



# NEW WORLD

MARSHALL DAY  
Acoustics 

NEW WORLD KHANDALLAH CARPARK  
NOISE ASSESSMENT

Rp 001 20211032 | 23 May 2022



Project: **CARPARK NEW WORLD KHANDALLAH**

Prepared for: **Foodstuffs Ltd  
PO Box 38896  
Wellington Mail Centre  
Lower Hutt 5045**

Attention: **David Boersen**

Report No.: **Rp 001 20211032**

#### Disclaimer

Reports produced by Marshall Day Acoustics Limited are based on a specific scope, conditions and limitations, as agreed between Marshall Day Acoustics and the Client. Information and/or report(s) prepared by Marshall Day Acoustics may not be suitable for uses other than the specific project. No parties other than the Client should use any information and/or report(s) without first conferring with Marshall Day Acoustics.

The advice given herein is for acoustic purposes only. Relevant authorities and experts should be consulted with regard to compliance with regulations or requirements governing areas other than acoustics.

#### Copyright

The concepts and information contained in this document are the property of Marshall Day Acoustics Limited. Use or copying of this document in whole or in part without the written permission of Marshall Day Acoustics constitutes an infringement of copyright. Information shall not be assigned to a third party without prior consent.

#### Document Control

Status:	Rev:	Comments	Date:	Author:	Reviewer:
			14 April 2022	T. Hulland	S. Arden
	R01	Included client comments	26 April 2022	T. Hulland	
		Included construction noise	23 May 2022	T. Hulland	S. Arden

## SUMMARY

Foodstuffs Ltd ('Foodstuffs') propose to expand their existing New World carpark at 26 Ganges Rd, Khandallah. This would add 64 carparks to the existing spaces and two new access ways to the carpark, replacing three existing dwellings to the west and south of the site.

Marshall Day Acoustics has been engaged by Foodstuffs to carry out a compliance assessment of the cumulative noise emissions from the site with the noise requirements of the Wellington City Council District Plan.

### Activity

The primary noise sources on site are as follows:

- Carpark traffic (from patrons and staff)
- Delivery vehicles
- Loading/unloading
- Fixed Plant

Commute are the traffic engineers for the project and have informed us of the peak hour predicted carpark traffic movements for the prescribed time frames, as described in the District Plan noise rules. These traffic movements are based on a traffic survey carried out at New World Island Bay, Wellington.

In addition to the carpark traffic, we have considered the cumulative noise effects of the currently consented delivery and loading activities on site. Delivery times and frequency have been advised by the client. Noise associated with these activities has been calculated based on measurements we made of the existing activity during a site visit on 10 November 2021.

Fixed plant noise has been excluded from this assessment as it is subject to different noise rules and remains unchanged from what has previously been consented.

### Assessment

#### Activity Noise

Cumulative noise emissions from vehicle movements, deliveries and loading activities are predicted to comply with the applicable District Plan noise limits subject to the following:

- Noise barriers are constructed around the carpark perimeter as described in this report;
- Only one truck delivery with associated loading/unloading is carried out in any 15-minute period between 2200 and 0700;
- Staff arriving prior to 0700 park at least 10 metres from any property zoned residential and used for residential purposes if parking on site.

#### Construction Noise

At this stage, a construction methodology has not been developed sufficiently to carry out a noise assessment and specifics of any exceedances cannot be reliably determined.

Due to the close proximity of some of the surrounding sites, it is highly unlikely that the District Plan construction noise limits would be complied with. This is not unusual for construction sites in Wellington.

To address the above, we propose a Resource Consent condition is included requiring a CNVMP be provided to the CMO for approval, at least 10 days prior to construction commencing on site.

