

Technical Memorandum

Project : MFG Northumberland Park Haringey
Date : 22 December 2021
Ref : EC17900-3
Author : Jon Mudd BEng(Hons) MIOA

TITLE : Activity Noise Impact Assessment

INTRODUCTION

Environmental Equipment Corporation Limited has been commissioned by MBH Design Studio Ltd to undertake a noise assessment of the proposed new jet wash bays that are to be incorporated within part of a larger redevelopment of the existing MFG Northumberland Park Service Station at 1-13 Willoughby Lane.

SITE DESCRIPTION

The MFG Northumberland Park service station is in a predominantly mixed commercial and residential area of Tottenham.

The service station currently comprises a number of EV charging bays, an automatic screened car wash, a screened single jet wash bay, fuel delivery pumps on a covered forecourt, an associated sales kiosk and vehicle service centre (*Tyresure & Brake Co Ltd*). The proposed remodelling will keep the petrol pumps and EV charging bays and remove the existing car washing facilities, sales kiosk and vehicle service centre. These will be replaced with a new sales building and two jet wash bays.

The following Google Maps image has been annotated to identify the existing site and the nearest noise sensitive residential properties.



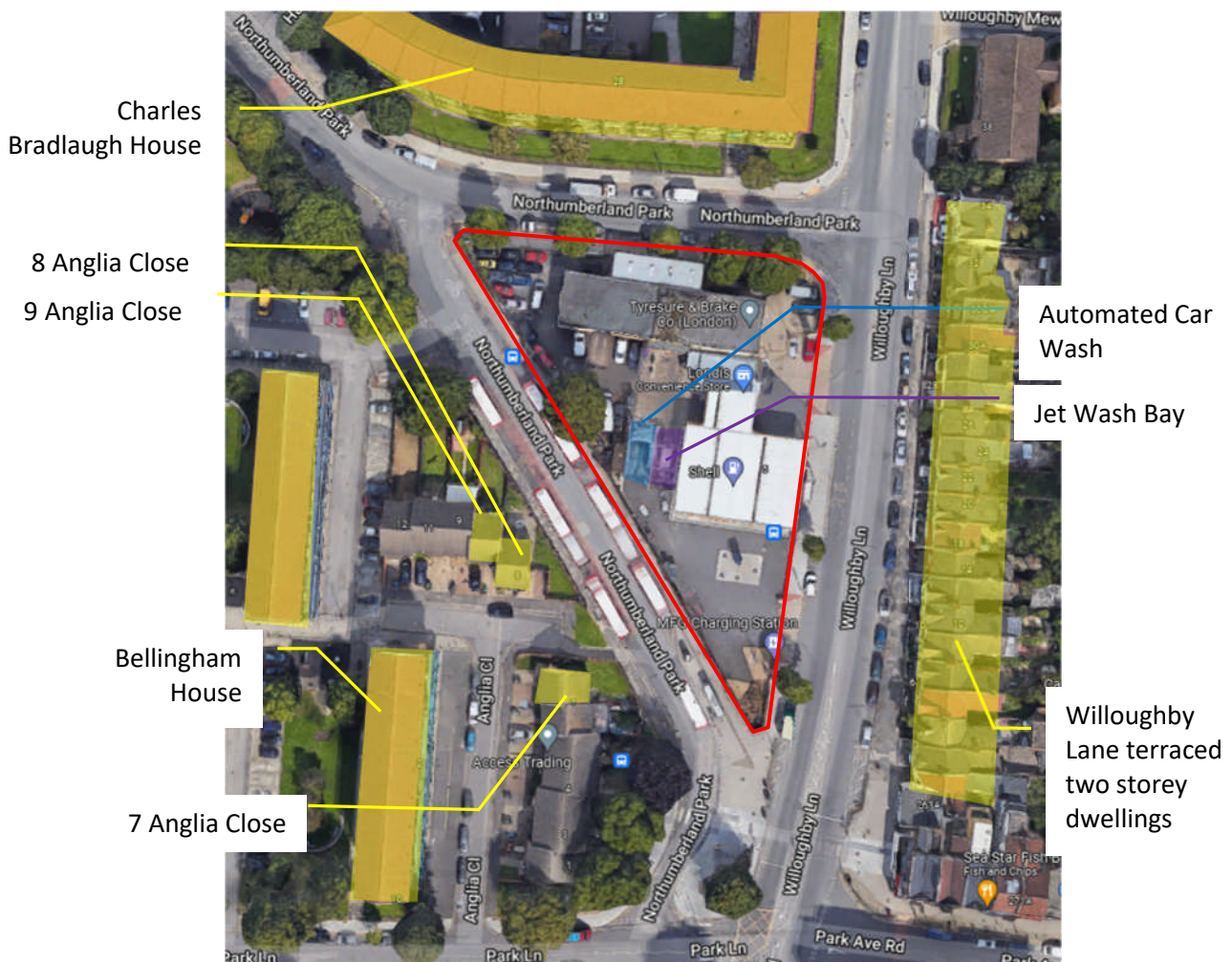


Figure 1: MFG Northumberland Park site and immediate surroundings (existing layout)

This noise impact assessment reflects the major change on the site which is the replacement of the automated car wash and jet wash bay with the installation of two new jet wash bays on the reconfigured site. Figure 2 below overlays the proposed layout plan onto a Google Maps image to show it in context.



Figure 2: Proposed new site layout and existing surroundings.

The noise generating elements consist of the compressor and lance of the proposed jet wash arrangement. It is proposed that the north, east and west elevations of the jet wash bays will have a 2.6m tall screen with the only open elevations being the roof and the side facing the garage forecourt. These screens will offer some acoustic screening to the nearest dwellings.

GUIDANCE

Typically we would look to assess the noise impact against the existing background noise level and the guidance contained within 'BS4142:2014+A1 2019: 'Methods for rating and assessing industrial and commercial sound'. BS4142 is the principal standard against which to assess potential impact in this context and that standard in turn requires that the assessment outcomes be judged and considered taking into account context and relevant guidance metrics.

