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20200376.3/1609A/R1/AW

31/08/2021

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Attn: Michael Rumble

Woolworths Customer Fulfillment Centre (CFC), 74 Edinburgh Road, Marrickville - Response to Department of Planning Queries

This letter has been prepared to address comments on the submitted *SSDA Acoustic Assessment* (ref: 20200376.1/0906A/R5/WY, dated 9/06/2021)and *Preliminary Construction Noise & Vibration Management Plan* (ref: 20200376.2/1510A/R1/WY, dated 15/10/2020) in relation the proposed Woolworths Customer Fulfillment Centre at 74 Edinburgh Road, Marrickville (ref: 20200376.1/0906A/R5/WY, dated 9/06/2021). The comments are detailed in an email from Patrick Copas dated 19/08/2021 and a *Request for Additional Information* letter, dated 7 September 2021.

An updated acoustic report has also been prepared to provide additional information where required (ref: ref: 20200376.1/0109A/R7/WY, dated 01/09/2021), hereon referred to as the *updated acoustic report*.

Department of Planning Comment

The Department notes that the attended and unattended noise levels relied upon in the original assessment were sourced from locations directly adjacent to Edinburgh Road. As was flagged in the Department's email dated 9 March 2021, these locations/levels may not be representative of the existing levels experienced at the most affected receiver and attended noise measurements should be undertaken in the residential area to the north-west to provide supplementary data. Such measurements can be utilised to validate the project noise trigger levels, including the night-time trigger level of LAmax 52 dB(A) or the prevailing rating background level plus 15 dB (whichever is greater). If supplementary noise monitoring data cannot be readily obtained due to current COVID restrictions, consideration should be given to designing mitigation measures to reduce predicted noise levels to well below the night-time assessment criteria.

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Acoustic Logic Response

As noted in the query, the NSW EPA Noise Policy for Industry (NPI) provides two thresholds for establishing a baseline indication of potential night time sleep disturbance impacts, which are detailed in Section 2.5 of the policy. With regard to the maximum noise level assessment (L_{max}), these thresholds are set as a minimum of 52 dB(A) L_{max}, or at the prevailing background noise level during the night time period plus 15dB(A) (where the rating background noise level during this period is above 37dB(A)$L_{90(period)}$).

Predicted noise levels to the worst affected facades of residential receivers (north of the proposed development, across Edinburgh Road) are 54dB(A) L_{max}, which is below the trigger level identified for the receiver. For all other receivers set back from Edinburgh Road, the maximum calculated noise level is 50dB(A) L_{max}, being below both the identified trigger level and minimum threshold detailed in the NPI.

Supplementary attended noise measurements have been undertaken at two locations, being 14 Bourne Street and 10 Leicester Street, both of which are approximately 65m from Edinburgh Road. These measurements were compared to simultaneous attended measurements at the long term monitoring location (65 Edinburgh Road) to determine the difference in background noise levels between the two locations. The results of these measurements indicate that residents set back from Edinburgh Road experience a marginally reduced background noise level of 2dB(A).

Project noise trigger levels (PNTL) at these locations have been revised to account for this difference. Importantly, the night time PNTL remains the same as previously identified (being 43dB(A) $L_{eq(15min)}$, set with reference to the amenity level). Sleep disturbance trigger levels are marginally reduced to 55 dB(A) L_{max}. As identified above, the predicted noise levels from the site (both L_{eq} and L_{max}) are below the relevant thresholds for noise emissions from the operation of the Customer Fulfillment Centre.

Further detail regarding the additional measurements and amended project noise trigger levels are contained in the updated acoustic report, specifically Section 4, Table 4-1 and Section 6.5.

Department of Planning Comment

The Department notes the updated noise impact assessment appears to have only considered noise from general movement around the carpark, engine start-up and car door slam events, and is concerned that the assumed LAmax of 96 dB(A) may not be representative of typical noise emission sources in the front carpark. Typical sources include passenger vehicles entering and exiting the carpark, general vehicle movements through the structure, engine start-up, vehicle acceleration, car door slam, vehicles idling, wheel and tyre squeal on concrete and commuter speech.

