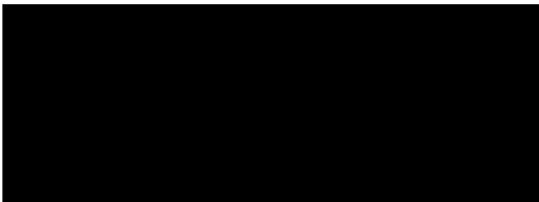


Noise Impact Assessment

Redevelopment of West Mill Quay, Plymouth. PL5 1BH

Report Number 04/23

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1) Introduction

S B Consulting Ltd have been contracted to undertake a Noise Impact Assessment of the redevelopment of West Mill Quay, Plymouth, PL5 1BH. It is proposed that the existing buildings, previously occupied by a furniture recycling business for warehousing, storage, and distribution, will be refurbished and repurposed to provide warehousing, self-storage units, and a Recreational Fitness & Wellbeing Facility.

The majority of the site will be very much in-keeping with the previous authorised usage, however, the redevelopment of the large warehouse to the east of the site into self-storage units and a Recreational Fitness & Wellbeing Facility (see figure 1) for use by the general public will increase traffic flow along nearby residential roads (Harbour Avenue) as well as on site in the carpark. The site will be in operation during daytime hours, typically (08:00-20:00).

This review is generally in accordance with method described in BS4142:2014 “Method for rating and assessing industrial and commercial noise”. This assessment method requires the rating of noise sources against prevailing background conditions.

The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs.

The rating sound level is determined based upon the “a weighted” noise level of the specific sound adjusted for any relevant features of the sound, i.e., tonality, intermittency, impulsivity, etc. An estimation of the impact of the specific sound can be obtained by the difference of the rating sound level and the background sound level and considering the following:

Typically, the greater this difference, the greater the magnitude of the impact.

A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.

A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact.

Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a negligible impact, depending on the context.