However in this instance it has not been possible to obtain the necessary background noise levels due to adverse weather conditions and also the short timescale available to undertake the assessment. We have therefore undertaken a desktop assessment using library data for typical noise levels associated with an automated car wash and the jet wash bays to compare the typical operating noise levels for the

existing plant against those of the proposed new plant to enable a comparison of the potential change in noise climate based in the existing and new plant.

Additional guidance has also been taken from current British Standards and World Health Organisation Guidance. These documents provide useful reference for assessing acceptability against established absolute noise limits.

BS8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings'

BS8233:2014, 'Guidance on sound insulation and noise reduction for buildings', section 7 gives guidance on acoustic criteria and noise levels appropriate for various internal spaces that have different functions. Section 7.7 relates specifically to buildings having a residential purpose and offers guidance on appropriate internal ambient noise levels for dwellings (when unoccupied) with specific consideration:

- i. for bedrooms, the acoustic effect on sleep; and
- ii. for other rooms, the acoustic effect on resting, listening and communicating.

The guidance applies to external noise as it affects the internal acoustic environment from sources without a specific character.

Table 4 of section 7.7.2 recommends the following internal noise limits based on the presence of steady, external noise sources:

Table 4 Indoor ambient noise levels for dwellings

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,16hour}$	—
Dining	Dining room/area	40 dB $L_{Aeq,16hour}$	—
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

The guidance criteria are based upon research and existing guidelines provided by the World Health Organisation.

It is generally considered that the sound insulation provided by a partially open window will be 15dB, dependent on window type, extent of opening and source frequency content.

It can be seen that in the worst case, with a partially open window reduction of 15dB, indoor ambient noise targets for bedrooms will be met where the external ambient noise level is below 45dB(A). This is based upon steady noise of an anonymous nature and is consistent with the World Health Organisations LOAEL.

ASSESSMENT

This noise impact assessment is concerned with the potential noise impact from the new jet wash bays that will be replacing an existing jet wash and motorised car wash offering at the MFG Northumberland Park service station as part of a wider planning application for the remodelling of part of the site.

