

16 April 2018

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City of Yarra  
P.O. Box 168  
Richmond VIC 3121

**Attention: Amy Hodgen**

Dear Amy

**626 Heidelberg Road, Alphington, Lot 2B  
Development Application Acoustical Review  
PLN 17/0978**

SLR Consulting Pty Ltd (SLR) has been retained by the City of Yarra to provide a review of the acoustic assessment report for the mixed use development proposed for 626 Heidelberg Road, Alphington, Lot 2B.

Details of the report are as follows:

- Title: The Village Alphington – Mixed Use Development
- Reference: MC300-01F02
- Date: 21 February 2018
- Prepared for: Alpha APM
- Prepared by: Norman Disney Young Pty Ltd

The report was prepared to address acoustic impacts to and from the development, including traffic noise impacts from the Chandler Highway Upgrade.

## **1 Preliminary**

*(Sections 1 and 3 and of the report)*

The development is described in this section of the report. The proposal includes:

- Three residential towers
- Commercial offices
- Retailing, including large supermarket, smaller tenancies and a food hall
- Commercial gymnasium
- Basement carparking
- School and childcare centre
- Community facilities including an outdoor netball court, community hall and outdoor spaces

The project is on Heidelberg Road and road traffic noise is identified as the main external noise impact to the subject development.

Other sources of noise to the development are internal, and are identified in subsequent sections of the report. The sources considered include:

- Mechanical plant associated with the development (Section 4.1.5 of the report)
- Loading dock noise (Section 4.1.6 of the report)
- Food and beverage tenancies (Section 4.2 of the report)
- Gymnasium noise (Section 4.3 of the report)
- Noise from the netball court (Section 5.4 of the report)
- Noise from school and childcare centre outdoor areas (Section 5.5 of the report)

**SLR Comments:** *The proposal is described and the main potential external and internal sources of noise have generally been identified.*

*We note that this application is concurrent with the mixed use application for Lot 2A, which includes dwellings along the eastern façade of the building, within 4 m from their boundary (Ground to Level 3). These dwellings will overlook the 'Mews'. Noise from ground floor food and beverage tenancies that are accessed from the Mews may need to be considered to this location.*

## 2 Road Traffic Noise

### 2.1 Traffic Noise targets

*(Section 5.1 of the acoustic report)*

All external noise from the project is proposed to be assessed to the following targets in apartments:

- 45 dB LAeq in living areas
- 40 dB LAeq in bedrooms at night (between 10 pm and 7 am)

**SLR Comments:** *The proposed targets are reasonable for road traffic noise provided they are applied to the loudest hour of traffic for the day and night periods. We also recommend that road traffic noise is assessed to the 'Better Apartments Design Standards' (BADS) targets, as implemented in Clause 55.07-6 of the Yarra Planning Scheme, being:*

- 40 dB LAeq,16h in living areas
- 35 dB LAeq,8hr in bedrooms

*While these targets do not strictly apply to apartments on Heidelberg Road due to the the fact that vehicle numbers do not exceed 40,000 per day, they will nevertheless provide for an appropriate minimum level of amenity.*

## 2.2 Traffic Measurements

*(Section 5.3.1 and 5.3.2 of the acoustic report)*

Measurements of road traffic noise were conducted during the evening peak hour on Wednesday 10 May 2017 and between 6 am and 7 am on Thursday 11 May 2017. Measurement positions were on the side of Heidelberg Road (Location A) and on the side of Chandler Highway (B). It is indicated that both measurements were conducted under free field conditions and were conducted for 10 to 15 minute intervals.

The results of measurements are provided in Table 4 of the report, and were in the range of 75 to 78 dBA Leq.