## TABLE OF CONTENTS

1.0	INTRODUCTION .....	5
2.0	SITE & ACTIVITY DESCRIPTION.....	5
2.1	Site location.....	5
2.2	Activity description .....	6
2.3	Mitigation .....	7
3.0	NOISE PERFORMANCE STANDARDS .....	7
4.0	PREDICTED ACTIVITY NOISE LEVELS AND COMPLIANCE ASSESSMENT.....	8
4.1	Noise Sources.....	8
4.2	Special Audible Characteristics.....	9
4.3	Predicted Noise Levels .....	9
4.3.1	0700 – 1900 Time Period.....	9
4.3.2	1900 – 2200 Time Period.....	10
4.3.3	2200 – 0700 Time Period.....	10
5.0	ACTIVITY NOISE COMPLIANCE SUMMARY .....	11
6.0	CONSTRUCTION NOISE .....	12
7.0	PROPOSED CONDITIONS.....	12

## APPENDIX A GLOSSARY OF TERMINOLOGY

## 1.0 INTRODUCTION

Foodstuffs Ltd ('Foodstuffs') propose to expand their existing New World carpark at 26 Ganges Rd, Khandallah. This would add 64 carparks to the existing carpark and two new access ways. These additional carparks and accessways would replace three existing dwellings to the west and south of the existing New World site.

Marshall Day Acoustics has been engaged by Foodstuffs to carry out a compliance assessment of cumulative noise emissions from the existing new world site and the proposed carpark, assessed against the requirements of the Operative Wellington City Council District Plan (the "District Plan").

A glossary of acoustic terminology used in this report is included as Appendix A.

## 2.0 SITE & ACTIVITY DESCRIPTION

### 2.1 Site location

The existing New World site is located at 26 Ganges Road and is zoned "Centre" under the District Plan. The location of the proposed carpark, which replaces the three existing dwellings is zoned "Outer Residential".

The closest noise sensitive receivers, and their corresponding District Plan zoning, are identified as

1. 2, 4 and 6 Dekka Street (Centre)
2. 5 Dekka Street (Outer Residential)
3. 5A Dekka Street (Outer Residential)
4. 29 Nicholson Road (Outer Residential)
5. 32 Nicholson Road (Outer Residential)
6. 37 Nicholson Road (Outer Residential)
7. 35 Nicholson Road (Outer Residential)
8. 35A Nicholson Road (Outer Residential)
9. 34 Ganges Road (Outer Residential)
10. 21, 23, 25, 33 Ganges Road (Centre)

The subject site, the location of the proposed carpark/accessways and the closest receivers potentially affected by noise are shown in Figure 1.

Figure 1: Aerial view of proposal and surrounds



Other receivers in the area may be exposed to noise from activities. However, noise levels would be lower than at the assessed locations due to increased propagation distances and screening from intervening buildings.

## 2.2 Activity description

The proposal would add 64 parking spaces to the existing New World carpark bringing the total parking provision to 102 parking spaces.

Commute are the traffic engineers for the project and have informed us of the following predicted traffic movements for this site, based on a traffic survey carried out at New World Island Bay, Wellington.

Table 1: Predicted Traffic movements

Time Period (Monday to Sunday)	Total Traffic Movements	Peak Hour Movements
0700 – 1900	2665	360
1900 – 2200	406	209
2200 – 0700	11	4

Deliveries will predominantly be during the day (0700-1900) at the sites dedicated loading bay. However, five deliveries a week occur prior to 0700. These early morning deliveries arrive, and are unloaded, on the eastern side of the existing carpark. This is because the stores dedicated loading bay borders residential properties. This remains unchanged from the previously consented operation.

