Before the Independent Hearings Panel
For Wellington City Council

Under	the Resource Management Act 1991
In the matter	an application for resource consent for an extension to the existing car parking area of the Khandallah New World supermarket at 26 Ganges Road, 3 Dekka Street, 31-33 Nicholson Road, Khandallah

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Statement of Evidence of Michael Miklin Halstead on behalf of Foodstuffs North Island Limited – Noise

Date: 15 April 2024

DLA PIPER

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INTRODUCTION

1 My full name is Michael Miklin Halstead. I am the Senior Associate at the Wellington office of Marshall Day Acoustics Ltd. (**Marshall Day**).

2 I am providing noise evidence on behalf of the Applicant, Foodstuffs North Island Limited (**FSNI**).

QUALIFICATIONS AND EXPERIENCE

3 I hold a Bachelor Degree of Industrial Engineering from the University of Washington, USA, which I obtained in 1992.

4 I have had 33 years of experience assessing and advising on the environmental sound effects of various projects, including wind farms, gas production plants, electricity substations and roading projects for corporate, industrial and public sector clients; I served as Chair of the NZS6801-6802 (noise measurement and assessment standards) revision committee for the current versions of these standards.

5 I have acted as a technical adviser to my colleague Tom Hulland as he prepared the original report for the Khandallah New World Carpark noise assessment, and took over the project after he moved to the UK to pursue another role.

CODE OF CONDUCT

6 I have read the Code of Conduct for Expert Witnesses set out in the Environment Court's Practice Note 2023. I have complied with the Code of Conduct in preparing my evidence and will continue to comply with it while giving oral evidence before the panel. My qualifications as an expert are set out above. Except where I state I rely on the evidence of another person, I confirm that the issues addressed in this statement of evidence are within my area of

expertise, and I have not omitted to consider material facts known to me that might alter or detract from my expressed opinions.

SCOPE OF EVIDENCE

7 This brief of evidence addresses the current noise generated from consented activities at the existing carpark and operations at New World Khandallah (the site) and the noise estimated to be generated from the construction and operation of the expanded carpark (the Proposal). The operation of the carpark extension is limited to movements of staff and customer vehicles, and will not be used for deliveries or service vehicles.

8 My statement of evidence addresses the following matters:

8.1 Relevant noise performance standards;

8.2 Current noise from carpark;

8.3 Potential noise from carpark extension proposal;

8.4 Noise mitigation measures;

8.5 Construction noise and vibration;

8.6 Submissions;

8.7 Response to Council's section 42A report (**Section 42A Report**); and

8.8 Conclusions.

9 In preparing my evidence I have considered the following:

9.1 Marshall Day Acoustic Assessment, appendix 6 of the application (**Noise Report**);[1]

9.2 Marshall Day Acoustic Engineering Section 92 Response (**Section 92 Noise Response**);[2]

9.3 The relevant noise limits in the Wellington City Council (**Council**) District Plan (District Plan);

9.4 The noise and vibration limits relating to construction activities set out in New Zealand Standard NZS6803:1999, DIN4150[3] and BS5228;[4].

9.5 The traffic evidence of Michael Nixon;

9.6 Traffic counts prepared by Commute Transportation Consultants Ltd (Commute) relating to the Island Bay New World and the Site;.

9.7 Submissions received in this process; and.

9.8 Council's Section 42A Report.

INVOLVEMENT WITH THE APPLICATION

10 I have provided technical assistance during the preparation of the acoustic assessment report relating to this project, and have been engaged to provide evidence on behalf of FSNI for the purposes of this hearing.

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[1] Marshall Day "Acoustic Report" (29 August 2022) Wellington City Council Public Notification: 26 Ganges Road, 3 Dekka Street and 31-33 Nicholson Road, Khandallah (Khandallah New World Carpark) Application Documents – Appendix 6 (**Noise Report**).
[2] Marshall Day "Acoustic Engineering Response" (29 August 2022) Section 92 Response – Attachment 2.
[3] DIN 4150-3:2016-12 "Vibrations in buildings – Part 3: Effects on structures".
[4] British Standard BS 5228-2:2009 "Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration".