With regards to the jet wash bays, EEC Ltd have previously undertaken in-situ measurements of the jet wash plant and operation, which has been used in these calculations. The measured data is in line with the manufacturer's broad brush published data. Copies of the manufacturer's datasheets for the jet wash are included at the end of this Technical Memorandum. We have currently not been able to survey the current motorised car wash and jet wash bays installed at the site but do have manufacturers data for typical units as well as survey data from other sites that have been used in our assessment of the typical noise levels that can be expected from the current installations.

A summary of the plant type and also the noise levels associated with the proposed new jet washes is given below:

Jet washes	Istobal model 4CA2000	<70dBA at 1m (Published) 67 dBA* at 1.5m (measured average for a typical 11-minute wash cycle).
------------	-----------------------	--

**67 dB was the recorded L_{Aeq} over the typical 11-minute wash cycle. Maximum L_{AF} emission values of up to 78 dB were recorded during the ultra-rinse with lance periods (approximately 1.5-2 minutes of the full cycle). Details of this are included in Appendix F.*

The noise from each plant item operation has been modelled using CadnaA software by Datakustik. Calculations are undertaken using the General Method of Calculation from ISO9613-2:1996. Within the noise model, buildings and the immediate local topography including building height and localised screens have been accounted for.

Figure 3 presents the results of the model carried out with CadnaA based on the noise levels that can be expected from the current installation with both the car wash and the jet wash bay operating in isolation. Figure 4 presents a view of the noise from the car wash in isolation and Figure 5 the calculated noise level from the operation of the existing jet wash bay. Figures 6 & 7 present the worst case noise levels that have been calculated based on both the proposed new jet wash bays being used simultaneously.

The following table also summarises the calculated resultant noise levels at the nearest most affected receptors around the site:



Receptor Location	Existing Operation		Proposed 2 No. new Jet Wash bays	Comment
	Car Wash	Jet Wash		
Bellingham House	61 dB(A)	41 dB(A)	41 dB(A)	Operational noise from the proposed new jet wash bays will be significantly quieter than existing car wash and no noisier than existing jet wash bay
7 Anglia Close	62 dB(A)	44 dB(A)	44 dB(A)	Operational noise from the proposed new jet wash bays will be significantly quieter than existing car wash and no noisier than existing jet wash bay
8 Anglia Close	67 dB(A)	48 dB(A)	48 dB(A)	Operational noise from the proposed new jet wash bays will be significantly quieter than existing car wash and no noisier than existing jet wash bay
9 Anglia Close	66 dB(A)	45 dB(A)	49 dB(A)	Operational noise from the proposed new jet wash bays will be significantly quieter than existing car wash and but slightly noisier than existing jet wash bay
Willoughby Lane – Worst case	61 dB(A)	42 dB(A)	42 dB(A)	Operational noise from the proposed new jet wash bays will be significantly quieter than existing car wash and no noisier than existing jet wash bay
Charles Bradlaugh House	55 dB(A)	37 dB(A)	43 dB(A)	Operational noise from the proposed new jet wash bays will be significantly quieter than existing car wash and but slightly noisier than existing jet wash bay

Table 1: Comparison of calculated noise levels from existing activity noise associated with car wash and jet wash bay against the proposed reconfigured site layout and 2 No. jet wash bays

