, this aspect of the development will not occur during the more sensitive night-time period. The principal potential noise associated with a retail premises is from goods deliveries by truck or van. In order to ensure that this activity does not impact the more sensitive night-time period, all deliveries will be only permitted between 07:00hrs – 19:00hrs. Appropriate signage shall be posted at the retail units to this effect.

External speakers will not be permitted at any of the retail/cafe units.

### Residential

The noise impact of the residential aspect of the development on the receiving environment will be slight and will be limited to internal vehicle movements entering and exiting the basement car-park, and residents using the internal courtyard amenity area which will be screened by the apartment block structures and the public plaza which will be screened from the residential aspect by the retail units buildings.

There will not be an adverse noise impact on the traveller accommodation site located further south of the subject development site.

In conclusion, it is predicted that the operational phase of the proposed development will not have an adverse noise impact on the receiving environment or on any existing third-party property.

### Creche

The Creche is an integral aspect of the development which will serve the residents of the development. The operational hours will be expected to be from 7am – 7pm Monday to Friday. Children will typically not be outside playing before 9am and as such there will be no early morning noise impacts associated with the creche. The sound of children playing in any environment is not regarded as a noise but as a natural aspect of life in any residential area or development and it is predicted that the operation of the creche will not adversely impact other units or residential apartments.

## **10.0 CONSTRUCTION PHASE NOISE & VIBRATION ASSESSMENT**

### **10.1 INTRODUCTION**

This section of the Noise Impact Assessment (NIA) relates to the environmental monitoring, assessment and management aspects of the demolition phase and construction phase associated with the subject site.

The purpose of this section is to detail the environmental monitoring, assessment, management and working criteria for assessing and controlling the construction related impacts of noise and vibration, on local receptors for the duration of the construction phase of the development project and to allow the development to be appropriately managed to minimise the potential for structural damage, noise nuisance to third party properties.

This document specifies a range of appropriate noise and vibration control and mitigation measures which shall be implemented from the outset of site works in order to achieve compliance with appropriate limit values and to minimise the impact of works on the closest receptors to the site and to comply with the relevant Planning Conditions as may be granted for the development. This section of the NIA shall form the basis of the Environmental Construction Management Plan for the subject development.

### **10.2 ETHOS ON THE ENVIRONMENTAL MANAGEMENT OF CONSTRUCTION WORKS**

It is the intention of the Project Team that the development project is managed to ensure that the receiving environment and local receptors are not adversely impacted by works and that a comprehensive environmental monitoring and management network will give confidence that works are being effectively managed and that environmental emissions are being effectively controlled and monitored in accordance with best practice, project limit criteria and regulatory requirements.

Key to the effective environmental management of the project will be the use of monitoring systems capable of live data transmission of environmental data.

The Environmental Construction Management Plan shall consider the sensitivities of the receiving environment, the utilisation of Best Practice Mitigation measures and the development of appropriate limiting criteria without curtailing the construction schedule.

We are confident that the project can be developed with an ethos of Low Environmental Impact as a core principle.

