Design Note

101 Albert Street Tenant Changes

Project Name: 101 Albert Street

Project No: 22131

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Issue Ref	Issue / Amendment Details	Author	Signature	Reviewer	Signature	Date
P01	For Information	N. Doyle		M. Avery		18/04/2024
P02	For Information	N. Doyle		M. Avery		6/12/2024
				RPEQ:20180		

Abbreviations and Terminology

The following abbreviations and terminology are used within this Design Note.

ETABS	3D Lateral Stability Analysis Software.
CRR	Cross River Rail
PCA	Property Council of Australia
CRR	Cross River Rail
IStructE	The Institution of Structural Engineers is a professional body for structural engineering based in the United Kingdom
EDQ	Economic Development Queensland is a government body overseeing the development of priority development areas.

1.0 Purpose

The purpose of this document is to describe the global level tenant changes being made to the development, how these impact the Structure as described in the Schematic Design Report ALB-RBG-REP-ST-00-000-02 [A01] and any effect on the CRR Performance Requirements.

2.0 Overview

To accommodate tenant requirements an additional high-rise level has been added to the building stack for 101 Albert St. The additional level is identical to the existing, typical HR level and is being inserted effectively at L27. RLs for all levels above L27 raise to suit (i.e. +3,850mm) and level naming increments by one (e.g. previous L27 becomes L28, previous L28 becomes L29). Levels below L27 are unaffected by this change.

In parallel to the additional high-rise level, storey heights on L07 and L08 are being reduced by 185mm (one stair tread). The RL of levels L07+ are impacted by this change. PCA grading is also being reduced from Premium to A grade however this primarily affects services and has limited impact on structure.

The net effect from all RL changes is +3,480mm movement in the top occupiable level. There is no change to the highest point on the structure of RL+187.080 which is the Goods Lift LMR.

3.0 Structural Impacts

3.1 Vertical Loads

The additional level results in additional building dead and live load. Revised modelling indicates a change in foundation dead load of approximately +1.5% and live load of +0.5%.

3.2 Lateral Loads

The additional sail width of 3,480mm and building mass of an additional level result in an increase in wind and seismic loads respectively.

Revised structural properties have been provided to the Wind Consultant (RWDI) to recheck occupant comfort (accelerations) and to recalculate structural wind loads. Based on extrapolation of the existing wind load data and the revised structural model, foundation wind loads are expected to change by approximately +4.0% and +5.0% for shear and moment respectively.

Revised modelling indicates a change in foundation seismic loads of approximately 9.0% and 6.0% in X and Y directions respectively.

Direction X is parallel to Alberts Street and Direction Y is perpendicular to Albert Street and the CRR Cavern.

3.3 Column Transfer

The additional load from the additional HR level results in an increase in column loads landing on the column transfer at L14, and therefore an increase in the in-plane loads in the diaphragm levels (L06 and L14). The adjustment to RLs on L07 and L08 also occurs within the column transfer zone of L06-L14 and therefore results in a steeper column rake and increased diaphragm loads.

Revised modelling indicates a change in the L6 and L14 in-plane loads in the range of 5-10%.

4.0 CRR Performance Criteria and Conclusions

The Cavern assessment and geotechnical modelling was completed during the 50%DD phase based on loads from the Structural Analysis Model (ETABS) current at the time. With consideration of the stage of the project and the level of design development still to occur, a 10% contingency factor was adopted for the Geotechnical Modelling at the time to help absorb future changes.

Based on the building load changes from the additional HR level summarised in Section 3.0, the overall change to foundation loads is below the 10% contingency factor adopted in prior analysis. Therefore, it can be concluded that the building still complies with the CRR Performance requirements after the addition of the extra HR level.

Refer to Appendix A for correspondence from the project Geotechnical Engineer (**EDG**) agreeing with this assessment.

Structural and Geotechnical models will continue to be developed during future project stages when compliance with CRR Performance Requirements will be again checked more directly. This high level assessment however provides a quick method of validation to enable the project to continue moving forward until revised wind loads are received and updated geotechnical analysis can be completed.

Appendix A EDG Support of Additional HR Level Load Assessment

Nicholas Doyle

From: David Cunliffe <David.Cunliffe@edgconsult.com.au>
Sent: Wednesday, 10 April 2024 5:16 PM
To: Nicholas Doyle; Darron Lee
Cc: Mark Avery
Subject: B014593-1AT: 21267: Timing Update

Hi Nick,

We have discussed you email below internally and consider the following:

- We confirm that all load combinations considered in the Concept Design (50%) stage analysis were combined with a global load factor of 1.1 to allow for a contingency on the structural loads.
- The Detailed Design (80%) stage analysis loads have increased due to the provision of an additional building floor, which are summarised in your email below.
- The load increases shown in your email below are within the 10% load contingency considered at Concept Design (50%) stage. Therefore, we consider that the outcomes of our Concept Stage geotechnical assessment (Reported in B01493-1AE) remain applicable.

For and on Behalf of EDG Consulting,

David Cunliffe Principal
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