

Memorandum

TO: Karen Bain, Planner

FROM: Lyn Pope, Environmental Health Officer

DATE: 17 July 2020

SUBJECT: **LUC-2020-263**
280 and 336 Cumberland Street, Dunedin

Environmental Health has reviewed this application by the Ministry of Health for the above ground deconstruction of the Cadbury building at 280 and 336 Cumberland Street. The application identifies there will be a breach of the construction noise standard during demolition.

The applicant commissioned a Noise and Vibration Assessment Report from Marshall Day Acoustics which covered noise effects of the deconstruction activities on the surrounding area. The assessment was based on NZS 6803:1999 Acoustics – Construction Noise on which the District Plan noise limits are based. Marshall Day are reputable, professional consultants on acoustic issues, and we would consider them experts in this field.

Under the proposed 2GP the site falls under the CEC North Zone while the land to the east is zoned Industrial and to the west, Central Business District.

The site is bordered either side by State Highway1 and the wider surrounding area is predominantly commercial. It experiences high traffic volumes due to the state highway and other busy inner-city streets, particularly during day time peak morning and afternoon hours. Monitoring by Marshall Day has shown ambient noise levels are already above the daytime 70 dB Leq criterion.

Some noise sensitive receivers are located nearby to the proposed site including the ODT building which shares a common boundary and is therefore not separated by any road corridor as the others are.

There will be a limited time where by these proposed works will overlap with other deconstruction activities elsewhere and this has been taken into consideration by the acoustic consultants when predicting noise levels associated with this application.

Deconstruction works will be limited to Monday to Saturday, between 7:30am and 6:00pm each day. No works will occur at night, on Sundays or public holidays, unless emergency works are required.

2GP Noise Limits

The proposed activity is located within the Commercial and Mixed-Use zone under the 2GP which has been afforded the following noise limits;

Noise levels measured at the notional boundary of the receiving property

	7am to 10pm	10pm to 7am
Commercial and mixed use (except centres, Smith Street and York Place) ...	60 dBA Leq (15 mins)	60 dBA Leq (15 mins) and 85 dB LAF max

Rules for construction noise (and vibration) are provided under Rule 4 - Temporary Activities under the 2 GP and Rule 4.5.4.1. provides noise performance standards (based on NZS6803:1999) for such activities to occur within the notional boundary of any building housing any noise sensitive activities.

Construction Noise Standards

**Note the term construction under the following Standard also covers maintenance and demolition works.*

The New Zealand Standard Acoustics - Construction Noise (NZS 6803:1999) states that "typical duration" of construction, means construction work at any one location for more than 14 calendar days but less than 20 weeks. It should be noted any delay in activities may result in extended timeframes for the works to be completed. This would push into 'long term duration' timeframes which are attributed with more stringent noise levels.

Construction shall be limited to the times set out below and shall comply with the following noise limits for construction noise received within a industrial or commercial areas as per New Zealand Standard Acoustics – Construction Noise NZS 6803:1999 – 7.2.3 Table 3.

Recommended upper limits for construction noise received in industrial or commercial areas for all days of the year

Time period	Duration of work		
	Typical duration	Sort duration term	Long term Duration
	Leq(dBA)	Leq(dBA)	Leq(dBA)
0730-1800	75	80	70
1800-0730	80	85	75

The table above indicates higher levels are permitted over night time hours due to the industrial/commercial location where sleep disturbance is not needed to be considered.

Given there are noise sensitive receivers located within reasonable proximity to the proposed site it may be appropriate to apply residential noise limits to such sites. In regard to this, the applicant has stated there will be no activity after 6pm or on weekends/public holidays so only the weekday noise limits from 7.30 am to 6pm would be necessary

Recommended upper limits for construction noise received in residential zones

Time period	Duration of work
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	Typical duration	Sort duration term	Long term Duration
Weekdays 0730-1800	75 Leq(dBA) 90 Lmax	80 Leq(dBA) 95 Lmax	70 Leq(dBA) 85 Lmax

When comparing the two tables the recommended Leq levels during day time hours are the same.

