

**BEFORE INDEPENDENT HEARING COMMISSIONERS APPOINTED BY THE
WELLINGTON CITY COUNCIL**

IN THE MATTER OF

The Resource Management Act 1991 (**RMA or
the Act**)

AND

IN THE MATTER OF

An application for resource consent for the extension of the car park for the New World supermarket in Khandallah, including earthworks and associated signage.

BETWEEN

**FOODSTUFFS PROPERTIES (WELLINGTON)
LIMITED**

APPLICANT

WELLINGTON CITY COUNCIL

CONSENTING AUTHORITY

**EVIDENCE OF GLEN WRIGHT FOR THE CONSENTING AUTHORITY
WELLINGTON CITY COUNCIL
(LIGHTING EFFECTS)**

Dated: 28TH MARCH 2024

INTRODUCTION

- 1 My name is Glen Andrew Wright
- 2 I am employed as a Principal at S&T Wellington Limited, an architectural and engineering consultancy based in Wellington.
- 3 I hold the qualifications of New Zealand Certificate of Engineering (Electrical), I am a Registered Engineering Associate and an Associate Member of the Illuminating Engineering Society of Australia and New Zealand.
- 4 I have over 30 years' experience in lighting design, application and review. This includes exterior lighting for amenity, security and appearance, and also includes public spaces, car parks, walkways, sports fields and buildings in urban and rural environments. I am the recipient of six national lighting awards.
- 5 I have provided lighting effects advice to many resource consent applicants and Auckland, Whangarei, Palmerston North, Porirua, Upper Hutt and Wellington Councils. I am currently assisting Wellington City Council with their Proposed District Plan Light Chapter hearing.
- 6 I have read the Environment Court's Code of Conduct and agree to comply with it. My qualifications as an expert are set out above. The matters addressed in my evidence are within my area of expertise, however where I make statements on issues that are not in my area of expertise, I will state whose evidence I have relied upon. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in my evidence.

SCOPE OF EVIDENCE

- 7 In my evidence I cover the following:
 - (a) Assessment of the lighting effects of the lighting proposed for the proposed car park extension.
 - (b) Responses to lighting technical matters raised by submitters.
 - (c) Recommendations.

- (d) Conclusions.

CONTEXT

- 8 The purpose of my evidence is to provide technical opinion on the artificial lighting effects associated with this proposed car park extension.

Documents reviewed

- 9 I carried out my peer review based on the following documents:
- a) Notified Resource Consent Application SR517439.
 - b) Consent Application SR517439 Notification Decision Report, dated 23/10/2023.
 - c) Landscaping plans issued by Stapleton Elliot Design Group, dated 11/05/2022.
 - d) New World Car park Assessment of Environmental Effects (AEE) and Statutory Analysis prepared by Baker & Associates Limited, dated 04/07/2022.
 - e) A total of 68 submissions.

THE PROPOSAL

- 10 The proposal seeks to expand the existing car parking area of Khandallah New World supermarket by removing the existing dwellings located at the adjoining 3 Dekka Street and 31-33 Nicholson Road sites, replacing these with additional car parking spaces to increase customer capacity, along with a new car parking access on Nicholson Road and associated car park signage, landscaping, lighting and fencing.
- 11 The lighting for this car parking expansion has not been designed and, therefore, no lighting design plans and calculations have been supplied. However, the supplied landscape layout L101 shows an indicative lighting layout, which includes a combination of 2.95m high poles with top mounted luminaires and 1m high bollard luminaires, these are located along the internal accessways and the parking bays.

- 12 Luminaire technical specifications are not included and a note on layout L101 notes the following:

"Lighting systems and placement are indicative only. Confirm with a lighting technician for exact placement and specifications".

- 13 The proposed lighting shown on the above-mentioned layout L101 also does not include any reference to *AS/NZS 1158.3.2:2020 Lighting for roads and public spaces, Part 3.1 Pedestrian area (Category P) lighting. Performance and design requirements*. It is considered best practice to refer to this standard for lighting performance and design requirements when designing outdoor spaces that will be used by public.
- 14 The existing supermarket car parking is zoned "Local Centre" in the Wellington City District Plan but the proposed car parking extension will be located on sites zoned "Outer Residential". Therefore, any proposed lighting on the car parking extension area should comply with the WPDP lighting rules for Outer Residential.
- 15 It is understood that this proposed lighting will operate only during the supermarket opening hours of 7am to 9pm.