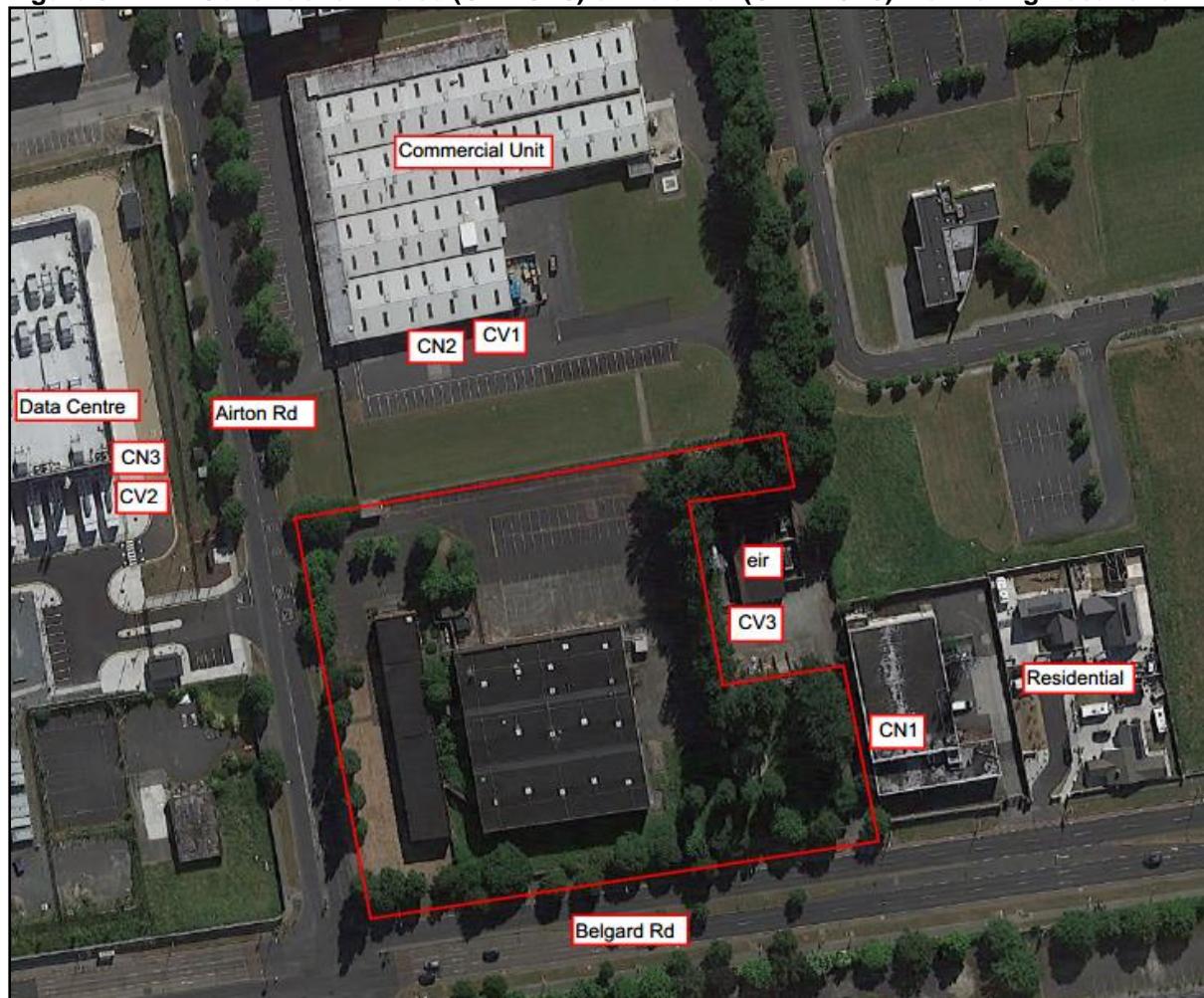
### **10.3 ENVIRONMENTAL RECEPTORS AND PROPOSED MONITORING LOCATIONS**

The closest receptors located in proximity to the development site which have the highest potential to be impacted by demolition and construction works are identified as follows:

- Traveller accommodation site south of the site
- Eir depot adjoining the southern site boundary
- Data Centre located further north of the site
- Industrial Unit adjacent the eastern site boundary

The monitoring of third-party buildings and property, given their proximity to development works, will require noise and vibration monitors to be installed at a number of locations to ensure that works can be effectively managed to ensure adverse impacts do not occur to third party properties. The receptor properties and the proposed noise and vibration monitoring locations are shown below in Figure 3.

**Figure 3 Construction Noise (CN1-CN3) & Vibration (CV1 – CV3) Monitoring Locations**



#### 10.4 CONSTRUCTION WORKS DESCRIPTION

The site will involve the following phases:

- Installation of Site Hoardings and site offices
- Stripping out of existing building
- Demolition of the existing building structures
- Site enabling works
- Site excavation to basement level
- Piling works,
- Construction of the sub and super structures
- Fit Out
- Landscaping works

It is understood that the demolition and construction phase will occur over an approximate 24-month period.

## 10.5 PROJECT ENVIRONMENTAL MONITORING & MANAGEMENT REQUIREMENTS

In order to effectively manage the environmental aspects of the demolition and construction phases, this Environmental Construction Management Plan (ECMP) will consider the following guidance documents which detail Best Practice methods for noise and vibration control and management on construction sites.