11 I have visited the site twice – once during a relatively quiet late morning period in March 2024, and once during the evening commute peak hour in April 2024. I have also conducted my own supplementary measurements and calculations to understand the impacts of the proposed carpark expansion, as well as reviewing the Noise Report.

NOISE PERFORMANCE STANDARDS

12 At the time of application, the existing New World site and carpark was zoned "Centre" under the District Plan and the proposed additional parking area was zoned "Outer Residential".

13 Noise from activities in the Centre zone was limited to 60 dB L_{Aeq}(15min) and 85 dB L_{AFmax} at all times, when assessed at neighbouring boundaries within the Centre zone.[5]

14 Noise from activities in either the Centre or Outer Residential zone, when measured at neighbouring Residential zoned properties, were controlled by the following limits:[6]

Average noise levels:

7am – 7pm	50 dB L_{Aeq}(15min)
7pm – 10pm	45 dB L_{Aeq}(15min)
10pm-7am	40 dB L_{Aeq}(15min)

Maximum noise levels:

10pm-7am	70 dB L_{AFmax} (when the noise originates from the Outer Residential zone) and 65 dB L_{AFmax} (when the noise originates from the Centre zone)

[5] District Plan, Rule 7.6.1.1.1.
[6] District Plan, Rule 7.6.1.1.5.

15 Under the Proposed District Plan the supermarket is located in the Local Centre Zone, and the adjacent properties (including the property on which the carpark expansion would be built) is zoned High Density Residential.

16 The noise limits between properties in the Local Centre Zone are unchanged. The noise limits from the Local Centre Zone, or from non-residential activities in the High Density Residential Zone, to the High Density Residential Zone are the same as at present except that the evening noise limit is relaxed from 45 to 50 dB $L_{Aeq(15min)}$ and the L_{max} noise limits are relaxed from 65 and 70 dB L_{AFmax} respectively to 75 dB L_{AFmax} in both cases.

17 In this application, the relevant noise sources relate to vehicle movements, car door slams, and shopping trolley noise. The "*average noise level*" limits would apply to engine and tyre noise which are generally steady in nature; the "*maximum noise level*" limits would apply to car door slams and sounds such as tyres striking potholes or other obstructions, and trolley impacts, which are infrequent but occur at higher noise levels.

CURRENT NOISE

Carpark noise

18 The existing carpark provides space for 38 vehicles. Access to and from the carpark is via an entrance/exit onto Ganges Road. The activities in the existing carpark are not expected to increase as a result of this expansion. Traffic movements via the Ganges Road entrance may decrease slightly due to the provision of two additional entrances.[7]

19 The ambient noise level in the area currently consists of existing customer activity and other traffic and business activities.

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[7] Evidence of Michael Nixon.

Because of the difficulties of accurately separating out the supermarket customer noise from other commercial and road activities, I have relied on noise modelling as presented in the Noise Report to establish this activity noise level.

20 This modelling is based on traffic count data relating to typical movements at the Island Bay New World provided to Marshall Day by Commute as part of their traffic assessment. The noise modelling considers noise levels generated by typical vehicles, and takes into account the topography of the car park and adjacent properties and buildings.

21 The existing carpark activity primarily affects the properties opposite the supermarket on Ganges Road, producing a noise level of 44 dB $L_{Aeq(15min)}$ during daytime activities. In the evening (after 7pm) reduced activity levels reduce this noise level to 42 dB $L_{Aeq(15min)}$. Both the daytime and evening activities comply with the respective noise limits of 60 dB $L_{Aeq(15min)}$ for the Centre zone.

22 There is currently no specific noise mitigation on the site, beyond the shielding provided naturally by the supermarket building itself.

NOISE FROM PROPOSED CARPARK EXTENSION

23 The proposed carpark extension would replace the houses on the adjacent residential sites at 3 Dekka Street, and 31 and 33 Nicholson Road. The new carpark would add 66 additional carparks resulting in an overall total of 100 spaces, and would include accessways to Dekka Street and Nicholson Road.

Extended carpark noise generation

24 Noise arising from the activity would be generated by customers' light vehicles entering, traversing and exiting the site. This noise is proposed to be controlled by an acoustic fence around the

perimeter of the site as shown in Figures 2 and 3 of the Noise Report,[8] and as I will describe in the next section.