THE RECEIVING ENVIRONMENT

Site observations

- 16 I carried out a visit to the site and its surrounds on Thursday 22nd February 2024 between 8.30pm and 9.30pm.
- 17 The following is a summary of my observations:
- The supermarket and its existing car park are elevated above the surrounding dwellings.
 - There is a lot of established vegetation along boundaries of most properties.
 - Existing supermarket car park lighting is from 5 lighting poles of 6 to 7m height and each with two or four symmetrical floodlights tilted above their horizontal.

- Supermarket existing car park lighting did not turn on at any stage up to the 9pm supermarket closing. For customer safety it should have been on, I therefore expect that the lighting is not switched on automatically by a daylight switch, it may have a time clock or is manually turned on by supermarket management.
- Supermarket opening hours at present are 7am to 9pm every day, seven days per week.
- No spill light or views of supermarket building lighting was evident to the dwellings that will be adjacent the proposed new car park extension.
- The only outdoor lighting spill onto these dwellings is from streetlights, typically 20 lux under street lights and dropping to less than 1 lux between street lights.
- No headlight sweep will occur onto surrounding residential dwellings when vehicles are existing or entering the proposed car park's new exits onto Dekka Street and Nicholson Road.
- Dekka Street has commercial properties across the road from the existing and proposed supermarket car parks.

Surrounding dwellings

- 18 The proposed car park extension will share boundaries with the residential properties of 5 & 7 Dekka Street, 29, 35, 35A and 37 Nicholson Road and 34 Ganges Road. Each of these properties has a residential dwelling. I would expect the potential for spill light effects from any proposed car park lighting to be limited to these properties. A lighting solution that provides minimal spill light to these boundaries will be required.
- 19 I would expect the potential for glare (light source brightness) from any proposed car park lighting to include the above neighbouring dwellings as well as dwellings further away. A lighting solution that provides minimal glare to all surrounding dwellings will be required.

Surrounding roads

20 The proposed car park extension will have frontages onto Dekka Street and Nicholson Road and therefore I would expect there to be potential for glare to road users from any proposed car park lighting. A lighting solution that provides minimal glare to these road users will be required.

Nighttime lighting

21 Existing nighttime artificial lighting present in the surrounding environment includes:

- Supermarket and other Khandallah town centre commercial premises lighting and illuminated signage.
- Supermarket car park lighting
- Streetlights
- Lights on vehicles
- Residential dwellings indoor and outdoor lighting

22 Therefore, I would classify the nighttime environment zone A3 medium district brightness.

ASSESSMENT OF THE PROPOSAL

Proposed car park lighting

23 Lighting for the proposed car parking extension has not been designed and the lighting shown on the landscape plan L101 is indicative only. No reference has been made to lighting performance proposed, we would expect a lighting performance category from AS/NZS 1158.3.1 to be specified.

24 Therefore, the lighting design should clarify the lighting category the lighting is designed to and should include lighting calculations showing compliance with the selected lighting category requirements. A note to this effect is included in our recommendations.

Wellington Proposed District Plan (WPDP)

Measuring Methods

25 WPDP, Light Chapter standard "Light S1" requires the following for all DP zones:

1. Lighting limits must be measured and assessed in accordance with AS/NZS 4282:2019 Control of the Obtrusive Effects of Outdoor Lighting. In the event of any conflict between this standard and the District Plan, the District Plan shall prevail.

2. Where an activity is located on a site which adjoins or is separated by a road from a different zone, the activity on the site must meet the relevant zone standards for light for the adjoining zone at the zone boundary.