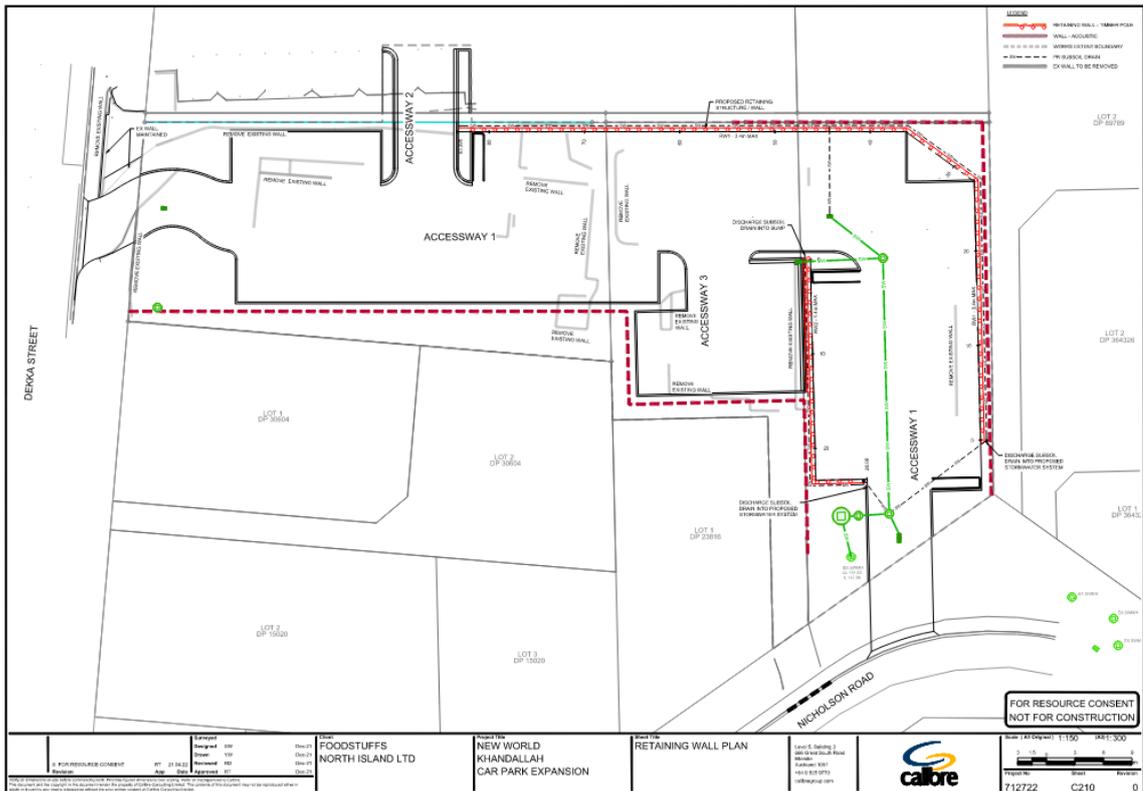
To inform our assessment, we measured the existing early morning carpark loading operations and have assumed that only one truck would arrive and be unloaded in any 15-minute period.

Fixed plant remains unchanged from the previously consented operation.

### 2.3 Mitigation

There is currently no specific noise mitigation on the site. The proposal is to include new noise protection walls around the perimeter of the site as shown in Figure 2. All walls are proposed to be at least 1.8 metres high and constructed with no air gaps between panels and between the fence and the ground. The minimum surface mass should be 12 kg/m<sup>2</sup>.

Figure 2: Carpark layout



### 3.0 NOISE PERFORMANCE STANDARDS

As stated in Section 2.1, the existing New World site and carpark is zoned “Centre” under the District Plan and the additional parking area is zoned “Outer Residential”.

There are separate noise rules in both zones for general activity noise and fixed plant noise. However, since the fixed plant (and hence noise emissions) from the operation remains unchanged from what has previously been consented, we have excluded it from this assessment.