25 The calculated noise levels of the Proposal as predicted at adjacent properties are given in the Noise Report, in Table 2 (for daytime activities) and Table 3 (for evening activities).[9] These noise levels range from 40 to 49 dB $L_{Aeq(15min)}$ during daytime, and from 38 to 46 dB $L_{Aeq(15min)}$ during evening activities. These measurements were calculated for the Proposal as a whole, including consideration of proposed noise mitigation.

26 At all times the noise levels comply with the relevant noise limits for the zone and time of day.

Mitigation methods

Acoustic fencing

27 The Proposal includes the construction of a new acoustic boundary fence as an important mitigation method needed to control activity noise levels received at neighbouring properties. Without this fence, noise levels would generally be 5 – 10 decibels higher than summarised above – with some first-storey locations receiving only slight attenuation and some ground floor locations receiving very significant attenuation by the fence.

28 The boundary fence is to be built in the location shown in Figure 2 of the Noise Report, and to the design shown in Figure 3.[10]

29 The acoustic fence is proposed to be of adequate surface mass of fence material (12 kg/m^2 or greater); a height of at least 1.8 metres above local ground level and be constructed to prevent

[8] Noise Report, page 8.
[9] Noise Report, page 11 at [4.3.1] and page 12 at [4.3.2]. I note that the tables incorrectly refer to 7 Dekka Street as 5A Dekka Street.
[10] Noise Report, page 8.

gaps from forming between fence palings; and to ensure there is no gap beneath the fence.

Delivery and Staff Parking

30 There are no proposed changes to delivery hours or movements as part of this resource consent application. I understand that delivery vehicles will continue to utilise the existing service lane on Ganges Road and will not need to access the new carpark at any time.

31 Staff parking movements on the new carpark are included in the daytime and evening noise predictions described above. During the early morning period (before 7am) a small number of vehicles will arrive, some of which will use the new carpark. We understand, based on traffic data supplied by Commute, that up to 11 staff vehicle movements will occur during the 10pm – 7am period, with a maximum intensity of four vehicle movements per hour.

32 The calculated sound levels from these traffic movements at neighbouring dwellings are presented in Table 4 of the Noise Report,[11] and are 29 dB $L_{Aeq(15min)}$ or less at all dwellings. This complies with the night-time noise limits of the respective zones.

33 The L_{max} limit which applies at night-time will be complied with by ensuring that staff park at bays greater than 10m from boundaries, and by delivering training on the importance of closing doors quietly when arriving before 7AM. The predicted noise level from doors closed carelessly is 68 dB L_{Amax}, compared to doors closed carefully, at 60 dB L_{Amax}.

[11] Noise Report, page 13.

Construction noise

34 Noise will occur as a result of the construction of the proposed carpark. Noise during construction is controlled by NZS6803:1999 "*Acoustics – Construction Noise*", which sets recommended daytime noise limits for projects of a 2 to 20 week duration to 75 dB L_{Aeq} at residential and commercial boundaries.

35 These recommended daytime noise limits are met at most neighbouring properties, but for the nearest properties these limits are likely to be exceeded by between 1 and 9 decibels. These properties are: 2, 4, 5, 6, and 7 Dekka Street; 29, 35, 35A and 37 Nicholson Road; and 34 Ganges Road.

36 Mitigation of construction noise effects would be achieved through a combination of temporary and permanent noise barriers, and by communication with neighbours and scheduling of activities around most sensitive times. I recommend that the establishment of the permanent noise barrier occur as early in the process as possible so that it can lend mitigation to the remainder of construction.

37 Communication and scheduling will form a crucial part of the Construction Noise Management Plan which is recommended to be prepared and submitted to the Council prior to the commencement of construction works.[12] This will allow unavoidably loud activities to be carried out quickly and efficiently at times with the least effect on particular neighbours, and will be an opportunity to design any further temporary barriers required to achieve the best practicable option with regards to noise effects.

38 Other mitigations proposed in the Noise Report include training of construction staff to minimise noise; selection of appropriate and

[12] Noise Report, page 26, proposed condition (3).

well-maintained equipment to carry out work quickly and/or quietly; and appropriate location of stationary equipment such as compressors and generators.