**SLR Comments:** *The measurement locations are suitable for quantifying impacts from the respective roads, and the measurement times are likely to provide an indication of typical worst case noise levels for the day and night periods (which can be assessed to the higher design targets of 40 dBA in bedrooms and 45 dBA in living rooms as proposed by NDY). However, the short term measurements conducted do not enable the Leq,16 h and Leq,8 hr levels to be determined. This data would be required for design to the BADS targets.*

*Based on logging provided for other projects on Heidelberg Road, we note the following:*

- *The night time average levels is typically at least 5 dB lower than the noise level between 6 am and 7 am weekdays. On these grounds, if the loudest hour target of 40 dBA Leq,1h is met in bedrooms, the BADS night target of 35 dBA Leq,8h will likely be met. (i.e. no requirement for further assessment of night time levels).*
- *The daytime Leq,16h level is typically only approximately 2 dB lower than the level between 6 pm and 6:30 pm weekdays. Therefore the BADS targets for living rooms are likely to be more stringent than the 'loudest hour' targets NDY have used.*

*We recommend that either further noise logging is conducted to quantify the daytime average level, or that a level 2 dB lower than those measured between 6 pm and 6:30 pm is adopted as the Leq,16h and assessed to an indoor target of 40 dBA Leq,16 hr in living rooms.*

## 2.3 Traffic Assessment

*(Sections 5.7 and Appendix A of the acoustic report)*

An explicit assessment is not included in the report. Recommended façade upgrade treatments are included in Sections 5.1 and Appendix A. Advice is provided for external walls and windows.

The most impacted apartments are proposed to be glazed with 10.76 mm thick laminated glass / 16 mm airgap / 12 mm glass. The report includes guidance for selecting appropriate frames and seals for ensuring that the sound insulation properties of the glass are not compromised. Advice is also provided for the non-vision areas. NDY recommend that where drywall construction is used, the transmission loss of the construction should be at least equivalent to that of the glazing.

**SLR Comments:** *We do not have sufficient information to conduct a full independent assessment of traffic noise ingress to the proposed apartments, such as the specific traffic noise spectrum and test data for the glazing configurations proposed for installation. However, the advice provided in the report is representative of a substantial upgrade from standard glazing, and may achieve the internal noise targets.*

*We recommended that minimum Rw ratings for the façade elements are also included in the report and that the frames and seals be required to comply with these targets. This requirement can help to ensure that the glazing performance is not compromised by window frames and seals. The ratings are especially important on projects where the acoustical consultant is not retained to sign off on glazing selections, as it gives the builder / developer the information they need to select suitable systems.*

*The requirement for drywall elements to be at least as good as the glazing is appropriate for small areas of drywall (e.g. above and adjacent to windows). However there are some larger wall areas that are exposed to noise from Heidelberg Road (e.g. some bedrooms in Type 2B apartments). We recommend providing a higher specification for these external walls if there is potential for them to be drywall.*

### 3 Mechanical Plant Noise

#### 3.1 Legislation and Guidelines

*(Section 4.1.1 of the report)*

Commercial and communal mechanical plant noise is proposed to be assessed to SEPP N-1. The SEPP N-1 zoning levels for two receiver locations are identified in Table 1 of the report. Background noise levels have not been measured because any measurements undertaken now (while the site is unoccupied) would not be representative of background noise levels once the project is complete. NDY propose to design building services noise to comply with the identified zoning levels.

**SLR Comments:** *We agree that it would be inappropriate to conduct background noise monitoring at the current site, however the actual SEPP N-1 limits will ultimately need to take background noise levels into consideration. Given this, it is important that the noise limits used during the design phase of the project are conservative. There would seem to be a risk on this project – where the zoning levels are quite high in some areas – for lower noise limits to apply. On these grounds we recommend allowing for a good margin for compliance.*

#### 3.2 Noise Control Advice

*(Section 4.1.5 of the report)*

Noise from mechanical plant is proposed to be controlled to achieve the identified limits through standard acoustic treatments, including lined duct, attenuators, acoustic louvres and the like.

**SLR Comments:** *The advice provided is sufficient for the planning phase of the project. We recommend that the permit require the ongoing involvement of a suitably qualified acoustical consultant to ensure that SEPP N-1 noise limits are met.*

### 4 Loading Dock Noise

An enclosed commercial loading dock is located on the ground floor. The loading dock is accessed from Heidelberg Road via tilt up doors. The building level above the loading dock is generally non-residential (carparking), however there are apartments on the Heidelberg Road façade of level 1, which will overlook the loading dock entrance.