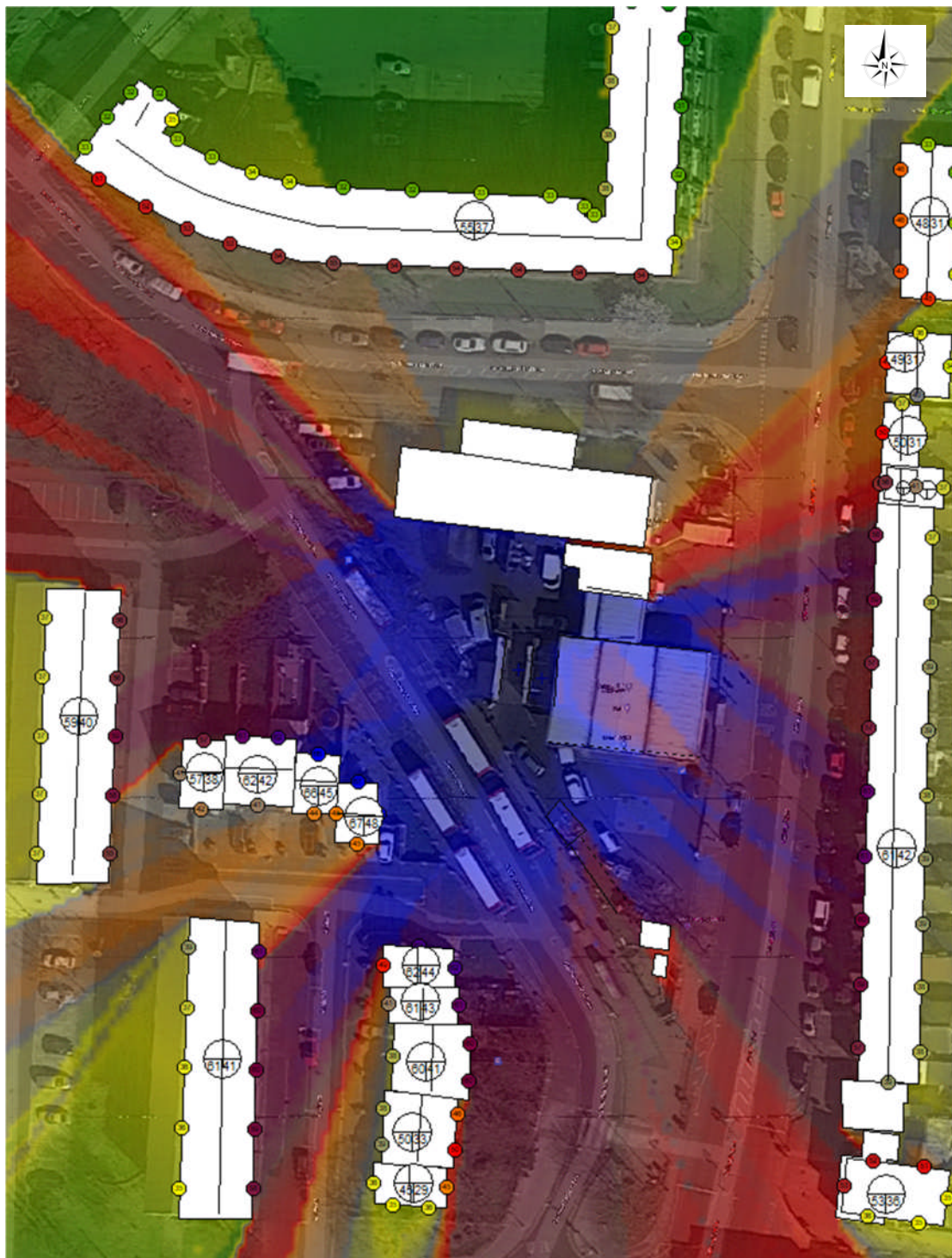


Figure 3: Specific Noise Level Calculated for the existing car wash/existing jet wash bay
 $- L_{Aeq,T}$