The Marshal Day Report – Predicted noise levels

Some demolition phases for the entire Cadbury demolition will overlap at times. The cumulative noise effects have therefore been considered by Marshal Day when calculating predicted noise levels from this proposal.

The Marshal Day report predicted worst case cumulative noise levels at several receiving sites may exceed the 70dBA long term duration recommended upper noise limit. This exceedance was calculated at being, up to 5dBA, bringing it more in line with the 'typical duration' recommended limits. Furthermore, these predictions were based on minimal mitigation measures being applied to the activity. Marshal day have stated it should be possible to achieve lower levels than predicted with appropriate management. However, at this stage appropriate noise mitigation methods cannot be specified in detail.

The ODT building is the only building immediately adjoining the demolition work. Predicted noise levels between 83 and 88 dB Leq (at 5 meters) may be received by the ODT building externally when deconstruction of the Cadbury World building commences, however levels below 50 dB Leq are expected internally. The exception to this may be as a result of structure-borne transmission of noise, or from the removal of the courtyard wall structure, for short periods towards the end of the proposed demolition programme.

The applicant has stated they will submit a Noise and Vibration Management Plan which would include mitigation measures. Marshal Day have attached a draft Plan (appendix F – intended to cover the entire project as a whole) and provides information on training, scheduling, general mitigation measures, noise barriers etc. This draft would need to be finalised once the working methodology for the proposed activity is determined and the best practicable options have been considered.

Resource Management Act 1991

The Resource Management Act 1991 requires the adoption of the best practicable option to ensure the emission of noise from a premises does not exceed a reasonable level. The Act also imposes a duty on every person to avoid, remedy or mitigate any adverse effect on the environment arising from an activity being carried out.

Noise summary

- Although the proposed site falls within a commercial/mixed use zone there are noise sensitive receivers nearby (residential and commercial). These include the ODT building which share a boundary wall. Whilst the Acoustic Consultants report indicates noise experienced inside the ODT building should remain below 50dB Leq their predictions do not account for any structure-borne transmission

of noise during the party wall works and removal of the courtyard wall. Works on these walls will be for a short period but may lead to disturbance.

- The area already has elevated day time background noise levels attributed to high traffic volumes and the proposal indicates activity outside of day time hours will only occur in emergency situations.
- Whilst the recommended upper noise limits for construction should be based on long-term duration (>20weeks) for the project as a whole, the elevated background noise levels already in the area may warrant less stringent noise limits and those for 'Typical Duration' may therefore be more applicable.
- The predicted worse case noise levels are in exceedance of the performance standard by up to 5dB Leq and at this stage no mitigation measures were considered which could lower the noise levels further.
- When putting these above points into context, the scale of effects on the surrounding area may be considered as low. NZS 6803:1999 acknowledged that small exceedances are often considered reasonable if they are of limited duration and best practical option measures are implemented to avoid, remedy and mitigate the noise emissions as far as practicable.

Vibration effects

The report by Marshal Day has considered vibration in regard to the District Plan limits, German Standard DIN 4150-3:2016 and British Standard BS 5228-2:2009. The main vibration concern is typically structural or cosmetic building damage, but people may be affected even at low levels.

Environmental Health are not experienced in this field and I agree with Marshal Day that a more suitably qualified acoustic specialist may need to be engaged to provide detailed guidance on vibration and reradiated noise effects once the working methodology (e.g. type of pile driving etc) has been determined.

Dust Nuisance

The applicant has stated the Demolition Management Plan will cover dust mitigation measures to suppress and minimise dust nuisance, however no details regarding these proposed measures were provided.

In the event of any dust issues, complaints will be referred to the Otago Regional Council.

Recommended conditions

- The applicant must meet the residential and commercial noise limits for Typical Duration construction noise outlined in NZS6803:1999 except in emergency situations.
- The applicant must submit a Noise and Vibration Management Plan prepared by a suitably qualified person prior to the commencement of work. It should address the relevant measures in NZS6803:1999 (noise) and DIN 4150-3:2016 (vibration).

Lyn Pope
Environmental Health Officer