## 4.1 Legislation and Guidelines

(Section 4.1 of the report)

Loading dock noise is proposed to be assessed to SEPP N-1.

**SLR Comments:** *Agreed. We would also recommend assessment to sleep disturbance targets of not more than 45 - 50 dBA Lmax in bedrooms at night, assuming closed windows (the actual target should take into consideration how frequently the noise occurs). Sleep disturbance targets would also be applicable to trucks entering and leaving the loading dock.*

## 4.2 Assessment and Recommendations

(Section 4.1.6 of the acoustic report)

An explicit assessment is not included in the report. The report includes the following recommendations for noise control:

- Absorption material be placed within the loading dock (type and extent to be determined during detailed design)
- No more than one delivery per 30 minute period during the night period

NDY note that their assessment is based on noise from the louder and larger trucks likely to deliver to the site.

### **SLR Comments:**

*We generally expect to see more detail in a SEPP N-1 assessment of loading dock noise in an acoustic planning report for a large supermarket. However, a high level of detail may not be necessary in situations where it can be demonstrated that there is a low risk of non-compliance with SEPP N-1. For the current project, which has a loading bay that is accessed from a major road; is located deep within the carpark; and does not have dwellings directly above the loading area, we would consider the risk of SEPP N-1 non-compliance low if the carpark entrance gates were proposed to be both impervious, and are proposed to be closed during any unloading and rubbish collection that takes place during the late evening and night periods.*

*If the entrance gates are proposed to be closed, the report should make this explicit. If not, we request further detail for the SEPP N-1 assessment (e.g. sound power levels of trucks and activities, full details of the absorption treatments proposed to be applied to the loading dock roof, details of any corrections for noise character that have been applied to the predicted noise levels, and presentation of the predicted SEPP N-1 effective noise level.*

*Given the potential frequency of trucks entering and leaving the loading dock at night, we would also like to confirm that appropriate Lmax targets will be met in the apartments overlooking the loading dock entrance and exit. If these targets are not met, further localised façade upgrades may be required.*

## 4.3 Food and Beverage Tenancies

(Section 4.2 of the acoustic report)

Noise from food and beverage tenancies is not addressed in any detail because the tenancies are generally remote from noise sensitive receivers within the development and in Lot 1A.

**SLR Comments:** *Noise to residents of Lot 2A should be considered, as some tenancies will open onto the Mews, which may be overlooked by apartments on the first four levels of Lot 2A. As a guide, we would recommend daytime and early evening operation only for any food and/or beverage tenancies unless an acoustic report is prepared demonstrating that noise impacts can be managed.*

## 5 Gymnasium Noise

A large commercial gym is shown located on Level 1 of the south east corner of the site.

*(Sections 4.3 of the report)*

NDY observe that music from the gym is likely to comply with the relevant noise limits due to the fact that the gym is fully enclosed, and has forced ventilation.

**SLR Comments:** *Generally agreed. However gyms can vary in the level of music they emit, and it is unclear at this stage just how close the nearest residential receivers will be. In any case, it is common in the City of Yarra for an assessment of noise impacts from gymnasiums to be required of the facility operator. Allowable internal music levels would be identified as part of such an assessment. Given this, noise from the gym is sufficient addressed in the current acoustic report.*

## 6 Outdoor Activities

An outdoor netball court and outdoor areas associated with the school and childcare centre are located in close proximity to apartments. Sources of noise associated with these activities include: voice noise; whistles and potentially ball bouncing (if the court is used for basketball as well as netball).

### 6.1 Noise Targets

Noise from outdoor activities has been assessed to 45 dBA Leq in habitable rooms during the day period (none of these activities are proposed to take place at night).