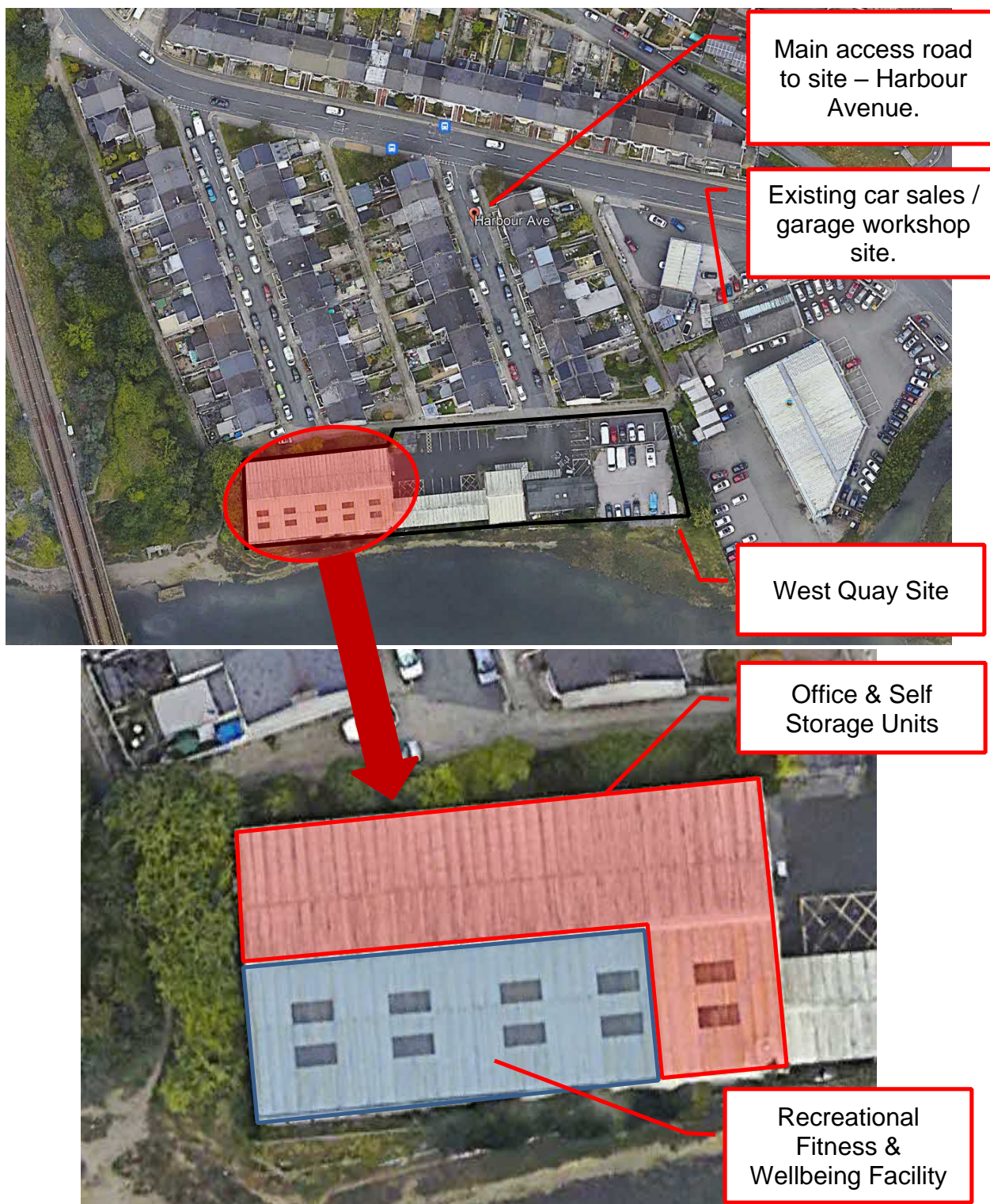


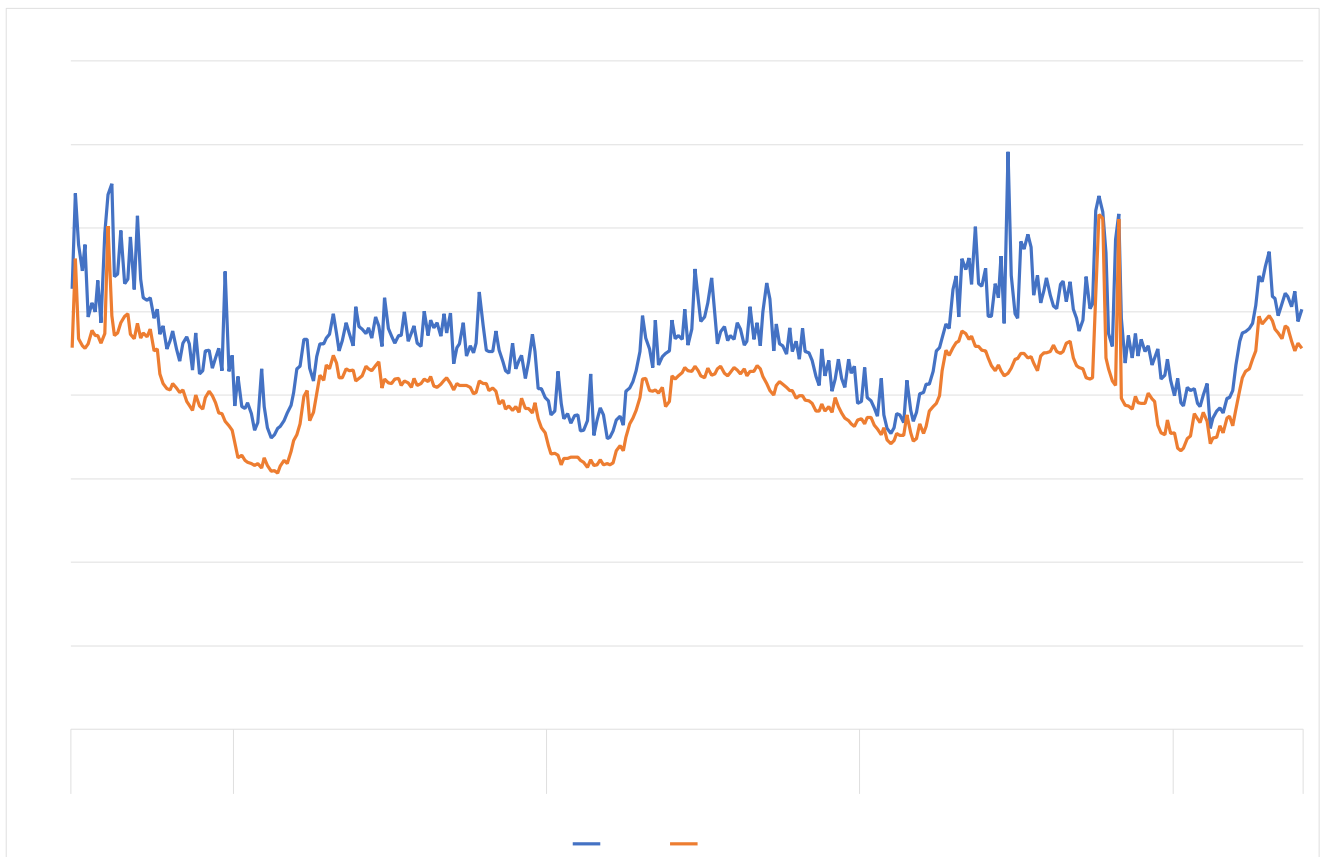
Figure 1, Area layout showing proposed location of Recreational Fitness & Wellbeing Facility and self storage units

2) Background Noise Monitoring

Noise levels on the site and surrounding area is mainly dominated by transportation noise (road & railway), and industrial noise from the car workshop which includes fan driven fume extract system. Noise monitoring equipment was sent up in the car park of the development site which has a similar noise climate experienced by the dwellings at the southern end of Harbour Avenue.

