

1.0 APPLICATION DESCRIPTION

Application and property details

Fast-Track project name: Downtown Carpark Site Development

Fast-Track application number: FTAA-2512-1158
BUN60460864, LUC60460865, DIS60460866 and WAT60460867

2.0 Technical Specialist Memo – Pedestrian Wind Effects

To: Sarah Wilson – Lead Planner & Adonica Giborees - PPL

From: Neil Jamieson

Qualifications & Relevant Experience:

I hold the qualifications of Bachelor of Science (Hons – Physics) and Master of Science (Physics) and have over 40 years of experience in carrying out wind assessments, wind tunnel model studies, full-scale measurements of pedestrian level wind conditions, and industrial aerodynamics investigations and design.
I am a full member of the Australasian Wind Engineering Society. I have prepared expert evidence and technical assessments for resource consent applications, plan changes, and have appeared as an expert witness before consent authorities and the Environment Court on multiple occasions.

Preparation in Accordance with the Code of Conduct:

I confirm that I have read the Environment Court Practice Note 2023 – Code of Conduct for Expert Witnesses ([Code](#)), and have complied with it in the preparation of this memorandum. I also agree to follow the Code when participating in any subsequent processes, such as expert conferencing, directed by the Panel. I confirm that the opinions I have expressed are within my area of expertise and are my own, except where I have stated that I am relying on the work or evidence of others, which I have specified.

Signature:



Date: 21 April 2026

3.0 Executive Summary / Principal Issues

This memorandum provides an independent peer review of the applicant's pedestrian wind effects assessment for the Downtown Carpark Site Development. It is intended to assist by (i) identifying where the proposal does not meet the Auckland Unitary Plan (AUP) wind environment standards for the anticipated pedestrian activity areas, and (ii) highlighting the extent to which compliance relies on the delivery and ongoing performance of the proposed wind mitigation (including substantial planting).

Summary

- The wind tunnel testing and reporting is generally consistent with accepted wind engineering practice.
- Existing baseline results presented are for a 'buildings only' scenario (no vegetation modelled). Under that baseline, wind conditions around the site are generally AUP Category A–B, with higher winds near the north-west corner and along surrounding streets including occurrences up to Categories D–E. One measured location (location 42) recorded a maximum annual gust of 29 m/s (above the 25 m/s Safety Criteria). If the existing vegetation was included in the testing, then calmer "existing" wind conditions would be expected in certain areas.
- The proposed development design incorporates positive wind engineering design features, including the tower and podium design, chamfered corners and the free roof. However, it is much bigger than the existing building, and substantial effects on wind conditions are to be expected.
- The 'proposed development – buildings only' scenario (no vegetation/mitigation) significantly increases wind speeds at and near the north-west corner of the site and around the neighbouring AON Tower, with more locations shifting into Categories D–E, and more locations exceeding the 25 m/s Safety Criteria. On this basis, several affected pedestrian areas would not meet the AUP wind standards. In wind engineering terms, "significant" changes (increases or reductions) in wind speeds are those large enough to be attributable to a physical change, e.g. building design or massing, rather than to measurement repeatability variations.
- With existing vegetation and a suite of proposed mitigation measures included, the testing identifies residual Category D conditions at several locations where Category C or better is anticipated under the AUP for the expected pedestrian activity. These locations include around the northwest and southwest corners of the development, and within the Urban Room. A localized deterioration in wind conditions is also identified in Sturdee St Park, where Category C is reported where Category B is anticipated.
- The mitigated wind conditions rely materially on the delivery of specific wind-mitigation elements (substantial planting, mature evergreen trees, and built elements). If these measures are reduced, delayed, or not achievable at the sizes assumed in testing, then greater non-compliance (larger Category D extents, possible Category E conditions) and additional exceedances of the 25 m/s Safety Criteria are likely.
- It is for the consenting authority to decide (1) whether the residual Category D locations and the deterioration in wind conditions in Sturdee St Park are acceptable in context, given the AUP anticipates Category C (or better) for pedestrian routes and Category B (or better) for public open space; and (2)

whether the marginal exceedance of the 25 m/s safety criterion is acceptable, or requires further mitigation/design refinement.

- If consent is granted, a consent condition should be included that ensures the full suite of wind mitigation described in the 'proposed configuration' test is delivered, with clear requirements for planting (species/type, minimum sizes at planting, locations, and maintenance/replacement). Any change to the mitigation should be certified by a suitably qualified person as maintaining or improving the pedestrian-level wind conditions that are consented.