26 The lighting design should comply with the above standard. A note to this effect is included in our recommendations.

Light Spill

27 As noted above, the site of the proposed car parking extension is zoned "Outer Residential" in the WPDP and Light Chapter standard "Light S2 – Light Spill" requires the following:

Outdoor artificial lighting must not exceed the following vertical illuminance levels:

- *7.00am – 10.00pm: 10 Lux; and*
- *10.00pm – 7.00am: 2 Lux.*

The vertical illuminance shall be measured at:

- *Any window of a habitable room of a building used for a sensitive activity on any adjacent site; or*
- *The minimum setback distance for buildings and structures used for residential purposes for the relevant zone of an adjacent site if that site does not contain a building used for a sensitive activity. The vertical extent of the calculation points for vertical illuminance shall be between:*

- 1.5m above ground level; and
- The maximum building height permitted by the relevant zone.

- 28 Therefore the car park extension lighting should not exceed the pre-curfew 10 lux limit as it is understood the car parking lighting will only be operating during the supermarket operational hours 7am to 9pm. But as noted above, the lighting design is still to be provided and, therefore, there are no lighting calculations to show the expected spill light illuminance levels at the windows of the adjacent residential dwellings.
- 29 The landscape layout L101 shows an indicative lighting layout that includes 2.95m poles with top mounted area luminaires with downlight projection and 1m high bollard luminaires placed away of the property boundaries. The landscape plans also show a proposed 2m fence running along the property boundaries and dense vegetation planted along this fence to mitigate noise and direct views from the surrounding dwellings.
- 30 Additional to this, my site visit showed that the existing car parking area is elevated above the surrounding dwellings and there is a lot of vegetation on the boundaries of most of the surrounding properties. No spill light or direct view of the existing supermarket external lights was noted from the dwellings that will be adjacent to the new car parking area.
- 31 Based on the above, and additional to this, the perimeter fence and the proposed and existing vegetation can be expected to block the spill light towards the neighbouring dwellings. Therefore, it is my opinion that the proposed combination of low height luminaires, their location away off the boundaries and the downlight projection of the pole mounted lights can be expected to contain the light inside the car parking boundary.
- 32 Lighting design and calculations should be provided by the applicant and these should include the light spill to the adjacent dwellings, ensuring compliance with "Light S2" standard. A note to this effect is included in our recommendations.

Glare

33 The site of the proposed car parking extension is zoned "Outer Residential" on the WPDP and Light Chapter standard "Light S3 – Glare" requires the following:

Outdoor artificial lighting on any site adjacent to a road, or adjacent to a site which contains a building used for a sensitive activity, must be selected, located, aimed, adjusted and/or screened so that the luminous intensity does not exceed the following:

- 7.00am – 10.00pm: 12,500 cd; and
- 10.00pm – 7.00am: 2,500 cd.

34 In this case, the proposed lighting should not exceed the pre-curfew 12,500 cd limit as it is understood the car parking lighting will only be operating during the supermarket operational hours 7am to 9pm.

35 As noted above, the lighting design is still to be provided and, therefore, there are no lighting calculations at this stage showing the expected luminous intensity levels at the adjacent roads and the windows of the surrounding residential dwellings.

36 Lighting design and calculations should be provided by the applicant and these should include the intensity values calculated at the surrounding residential windows, ensuring compliance with "Light S3" standard. A note to this effect is included in our recommendations.

Effects on road users

37 The site of the proposed car parking extension is zoned "Outer Residential" on the WPDP and Light Chapter standard "Light S4 – Effects on road users" requires the following:

Outdoor artificial lighting must not exceed a 15% threshold increment limit (based on adaption luminance of 2 cd/m²) when calculated in the direction of travel within each traffic lane of any public road.

38 The proposed lighting included on the landscape layout L101 shows some pole mounted luminaires placed at the car parking new access points located on Dekka Street and Nicholson Road. These lights are the closest to the

existing roads and are placed there to increase the road visibility and to ensure the safety of drivers.

- 39 As noted previously the indicative pole mounted luminaires are of short height and their locations follows the recommendations of AS/NZS 1158 road lighting standards regarding lighting at road intersections. In my opinion, their presence at the proposed car parking access points will be beneficial in terms of road safety and visibility at night-time and it is unlikely that will cause any adverse effects on road users.
- 40 Lighting design and calculations should be provided by the applicant and these should include the Threshold Increment (TI) along the surrounding roads complies with "Light S4" standard. A note to this effect is included in our recommendations.