quietly moving forward

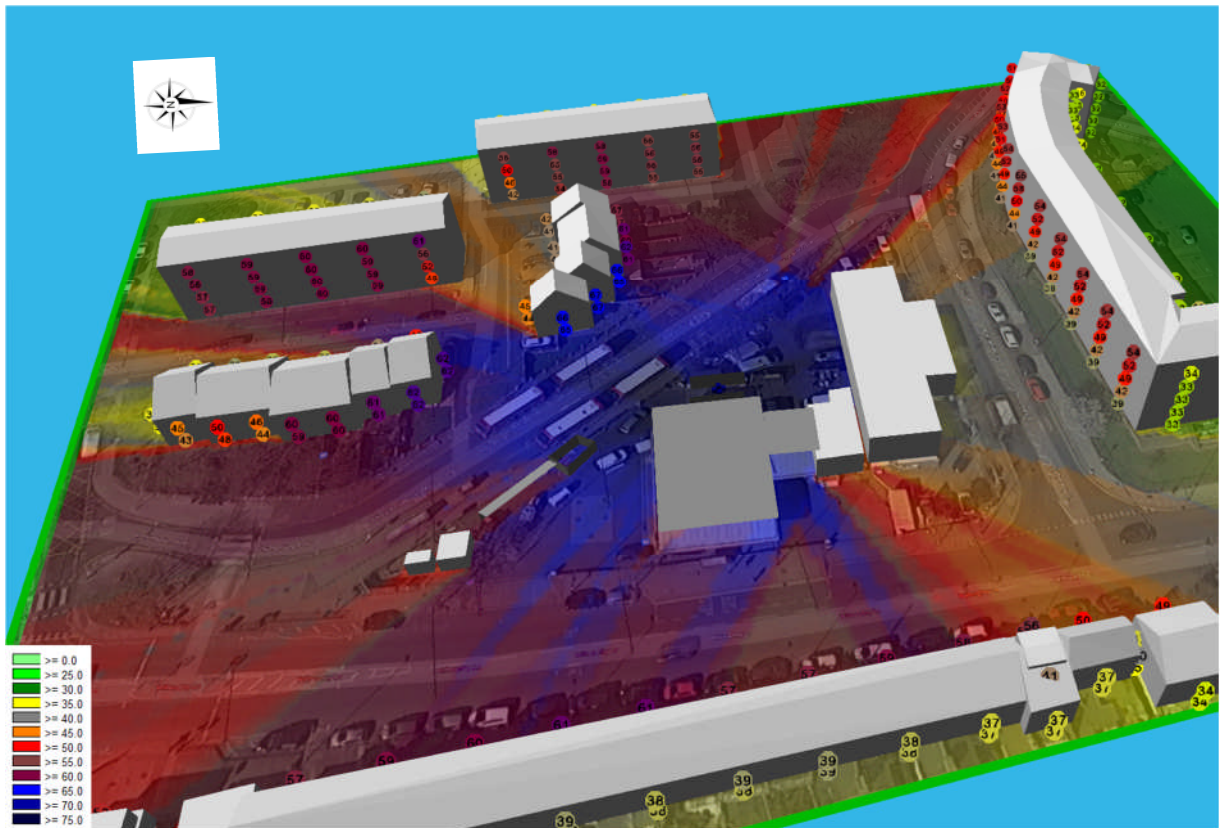


Figure 4: Isometric view of noise propagation existing car wash in operation.