The use of pedestrian crossing beepers by staff at the Edinburgh Road / Smidmore Street intersection may also result in sleep disturbance for nearby residents. The detailed night-time noise assessment should subsequently be updated to address maximum noise levels for all possible activities, the extent to which the maximum noise level would exceed the rating background noise level, and the number of times this happens during the night-time period. Further information should then be provided to clarify:

- *whether surface treatment will be applied to the front carpark to minimise tyre squeal*
- *what additional mitigation and/or management measures are proposed (such as at-property architectural noise treatments, employee training procedures, etc) to address noise impacts if any of the additional noise sources are likely to cause sleep disturbance.*

Acoustic Logic Response

All sound power levels and assumptions associated with noise emissions from the carpark have been detailed in Sections 7.3.1 & 7.3.3 of the submitted acoustic report. This includes the noise sources identified in the above query, and takes into account noise from vehicles entering and exiting the carparking facility (i.e. the entrance driveway). The sound power level of 84dB(A) L_{eq} is an average which includes both acceleration and deceleration/idling of passenger vehicles. Given all vehicles using the carpark would be expected to be travelling at low speed, significant acceleration would not be expected. Further, the ramp to access upper levels of the carpark is located on the eastern boundary of the site, away from any residential receivers.

The maximum sound power level assumed in the northern carpark is 96dB(A) L_{max} from a car door closing has been identified as the highest peak noise level associated with the use of the carpark, however is not the only source of noise which has been considered as part of the assessment. Peak noise events from vehicles entering the carpark would be limited to 'pass-bys'.

Similarly, contribution from vocal noise within the carpark is not expected to be significant with regard to noise emissions from the carpark for the following reasons:

- The carpark would not be expected to accommodate large gatherings of staff.
- Any vocal noise from staff conversations within the carpark would typically be limited to a small number of people speaking with casual or normal vocal effort, whilst travelling between the carpark and building entrances. The sound power level associated with casual speech is commonly accepted as being between 61 – 66 dB(A) L_{eq}, which is significantly below the assumed SWL for vehicle use of the carpark.
- In consideration of the above, vocal noise within the carpark would not be a significant contribution to noise from the use of the facility.

Tables 7-3 and 7-4 identify the maximum predicted noise levels from the facility (inclusive of both carpark and loading dock activities) at nearby residential receivers, which are below the sleep disturbance emergence levels identified in the NPI.

With regard to the potential for increased use of the pedestrian crossing at the intersection of Edinburgh Road and Smidmore Street, we note this intersection is managed by Council and therefore noise from it's use would be outside of the control of the development. Notwithstanding, measurements of noise from the pedestrian beacon were measured on the evening of 7 September 2021, in order to determine the potential impact of the existing crossing on the closest resident, located at 65 Edinburgh Road.

Measurements of the pedestrian beacon indicated that there were two sources of peak noise, being impact noise from pedestrians pressing the button as well as the beacon indicating that pedestrians had right of way. The highest noise level measured from a number of samples was 75 dB(A) L_{max} at a distance of 1m from the signal. Similar measurements were undertaken at the residential boundary, where a level of 55 dB(A) L_{max} was measured, noting that the noise was only partially audible and subject to contribution from background noise. When correcting the noise level to nearest window of the resident (as required by the NPI for the assessment of peak noise), the peak noise level from the use of the pedestrian beacon is 51dB(A) L_{max}. We note that this is below the minimum recommended sleep disturbance trigger level nominated in the NPI.

Department of Planning Comment

According to EPA guidelines, a time-varying noise is considered intermittent when the noise level or loudness changes regularly by a noticeable amount. The updated noise impact assessment claims that intermittent penalty is not warranted based on the predicted noise levels. However, according to Table 7-3 (LAeq,15min and LAmax levels for R1) and Table 7-4 (LAeq,15min and LAmax levels for R2) of the updated noise impact assessment, it can be deduced that the difference between minimum and maximum sound pressure levels over the worst-case 15-minute period would be substantially greater than 5 dB(A). This deduction is on the basis that the difference between LAmax and LAeq,15min levels is already 5 dB(A) at these most-affected receiver locations. Based on the above, the Department considers the application of a +5 dB modifying correction for intermittent noise to be warranted. The Department's view is supported by the ISO1996-1:2016 on description, measurement and assessment of environmental noise and EPA's draft Noise Guide for Local Government for which motor vehicle noise under conditions of small traffic volume is exemplified as being a source of intermittent noise.

