Robert Bird Group
Member of the Surbana Jurong Group

Design Note

101 Albert Street Tenant Changes

Project Name: 101 Albert Street
Project No: 22131
Document No: 22131-RBG-ZZ-XX-DN-00003

PLANS AND DOCUMENTS referred to in the PDA DEVELOPMENT APPROVAL
Approval no: DEV2023/1374/2
Date: 18-Jun-2025
Queensland Government

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
P03	Highlighted updates	M.Avery		N.Doyle		11/03/2025
P04	Highlighted updates	M.Avery RPEQ:20180		N.Doyle		12/03/2025

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
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 DA Application documents and Schematic Design Report ALB-RBG-REP-ST-00-000-02 [A01] and any effect on the CRR Performance Requirements. This latest revision includes updates based on the current 80% design development (**80%DD**) stage.

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. The typical commercial storey height has also reduced from 4,000mm to 3,850mm.

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.

RLs for all levels adjust to suit the storey height changes and additional high-rise level including the level naming increments by one (e.g. previous L27 becomes L28, previous L28 becomes L29). Levels below L27 are unaffected by this change.

The top occupied level does not change due to the net effect from all RL changes. 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

The below impacts have been measured against the original proposed building loads, load cases and combinations used in the DA submission.

3.1.1 Vertical Loads

The additional level results in additional building dead load (G) and live load (Q). Revised modelling indicates a change in foundation loads of approximately 1.5% for G and 0.5% for Q.

3.1.2 Lateral Loads

The additional sail width of 3,480mm and building mass of an additional level result in an increase in wind load (W) and seismic load (EQ), respectively.

Revised structural properties based on the additional level were provided to the Wind Consultant (RWDI) to recheck occupant comfort (accelerations) and to recalculate structural wind loads. Based on the updated wind loads, the foundation W loads are expected to change by approximately 2.0% for shear in the direction towards Albert Street and Cavern.

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

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

3.1.3 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%.

3.1.4 Geotechnical Impacts

The Cavern assessment and geotechnical modelling caried out by the Geotechnical Engineer (EDG) and included in the DA submission was based on loads from the Structural Analysis Model (ETABS) current at the time and prior to the additional floor. 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 load cases G, Q, W and EQ used in the Geotechnical Modelling at the time to help absorb future changes.

Additionally, the load cases inclusive of the 10% contingency were combined into a single worst case permissible load combination including 1.1*[G+Q+0.64*W+0.5*EQ]. The factors applied to W and EQ were to reduce from ultimate limit state to permissible design. The load cases adopted for W and EQ are based on lateral load towards Albert Street which is the critical direction for the Cavern.

Based on Australian Standards W and EQ do not need to be combined as this is conservative and unrealistic given seismic and wind events are unlikely to occur at the same time. The permissible base shear for W and EQ is 10,440kN and 7,201kN, respectively totalling approximately 17,645kN. By combining these load cases there is an inherit minimum contingency of approximately 85% [base 10% contingency x 68% (17,654kN/10,440kN) due to W and EQ applied together] based on the lateral load cases.

4.0 CRR Performance Criteria and Conclusions

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 original DA analysis. Additionally, there was also further contingency in the load combination.

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 EDG agreeing with this assessment.

Further to above, since the addition of the additional HR level and prior issues of this document, the project design has been further tuned to 80%DD or tender documentation level. This includes development of the Structural and Geotechnical models including updated structural systems, revised wind and building loads (10% contingency still included), geometry, and load combinations to algin with the Australian Standard - Structural design actions AS1170.0. The change in vertical displacement on the Cavern liner based on the original DA and current 80%DD Geotechnical Cavern assessments are presented in Appendix B. The load combinations adopted for each assessment have been highlighted yellow. In summary the current displacements due to the 80%DD building loads with 10% contingency are less than that at DA.

Development of the design will continue once Contractor input is available and additional geotechnical investigations are complete.

Appendix A EDG Support of Additional HR Level Load Assessment

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.

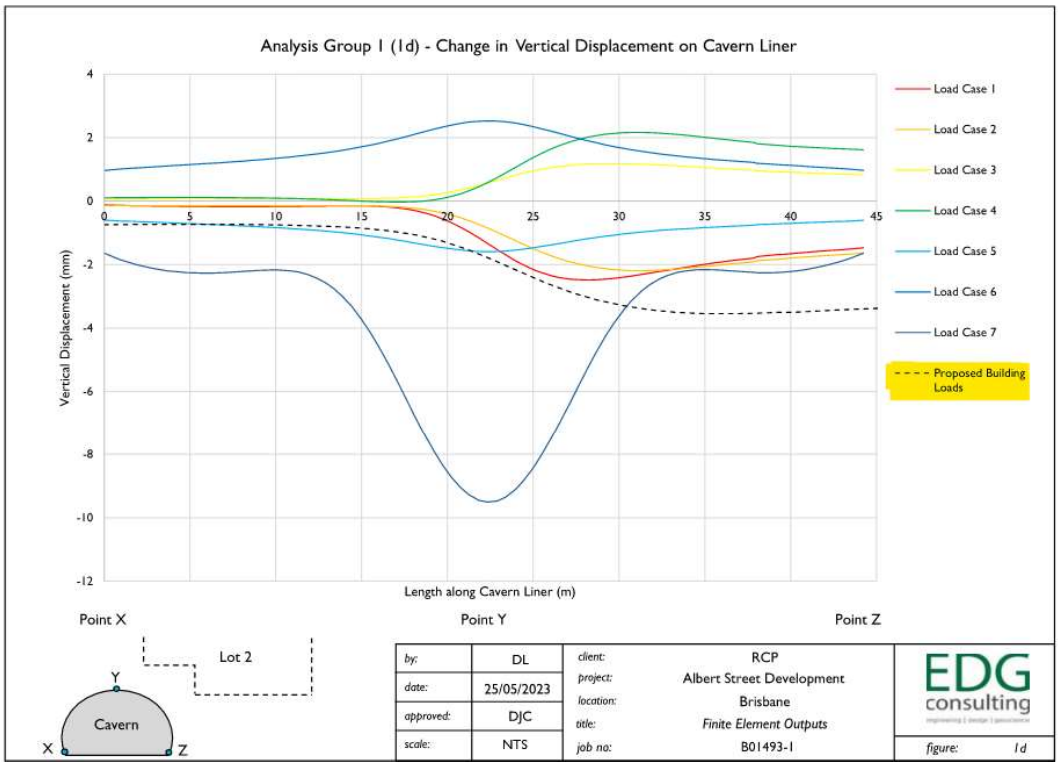
For and on Behalf of EDG Consulting,

David Cunliffe Principal
EDG Consulting
TYPSA Group

m: +61 438 776 585
David.Cunliffe@edgconsult.com.au

Appendix B EDG Cavern Assessment Results

EDG Report B01493-1AE dated 29 May 2023 - Change in vertical displacement on Cavern Liner.



EDG Report B01493-1BC dated 11 August 2024 - Change in vertical displacement on Cavern Liner.