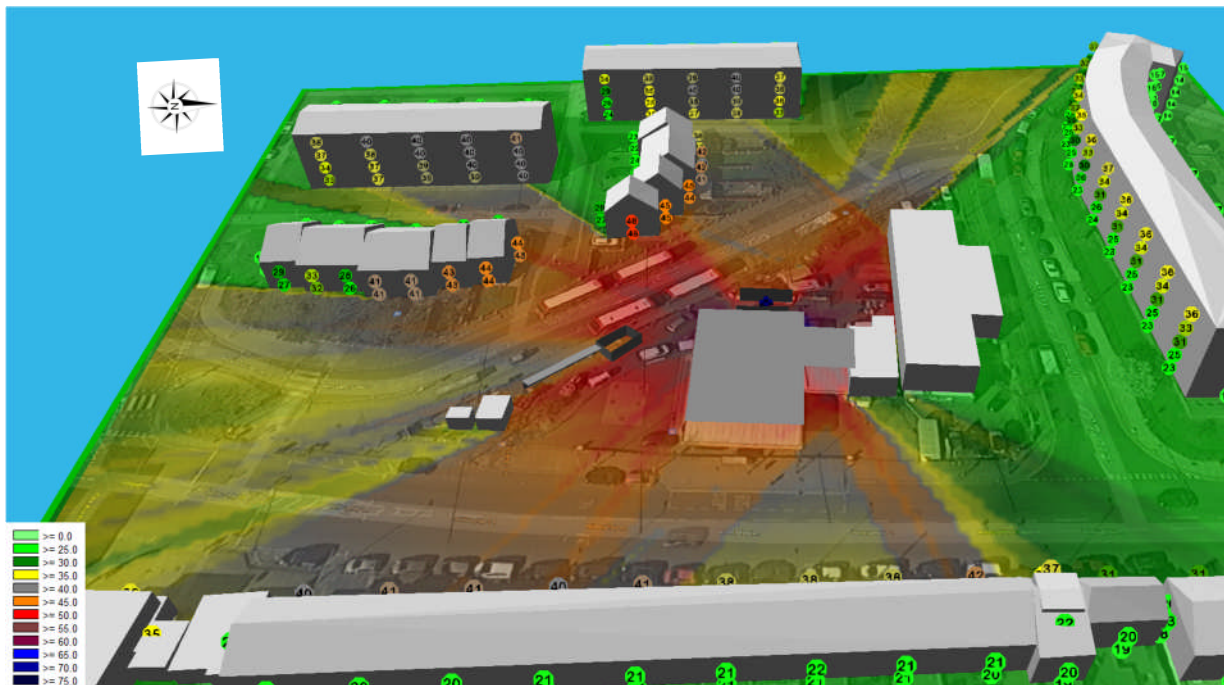


Figure 5: Isometric view of noise propagation existing jet wash in operation.



Figure 6: Specific Noise Level Calculated for the Proposed Jet Wash Bay
 $- L_{Aeq,T}$