The activity noise rules for each zone have been reproduced below:

#### Outer Residential Zone

##### “5.6.1.1

*Noise (emitted from Residential Areas and received within Residential and Rural Areas)*

##### 5.6.1.1.1

*Noise emission levels from any non-residential activity occurring within a Residential Area, when measured at or within the boundary of any site, other than the site from which the noise is emitted in Residential and Rural Areas, must not exceed the following noise limits:*

---

**Outer Residential Area**

---

Monday to Sunday 7am to 7pm	50dB $L_{Aeq}$ (15 min)
Monday to Sunday 7pm to 10pm	45dB $L_{Aeq}$ (15 min)
Monday to Sunday 10pm to 7am	40dB $L_{Aeq}$ (15 min)
Monday to Sunday 10pm to 7am	70dB $L_{AFmax}$ "

---

**Centres Zone**

**"Noise (emitted and received within Centres)**

7.6.1.1.1

Noise emission levels from activities in Centres when measured at or within the boundary of any site or at the outside wall of any building on any site, other than the site from which the noise is emitted in Centres shall not exceed the following limits:

At all times 60dB  $L_{Aeq}$  (15 min)

At all times 85dB  $L_{AFmax}$

**Noise (emitted within Centres received in other Areas)**

7.6.1.1.5

Noise emission levels from activities in Centres when measured at or within the boundary of any site in Residential and Rural Areas shall not exceed the following limits:

---

**Outer Residential Area**

---

Monday to Sunday 7am to 7pm	50dB $L_{Aeq}$ (15 min)
Monday to Sunday 7pm to 10pm	45dB $L_{Aeq}$ (15 min)
Monday to Sunday 10pm to 7am	40dB $L_{Aeq}$ (15 min)
Monday to Sunday 10pm to 7am	65dB $L_{AFmax}$ "

---

**4.0 PREDICTED ACTIVITY NOISE LEVELS AND COMPLIANCE ASSESSMENT**

**4.1 Noise Sources**

Predicted noise levels are based on the peak hour traffic activity described in Section 2.2. Noise source data is based on measurements made by us of the existing activity and from similar activities on other sites.

Item	Sound Power Level $L_w$
Light vehicle traversing site	85
Heavy Vehicle traversing site*	92
Heavy Vehicle Loading/Unloading*	84
Door slam	96 $L_{max}$

---

\*Calculated from measurements of the existing activity

## 4.2 Special Audible Characteristics

Where a sound has a distinctive character, which may affect its acceptability within a community, then a penalty of +5 dB may be applied to the noise level in accordance with Section 6.3 of NZS 6802:2008. Such characteristics would include the sound being noticeably impulsive or tonal.

For loading and unloading activities, possible special audible characteristics (SAC) include noise from reversing beepers, dropping of pallets/boxes, or tailgates banging. From our site observations, no penalty for SAC was applicable to the activity noise.

The penalty for SAC would not be applicable to vehicles driving on site.

Regardless, the following ongoing noise mitigation should be implemented to ensure that the risk of application of the SAC penalty is avoided and to ensure that BPO is taken to reduce operational noise emissions as far as practicable:

- The carpark should be maintained and kept free of potholes etc;
- Loading/unloading techniques to minimise the banging pallets/boxes;
- Avoid tonal reversing or warning alarms (suitable alternatives may include flashing lights, broadband audible alarms or reversing cameras inside vehicles). Where this is not possible, vehicles should avoid reversing on site where practicable.

## 4.3 Predicted Noise Levels

The following sections outlines the predicted cumulative noise levels from traffic, deliveries and loading/unloading for each of the prescribed time frames specified in the District Plan noise rules.

### 4.3.1 0700 – 1900 Time Period

During this time period, the following noise limits apply:

Receiving Zone	Noise Limit
Outer Residential	50dB L <sub>Aeq</sub> (15 min)
Centres	60dB L <sub>Aeq</sub> (15 min)
	85dB L <sub>AFmax</sub>

Table 2 below shows the predicted noise levels at each receiver, described in Section 2.1.