4.0 Documents Reviewed

The following documents have been reviewed in preparing this memorandum:

- Downtown Carpark Site Development Assessment of Environmental Effects and Statutory Analysis (18 December 2025) – Barker and Associates
- Appendix 9C – Architecture and Landscape Report (1 October 2025) – Warren and Mahoney.
- Appendix 24 – Proposed Consent Conditions
- Appendix 28 – Environmental Winds Report (29 October 2025) – Holmes NZ LP and RWDI.
- S67 Environmental Wind Responses (14 April 2026) – Holmes NZ LP.

5.0 Additional Reasons for Consent Not included in AEE / Incorrect Reasons for Consent

- Not Applicable

6.0 Specialist Assessment

Wind Tunnel Study

- 6.1. *The wind tunnel study reported on by Holmes NZ LP and RWDI has been conducted in general accordance with accepted wind engineering practice, although specific technical information regarding the data collection (sample rate and duration) and analysis (variability/repeatability) has not been provided.*
- 6.2. *Initial testing was carried out for the existing situation and the proposed development, in both cases without any of the existing vegetation. No information is provided on wind conditions for the existing situation with the existing vegetation. It is likely that wind speeds for this configuration would be the same or lower, particularly at those locations closer to existing trees and vegetation. For some locations where the wind speed is close to the threshold between wind performance categories, this may result in a lower category.*
- 6.3. *Examination of (1) the annual mean wind speed data and Auckland Unitary Plan (AUP) Categories, (2) the maximum annual gust speeds, and (3) other information provided in the wind report shows the following:*

Wind Conditions – Existing Situation (street level – buildings only)

- 6.4. Existing wind conditions with no existing vegetation in the pedestrian areas of Lower Hobson Street and Customs Street immediately adjacent to the site are mostly Category A and B, which are suitable for longer- or shorter-term recreation or relaxation. Wind conditions in the areas extending from the northwest corner of the site, into Quay Street, are generally higher, with occurrences of Category C and D, and including one location with Category E conditions. Under the AUP wind rules, Category C conditions are the highest considered acceptable for pedestrian linkages and footpaths, Category D conditions are considered acceptable for areas of vehicle transit, but not for footpaths, and Category E conditions are considered unacceptable and potentially dangerous. Similarly, wind conditions extending from the southeast corner of the site, east along Customs Street West, and north along Lower Hobson Street are also higher, being mostly Category C, with occurrences of Category B, and one of Category D.
- 6.5. Existing maximum annual gust speeds at the measured locations at street level were all below the 25m/s AUP safety threshold, except at one location near the northwest corner of the site (location 42), where a speed of 29m/s was measured.

Wind Conditions - Proposed Configuration (street level – buildings only)

- 6.6. The proposed development comprises two tall towers atop podium building elements connected by a free roof. Each tower block has chamfered corners above the podium elements and at its top. These design features are considered beneficial in terms of helping to mitigate some of the effects on pedestrian wind conditions expected due to the overall height and bulk of the development. Nevertheless, the development is much bigger than the existing building, in terms of both height and bulk, and some significant effects on pedestrian wind conditions would normally be expected.
- 6.7. Compared to the existing situation (with no vegetation), the proposed development (with no vegetation) causes significant increases in mean wind speeds around the northwest corner of the site (the intersection of Lower Hobson and Quay Streets), and adjacent to the neighbouring AON Tower around the intersection of Lower Albert and Customs Street. In these areas, wind conditions at some locations are increased to Category D, or Category E, and at some locations gust speeds are increased above the 25m/s AUP Safety threshold. Category E conditions are considered unacceptable and potentially dangerous under the AUP wind rules. A simple comparison of the number of occurrences of the different AUP wind categories in pedestrian areas external to the site itself illustrates the overall deterioration in wind conditions.

AUP Wind Category	Existing Situation	Proposed Development	Change in number of locations
A	6	3	-3
B	23	15	-8
C	13	13	0
D	5	11	+6
E	1	6	+5

This shows a shift from the lower (less windy) categories into the higher (more windy) categories, most notably categories D and E.

- 6.8. Under the AUP wind rules, proposed developments must not cause (i) wind conditions to exceed the Category for the intended use of the area, and (ii) an existing mean speed to increase if it already exceeds