*BS 5228 - 1:2009+A1:2014 Code of practice for noise and vibration control on open sites: Part 1 Noise; and*

*BS 5228 – 2:2009+A1 2014 Code of practice for noise and vibration control on open sites: Part 2 Vibration*

The following monitoring instrumentation shall be installed prior to the commencement of any site works:

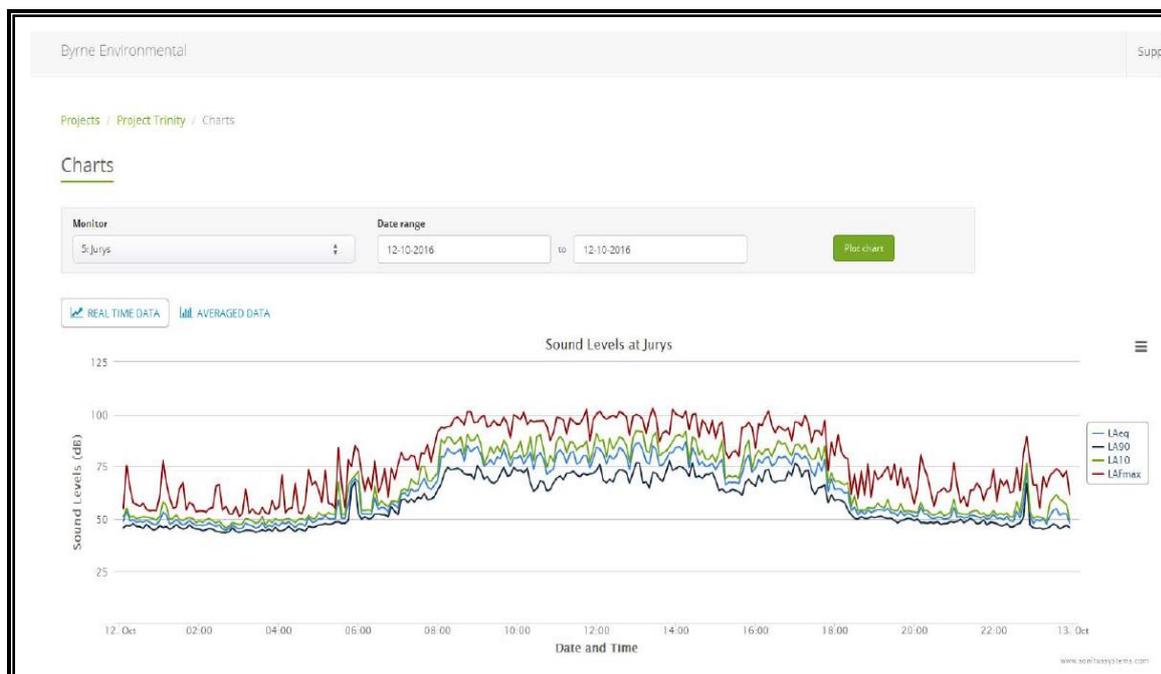
### Noise Monitoring

Installation of continuous data logging live Noise Monitoring Systems with remote login and data download and text/email alert functionality.

It is proposed that web based live continuous noise monitoring systems shall be installed at the closest receptors to the development site which shall record the continuous measurements of key noise parameters including  $L_{Aeq}$  and  $L_{AFmax}$ ,  $L_{A90}$ ,  $L_{A10}$ .

The noise monitoring systems shall be capable of sending email and text alerts of exceedances of the specified noise limit criteria which will allow the Construction Manager or a delegate take immediate action to control a subject noise source / activity.