quietly moving forward

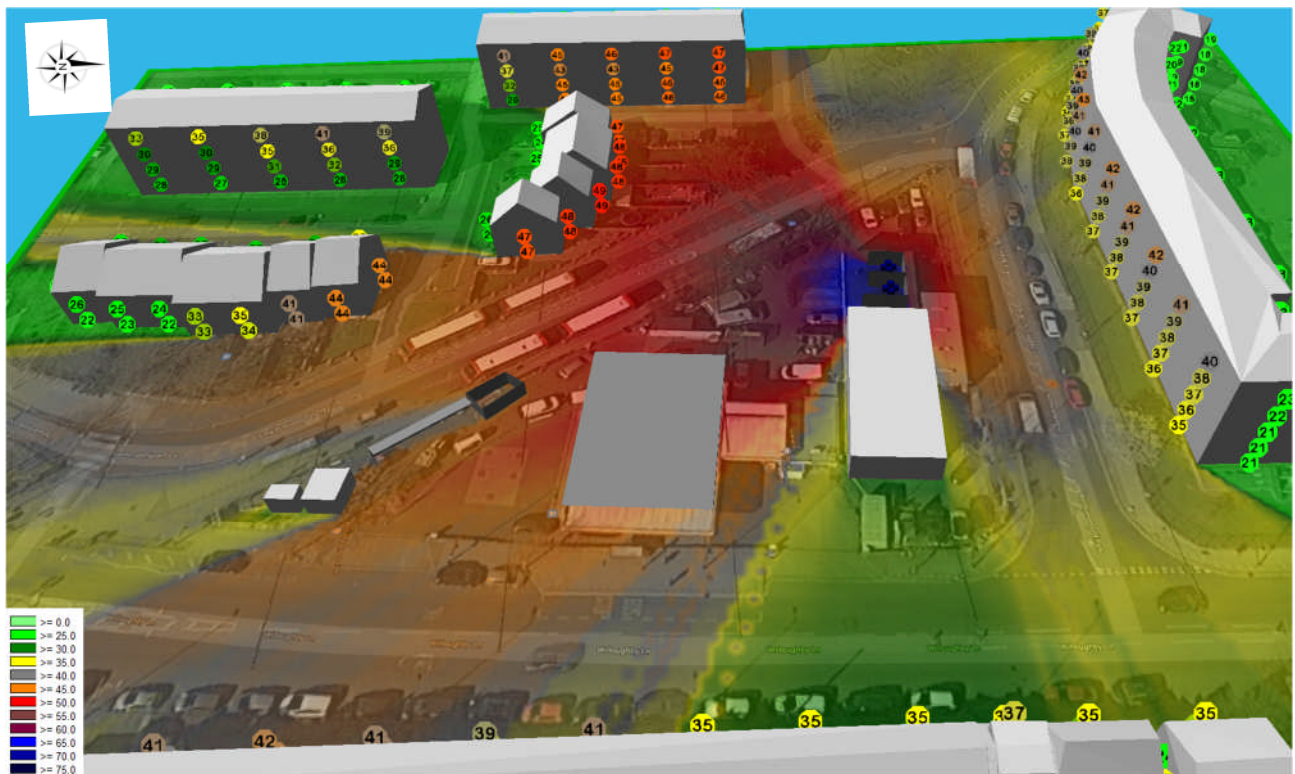


Figure 7: Isometric view of noise propagation from both new jet wash bays in operation.

As presented in Table 1 the calculated operating noise levels from the proposed new jet wash bays will be quieter than the operating noise levels associated with the car wash and therefore the changes to the site would represent a reduction (improvement) in the noise immissions from these sources when compared against that operation.

When compared to the noise immissions of the existing jet wash activity, the proposed new jet wash bays will, in the majority of cases, be no noisier except at a couple of specific receptors. In all instances the resultant noise levels will be below 50dB(A) at the nearest and most affected receptors due to the simultaneous operation of the two new jet wash bays.

Whilst we are awaiting a suitable opportunity to undertake a background noise survey at the site the site is between two major roadways and our experience would say that typical ambient noise levels in this area will be between 55-60dB(A) during the daytime period and it is expected that the activity noise associated with the operation of the jet wash bay will be largely masked by existing noise.

To provide some additional context we have also compared the calculated noise levels within the nearest, most affected dwellings from the activity noise against the guideline values specified within BS8233:2014 for daytime noise. We have allowed for a worst case that the dwellings could have their windows open and assumed a typical loss of 15dB for noise passing through a partially open window in line with guidance in the British Standard.

Receptor Location	Calculated Internal Noise level from Operation of 2 No. New Jet Wash bays	BS8233 Design Criterion
Bellingham House	26 dB(A) $L_{eq,15min}$	35 dB $L_{Aeq, 16hours}$
7 Anglia Close	29 dB(A) $L_{eq,15min}$	35 dB $L_{Aeq, 16hours}$
8 Anglia Close	33 dB(A) $L_{eq,15min}$	35 dB $L_{Aeq, 16hours}$
9 Anglia Close	34 dB(A) $L_{eq,15min}$	35 dB $L_{Aeq, 16hours}$
Willoughby Lane – Worst case	27 dB(A) $L_{eq,15min}$	35 dB $L_{Aeq, 16hours}$
Charles Bradlaugh House	28 dB(A) $L_{eq,15min}$	35 dB $L_{Aeq, 16hours}$

Table 2: Calculated Internal Noise Levels within nearest dwellings from operation of the two new jet wash bays

As presented in Table 2 the resultant noise levels will be below the guideline values for desirable internal noise levels in line with BS8233 even when assessed over a worst case period of the activity occurring for no more than 15 minutes at a time; the daytime guideline value reference time period being 16 hours (0700-2300hrs).

CONCLUSION

Predictions have shown that the noise emissions when calculated at the most-affected noise sensitive receivers from the operation of the proposed new jet wash bays will be quieter than the calculated noise levels from the operation of the existing car wash on site. The noise levels will also be generally be no noisier than the noise from the existing jet wash bay, except at two specific receptors.

The desktop assessment has also shown that in all instance the calculated noise levels within the nearest and most affected dwellings will all satisfy the guidance contained within BS8233:2014 for desirable internal ambient noise levels during the daytime

It has not been possible, due to adverse weather conditions and other restrictions in place, to undertake a representative background noise survey,. However based on our experience of similar sites the typical ambient noise levels from activity on the surrounding roads for this area are expected to be at least 5-10dB higher than the calculated noise level from the activity from the new jet wash bays. It is therefore expected that a lot of the noise from the jet wash activity will be masked by existing noise in that area.

On the basis of this assessment it is considered that noise is unlikely to pose a material constraint to the operation of the proposed charging stations and associated infrastructure.