**SLR Comment:** *Voice and whistle noise is typically considered more intrusive than road traffic noise, and where these sources are likely to occur frequently or for extended periods, we recommend designing to lower targets.*

*Our recommended maximum design targets for this type of use are:*

- *35 dBA Leq and 50 dBA Lmax in habitable rooms during the day and evening, and*
- *30 dBA Leq and 45 dBA Lmax in bedrooms at night (use not currently proposed for the night period)*

*The measured or predicted noise levels should be corrected for noise character. A 5 dB penalty should be applied to highly characteristic noise sources, such as whistles, ball bounding or shouting.*

*Lower levels than those provided here should be targeted if feasible, because frequent noise levels of 45 - 50 dBA Lmax from voice and whistle noise will cause annoyance, particularly if they occur over extended periods.*

## 6.2 Netball Court

*(Section 5.4 of the acoustic report)*

Noise from voice and whistles used during play has been considered. It is stated that noise from these sources will comply with the identified Leq noise target of 45 dBA inside apartments. Whistle noise is however observed to be audible inside irrespective of likely compliance.

**SLR Comment:** *From our indicative calculations it appears likely that our recommended targets of 35 dBA Leq and 50 dBA Lmax will also be met for both voice and whistle noise with the proposed glazing in place (being 6.38 mm thick laminated glass, 12 mm gap, 6.38 mm thick laminated glass).*

*Noise from ball bouncing has not been considered in the report. If basketball as well as netball is likely to be played in the court, this noise should be considered. We note that ball bouncing noise can be difficult to control with small cavity double glazing.*

## 6.3 School Outdoor Areas

The school rooftop outdoor area is approximately 28 m from the nearest apartment, and there will be a line of sight from the apartment to the outdoor area.

*(Section 5.5 of the acoustic report)*

In their assessment NDY assume that 60 people will be in the outdoor area and shouting at any one time. The noise level inside apartments, with windows closed, is predicted to comply with the 45 dBA Leq targets. The glazing to the apartments potentially most impacted by voice noise from school children is Type GT01, being 8.38 mm thick laminated glass or double glazing comprising 4 mm glass/6mm airgap/8 mm glass.

**SLR Comments:** *NDY have taken a conservative approach to the noise source and assumed that 60 people will be shouting at any time. The sound power levels used in NDY's calculations are not provided in the report, however based on the information provided our calculations suggest that a total sound power level of 116 dBA Leq has been assumed. These levels can be considered 'worst case'.*

*Our indicative calculations suggest that the NDY targets will be met for people shouting, and that our recommended (lower) targets will be met assuming crowd noise comparable to a noisy beer-garden (typically estimated to be in the order of 105 Lw dBA Leq for approximately 120 people). On these grounds the advice provided in the report is considered reasonable.*

## 6.4 Childcare Centre

A 120 place childcare centre is proposed for Level 3 of the commercial building, and the centre is proposed to have an outdoor play area which will be overlooked by east facing apartments in nearest residential tower, who will be approximately 15 m away.

**SLR Comments:** *The glazing to apartments in closest proximity to the centre is proposed to be upgraded to 6.38 mm glass / 12 mm airgap/ 6.38 mm glass. Our indicative assessment suggests that children's voice noise will comply with the 35 dBA Leq target we recommend for these sources, provided the proposed glazing is installed.*

*This assessment, like all assessments of noise from external sources to the subject development, assumes that apartment windows will be closed when reasonable acoustic amenity is sought. Acoustic amenity to outdoor areas will be compromised, with levels in the order of 66 dBA Leq from the childcare centre predicted if all children play outdoors at the same time. While not ideal, this outcome is considered reasonable provided that the outdoor play area is only used for intervals during the daytime on weekdays (e.g. 8 am to 6 pm), and provided that future residential occupants are aware of the centre.*

*If extended operating hours for the childcare centre are sought, we would recommend providing some restrictions on when the outdoor play area can be used given its extremely close proximity to residential receivers.*

## 6.5 Community Centre (Enclosed spaces)

A large community space is proposed for Level 1 of the commercial building. The space has large strip skylights that will be overlooked by east facing apartments of the nearest residential tower, which are approximately 6 m away.