### Example of real time web-based noise level plot



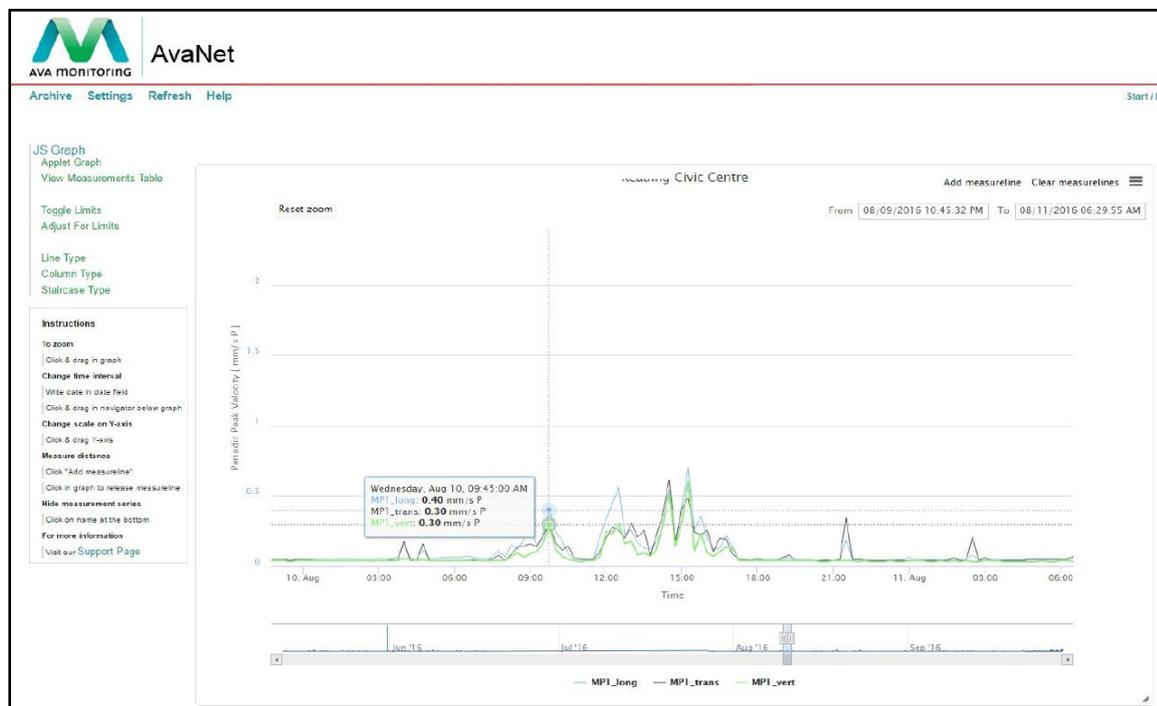
### Vibration Monitoring

Installation of continuous data logging live Vibration Monitoring Systems with remote login and data download and text/email alert functionality.

It is proposed that web based live continuous vibration monitoring systems shall be installed at the closest receptors to the development site which shall record the continuous measurements of structural vibration parameters including PPV (mm/sec) and Frequencies as Hz.

The vibration monitoring systems shall be capable of sending email and text alerts of exceedances of the specified vibration limit criteria which will allow the Construction Manager or a delegate take immediate action to control a vibration causing activity.

### Example of real time web-based vibration level plot



The Environmental Construction Management Plan shall detail a range of Best Practice noise and vibration control and mitigation measures that shall be implemented during the construction phase of the development project as detailed below.

## 10.6 PROPOSED NOISE & VIBRATION LIMIT CRITERIA

### 10.6.1 Construction Phase Noise Limit Criteria

The construction noise limits, which are presented in Table 5 represent a reasonable compromise between the practical limitations in a construction project, and the need to ensure an acceptable noise level for the nearby residents and other sensitive receptors including amenity space. Table 5 specifies the recommended Project Noise Limit Criteria in accordance with *BS 5228 – 1:2009+A1 2014 Code of practice for noise and vibration control on open sites: Part 1 Noise*. Noise limit criteria are based on the noise measured at the façade of each receptor location.

**Table 5** BS5228-2014-Part 1 Construction Phase Noise Limit Criteria

Construction Phase			Noise Limit Criteria
Location / Day	Assessment Period	External Noise Limit Criteria	
All Receptors Monday to Friday Morning	07:00hrs – 08:00hrs	70 dB(A), LAeq, 1hr	
All Receptors Monday to Friday Daytime	08:00hrs – 18:00hrs	75dB(A), LAeq, 10hr	
All Receptors Monday to Friday Early Evening	18:00 – 19:00hrs	70 dB(A), LAeq, 1hr	
All Receptors Monday to Friday Late Evening	19:00hrs – 22:00hrs	65 dB(A), LAeq, 3hr	
All Receptors Monday to Friday Nighttime	22:00hrs – 07:00hrs	55 dB(A), LAeq, 1hr	
All Receptors Saturday Morning	07:00hrs – 08:00hrs	70 dB(A), LAeq, 1hr	
All Receptors Saturday Daytime	08:00hrs – 13:00hrs	75dB(A), LAeq, 5hr	
All Receptors Saturday Midday	13:00 – 14:00hrs	70 dB(A), LAeq, 1hr	
All Receptors Saturday Afternoon-Evening	14:00 – 22:00hrs	65 dB(A), LAeq, 3hr	
All Receptors Saturday Nighttime	22:00hrs – 07:00hrs	55 dB(A), LAeq, 1hr	
All Receptors Sundays and Public Holidays Daytime	07:00hrs – 21:00hrs	65 dB(A), LAeq, 1hr	
All Receptors Sundays and Public Holidays Nighttime	21:00 – 07:00hrs	55 dB(A), LAeq, 1hr	

### 10.6.2 Construction Phase Vibration Limit Criteria

This section specifies appropriate vibration limit criteria to be implemented during all aspects of the demolition and construction phases of the project.