**Table 2: 0700 - 1900 predicted noise levels**

Receiver	Predicted Noise Level L <sub>Aeq</sub> (15 min), dB	Noise limit L <sub>Aeq</sub> (15 min), dB
2, 4 and 6 Dekka Street (Centre)	48	60
5 Dekka Street (Outer Residential)	41	50
5A Dekka Street (Outer Residential)	48	50
29 Nicholson Road (Outer Residential)	46	50
32 Nicholson Road (Outer Residential)	45	50
37 Nicholson Road (Outer Residential)	46	50

35 Nicholson Road (Outer Residential)	41	50
35A Nicholson Road (Outer Residential)	47	50
34 Ganges Road (Outer Residential)	40	50
21, 23, 25, 33 Ganges Road (Centre)	44	60

Door slams from cars using the carparks closest to sites zoned Centre are predicted to be less than 60 dB  $L_{AFmax}$  so will comply with  $L_{AFmax}$  limit during this time.

#### 4.3.2 1900 – 2200 Time Period

During this time period, the following noise limits apply:

Receiving Zone	Noise Limit
Outer Residential	45dB $L_{Aeq}$ (15 min)
Centres	60dB $L_{Aeq}$ (15 min)
	85dB $L_{AFmax}$

Table 3 below shows the predicted noise levels at each receiver described in Section 2.1.

**Table 3: 1900 - 2200 predicted noise levels**

Receiver	Predicted Noise Level $L_{Aeq}$ (15 min), dB	Noise limit $L_{Aeq}$ (15 min), dB
2, 4 and 6 Dekka Street (Centre)	46	60
5 Dekka Street (Outer Residential)	38	45
5A Dekka Street (Outer Residential)	45	45
29 Nicholson Road (Outer Residential)	44	45
32 Nicholson Road (Outer Residential)	42	45
37 Nicholson Road (Outer Residential)	43	45
35 Nicholson Road (Outer Residential)	39	45
35A Nicholson Road (Outer Residential)	44	45
34 Ganges Road (Outer Residential)	37	45
21, 23, 25, 33 Ganges Road (Centre)	41	60

Door slams from cars using the carparks closest to sites zoned Centre are predicted to be less than 60 dB  $L_{AFmax}$  so will comply with  $L_{AFmax}$  limit during this time.

#### 4.3.3 2200 – 0700 Time Period

During this time period the following noise rules apply:

Receiving Zone	Noise Limit
----------------	-------------

Receiving Zone	Noise Limit
Outer Residential	40dB $L_{Aeq}$ (15 min) 65 or 70 dB $L_{AFmax}$ *
Centres	60dB $L_{Aeq}$ (15 min) 85dB $L_{AFmax}$

\* $L_{AFmax}$  limit depends on whether the door slam occurs within the Centre or Outer Residential zone

Table 4 below shows the predicted noise levels at each receiver described in Section 2.1.

**Table 4: 2200 - 0700 predicted noise levels**

Receiver	Predicted Noise Level $L_{Aeq}$ (15 min), dB	Noise limit $L_{Aeq}$ (15 min), dB
2, 4 and 6 Dekka Street (Centre)	39	60
5 Dekka Street (Outer Residential)	31	40
5A Dekka Street (Outer Residential)	40	40
29 Nicholson Road (Outer Residential)	30	40
32 Nicholson Road (Outer Residential)	28	40
37 Nicholson Road (Outer Residential)	27	40
35 Nicholson Road (Outer Residential)	23	40
35A Nicholson Road (Outer Residential)	28	40
34 Ganges Road (Outer Residential)	22	40
21, 23, 25, 33 Ganges Road (Centre)	44	60

Door slams from carparks closest to Centres zones are predicted to be less than 60 dB  $L_{AFmax}$  so will comply with the Centres  $L_{AFmax}$  limit during this time.

Door slams from cars received in Outer residential zones are predicted to comply with the 65 dB  $L_{AFmax}$  limit, provided that cars are parked at least 10m from a residential boundary.

## 5.0 ACTIVITY NOISE COMPLIANCE SUMMARY

Activity noise levels from the site are predicted to comply with the District Plan noise limits at all times subject to the following:

- Noise barriers are constructed around the carpark perimeter as described in this report;
- Only one truck delivery with associated loading/unloading is carried out in any 15-minute period between 2200 and 0700;
- Staff arriving prior to 0700 park at least 10m from any property zoned residential and used for residential purposes if parking on site.