Construction Vibration

39 We have assessed[13] the likely level of vibration arising from construction of the carpark, and compared this with the vibration limits described by DIN4150[14] (as commonly used by Wellington City Council) and BS5228[15] which describes human subjective response to vibration.

40 This assessment has not predicted any exceedance of the relevant amenity vibration limits, and are significantly below the limits which relate to cosmetic damage to buildings.

SUBMISSIONS

41 Several submissions are generally concerned with vehicle noise, particularly as it could affect sleep. I understand that the intention of the carpark extension is to provide additional daytime and evening parking to customers, and to a limited number of staff who may arrive and depart during night-time hours. Vehicle noise, controlled by the acoustic fence, is calculated to comply with District Plan noise standards at all times. The shift of staff parking from the roadside to the carpark will better facilitate the requirement for staff to park more than 10 metres from dwellings.

42 The submission of Janet Preston (submission #51) makes specific reference to noise from trolley returns impacting into the metal return bays. The locations of these bays are presented in

[13] Noise Report, pages 17 – 19.
[14] DIN 4150-3:2016-12 “Vibrations in buildings – Part 3: Effects on structures”.
[15] British Standard BS 5228-2:2009 “Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration”.

the landscaping plans,[16] and are as far from residential boundaries as possible. I note that the objective measure of such noise would mainly relate to the L_{max} (impact noise) metric, which does not apply during daytime or evening assessments. I recommend a condition that trolleys be retrieved prior to 10PM to avoid sleep disturbance during night-time hours. I have measured the noise from trolley activity and calculate that it will comply with the daytime and evening noise standards.

43 The submissions of Brenda and Robert Vale (submissions #24 and #27 respectively) reference matters of staff parking, which I have discussed above, and of matters related to the existing activities at Ganges Road and in the existing carpark, which I believe are not related to activities which would occur in the new carpark.

44 The submission of Andrew Duncan Fleming and Catherine McGachie (submission #64) raises concerns that the Noise Report's noise model does not take into account the topography of the land and the height of noise sources, particularly where adjacent dwellings overlook the site. I note that the noise model does include topography, and that the noise levels calculated are presented separately for both levels of two-storey houses. The submitters are correct to point out that where such an elevated observation point looks over the 1.8m fence onto a noise source, the effectiveness of the noise barrier is reduced. This has been reflected in the calculated values in the Noise Report.

45 The submission of John Andrews (submission #56) notes that overlapping palings (with sufficient mass) are required in an acoustic fence to be effective. This is one out of several potential options to achieve the aim of eliminating gaps in the fence. I note that the "feather edge boards" described in the drawing L200[17]

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[16] Updated plans attached to the landscape evidence of Caitlin Cook, drawing L100.
[17] Updated plans attached to the landscape evidence of Caitlin Cook, drawing L200.

from DGSE should indicate an overlap, and I have discussed this with the author of drawing to ensure this is communicated.

RESPONSE TO SECTION 42A REPORT

46 I have reviewed the report prepared for the Council by Amy Camilleri, as well as the evidence provided by the Council's noise expert Edward Dyer, contained within Appendix 2 of the Council's Section 42A report.

Noise Expert's Evidence

47 In his Statement of Evidence Mr Dyer generally agrees with the conclusions of the Noise Report, although he requests that several matters be addressed by me.

48 In paragraph 26 – 27 of the Operational Noise section of Mr Dyer's evidence, he notes that our Section 92 Noise Response states that the noise barrier would provide between 3 and 14 decibels of attenuation. He challenges the assertion that any attenuation would be provided by a barrier which just permits line of sight, and requests that we provide specific attenuation amounts for the relevant neighbouring receivers of noise.

49 Barrier attenuation has been calculated using SoundPLAN noise propagation software. This software implements the method of calculating barrier attenuation described in the ISO 9613-2 standard. This method considers the difference in length between the uninterrupted source-to-receiver path and the path over the barrier. In the situation where this difference is zero (where the barrier just skims the line-of-sight) the barrier attenuation is 4.5 decibels when the source is on hard ground. This relates to the interruption of the ground reflection and the resulting phase cancelation at the barrier. The barrier attenuation increases if it more drastically obstructs line-of-sight, and rapidly diminishes as the line of site rises above the barrier.