Sky glow

- 41 WPDP Light chapter standard "Light S5 – Sky glow" standard requires the following in the Outer Residential zone:

Outdoor artificial lighting must not exceed an upward light ratio of 2%.

- 42 Lighting design and calculations should be provided by the applicant and these should include the upward light ratio to show it complies with "Light S4" standard. A note to this effect is included in our recommendations.

RESPONSE TO MATTERS RAISED BY SUBMITTERS

- 43 My response to submissions is limited to the consideration of lighting technical matters in contention.

Submission of [6] Kevin & Marie Pugh

- 44 Mr and Mrs Pugh own 7 Dekka Street, Khandallah, which directly abuts the western boundary of the proposed car park extension. Their property will be bordered by the proposed car park on two sides. Their property contains a two-storey residential dwelling. They state:

"The proposed development will introduce a notable departure from the scale and nature of lighting presently experienced on our property. Further, the proposed lighting standard of 10 lux significantly contrasts

with that expected on residential sites between 10 pm and 7am in the Proposed Wellington District Plan (which is 2 lux);"

45 I concur particularly as the proposed car park lighting is associated with a non residential activity occurring within outer residential zone, the level of spill light and glare should be lower than the permitted activity limits in the WPDP and that appropriate lighting can be readily provided.

Submissions of [37] Susan Wright

46 Ms Wright requests that the application avoid light pollution.

47 I concur that any lighting associated with this application should avoid light pollution. To me light pollution is when lighting is:

- Providing more light than is required to safely carry out an activity at night.
- Obtrusive levels of spill light occur outside the property boundary.
- Obtrusive levels of light fitting brightness can be viewed from outside the property boundary.
- When a light fitting projects light above its horizontal.

The lighting standards I have included in my evidence if complied with would avoid light pollution.

Submission of [47] Andrew Black

48 Mr Black states:

"For residents around there'll be more light and noise. They should be able to enjoy their homes without undue light and noise."

49 I concur that surrounding residents should be able to enjoy their homes (amenity) without undue light from any lighting associated with this application. The lighting standards I have included in my evidence if complied with would ensure current levels of amenity are maintained.

Submission of [56] John Andrews

50 Mr Andrews states:

"I would like to see enhanced light spill suppression, ensuring the light source is not visible from any neighbours property, as well as zero cut off lighting across the site to preserve darkness. This is easy to do now and harder later, but light pollution management is increasing and new developments should lead the way."

51 I concur, particularly as the proposed car park lighting is associated with a non residential activity occurring within outer residential zone, the level of spill light and glare should be lower than the permitted activity limits in the WPDP and that appropriate lighting can be readily provided.

Submission of [66] Jolanda Meijer

52 Ms Meijer states:

"Extending the car park will have a negative impact on the adjacent residential properties, including a noise and light pollution."

53 I concur, please refer to my earlier response to similar issues raised in other submissions.

KEY ISSUES AND SUMMARY OF CONCLUSIONS

Car park lighting

54 Lighting is required for the safety of the users of the proposed car park extension, but the lighting should not be more than is required safety. With reference to AS/NZS 1158.3.1:2020 recommendations for car park lighting, it is my recommendation that lighting category PC2 is appropriate based on reference to Table 3.5 and the selection criteria of "medium" Night time vehicle and/or pedestrian movements and that any installed lighting should not exceed these levels by more than 25%.

55 AS/NZS 1158.3.1:2020 Table 3.5

TABLE 2.5
LIGHTING SUBCATEGORIES FOR OUTDOOR CAR PARKS
(INCLUDING ROOF-TOP CAR PARKS)

1	2	3	4
Type of area	Selection criteria ^{a,c}		
	Night time vehicle and/or pedestrian movements	Fear of crime	Applicable lighting subcategory ^b
Parking spaces, aisles and circulation roadways	High	High	PC1
	Medium	Medium	PC2
	Low	Low	PC3
Designated parking spaces specifically intended for people with disabilities	N/A	N/A	PCD
For any designated areas for pedestrians to cross	N/A	N/A	PCX

56 With reference to AS/NZS 1158.3.1:2020 Table 3.7, Sub Category PC2 recommends an average horizontal illuminance of 7 lux.