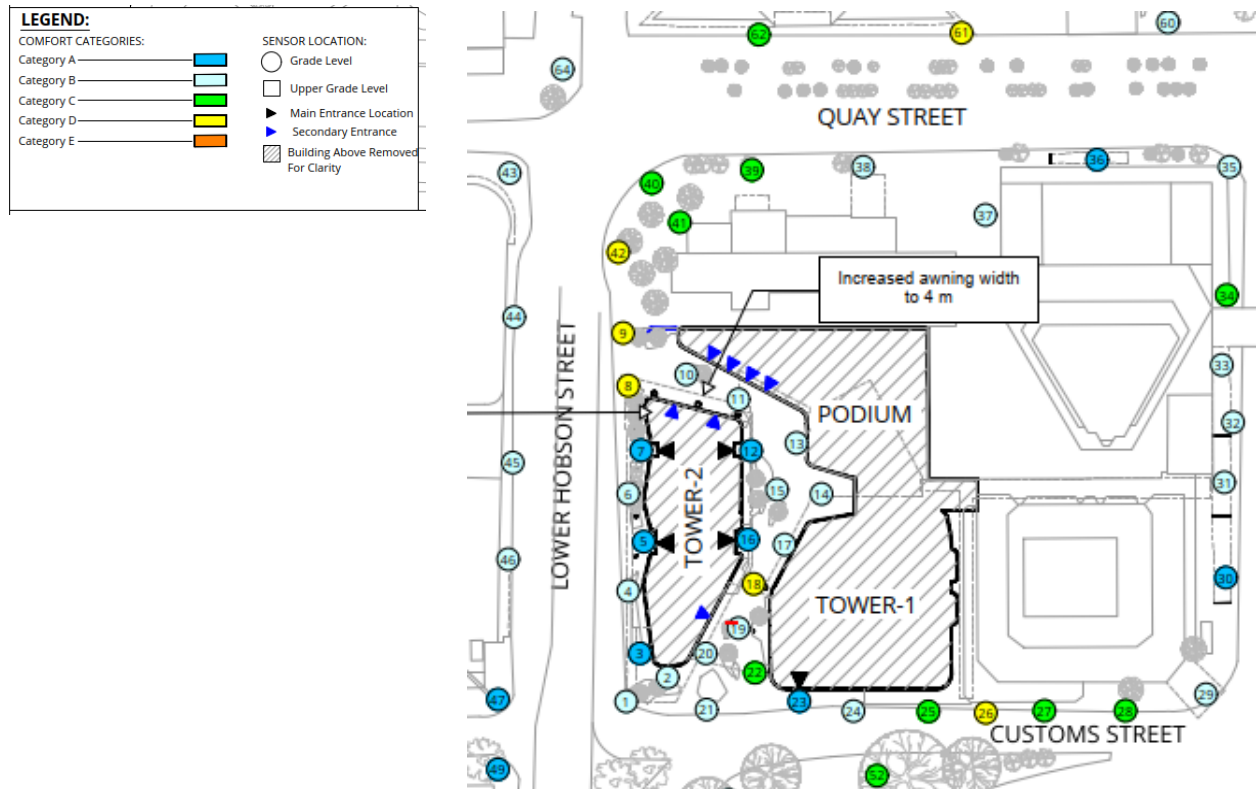
the Category of intended use. Consequently, most of the locations counted in the above table for the proposed development, as Category D or E, fail the wind standards for one or both reasons.

Wind Conditions - Proposed Configuration (street Level – existing vegetation and mitigation)

- 6.9. The Holmes/RWDI wind report describes testing of a range of building configurations with different suites of mitigation measures and model changes. These configurations consist primarily of the inclusion of existing and additional trees and vegetation, an extension of the free roof between the podium elements, a canopy along part of Lower Hobson Street, and various short porous or solid 2.5m high vertical screens. The image below, which is taken from the Holmes/RWDI wind report, shows the elements included in the final/proposed configuration.



6.10. The image below, also from the Holmes/RWDI report, shows the AUP wind categories for the proposed development with the above combination of existing vegetation and mitigation measures included.



6.11. The image in 6.10, together with the wind speed data provided in the Holmes/RWDI report, show that there are five locations outside the site (locations 8, 9, 26, 42 and 61), and one within the site (location 18), where Category D conditions are reported, and where under the AUP wind rules Category C conditions or better are anticipated according to the expected use. At location 9 the maximum gust speed of 26m/s also marginally exceeds the 25m/s AUP Safety Criteria.

6.12. There is also one area in Sturdee St Park (location 52) where the wind conditions are Category C, and where Category B conditions or better are anticipated under the AUP. The existing wind conditions, even without the existing vegetation, are Category B, so this is an identifiable deterioration. This has not been specifically addressed in any mitigation investigations.

6.13. The noncompliance described in 6.11 is generally consistent with that reported in the Assessment of Environmental Effects (AEE). However, the AEE suggests that these wind conditions are mostly similar or calmer than existing wind conditions. This is not strictly true, as the measurements for the existing situation did not include any of the existing vegetation. If the existing vegetation was included in the testing, then calmer “existing” wind conditions would be expected in certain areas.