Background and ambient noise levels ($L_{A90,15min}$) were measured at the site over a 5-day period between 11:00hrs on 27/01/23 (Friday) 09:00hrs on 31/01/23 (Tuesday). The results are presented in Figure 2, showing the ambient $L_{Aeq,15min}$ and background $L_{A90,15min}$ in blue and orange respectively.

All measurements were taken using a Cirrus Research CR171B Type 1 Sound Level Meter, Serial Number G061315, Calibration Due 30/05/2023. The meter was field calibrated using a Norsonic Type 1251 acoustic calibrator, Serial Number 31523, Calibration Due 03/05/23. The weather conditions were dry with low wind speeds below 5m/s, and the meter was mounted on a tripod with the microphone at a height of 1.4m from the ground and at least 3m from any flat surfaces.



Note: The spikes in the noise data were caused by vehicles with engines left running close to the monitoring location.

Figure 2 – Results of Background Noise Monitoring

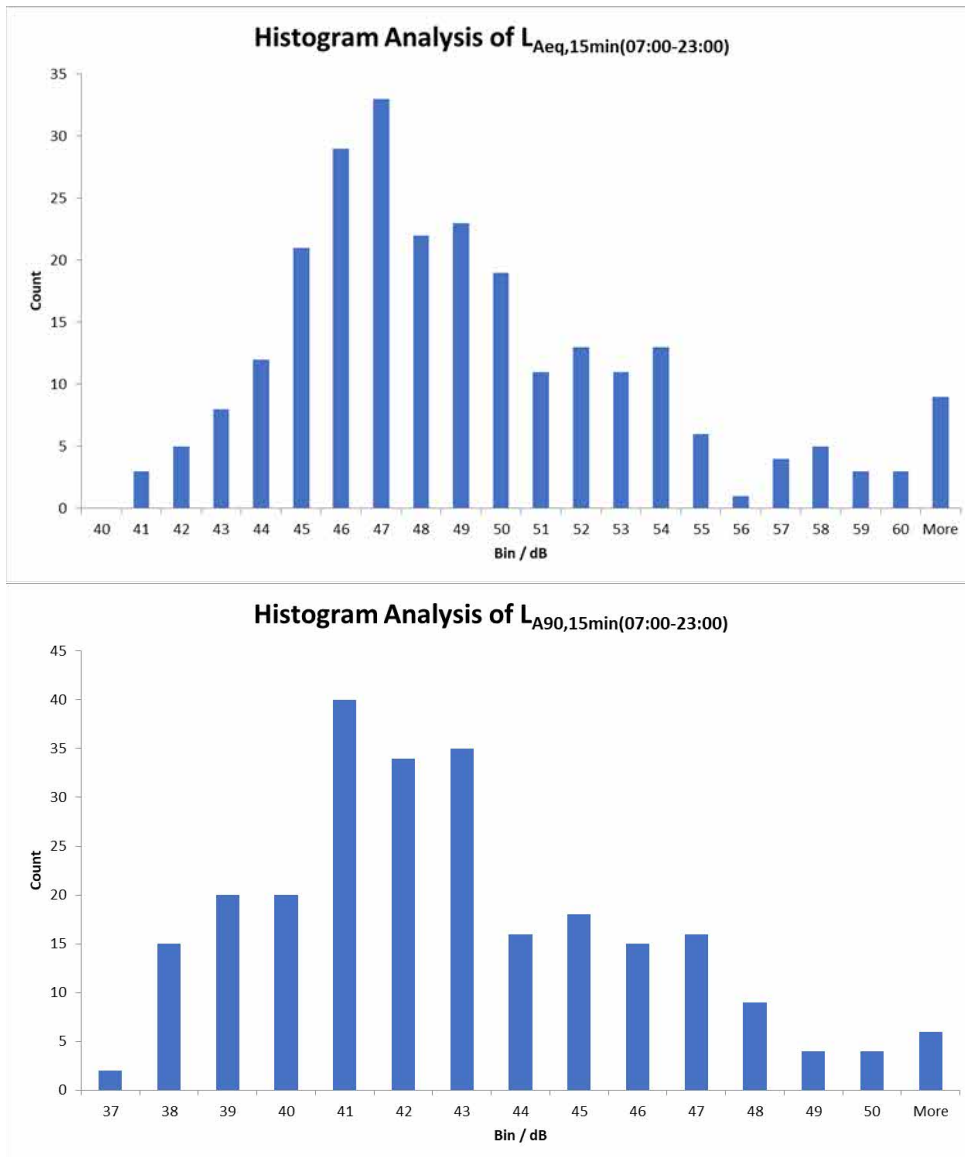


Figure 3 – Histogram Analysis

Histogram analysis of the daytime (07:00-23:00) ambient and background noise data (Figure 3) shows that the modal ambient noise level or L_{Aeq,15min} is 46-47 dBA with a mean level of 49dB to the nearest whole decibel. For the purposes of this assessment the upper modal level, 47dB, will be used to describe the typical ambient noise level.

With regards to the background or L_{A90,15min} the modal background noise level is 41-43 dBA with a mean level of 43dB to the nearest whole decibel. For the purposes of this assessment the mean / upper modal level, 43dB, will be used to describe the typical background noise level.

3) Noise Sources & Nearest Affected Dwellings

The redevelopment of the site to provide warehousing, self-storage units, and a s will not result in any significant noise source expect that caused by increased traffic from within the site.

Access to the site is expected to be very similar to the previous usage for the site with no more than 5 vehicles per hour during the day, however, with the addition of the Recreational Fitness & Wellbeing Facility it is possible that this could increase to approximately 15-20 vehicle movements per hour during the evening when the site is in peak use, although it is anticipated that many people will access the site on foot from the local area. Due to the restricted access, vehicle types are limited to cars and light-goods / vans with no HGV permitted on site. Speed is limited on site to 15mph (24kph).

Using the CRTN (Calculation of Road Traffic Noise) method it is possible to predict the traffic noise from the on carpark affecting the dwellings nearest to the site which are approximately 10m away.