It is proposed that the limit criteria will be implemented for all buildings based on *British Standard BS 7385-2:1993* and with regard to a building condition survey prior to the commencement of works,

**Table 6** Transient vibration guide values for cosmetic damage as set out in BS 7385-2:1993

Type of building	Peak component particle velocity in frequency range of predominant pulse	
	4-15Hz	15Hz and above
Reinforced or framed structures Industrial and heavy commercial buildings	50mm/s at 4Hz and above	50mm/s at 4Hz and above
Unreinforced or light framed structures Residential or light rail commercial buildings	15mm/s at 4Hz and increasing to 20mm/s at 15Hz	20mm/s at 15Hz and increasing to 50mm/s at 40Hz and above

Table 6 shows limits above which cosmetic damage could occur for transient vibration. Minor damage is possible at vibration magnitudes which are greater than twice those shown in Table 6, and major damage to a building structure would only generally occur at values greater than four times the tabulated values.

The values in Table 5 only relate to transient vibration. If there is a continuous vibration, e.g. from the operation of a sonic pile driver, the guide values shown in Table 5 will be reduced by up to 50%. This guidance is reproduced from *BS 5228-2:2009+A1:2014 Code of practice for Noise and Vibration Control on Construction and Open Sites: Part 2 – Vibration*, and *BS 7385- 2:1993 – Evaluation and Measurement for Vibration in Buildings: Part 2 – Guide to damage levels from groundborne vibration*.

With consideration of the above a proposed vibration limit value of 7.5mm/sec (PPV) is recommended to be implemented for all properties in the vicinity of the development sites. (Subject to building condition survey results) and with an amber alert of 5mm/sec at all buildings.

## 11.0 PROPOSED NOISE & VIBRATION CONTROL & MITIGATION MEASURES

This section of the Noise Impact Assessment details the noise and vibration mitigation measures that shall be implemented during the course of demolition and construction works to minimise the impact of works on adjacent and adjoining receptor buildings.

### 11.1 NOISE CONTROL & MANAGEMENT

This section details the noise control and mitigation measures that may be implemented as required during the demolition and construction phases of the project.

#### Site design / Pre-Works Set Up

Prior to the commencement of demolition / construction activities, a solid 3m high boundary perimeter hoarding shall be erected.

Work compounds shall be laid out so that access and loading areas are located away from residential receptors located to the south of the site, by locating noisy operations well away from receptors and using on-site structures and materials to screen noise where practicable and necessary.

Advance notice shall be given to all stakeholders prior to the commencement of demolition, excavation and piling works detailing the nature of the works and the expected duration of the works relative to the location of the receptor and should also include reference to all measures implemented to reduce the noise impact from works.

Installation of noise and vibration monitoring systems at third party properties.

#### Demolition / Construction Works Noise Mitigation & Control Measures

This section details the noise control and mitigation measures to be implemented and enforced for the duration of demolition and construction works.

All plant used on the project shall be operated in compliance with the noise limits quoted in the relevant *European Commission Directive 2000/14/EC [S.I. No. 632 of 2001] as amended by S.I. 191 of 2006* and all subsequent amendments thereof, and will adopt the recommendations set out in *BS 5228 – 1:2009+A1 2014 Code of practice for noise and vibration control on open sites: Part 1 Noise* with regard to noise mitigation options.

Tools, plant or equipment which involve percussive processes such as rock breaking will not be operated before 08.00hrs.

Mobile 3m noise screens shall be used to enclose all pneumatic breaking and piling activities to control noise at source.

Noisy stationary equipment shall be sited away from sensitive site boundaries as far as practicable.

Where reasonably practicable, noisy plant or activities shall be replaced by less noisy alternatives if noise limit breaches and/or complaints occur for extended periods.

Proper use of plant with respect to minimising noise emissions and regular maintenance will be required.

All vehicles and mechanical plant will be fitted with effective exhaust silencers and will be maintained in good efficient order

Where noisy plant is required to operate in works areas next to sensitive buildings acoustic low noise plant options will be used wherever practicable.

Dumpers and any plant used for moving materials around the site will have high performance exhaust silencers.

Selected use of rubber-tyred 360 excavators over steel track equipment where practicable.

The use of inherently quiet plant is required where appropriate – all compressors and generators will be “sound reduced” or “super silent” models fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use, and all ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers.

All compressors, generators and pumps shall be silenced models fitted with properly lined and sealed acoustic covers or enclosures, which will be kept closed whenever the machines are in use.

All pneumatic percussive tools such as pneumatic hammers shall be fitted with dampers, mufflers or silencers of the type recommended by the manufacturer.