50 The precise attenuation depends on both the source and the receiver's distance from the barrier as well as the relative heights, and on the frequency spectrum of the noise source. As requested, Table 1 below lists the barrier attenuations attributed to the average vehicle noise calculations in our assessment:

Table 1 - Barrier attenuations attributed to average vehicle noise calculations

Receiver	Calculated Barrier Attenuation (dB)
2, 4 and 6 Dekka Street	4
5 Dekka Street	13
7 Dekka Street - Ground Floor	11
7 Dekka Street - First Floor	5
29 Nicholson Road - Ground Floor	14
29 Nicholson Road - First Floor	8
32 Nicholson Road	2
37 Nicholson Road - Ground Floor	5
37 Nicholson Road - First Floor	1
35 Nicholson Road	10
35A Nicholson Road - Ground Floor	10
35A Nicholson Road - First Floor	3
34 Ganges Road	13
21, 23, 25, 33 Ganges Road	5

51 In Paragraph 25 of Mr Dyer's Construction Vibration section, he suggests that I may wish to provide further comment on noticeable vibration during construction.

52 I can provide additional comment by reviewing Table 11[18] in the Noise Report (which sets out predicted construction vibration levels at each dwelling during each activity) in the context of the vibration amenity guidelines listed in section 6.5[19] of the Noise Report. For most activities, all dwellings would receive vibration which is just perceptible, or at worst "typically acceptable with prior notification". During use of excavators close to the boundaries of the dwellings at 5 and 7 Dekka St and 29 and 35a Nicholson Road, vibration levels are likely to be clearly perceptible, and communication of the times these activities will occur is important to the acceptability of

[18] Noise Report page 21.
[19] Noise report page 19.

this vibration. This level of communication is anticipated in the preparation of the Construction Noise and Vibration Management Plan proposed.

53 Mr Dyer agrees with the conclusions of the Noise Report and the proposed mitigations.[20] He proposes a set of conditions relating to construction noise and vibration, and to the certification of the noise barrier fence.[21] I agree with the intent of these conditions.

Section 42A Report Conclusions

54 The Section 42A Report also agrees with the conclusions of the Noise Report and those of the WCC noise expert inasmuch as the proposed activities comply with the relevant noise standards. Nevertheless this report concludes that the effects are not acceptable because of the unanticipated character of noise produced by the carpark activity in the context of the Residential Zone.[22]

55 I disagree with the characterisation of the Residential zone as one which does not anticipate noise from vehicles, as most of the properties are bounded by public roads, and some of the properties presently experience noise from car parking activities on the street which are permitted, but which would be moved internally to the New World property as a result of this application. This particular portion of the residential zone in fact borders the commercial zone, and is signposted as the “Khandallah Shopping Village”.

56 I am sympathetic to the change in noise character on the basis of the scale and intensity of vehicle movements during peak shopping times as I observed during my 5pm visit to the site. During this time the carpark was full and many vehicles parked on adjacent streets. The noise character when observed directly above the carpark in

[20] Mr Dyer's evidence, at [20].
[21] Appendix A to Mr Dyer's evidence.
[22] Section 42A Report, at [61] - [73].

clear view was dominated by engine noise from the carpark, at a noise level of around 52 dBA.

57 However, when I moved to a position where the carpark was shielded from view, the noise environment was then one of distant traffic, birds, aircraft, and wind in trees. For this reason, the Noise Report recommended noise barrier fences to be constructed around the carpark.

58 In my opinion the design of the carpark – including the noise barrier fence – will control the scale and intensity of the car parking activity such that it does not materially change the character, or run counter to the anticipated character, of a residential zone, particularly one which borders a commercial zone.

CONCLUSIONS

59 On the basis of the assessment above, I consider that the operation of the proposed carpark expansion will result in reasonable noise levels which will not have a significant noise impact on neighbours, including no material change in character of the noise environment.

60 I consider the construction of the carpark will generally have reasonable noise effects if managed with good practice and particularly with good neighbourly communications and regard for specific times of noise sensitivity.

Date: 15 April 2024

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Michael Miklin Halstead