Traffic Flow, q, vehicles/hr	Predicted Noise Level @ 10m from car park (CRTN) $L_{A10(1hr)}$, dB
5	44
10	47
15	48
20	50
25	51
30	52

For roads with low traffic flow rates the $L_{Aeq(1hr)}$ will be significantly lower that the $L_{A10(1hr)}$ due to the peaky nature of the noise profile. Typically, the L_{Aeq} is at least 2-3dB below the L_{A10} so in this instance a specific noise source figure of 46-48dB $L_{Aeq(1hr)}$ would seem realistic.

Due to the location of the Recreational Fitness & Well-being Facility any breakout noise will be directed away from the nearby residential area towards the more industrial areas of Weston Mill / Devonport Royal Dockyard where there will be no impact.

4) BS4142:2014 Assessment

Using the data presented above it is possible to carry out a Noise Impact Assessment in accordance with BS4142:2014.

Parameter	Nearest affected dwellings	Comments
Carpark specific noise level	46-48 dB	Estimated from CRTN
Time Correction	0 dB	None. Data is based upon 1hr time period.
Acoustic Correction – Tonality	0 dB	Noise not likely to be tonal
Acoustic Correction – Impulsivity	0 dB	Noise not impulsive
Acoustic Correction - Intermittency	+3 dB	Noise will be intermittent as vehicles come and go.



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Parameter	Nearest affected dwellings	Comments
Rating Sound Level	49-51 dB	Specific Sound Level + corrections to the nearest whole decibel.
Typical Background Sound Level, $L_{AF90,15min}$.	43 dB	From background monitoring
Excess of Rating over Background Sound Level	+6 to +8 dB	A difference of around +5 is an indication of adverse impact. A difference of +10dB and above is an indication of significant adverse impact.

The above assessment predicts that the noise rating level from the increased usage of the car parking is likely to have some adverse impact upon the nearest affected dwellings, although vehicle noise is in keeping with the noise context of the area and the specific noise level is equivalent to the current typical daytime $L_{Aeq,1h}$ measured at the site, 47dB. Importantly, the noise from the site would not be classed as causing “significant adverse” impact.

5) Conclusion

Based upon this noise impact assessment, the proposed reuse of the West Quay site is likely to have some adverse impact upon nearby dwellings due to increased vehicle noise accessing the site and using the onsite carpark. However, this type of noise is in-keeping with the context of the area and its previously approved usage, furthermore, the vehicle specific noise is no higher than current ambient noise levels in the area. For these reasons noise should not be a significant factor in the redevelopment of this site or a substantive reason to refuse the planning application.