Fixed items of plant shall be electrically powered in preference to being diesel or petrol driven.

Vehicles and mechanical plant utilised on site for any activity associated with the works shall be fitted with effective exhaust silencers and shall be maintained in good working order and operated in a manner such that noise emissions are controlled and limited as far as reasonably practicable.

All plant, equipment, and noise control measures applied, shall be maintained in good and efficient working order and operated such that noise emissions are minimised as far as reasonably practicable.

Any plant, equipment or items fitted with noise control equipment found to be defective in shall not be operated until repaired / replaced.

Machines in intermittent use shall be shut down in the intervening periods between works or throttled down to a minimum during periods when not in use.

Static noise emitting equipment operating continuously shall be housed within suitable acoustic enclosure, where appropriate.

All excavator mounted pneumatic breakers used for demolition and ground-breaking activities shall be fitted with effective dampeners and /or enclosed within a noise adsorbing blanket structure to minimise noise emissions.

Site activities such as piling, concrete cutting and rock breaking shall be staggered when working in proximity to any receptor. This proposed method of working will provide effective noise management of site activities to ensure that any receptor is not exposed to unacceptably high levels of noise over extended periods.

Piling activities which involve the mechanical shaking of the piling rig to remove soil from the auger shall not be permitted. An alternative method to removing debris from the piling rig auger shall be developed.

Excessive revving of all vehicles shall be avoided.

Unnecessary dropping of heavy items onto ground surfaces shall be banned.

The use of an excavator bucket to break up slabs of concrete or tarmac shall not be permitted.

The dragging of materials such as steel covers, plant or excavated materials along ground surfaces shall not be permitted.

The use of acoustic screens to attenuate noise at source shall be implemented as deemed necessary. Plant Reversing Alarms: High frequency “beeping” reversing alarms of all plant vehicles shall not be permitted. Only broadband reversing alarms that comply with safety regulations shall be permitted.

The demolition and construction contractors shall be informed of the live continuous noise monitoring systems and their mode of operation and shall be included on the text / email alert list to ensure that noise generated by their activities are appropriately managed.

A nominated person from the Contractor team will be appointed to liaise with local residents and businesses regarding noise nuisance events.

The Developer shall appoint an independent Consultant to install all monitoring systems and to conduct Noise and Vibration Audits to ensure that all noise and vibration control and mitigation measures are being implemented throughout the demolition and construction phases of the development.

## **11.2 VIBRATION CONTROL & MANAGEMENT**

This section details the vibration control and mitigation measures that may be implemented as required during the demolition and construction phases of the project.

### **Demolition / Construction Works Vibration Mitigation & Control Measures**

In the event of an exceedance of a vibration trigger or limit value the following procedure shall occur:

Review the construction activities in the vicinity to determine the cause.

Where activities outside the control of the Contractor may have had an influence, these shall be identified.

Identify and agree appropriate engineering controls and management procedures to reduce vibration levels resulting from the works activities identified as the cause of the trigger level being reached.

Breaking out concrete elements using low vibration tools.

Choosing alternative, lower-impact equipment or methods wherever possible.

Routing, operating or locating high vibration sources as far away from sensitive areas as Possible.

Sequencing operations so that vibration causing activities do not occur simultaneously.

Equipment shall be routinely maintained.

A nominated person from the Contractor team will be appointed to liaise with local residents and businesses regarding vibrational nuisance events.

## 12.0 CONCLUSIONS

This noise impact assessment report has considered both the inward noise impact associated with external noise sources including road traffic and the outward noise impact including construction noise on the receiving environment and the operational noise that various aspects of the development will have on each other.

It is concluded that provided that all aspects of noise control by design and mitigation are implemented, the proposed development will not have an adverse impact on the receiving environment and that all residential units will be constructed to achieve appropriate sound insulation.

## APPENDIX I

## INSTITUTE OF ACOUSTICS CERTIFICATE OF MEMBERSHIP



# Certificate of Membership

This is to certify that

*Ian Byrne*

*has been elected as a*

*Member*

of the  
Institute of Acoustics

*Given under the seal of the Institute  
in accordance with the  
Articles of Association and By-Laws*

President

Institute Secretary

Valid Until **31-12-2019**

Membership Number **44543**



The certificate remains the property of the Institute and shall be returned to the Institute on demand.  
Membership of the Institute is subject to annual renewal.

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CONSULTING LTD

Belgard Rd & Airton Rd Strategic Housing Development  
Noise Impact Assessment