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## **Vipac Engineers & Scientists**

Tanner Kibble Denton Architects Pty Ltd

### **Curl Curl North Public School**

### **Wind Impact Statement**



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| <b>Report Title: Wind Impact Statement</b><br><b>Job Title: Curl Curl North Public School</b>                                                                                                                                                                                                                             |                                                                                                                                                                                                                          |                   |                |             |                 |   |            |               |   |                     |                   |   |  |  |
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| <b>KEYWORDS:</b>                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                          |                   |                |             |                 |   |            |               |   |                     |                   |   |  |  |

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## EXECUTIVE SUMMARY

**Tanner Kibble Denton Architects Pty Ltd** commissioned Vipac Engineers and Scientists Pty Ltd to prepare a statement of wind effects for the proposed development at **Curl Curl North Public School, at Playfair Road, North Curl Curl, NSW**. This appraisal is based on Vipac's experience as a wind-engineering consultancy.

Drawings of the proposed development were supplied by **Tanner Kibble Denton Architects Pty Ltd** in May 2017, as described in Appendix C of this report.

The findings of this study can be summarised as follows:

- The proposed development would be expected to generate wind conditions in the ground level footpath areas within the walking criterion.
- The proposed development would be expected to generate wind conditions in the building entrance areas within the standing criterion.
- The proposed development would be expected to generate wind conditions at the outdoor seating areas to be within the recommended sitting criterion.
- The proposed development **with recommendations** would be expected to generate wind conditions at the ground level student walkway areas within the recommended standing criterion
- The proposed development would be expected to generate wind conditions at the Level 1 student walkway areas within the recommended standing criterion.
- The proposed development would be expected to generate wind conditions at the various ground level outdoor amenity areas within the recommended standing criterion.

The assessments provided in this report have been made based on experience of similar situations in Sydney and around the world. As with any opinion, it is possible that an assessment of wind effects based on experience and without wind tunnel model testing may not account for complex flow interactions in the vicinity.

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## 1 INTRODUCTION

Vipac Engineers and Scientists has been commissioned by **Tanner Kibble Denton Architects Pty Ltd** to carry out an appraisal of the pedestrian wind effects at the ground level and open spaces of the proposed development at **Curl Curl North Public School at Playfair Road, North Curl Curl, NSW**.

Strong winds in pedestrian areas are frequently encountered in central business districts of cities around the world; including Sydney, Melbourne and Brisbane. Wind characteristics such as the mean speed, turbulence and ambient temperature determine the extent of disturbance to users of pedestrian areas. These disturbances can cause both comfort and safety problems and require careful consideration to mitigate successfully.

The proposed development is a set of 5 school buildings ranging from 1-2 stories. The site is bounded by Playfair Road to the West, Abbott Road to the South, and existing buildings in the North and the East. A satellite image of the proposed development site and the west elevation of the building are shown in Figure 1 and Figure 2.

This report details the opinion of Vipac as an experienced wind engineering consultancy regarding the wind effects in ground level footpath areas adjacent to the development as proposed. No wind tunnel testing has been carried out for this development at this stage. Vipac has carried out wind tunnel studies on a large number of developments of similar shape and having similar exposure to that of the proposed development. These serve as a valid reference for the prediction of wind effects. Empirical data for typical buildings in boundary layer flows has also been used to estimate the likely wind conditions on the ground level areas of the proposed development [2] & [3].

Drawings of the proposed development were supplied to Vipac by **Tanner Kibble Denton Architects Pty Ltd** in **May 2017**. A list of drawings supplied is provided in Appendix C of this report.



Figure 1: Aerial view of the proposed development at Curl Curl North Public School.



Figure 2: West elevation of the proposed development.

## 2 ANALYSIS APPROACH

In assessing whether a proposed development is likely to generate adverse wind conditions in ground level footpath areas, Vipac has considered five main points:

- The exposure of the proposed development to wind
- The regional wind climate
- The geometry and orientation of the proposed development
- The interaction of flows with adjacent developments
- The assessment criteria, determined by the intended use of the areas affected by wind flows generated or augmented by the proposed development.

The pedestrian wind comfort at specific locations of ground level footpath areas may be assessed by predicting the worst annual 3-second wind gust expected at that location. The location may be deemed generally acceptable for its intended use if the annual 3-second gust is within the threshold values noted in Section 2.5. Where Vipac predicts that a location would not meet its appropriate comfort criterion, the use of wind control devices and/or local building geometry modifications to achieve the desired comfort rating may be recommended. For complex flow scenarios or where predicted flow conditions are well in excess of the recommended criteria, Vipac recommends scale model wind tunnel testing to determine the type and scope of the wind control measures required to achieve acceptable wind conditions.