**SLR Comments:** *Uses of the community space are not discussed in the acoustic report, and it is unclear whether there is potential for music to be played. If there is, consideration should be given to designing the roof, and particularly the skylights, to ensure that compliance with SEPP N-2 will be achieved whilst a reasonable level of music is being played within the centre.*

## 7 SLR Summary

A review of the acoustic report for the mixed use development is provided above. The items we recommend are addressed in further detail are summarised below:

### Traffic Noise

- Traffic noise has been assessed to targets of 45 dBA Leq in living rooms and 40 dBA Leq in bedrooms at night. These targets are suitable for assessment of noise during the loudest hours of the day and night periods, but we also recommend assessing to the day and night average targets 40 dBA Leq,16h in living rooms and 35 dBA Leq,8hr in bedrooms, consistent with the BADS targets. This approach may have implications for the glazing design to living rooms.

### Façade Upgrade Advice

- Glazing requirements are expressed as glazing configurations and octave band sound transmission data. We recommend that a minimum Rw rating also be provided to assist the builder / developer in the selection of appropriate systems. The frame and seal combinations proposed for installation should be demonstrated to achieve the specified Rw ratings.
- Drywall components of the façade are required to have an acoustic rating not less than any glazing in the same façade. In our opinion this specification may be appropriate for in-fill panels, however larger areas of wall should typically perform better than the glazed elements. If there is potential for large areas of lightweight wall we recommend providing a higher specification for them.



## Mechanical Plant Noise

- SEPP N-1 noise limits have been identified for mechanical plant. The limits are based on zoning levels due to the fact that background noise at the site is not currently representative of future levels. While this approach is reasonable, we feel that there is potential for lower noise limits to be determined in the future, and suggest that the mechanical design take this into consideration.

## Loading Dock Noise

- Limited detail is provided for the SEPP N-1 assessment of loading dock noise. This approach is sufficient if there is a very low risk of non-compliance as would be the case if the loading bay is proposed to be fully enclosed during deliveries (i.e. entrance doors impervious and closed). If the loading area is not fully enclosed, a more detailed assessment is requested. The assessment should include assumed sound power levels of trucks and activities; full details of the absorption treatments proposed to be applied to the loading dock roof; details of any corrections for noise character that have been applied to the predicted noise levels, and presentation of the predicted SEPP N-1 effective noise level.
- Given the potential frequency of trucks entering and leaving the loading dock at night, we would also like to confirm that appropriate L<sub>max</sub> targets will be met in the apartments overlooking the loading dock entrance and exit. If these targets are not met, further localised façade upgrades may be required.

## Food and Beverage Tenancies

- It is recommended that any food or beverage tenancy proposing to play music above background noise levels or to operate beyond outside standard business hours, be required to undertake a noise impact assessment.

## Gymnasium Noise

- We recommend that the gym operators be required to undertake a noise impact assessment if music is proposed to be played above background noise levels. Noise, including structureborne sound, should also be considered to the surrounding commercial premises.

## Netball Court, School and Childcare Centre Outdoor Areas

- Noise from voice and whistles associated with the outdoor areas in close proximity to apartments is assessed to 45 dBA Leq in habitable rooms in the report. We recommend the following targets are applied to these sources:
  - 35 dBA Leq and 50 dBA L<sub>max</sub> in habitable rooms during the day and evening, and
  - 30 dBA Leq and 45 dBA L<sub>max</sub> in bedrooms at nightwith appropriate corrections made to the noise source for character. Even lower targets should be adopted if feasible because these sources have potential to cause nuisance to future occupants, particularly if extended periods of use are likely.
- The glazing proposed for apartments potentially affected by voice and whistle noise has been upgraded and the upgrades appear likely to achieve both the targets nominated by NDY and the lower targets we have recommended.
- Noise from basketball bouncing has not been assessed in the report. If this is likely to occur we recommend that it be assessed.

### Indoor Community Space

If the Level 1 community space is likely to be used for music we recommend that an assessment of impacts to the overlooking residences be conducted, and advice for façade / roof treatment be provided to enable the proposed levels of music to be played.

Regards,



Dianne Williams  
Associate - Acoustics

Checked/ Authorised by: JA
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