## 6.0 CONSTRUCTION NOISE

Under the District Plan General Provisions, *“noise from construction, maintenance and demolition activities, including those associated with the urgent repair of utilities to maintain continuity of service, on any site or on any road shall comply with, and be measured and assessed using, the recommendations of NZS6803:1999”*.

The District Plan does not address vibration resulting from construction activities. However, guidance can be found in DIN 4150-3:2016 “Vibrations in buildings – Part 3: Effects on structures”. This Standard is used widely in New Zealand to assess potential for vibration causing damage to buildings and is frequently referenced in consent conditions issued by Wellington City Council.

At this stage, a construction methodology has not been developed sufficiently to carry out a noise assessment and specifics of any exceedances cannot be reliably determined.

Due to the close proximity of the some of the surrounding sites, it is highly unlikely that the construction noise limits would be complied with. This is not unusual for construction sites in Wellington. Until further details on the construction methodology have been determined, we are unable to comment on whether or not the vibration limits can be complied with.

To address the above, we propose a Resource Consent condition is included requiring a CNVMP be provided to the CMO for approval, at least 10 days prior to construction commencing on site.

## 7.0 PROPOSED CONDITIONS

The following sets out our recommended conditions of consent for the proposal. The intention of these conditions is to ensure that the noise requirements of the District Plan are addressed, and sufficient information is provided to the Compliance Monitoring Officer.

### Construction Activities

- (1) Construction noise shall be measured and assessed in accordance with New Zealand Standard NZS 6803:1999 *“Acoustics - Construction Noise”* and comply with the NZS 6803 noise limits at any occupied building, unless otherwise provided for in the CNVMP (condition 3).
- (2) Construction vibration shall be measured and assessed in accordance with German Standard DIN 4150-3:2016 *“Structural Vibration – Part 3: Effects of Vibration on Structures”* and comply with the limits of that standard, unless otherwise provided for in the CNVMP (condition 3).

### Construction Noise and Vibration Management Plan (CNVMP)

- (3) A Construction Noise and Vibration Management Plan (CNVMP) must be prepared by a suitably qualified person in accordance with Annex E of NZS 6803:1999, and submitted to the compliance monitoring officer for approval at least 10 days prior to the commencement of the works. The CNVMP must be implemented throughout the Project. The CNVMP objectives are to:
  - a) Identify and adopt the best practicable option (BPO) for the management of construction noise and vibration.
  - b) Define the procedures to be followed when the noise and vibration standards in Conditions 1 and 2 cannot be met.
  - c) Inform the duration, frequency, and timing of works to manage disruption.
  - d) Require engagement with affected receivers and timely management of complaints.

## APPENDIX A GLOSSARY OF TERMINOLOGY

<b>Noise</b>	A subjective term used to describe sound that is unwanted by, or distracting to, the receiver.
<b>A-weighting</b>	<p>A set of frequency-dependent sound level adjustments that are used to better represent how humans hear sounds. Humans are less sensitive to low and very high frequency sounds.</p> <p>Sound levels using an “A” frequency weighting are expressed as dB <math>L_A</math>. Alternative ways of expressing A-weighted decibels are dBA or dB(A).</p>
<b>dB</b>	Decibel. The unit of sound level.
<b><math>L_{Aeq}</math></b>	The equivalent continuous A-weighted sound level. Commonly referred to as the average sound level and is measured in dB.
<b><math>L_{Amax}</math></b>	The A-weighted maximum sound level. The highest sound level which occurs during the measurement period. Usually measured with a fast time-weighting i.e. $L_{AFmax}$
<b><math>L_w</math></b>	Sound Power Level. The calculated level of total sound power radiated by a sound source. Usually A-weighted i.e. $L_{WA}$ .