6.14. In the area of public open space on-site, wind conditions with existing vegetation and mitigation measures at location 18 are reported as Category D. The AUP anticipates Category C or B conditions depending on the defined use of this space (i.e. as an area of pedestrian transit, or as a space that encourages some

recreational or relaxational activities). As such it is a decision for the consenting authority whether the localized higher wind condition is acceptable when balanced against the other favourable effects of the development, or whether further wind mitigation in this area is required (either, before consent is issued or during detailed design after a consent is granted). Further mitigation may result in compromises to pedestrian transit or increases in CPTED issues.

- 6.15. *In Customs Street West (location 26), wind conditions with existing vegetation and mitigation measures are reported as Category D where Category C conditions are anticipated for such a footpath under the AUP wind standards. The Category D conditions appear to be quite localized. It is a decision for the consenting authority to determine if this exceedance is acceptable in relation to other factors, or whether further mitigation is required.*
- 6.16. *In Lower Hobson Street the area of Category D conditions around the northwest corner of the development, with the inclusion of existing vegetation and mitigation measures, is larger (locations 8, 9 and 42) and spans the access to the Urban Room. In part, achieving Category D conditions in this area relies on the planting of 6-8m high mature evergreen and 3m high mature evergreen trees, as shown in the image in 6.9 and in the Landscaping Plan. These additional trees are of significant size, and to achieve the reported wind conditions immediately, the trees will need to be planted in these types and sizes.*
- 6.17. *The ability to deliver the additional planting should be confirmed prior to consent, to enable the consenting authority to decide if this level and area of non-compliance is acceptable when balanced against other factors. If either (1) the additional trees and the canopy along Lower Hobson Street cannot be delivered, or (2) the size or number of additional trees are reduced, then an increase in the wind speeds in this area is anticipated, with a larger extent of Category D conditions, or possibly Category E. In addition, gust speeds are also likely to increase, with the possibility they would exceed the 25m/s Safety Criteria. Should either of the changes (1) or (2) above occur, we suggest that alternative wind mitigation be required to at least achieve wind conditions the same or better than with the currently proposed configuration.*

Wind Conditions - Proposed Configuration (Level 1 – existing vegetation and mitigation)

- 6.18. *Wind conditions at Level 1 range from Category A to C and are generally acceptable for the intended uses of these areas.*

Wind Conditions - Proposed Configuration (Level 7 – existing vegetation and mitigation)

- 6.19. *Wind conditions at some locations on Level 7 exceed either the mean wind speed criteria (locations 80, 802 and 83), or the gust speed criteria (locations 83, 87 and 88). However, these are not areas open to the general public, and access to these spaces can be controlled.*

General Comment on Category D Wind Conditions - Proposed Configuration (existing vegetation and mitigation)

- 6.20. *I agree with the Holmes LP s67 response that “Category D conditions do not mean that conditions will always be windy and uncomfortable. It means that during a year there will be more days when conditions would feel windy for walking than an area of Category C conditions, noting also that Category D conditions are not considered a safety issue”. However, under the AUP wind standards, Category D conditions are*

considered suitable for vehicle transit, but not for pedestrian transit, or for shorter or longer term recreational or relaxation use.

7.0 Section 67 Information Gap

I have identified that there are no section 67 information gaps.

8.0 Recommendation

Wind Mitigation

We recommend that all wind mitigation measures shown in the proposed configuration be included in the development. Should mitigation measures be removed or reduced in size, location, extent, or type, alternative measures should be included that perform the same or better.

9.0 Proposed Conditions

The single proposed condition relating to pedestrian wind effects is shown below (draft condition 107).

107. At the time of lodgement of Structural Building Consent for the buildings on the Site, the consent holder must provide to the Council written certification from a SQEP that the findings of the Wind Design Review, titled "Downtown Carpark Development – Environmental Winds Report", by Holmes, October 2025 (referenced Condition 1) remain accurate. If it is found that the standard is not complied with or the infringements that were consented are exceeded, the consent holder must make any changes as necessary to the building to ensure that compliance is achieved, prior to building occupation.

This condition broadly covers the requirement to achieve wind conditions as reported by Holmes NZ LP for a configuration that includes existing vegetation and mitigation. However, should the consenting authority decide that these wind conditions, which include non-compliance of the AUP wind standards, are not acceptable, then the Applicant should provide evidence that alternative mitigation options achieve the conditions deemed acceptable. An alternative suggested wording is given below.

At the time of lodgement of Structural Building Consent for the buildings on the Site, the consent holder must provide to the Council written certification from a SQEP that the development results in wind conditions the same or better than those that may have been consented. If it is found that the consented wind conditions are exceeded, the consent holder must make any changes as necessary to the development to ensure that compliance is achieved, prior to building occupation.

10.0 Supporting Documents