Further, the WHO notes that the intermittency of a time-varying sound can be determined by quantifying the number of noise events as well as examining the difference between the maximum sound level and background sound level. Noise management and mitigation measures for night-time operations should be designed with a goal of minimising specific noise characteristics according to the Noise Policy for industry. The Department requires a feasible and reasonable mitigation decision-making matrix be included within the updated noise impact assessment in line with the advice provided in Section 3.4 of the Noise Policy for Industry.

Acoustic Logic Response

Other than time invariant source of noise (such as continuously operating mechanical plant), all sources of noise will exhibit a level of fluctuation during their operation. However, clearly, not all sources of noise would be considered to be intermittent. With regard to corrections for annoying noise characteristics in Factsheet C of the NPI, the example used to demonstrate a source of noise which may be intermittent is *equipment cycling on and off*. An example of this would be a cooling tower or package unit which is not provided with speed control, such that it can only operate at either full capacity or not at all. This view has been supported in discussions with the EPA, which has specifically advised that an intermittency penalty would not be appropriate to apply to the assessment of carparks.

Further, the query references ISO 1996-1:2016 (*Acoustics – Description, measurement and assessment of environmental noise – Part 1: Basic quantities and assessment procedures*) as well as the draft Noise Guide for Local Government (noting that this is still subject to public consultation). We note that ISO 1996-1:2016 is not contained within the reference materials of the NPI, which instead relies upon the similar Australian Standard AS 1055.1:1997 (*Acoustics – Description and measurement of environmental noise, Part 1: General procedures*) – this standard does not provide a definition or description of intermittent noise.

Notwithstanding the above, the definition for intermittent sound in ISO 1996-1:2016 provides the following:

> *sound that is present at the observer only during certain time periods that occur at regular or irregular time intervals and is such that the duration of each such occurrence is more than about 5s.*
>
> *Example* *Motor vehicle noise under conditions of small traffic volume, train noise, aircraft noise, and air compressor noise*

The query with respect to the potential intermittent nature of noise from the carpark compares the calculated average ($L_{eq(15min)}$) noise to the maximum (L_{max}) noise levels. The maximum noise level from the site is presented using the 'fast' time weighting (as required by the NPI) which uses a period of 125ms, being significantly shorter that the duration recommended by ISO 1996-1:2016. The comparison of predicted L_{max} levels to L_{eq} levels is an incorrect methodology to apply when determining the intermittency of a noise source.

In relation to the comments of small traffic volumes being a source of intermittent noise (referenced in both ISO 1996-1:2016 and the draft Noise Guide for Local Government), we note that the receivers closest to the carpark are also exposed to noise from Edinburgh Road, which dominates the acoustic environment in the area. This roadway would not be described as 'small traffic volumes', and so in the context of the noise environment it would not be appropriate to apply any type of penalty in relation to vehicle movements.

There are a number of published documents from the WHO which summarise research in relation to noise and potential health impacts. Although it is not identified which research or publication is referenced in the comments from the Department of Planning, the NPI identifies *Night noise guidelines for Europe* (NNGE) as reference material. A review of the comments provided in this document relating to both the number of noise events and comparison between the difference between the maximum and background noise levels reveals the following:

- The NNGE notes that the number of events is an important indication to describe the potential for instantaneous reactions to noise, however cites that there is no agreed or accepted number of events or noise descriptor which should be used when determining impact from peak noise events.
- With regard to potential impacts from peak noise events, the NPI recommends the use of the NSW EPA *Road Noise Policy* (where predicted L_{max} noise levels exceed the trigger levels identified in the policy). This policy states *maximum internal noise levels below 50-55 dB(A) are unlikely to awaken people from sleep.*
- We note that the predicted *external* noise levels from the operation of the Woolworths CFC are a maximum of 54dB(A) L_{max}. Assuming that there is a 10dB(A) reduction through the façade where windows are open, the internal noise level would be significantly below the maximum noise levels identified in the RNP.
- The NNGE identifies that their assessment of peak noise event explicitly excludes comparison to background noise levels. Comparison is made in many instances to the ambient/L_{eq} level, however the guidelines indicate that this is not necessarily an appropriate methodology for identifying impacts from peak noise events.
- The NPI however provides specific guidance on the level of peak noise above the background which would be considered acceptable. As previously noted, this is either a level of 15dB(A) above the background ($L_{90(period)}$) level, or a minimum of 52dB(A) L_{max}. The predicted maximum noise levels are below the level which would be considered as acceptable when applying this policy.

In consideration of the above, both feasible and reasonable mitigation measures have been provided to the northern carpark (barrier screening) in order to provide noise levels within the requirements of the NSW EPA Noise Policy for Industry. Given there are no identified exceedances of the relevant noise emission levels from the site, the provision of a decision making matrix would appear redundant.

Department of Planning Comment

The colour scale used on figures 4 to 11 varies slightly. Please update these figures to maintain a consistent colour scale.

Acoustic Logic Response

Figures 6-11 (which show façade noise maps of noise emissions from the site) provide a consistent colour scale, as well as providing the numerical predicted noise level at various façade elevations.

Figures 4 & 5 provide overall grid noise maps for the site, and demonstrate noise propagation from the site over differing areas. Given the wider area covered in Figure 4, a more restricted colour scale would not demonstrate sufficient detail to describe predicted noise levels. Figure 5 provides a more detailed map of noise contours for residents to the north (being the closest residential receivers).

Department of Planning Comment

Figures 4 and 9 show a large building on the Sydney Metro site, which was demolished in early 2020. Please update these figures accordingly.

Acoustic Logic Response

The modelling has been updated to reflect this change. Refer Figures 4-12.

Department of Planning Comment

It is unclear why LAmax noise levels are the same for both R1 and R2 (as outlined in Table 7-3 and Table 7-4) when the LAeq noise levels are different for both locations. If necessary (noting the Department's comments above may change the predicted levels), please update the assessment to clarify why this is the case.

Acoustic Logic Response

Average/L_{eq} noise contribution to residents at location R1 is from both the northern carpark and a small amount of noise from the rear loading docks. In contrast, the proposed building form screens noise from the loading dock to residents at R2, such that they are primarily exposed to noise from the carparking facilities. This is most clearly demonstrated in Figure 5 of the updated acoustic report.

In contrast, peak noise impacts are primarily from the northern carpark for both receivers. The peak noise level at the resident is determined primarily by distance, and so a higher noise level is emitted to R2 given it's proximity.

Department of Planning Comment

It is noted that the Acoustic Assessment recommends the installation of 1.5 metre-high nose barriers for the ground and first floors of the front carpark. Please provide elevations for the proposed barriers, so that the Department can understand their potential visual impact.

Acoustic Logic Response

The proposed architectural drawings demonstrate the proposed barriers, and are consistent with the acoustic report.

Department of Planning Comment

the Department notes that the PCNVMP proposes extended construction hours on Saturdays (7:00 am to 4:00 pm), however the Interim Construction Noise Guideline (DECC, 2009) advises that, in general, only works undertaken on public infrastructure should occur outside of the standard construction hours (8:00 am to 1:00 pm on Saturdays). As the PCNVMP does not demonstrate and/or justify a need to operate outside the standard construction hours, the Department does not support extended construction hours on Saturdays

Acoustic Logic Response

The updated Construction Noise & Vibration Management Plan has been updated to reflect the 'Standard Hours' noted in the *Interim Construction Noise Guideline*.

Please contact us should you have any further queries.

Yours faithfully,

Acoustic Logic Consultancy Pty Ltd
Alex Washer