57 AS/NZS 1158.3.1:2020 Table 3.7

TABLE 3.7
VALUES OF LIGHT TECHNICAL PARAMETERS FOR OUTDOOR
CAR PARKS (INCLUDING ROOF-TOP CAR PARKS)

1	2	3	4	5
Lighting subcategory	Light technical parameters (LTP)			
	Average horizontal illuminance ^{a,b} (\bar{E}_h) lx	Point horizontal illuminance ^{a,b} (E_{Ph}) lx	Illuminance (horizontal) uniformity ^c Cat. P (U_{E2})	Point vertical illuminance ^{a,b} (E_{Pv}) lx
PC1	14	3	8	3
PC2	7	1.5	8	1
PC3	3.5	0.7	8	—
PCD ^d	—	≥ 14 and $\geq (\bar{E}_h)^d$	—	—
PCX ^e	21	5	8	—

Effects on residents

RECOMMENDATIONS

58 While I expect the WPDP permitted levels can be met, these levels can be expected to result in a change in amenity for the neighbouring dwellings, particularly as they currently experience no effects from light spill or glare from lighting in the neighbouring property. As the proposed car park extension lighting is associated with a non-residential activity occurring within

outer residential zone, to make this lighting less obtrusive to these dwelling I recommend that appropriate lighting standards are included as consent conditions. Appropriate standards would include:

- 1) Measurement method should comply with standard "Light S1".
- 2) Light spill should comply with "Light S2" curfew (10.00pm – 7am) level of 2 Lux in lieu of the pre-curfew level of 8 Lux.
- 3) Glare should comply with "Light S3" curfew (10.00pm – 7am) level of 2,500 cd in lieu of the pre-curfew level of 12,500.
- 4) Effects on road users, complies with "Light S4".
- 5) Sky glow, complies with "Light S5".
- 6) To reduce sky glow effects and make the light emitted less obtrusive the light source colour temperature to be 3000Kelvin or less.
- 7) To reduce sky glow effects and views the bright light sources, any luminaire when installed is not to emit any light above its horizontal.
- 8) The lighting should be controlled by automatic controls that turn the lights on via daylight switch and a time clock to ensures the lights are only on when it is dark and are not operated between 9.00pm and 7am, Monday through to Sunday. Except that there can be a manual maintenance switch to allow the lights to be switched on during daylight when required for lighting maintenance purposes.

- 59 To ensure that the car park extension lighting will comply with the above recommended standards lighting calculations should be carried out and the building consent application should include a lighting report prepared by a suitably qualified lighting practitioner. This report is to verify and provide evidence that the proposed lighting will comply.

RECOMMENDED CONDITIONS OF CONSENT

- 60 The building consent for the proposed car park extension shall include a lighting report prepared by a suitably qualified lighting practitioner. This report is to verify that the proposed lighting will comply with the following requirements:

- a) Lighting performance to meet AS/NZS 1158.3.1:2020 lighting sub category PR???, lighting levels shall not exceed these by more than 25%.
- b) Comply with WPDP Light Chapter standards for outer residential, and for spill light and glare they shall meet the lower curfew (10.00pm to 7am) levels.
- c) The light source colour temperature to be 3000Kelvin or less.
- d) Any luminaire when installed does not emit any light above its horizontal.
- e) The lighting is controlled by automatic controls that turn the lights on via daylight switch and a time clock to ensures the lights are only on when it is dark and are not operated between 9.00pm and 7am, Monday through to Sunday. Except that there can be a manual maintenance switch to allow the lights to be switched on during daylight when required for lighting maintenance purposes.

CONCLUSIONS

If the car park extension lighting complies with my recommended lighting standards it is my opinion that its effects on the amenity of adjacent residential dwellings will be less than minor.

Glen Andrew Wright



Date 8th March 2024: