MULTIPLE DWELLING DEVELOPMENT

299 Coronation Drive, Milton

Transport Air Quality Corridor Report

Silverstone Developments

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Report
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1. INTRODUCTION

1.1 Overview

Trinity Consultants Australia was commissioned by Silverstone Developments to provide air quality consultancy services for the proposed multiple dwelling development to be constructed at 299 Coronation Drive, Milton.

The proposed development site at 299 Coronation Drive (south section) is located within the transport air quality corridor A and B sub-category of the Brisbane City Council (BCC) Plan 2014 Transport Air Quality Corridor Overlay Code. PO3 of the code relates to development within the air quality corridor B sub-category and provides an acceptable outcome (AO3) allowing for development at 7 metres or higher, provided that it is set back at least 20 metres from the kerb. Given that the proposed development is located within 20 metres of the kerb of Coronation Drive, Milton and with a roof height greater than 7 metres, the development is not consistent with AO3, therefore, further demonstration of compliance with PO3 is required. PO3 requires built form and landscape design elements that maximise wind movement around buildings and disperse road traffic pollutants.

Subsequent sections of this report address the various design features referred to in the Transport Air Quality Corridor Planning Scheme Policy.

1.2 Scope

This report describes the assessment of the air quality impacts, which is based on the following tasks:

- Review the project and review of the relevant parts of the BCC codes.
- Undertake a site visit to make observations on the surrounding built form, to feed into the transport air quality assessment.
- Review the built form with respect to the requirements of the BCC Transport Air Quality Corridor Planning Scheme Policy.
- Where necessary, make recommendations on changes or alterations to the proposed design to satisfy Council's requirements.

To aid in the understanding of the terms in this report a glossary is included in **Appendix A**.

2. STUDY AREA DESCRIPTION

2.1 Location

The proposal is to develop a 29-storey multiple dwelling use to be located at 299 Coronation Drive, Milton as highlighted in **Figure 2.1**. The subject site is currently occupied by a four-storey commercial building at Lot 1 on RP211215 (299 Coronation Drive, Milton) as illustrated in **Figure 2.1**. The view of the subject site toward Coronation Drive is shown in **Figure 2.2**.

Figure 2.1: Site Location

Figure 2.2: View of the Subject Site Towards Coronation Drive

2.2 Surrounding Area

The proposed development is in a mixed use (inner city, Centre frame and Corridor) zone.

Coronation Drive and the adjacent river run from south-west to north-east. To simplify references to direction, this report refers to the east-west axis as parallel to Coronation Drive and the north-south axis as perpendicular to Coronation Drive. The site is surrounded by the following uses:

- Graham Street and 1 Graham Street Milton/67 Park Road Milton which houses Scout Talent Recruitment Software NetEngine, Schiavello and ChekRite to the east
- Commercial uses (Davies Collison Cave, Labour Solutions Australia, Jason Adcock-Adcock Prestige) at 303 Coronation Drive, Milton to the west
- Coronation Drive, Bicentennia Bikeway and Brisbane River to the south
- Sedgman building to the north.

2.3 Transport Air Quality Corridor

The subject site is located approximately 16.5 metres within the Transport Air Quality A sub-category overlay and approximately 12 metres within the B sub-category overlay from Coronation Drive, as in **Figure 2.3**. The impact of emissions from road traffic on the development is required to be considered.

Figure 2.3: Location and the Transport Air Quality Corridor Overlay

3. PROPOSED DEVELOPMENT

The proposed development comprises of a multi-storey residential building. Components of the buildings are as follows:

- 3 Basement Levels
  - Car parks
- Ground Floor
  - Retail spacing
  - Car parks,
  - Parcel room
  - Bike store
  - Loading dock
  - Café
  - Terrace
  - Plaza
  - Lobby
  - Toilets
  - Substation.
- Level 1 to 3 Podium
  - Car parks
- Level 4 - 8
  - 2 bedrooms units + Multi-purpose room (MPR) (2)
  - 3 bedrooms units + MPR (6)
  - Terrace
  - Deep planting
  - Balcony
- Level 9 – 27
  - 2 bedrooms units + Multi-purpose room (MPR) (2)
  - 3 bedrooms units + MPR (6)
- Level 28
  - Home office
  - Large home office
  - Cinema
  - Meeting room
  - Lounge
  - Deep planting
- Level 29 – communal open space, including:
  - Pool
  - Gym
  - Sauna
  - Plunge
  - Outdoor dining

4. BCC CITY PLAN 2014 AIR QUALITY REQUIREMENTS

4.1 Overview

Relevant requirements for development assessment are contained within the development codes and overlay codes of the 2014 Brisbane City Plan (City Plan).

The subject site is identified via Council mapping to be located within the transport air quality corridor of Coronation Drive, and therefore the Transport Air Quality Corridor Overlay Code and associated planning scheme policy are applicable to the development as discussed in **Section 5.1**.

4.2 Transport Air Quality Corridor Overlay Code

The Transport Air Quality Corridor Overlay Code assesses the suitability of sensitive land uses within the vicinity of a transport corridor or tunnel vent stack. It includes state-controlled and other roads where traffic volumes are moderate to high. The proposed site is opposite to and within the transport air quality corridor of Coronation Drive (Category A and B), which is categorised as an arterial road and Transport route Category 4, as shown in **Figure 2.3**.

Table 4.1 presents the relevant performance outcomes and acceptable outcomes relevant to this assessment.

Table 4.1: Transport Air Quality Overlay Performance Outcomes and Acceptable Outcomes

Performance Outcomes	Acceptable Outcomes
Transport Air Quality Corridor A	
PO1 Development for a multiple dwelling, residential care facility, rooming accommodation where accommodating 6 people or more, or retirement facility minimises exposure of an occupier of the development to road traffic air pollutants through: a) adequate separation from the road; or b) provision of ducted mechanical ventilation with supply of clean outdoor air.	**AO1** Development for a multiple dwelling, residential care facility, rooming accommodation where accommodating 6 people or more, or retirement facility: a) is set back to the greater of the requirements of any use code or the minimum separation distance, measured in the horizontal and vertical planes (refer to Figure a), from the kerb as specified in Table 8.2.23.3.B; or b) is installed with ducted mechanical ventilation for the supply of outdoor air in compliance with AS 1668.2: The use of ventilation and air conditioning in buildings - Mechanical ventilation in buildings, and: i. locates the mechanical ventilation outdoor air intakes at least the minimum distance, measured in the horizontal and vertical planes (refer to Figure b), from the kerb as specified in Table 8.2.23.3.B; or ii. includes filtration of outdoor air to a minimum performance standard of F6 or minimum efficiency reporting value (MERV) 9. Editor's note—MERV rating system (in accordance with the American Society of Heating, Refrigeration and Air-Conditioning) and the F rating system (in accordance with AS 1324.1 Air filters for use in general ventilation and air-conditioning - Application, performance and construction) are measures used to describe the efficiency with which particulate filters remove particles of a specified size from an airstream. The higher the MERV designation, the better the removal efficiency, particularly for smaller particles.

Performance Outcomes	Acceptable Outcomes
Transport Air Quality Corridor B	
PO3 Development incorporates built form and landscape design elements that maximise wind movement around buildings and the dispersion of road traffic air pollutants, including: a) maintaining gaps between buildings at 7m or higher; b) variation in the building facade, in addition to balconies; c) varying the building shape and form from that of neighbouring buildings; d) significant vegetation between the road and the building. Note—A transport air quality corridor report prepared in accordance with the Transport air quality corridor planning scheme policy can assist in demonstrating achievement of this performance outcome.	**AO3** Development at 7m or higher is set back at least 20m from the kerb.

With regards to addressing the Category A overlay, Table 8.2.23.3.B of the Code provides minimum separation distances for development within air quality corridors. The separation distances prescribed are presented in **Table 4.2**. These distances have been selected to minimise impacts from road traffic along Coronation Drive, which will result in the emission of a range of pollutants, such as particulate matter with an aerodynamic diameter of less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), and benzene.

Table 4.2: Transport Air Quality Overlay Performance Outcomes and Acceptable Outcomes

Route Type	Minimum separation distance measured from the kerb (m)	
	Horizontal Distance	Vertical Distance
Category 4	25	10

With regards to addressing the Category B overlay, reference is made to the Transport Air Quality Corridor Planning Scheme Policy. This policy provides guidance on the requirements for the built form and landscape design elements that facilitate pollutant dispersal. The requirements of this policy as they apply to the development are discussed further in **Section 5.2**.

5. ASSESSMENT

5.1 Performance Outcomes for Transport Air Quality Corridor A Sub-category

Based on the separation distances from the development to the Transport Air Quality A Sub-category, as illustrated in **Figure 5.1**, the nearest residential units on Level 4, comply with acceptable outcome AO1. These residential units are located outside the vertical distance of 10 metres from the ground, which is compliant the minimum vertical separation distance, as shown in **Figure 5.2**. The nearest unit is separated by a vertical distance of 15.8 metres (more than the 10 m threshold). It is noted that the proposed building is to be built to a height of 102.3 metres.

Therefore, there are no requirements for mechanical ventilation or filtration for the units.

Figure 5.1: Floor Layout – Level 4

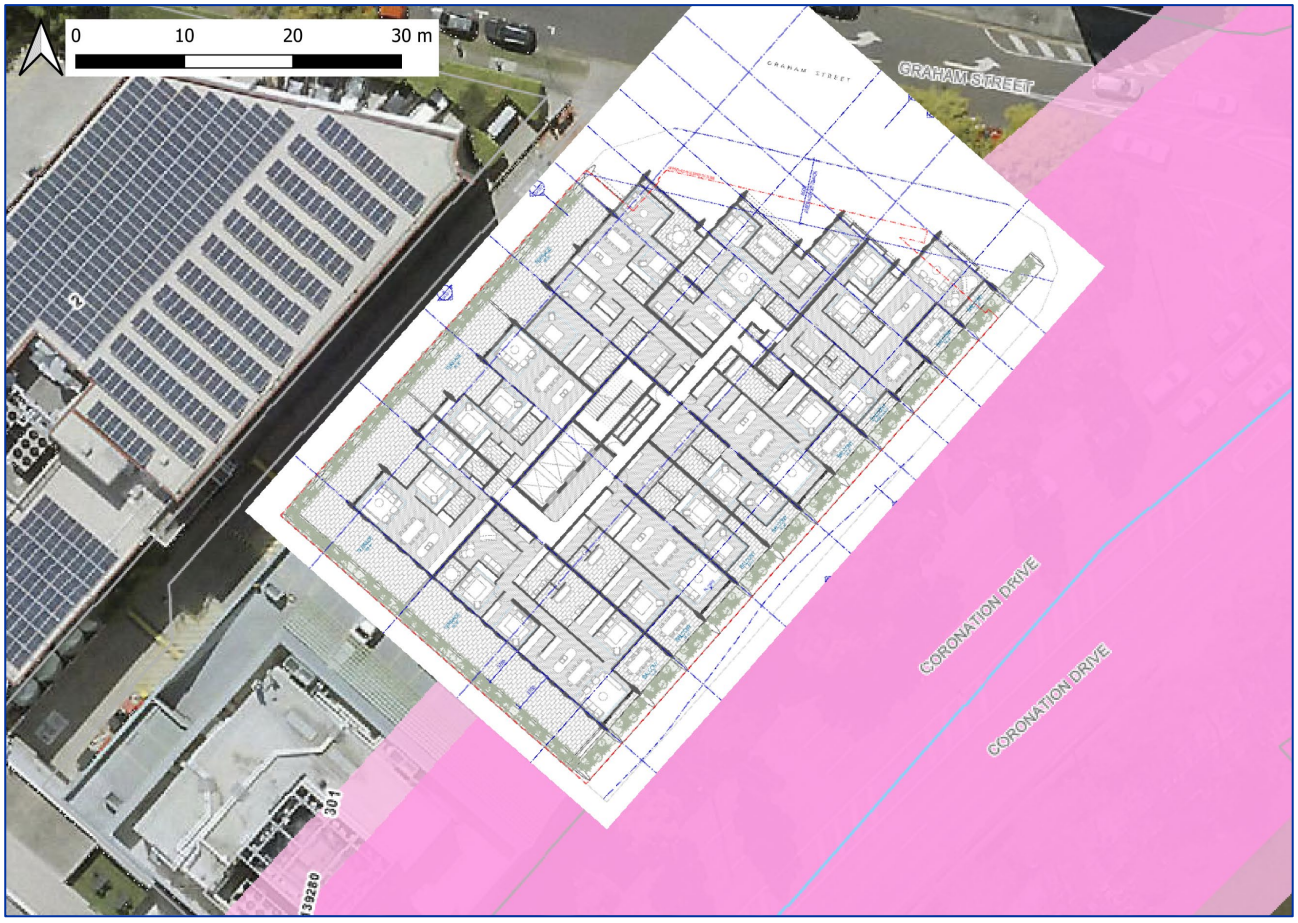
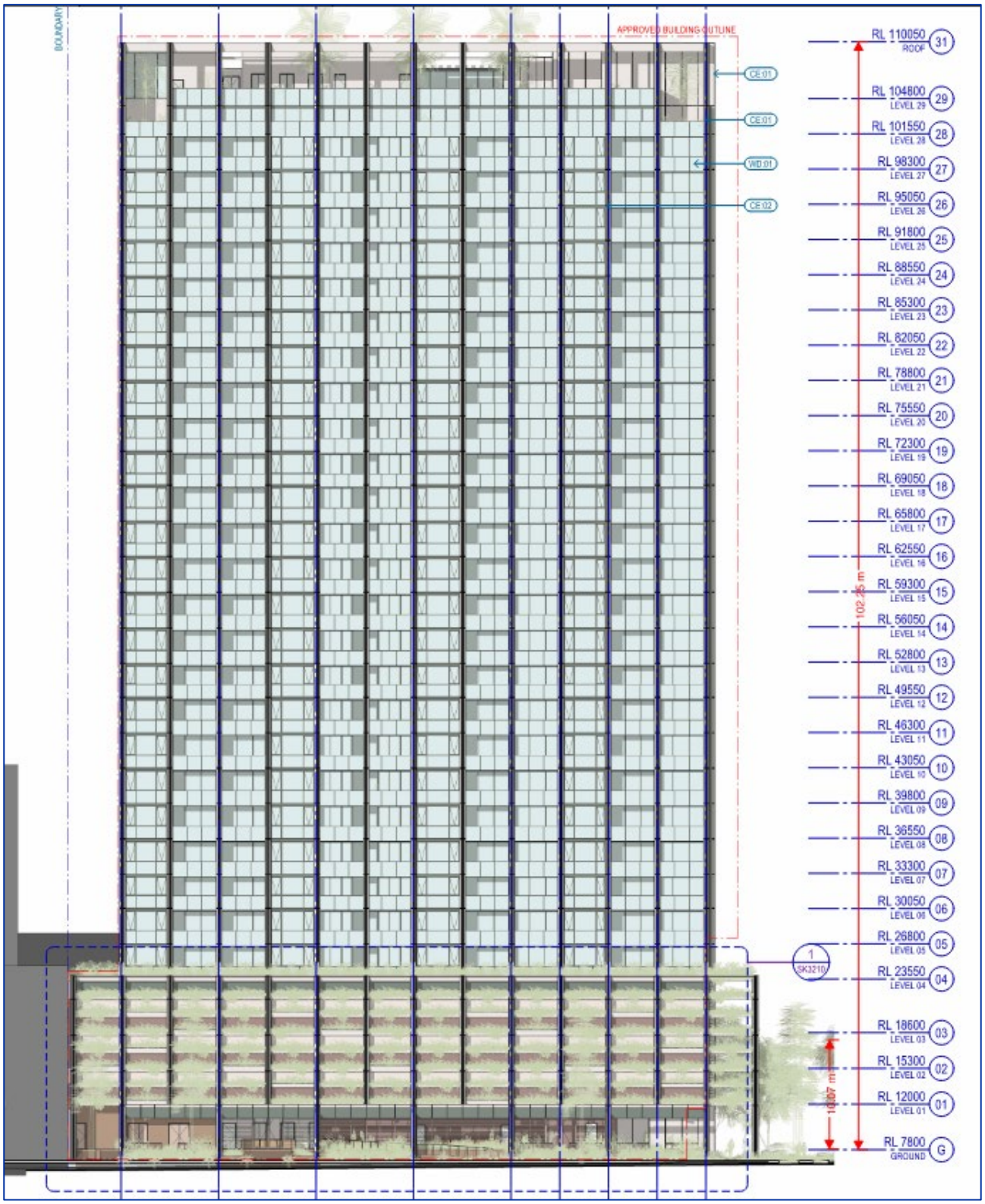


Figure 5.2: Height of Building



5.2 Performance Outcomes for Transport Air Quality Corridor B Sub-category

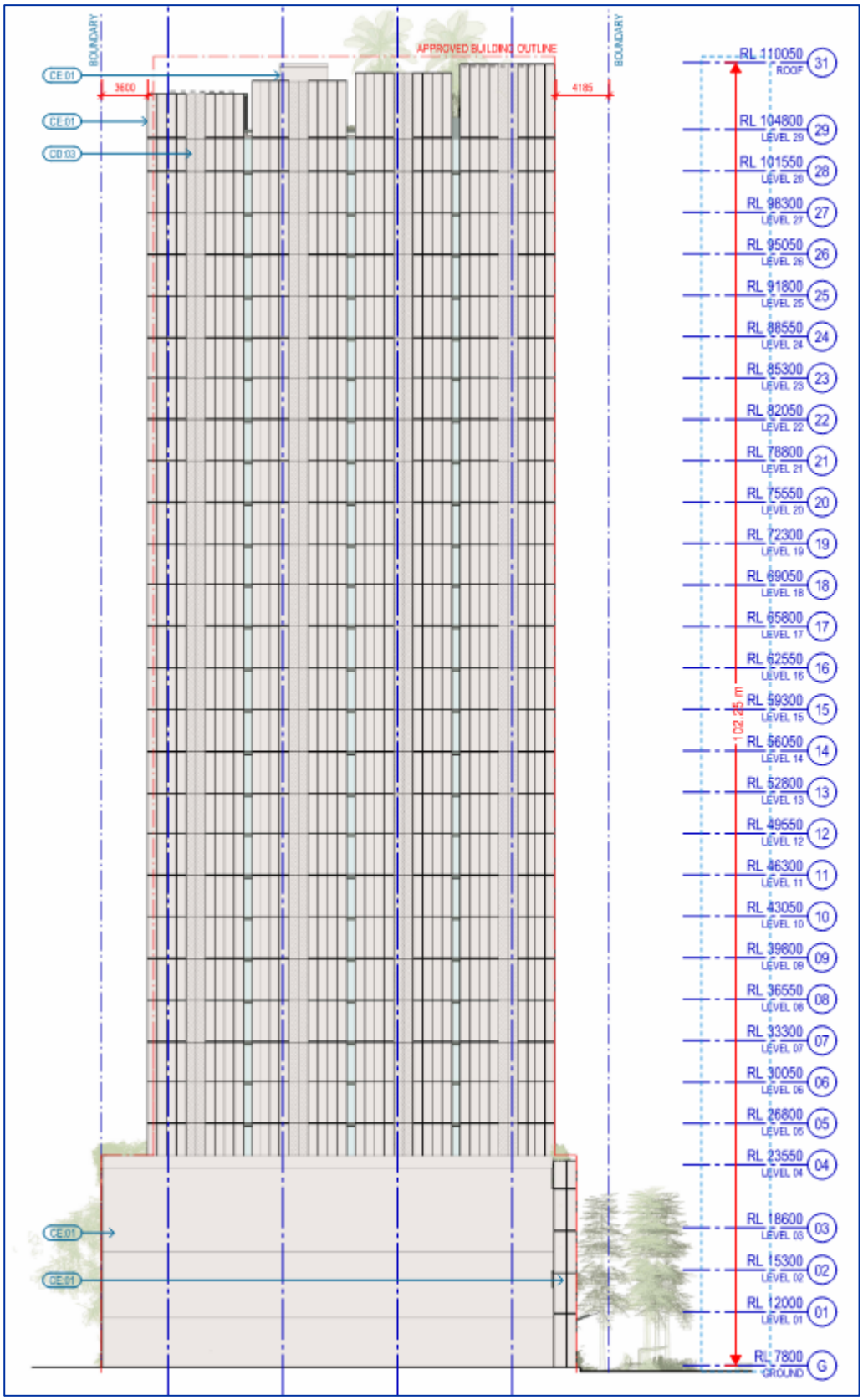
5.2.1 Avoiding Street Canyon Effect

The street canyon effect occurs in deep narrow spaces in streets with tall buildings on either side with minimal airflow, thus trapping road traffic pollutants in the street canyon. The following sections assess the potential for street canyoning effects at the proposed development site and design features which act to minimise and mitigate the impacts.

5.2.2 Street Canyon Dimensions

The height of the proposed building is approximately 102 metres, and it is located less than 20 metres from the kerb of Coronation Drive as presented in **Figure 5.4**. The proposed building has different floor plan dimensions at each level, except levels 4-8 and 9-27 which are similar as shown in **Table 5.1,** with matching figures illustrated below (**Figure 5.4** - **Figure 5.10**Error! Reference source not found.**).** The width of Coronation Drive, from the section the development site fronting onto the opposite side of the Coronation Drive, is 20.1 metres.

Figure 5.3: Height of building – Façade



Given the maximum height of 102 metres for the proposed building, building heights to the west and east axes along Coronation Drive for approximately 510 metres on both directions have been considered (as per

Section 3.1.2.e of the Transport Air Quality Corridor Planning Scheme Policy). The south axis along Coronation Drive was not considered because beyond the Coronation Drive is the Brisbane River. The heights of the neighbouring buildings within 520 metres in both directions of the proposed development site have been determined based on a desktop review on 22nd May 2023 and site visit (22nd May 2023) as presented in **Figure 5.11.**

Table 5.1: Separation Distances at Ground Level - Level Rooftop

Reference to the Separation Distance	Distance
Height of the building	102.3 metres
Ground Level (Figure 5.2)	
Width of the building	65.5 metres
Building to the kerb of the road	5.4 metres
Building to the north Boundary	0.0 metres
Building to the east Boundary	0.0 metres
Building to the south Boundary	2.4 metres
Building to the west Boundary	0.0 metres
Level 1 - 3 (Figure 5.3)	
Width of the building	63.4 metres
Building to the kerb of the road	5.2 metres
Building to the north boundary	0.0 metres
Building to the east boundary	1.3 metres
Building to the south boundary	3.3 metres
Building to the west boundary	0.0 metres
Level 4 - 8 (Figure 5.4)	
Width of the building	63.5 metres
Building to the kerb of the road	6.5 metres
Building to the north boundary	0.0 metres
Building to the east boundary	1.5 metres
Building to the south boundary	3.4 metres
Building to the west boundary	0.0 metres
Level 9 - 27 (Figure 5.5)	
Width of the building	54.7 metres
Building to the kerb of the road	8.2 metres
Building to the north boundary	3.6 metres
Building to the east boundary	6.4 metres
Building to the south boundary	4.3 metres
Building to the west boundary	5.2 metres
Level 28 (Figure 5.6)	
Width of the building	54.7 metres
Building to the kerb of the road	8.2 metres
Building to the north boundary	5.2 metres

Reference to the Separation Distance	Distance
Building to the east boundary	5.7 metres
Building to the south boundary	4.2 metres
Building to the west boundary	5.1 metres
Level 29 (Figure 5.7)	
Width of the building	54.5 metres
Building to the kerb of the road	7.5 metres
Building to the north boundary	3.5 metres
Building to the east boundary	6.2 metres
Building to the south boundary	4.5 metres
Building to the west boundary	5.2 metres
Level Roof (Figure 5.10)	
Width of the building	54.5 metres
Building to the kerb of the road	8.2 metres
Building to the north boundary	3.6 metres
Building to the east boundary	6.1 metres
Building to the south boundary	4.3 metres
Building to the west boundary	5.2 metres

Figure 5.4: Separation Distance at Ground Level

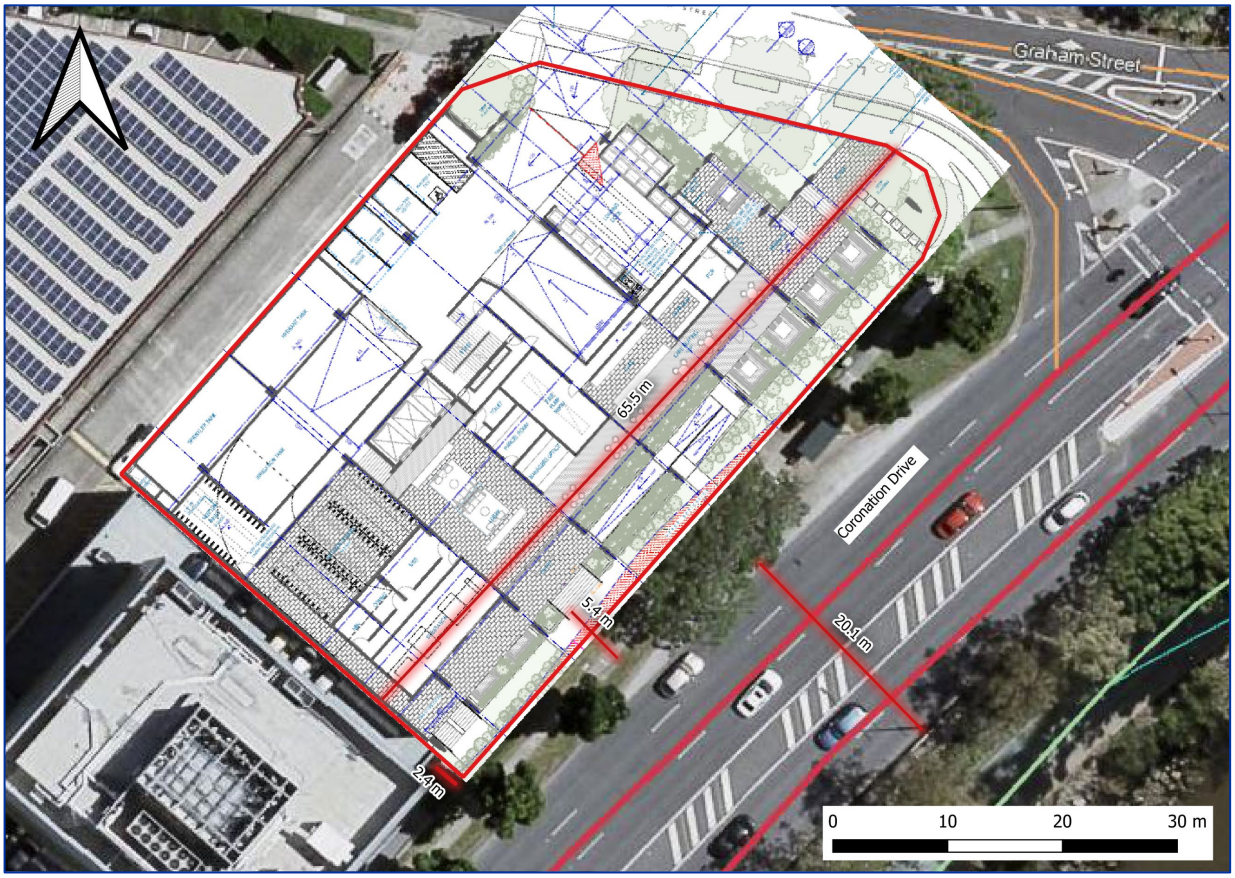


Figure 5.5: Separation Distance at Levels 1 - 3

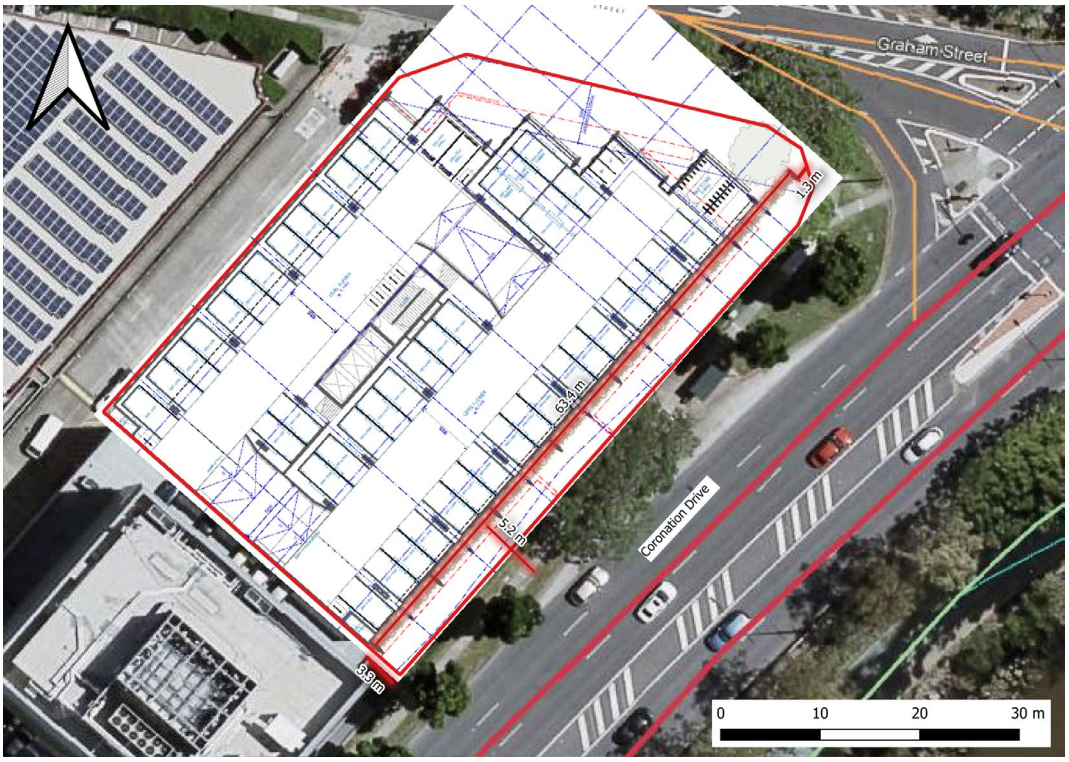


Figure 5.6: Separation Distance at Levels 4 - 8

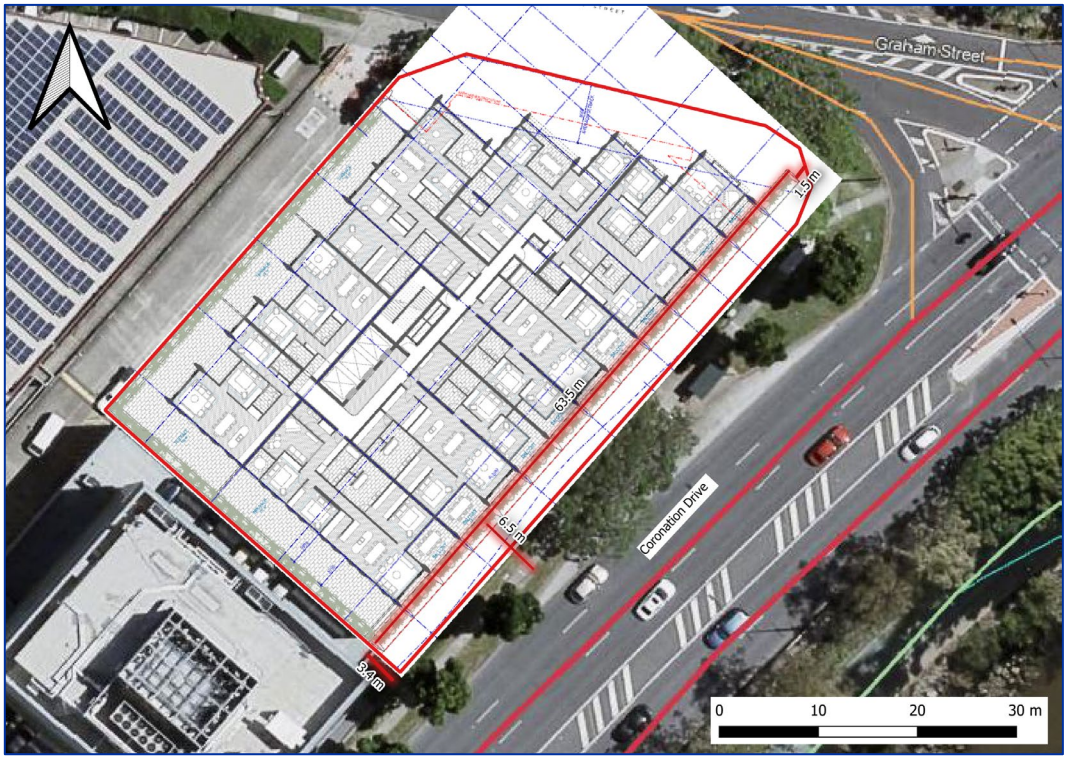


Figure 5.7: Separation Distance at Levels 9 - 27

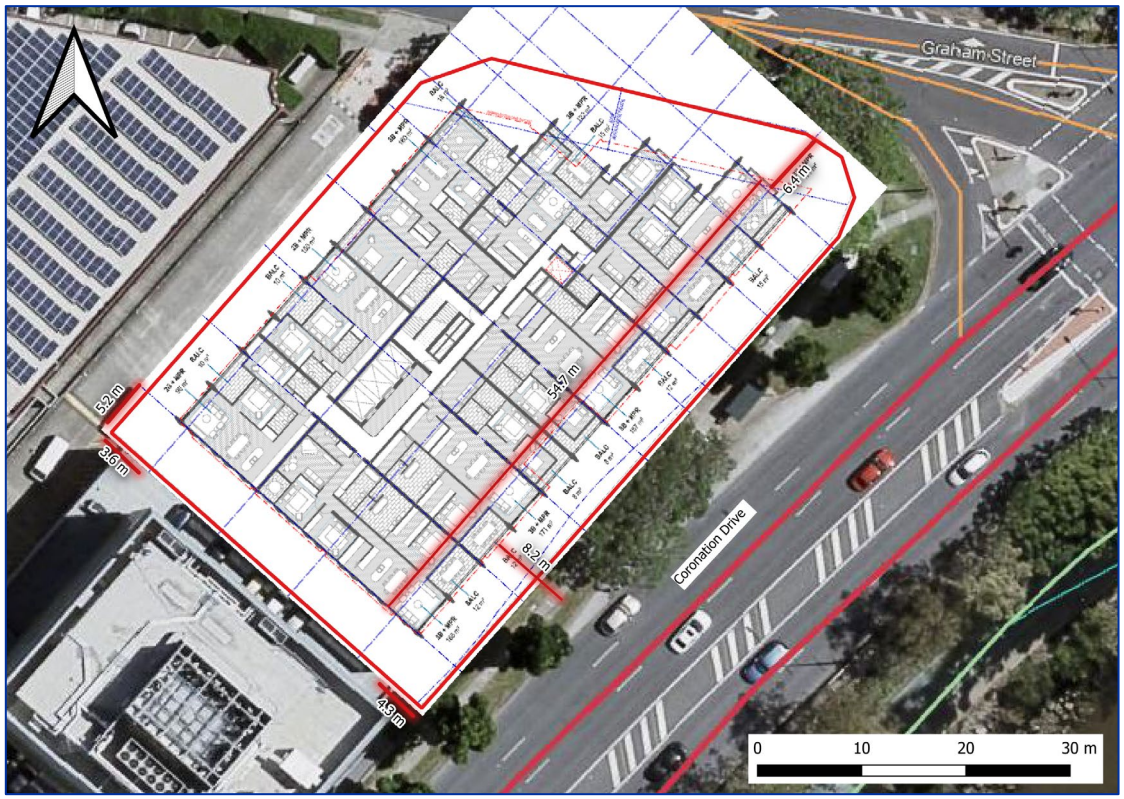


Figure 5.8: Separation Distance at Level 28

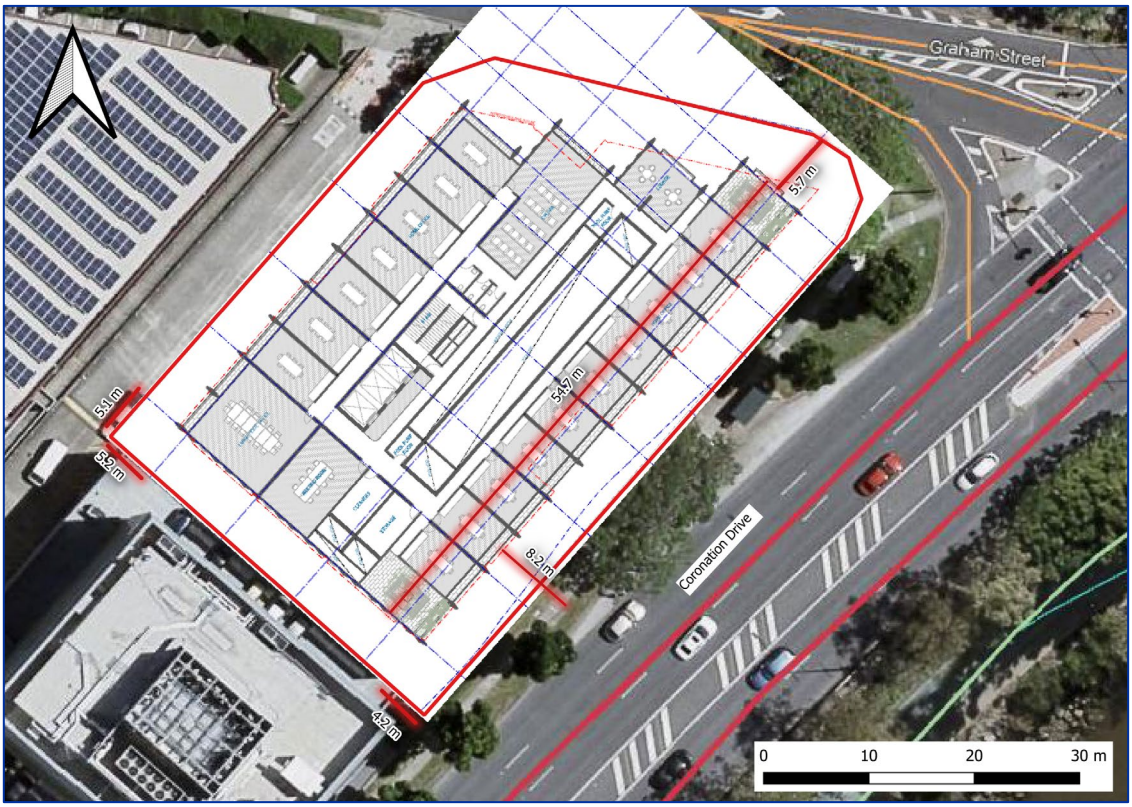


Figure 5.9: Separation Distance at Level 29

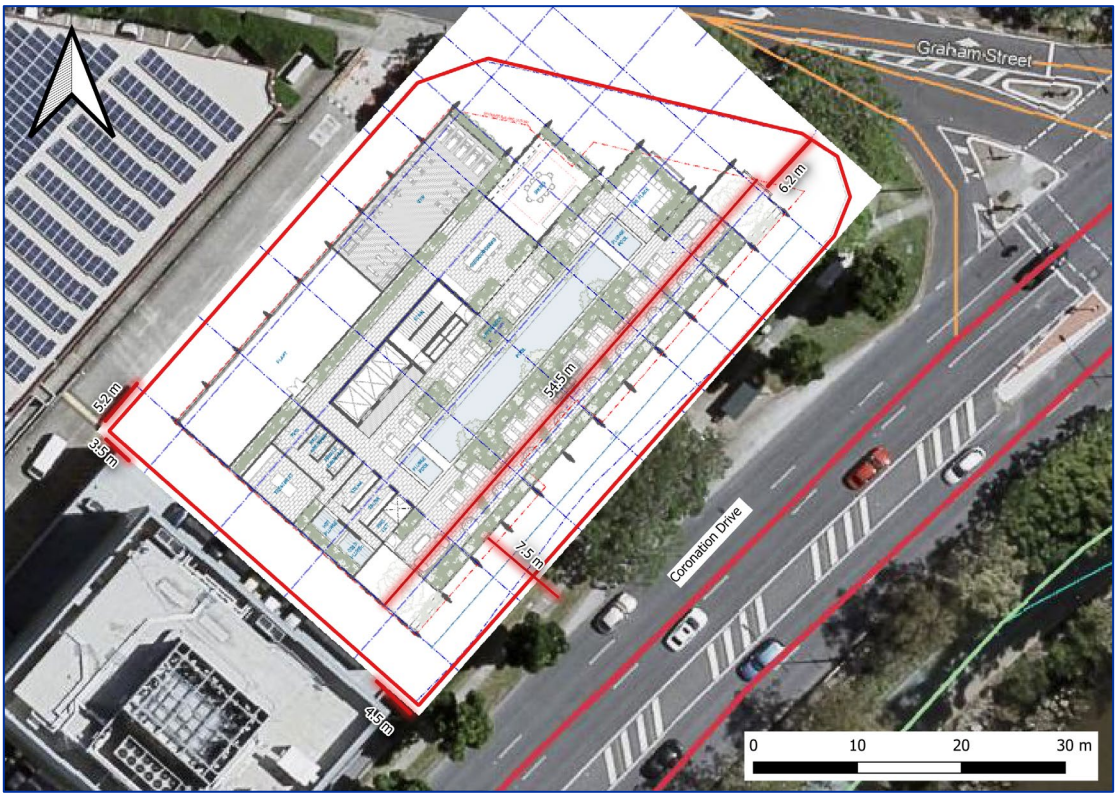


Figure 5.10: Separation Distance at Level Roof

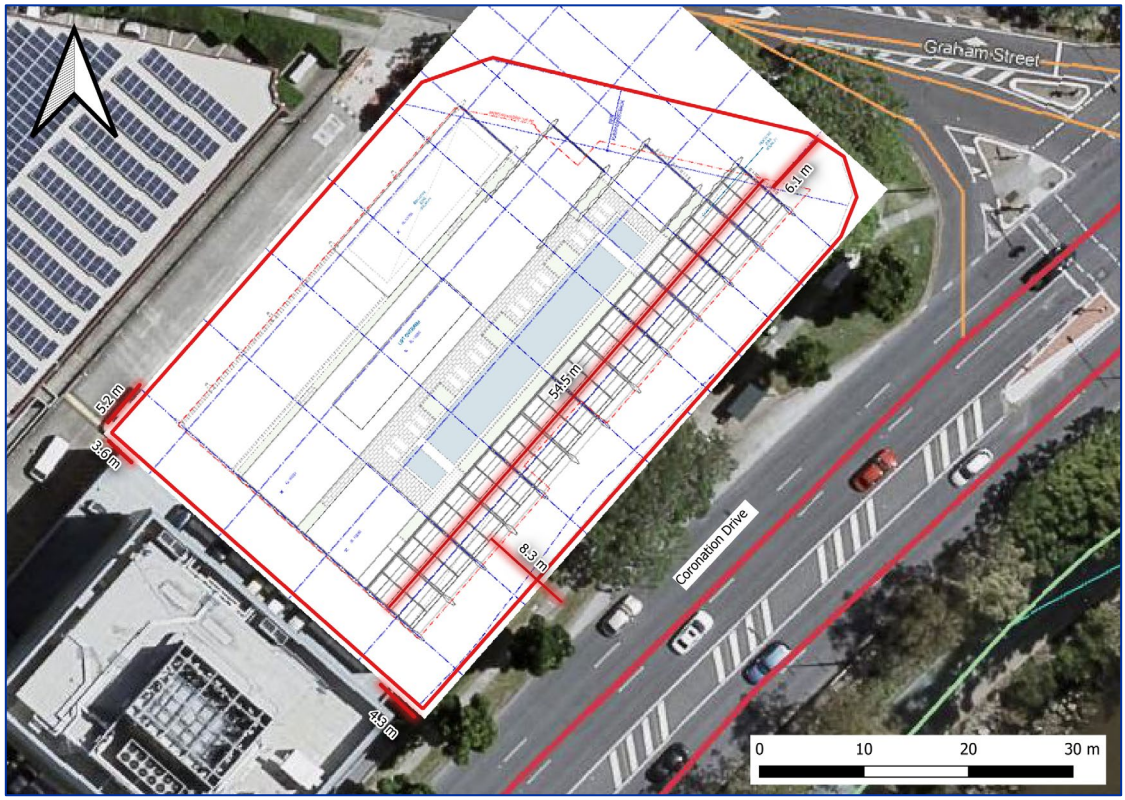


Figure 5.11: Heights of Neighbouring Buildings

The following points are noted:

- Canyon width-to-height ratio is approximately 0.2 (19.7 metre road width vs 102 metre high building) which is less than the minimum recommended ratio of 0.7.
- Despite the above ratio being lower than recommended, it is noted that:
  - Firstly, there are no buildings along the south axis along Coronation Drive but trees and the Brisbane River. This environment will enhance dispersion of pollutants because of 1) there is no possibility of a street canyon (no development on Brisbane River side is possible) and 2) winds across the open Brisbane River area will assist in dispersion.
  - The height of the proposed building is taller than the surrounding buildings at the same side of the road, and buildings in the surrounding area of varying heights, allowing for asymmetry in the local building topography.
  - Street corridor and surrounding buildings could be described as asymmetric (i.e. buildings vary in height opposite one another).
  - There are several intersecting streets along (such as Chasely Street, Lang Parade, Graham Street, Park Road, Cribb Street, M3 Motorway) which limit the possibility of a street canyon occurring (since development cannot occur where these street corridors are located).

5.2.3 Gaps in Airflow

Gaps in the streetscape allow for improved dispersion of road traffic pollutants. The lot to the west of the proposed development is occupied by a 14-storey building and is located approximately 1 metre west of the proposed building. The lot to the east is occupied by a three-storey building beyond Graham Street and it is

located approximately 22 metres east of the proposed building. A review of Development.i Online (available at: https://developmenti.brisbane. qld.gov.au/ Accessed in: 5 February 2025) found no current applications or approvals for the neighbouring properties.

The residential buildings on the neighbouring properties to the east and west have a flat rooftop with variable. To the east and west of the proposed development site, the buildings have varying rooftops. The proposed building design incorporates a predominantly slanting rooftop terrace with deep planting as shown in **Figure 5.10**.

As discussed previously, there are several intersecting streets along Coronation Driver, which provide permanent gaps in the streetscape and minimise the possibility for a street canyon.

It is further noted Podium Levels 1 to 3 are open car park areas. This means that air can readily pass through these floor levels, reducing the potential for the buildup of pollutants.

Given the above information, there is a variation in building heights to the east and west, as well as numerous gaps for air flow between neighbouring buildings as shown in **Figure 5.11** (Heights of Neighbouring Buildings). On this basis, the proposed building is unlikely to contribute to street canyon effects.

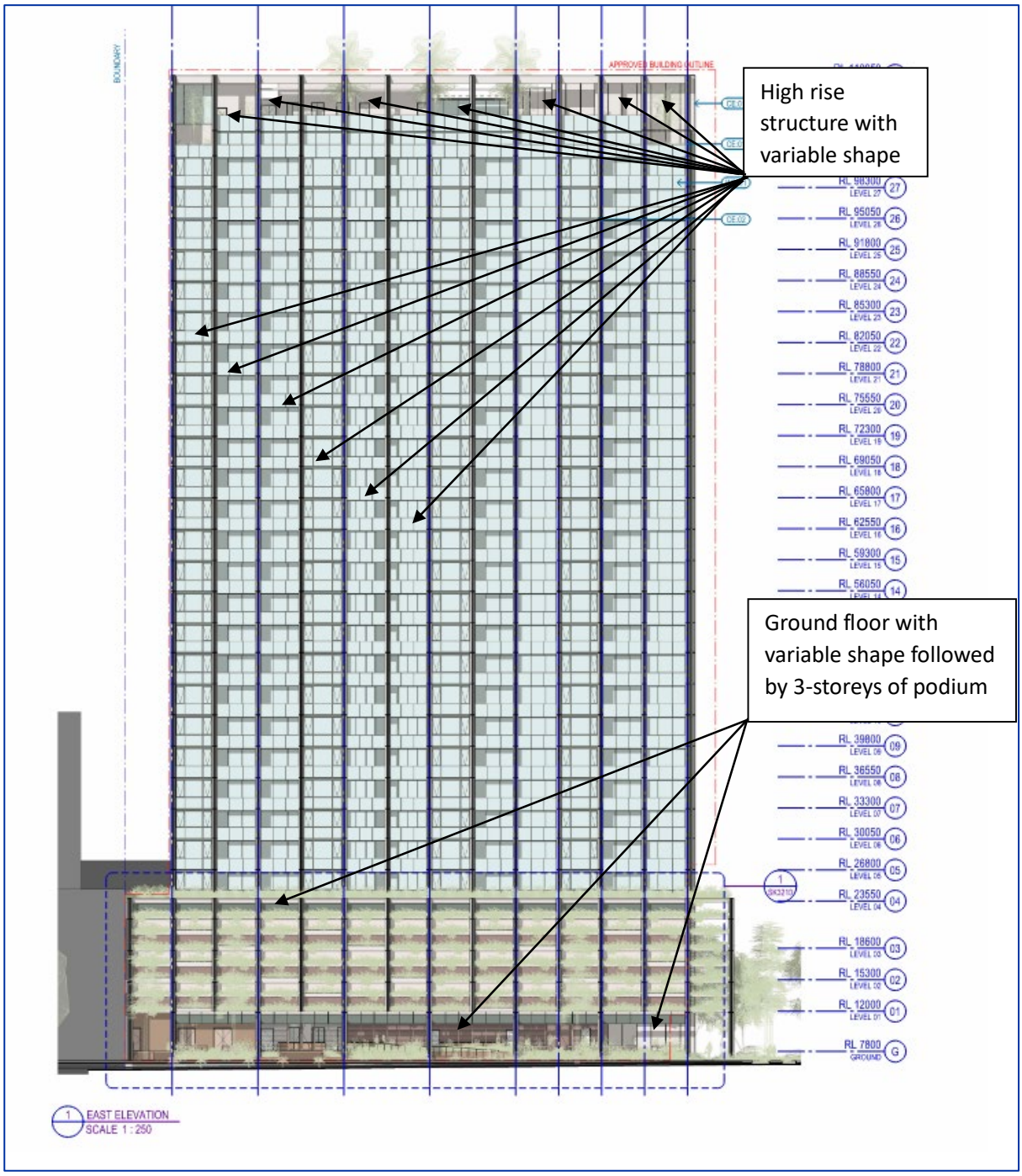
5.2.4 Encouraging Turbulence

Air dispersion from road traffic is improved with the introduction of turbulence to the road corridor. Turbulence can be introduced to the road corridor through increasing building roughness, providing gaps between building and vegetation.

5.2.4.1 Building Roughness

The proposed building is a high-rise structure on a small lot, with as much as façade variation as is possible. Specifically, the building does not have a flat/vertical façade, but has various textures and roughness features such as expansive layered façade; 3-storeys of podium with a variable façade as well as a ground floor with a variable shape to allow air movement as shown in **Figure 5.12**. The Transport Air Quality Corridor Planning Scheme Policy recommends high degree of building roughness which includes varying building tiers, shape and façade which encourages wind turbulence necessary for dispersion of pollutants.

Figure 5.12: Proposed Building Render



5.2.4.2 Variation in Streetscape

As noted above, the neighbouring property to the east and west are occupied by commercial buildings with varying heights ranging from 2 to 14-storeys high as shown in **Figure 5.11**. The highset dwelling provides variability in the streetscape. Opposite the site (west of Coronation Drive) is occupied by trees and the Brisbane River, located approximately 51 metres from the proposed site.

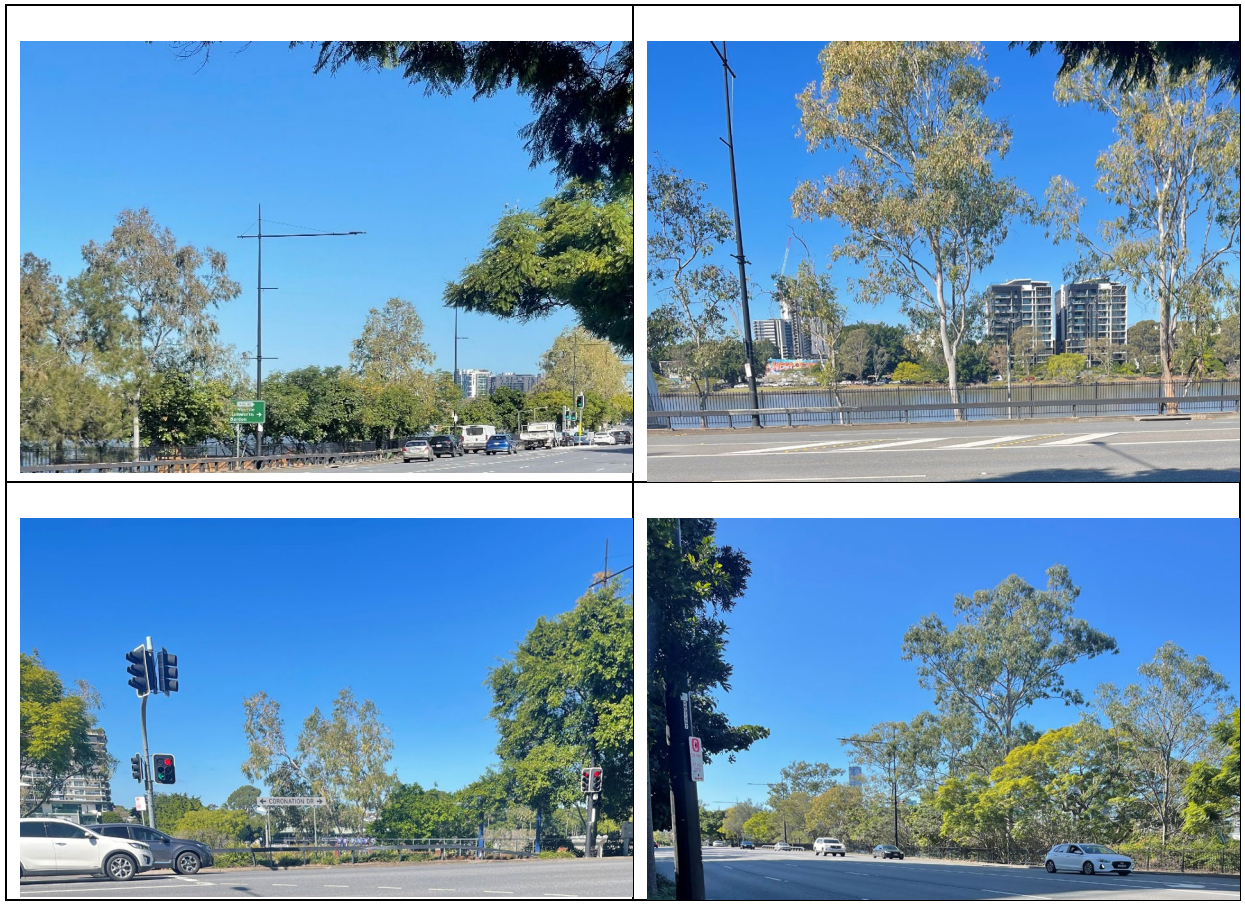
Figure 5.13, **Figure 5.14** and **Figure 5.15** presents photos of the surrounding area, confirming that the proposed building will not be identical in height to the surrounding (neighbouring and opposite the site) streetscape.

It is noted that the proposed building is located within the Office precinct (Milton neighbourhood plan/NPP-003), which provides a transition between the high-rise development north of Coronation Drive and, the high density residential to the east next to a Mixed use (inner city) zone. The interface with existing character residential and medium density residential uses outside of the precinct is managed with transitions in height and scale, to protect the amenity of adjoining low to medium density development. Therefore, it is expected that there would be variation in built form for any future development in the area.

Figure 5.13: Photos of the surrounding area: from subject site to the west

Figure 5.14: Photos of the surrounding area: from subject site to the east

Figure 5.15: Photos of the surrounding area: from the opposite side of the road towards south



5.2.5 Vegetation

The proposed building includes landscaping between the north-east, east and south boundaries, to provide planting as a buffer to the neighbouring uses. Those landscape elements will incorporate shade-tolerant plants and include a range of shrubs, ground cover and deep planting to encourage turbulence in the road corridor as shown in **Figure 5.16** and **Figure 5.17**. At the south boundary, facing Coronation Drive, the podium offers an awning above the footpath, and the top of the proposed awning will be occupied by pot planting and vertical greenery. In addition, there will be deep planting on the Rooftop terrace. There will be also vine green walls feature and vertical greenery as well as pot planting on levels 4-8, levels 28 -29. The planting is not significant in nature, however, the combined effect of other design elements as described above are appropriate for encouraging air movement and pollutant dispersion around the development site.

Figure 5.16: Greenery Features of Proposed Building

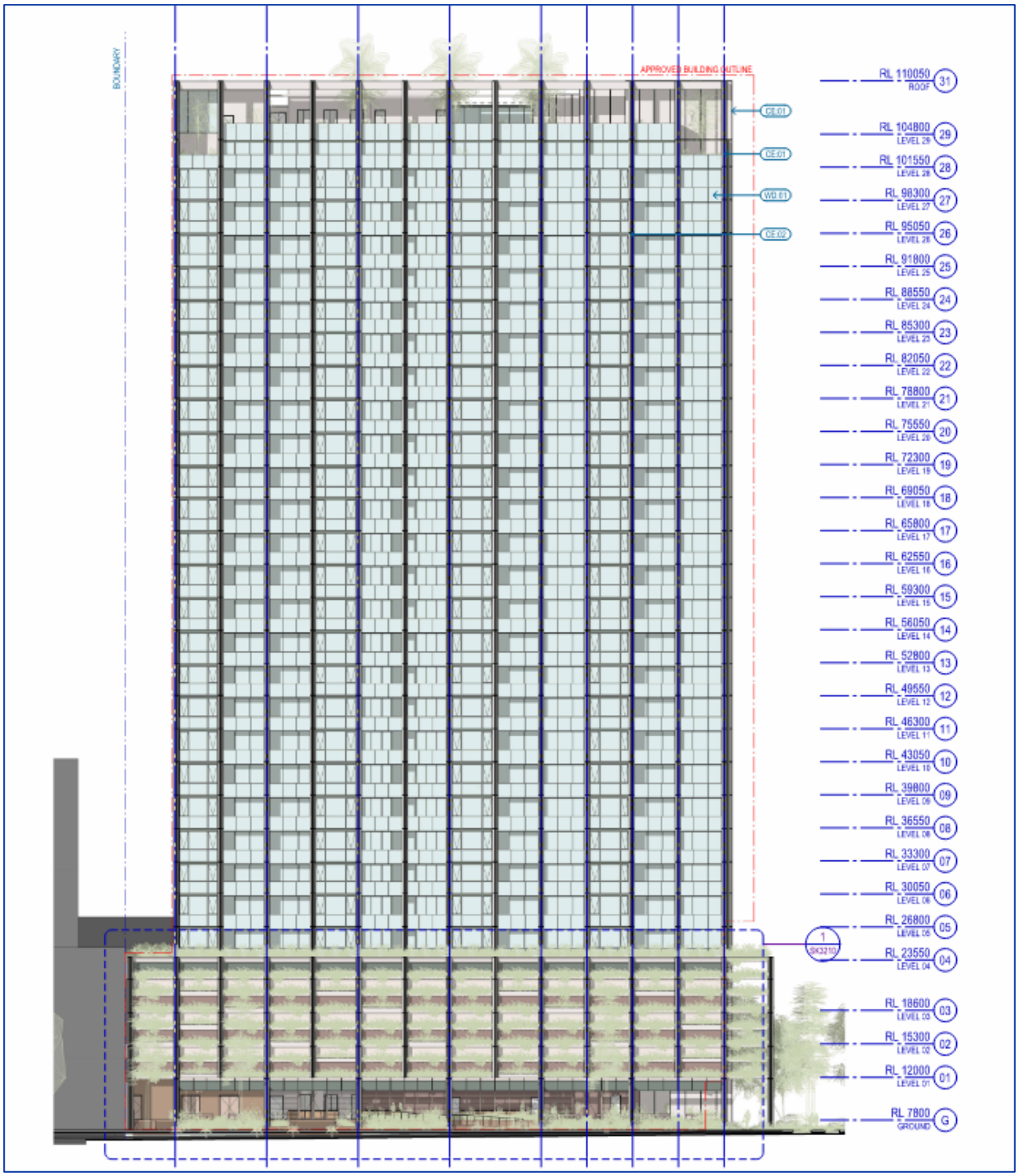
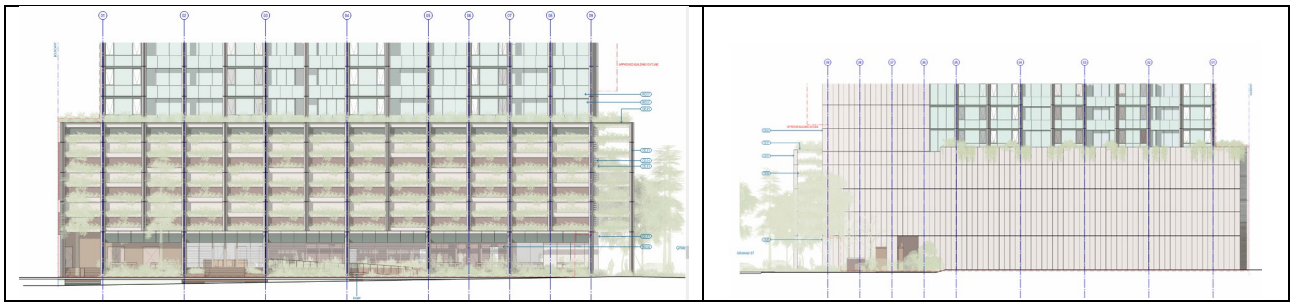


Figure 5.17: Closer View - Greenery Features of Proposed Building



6. RECOMMENDATION & CONCLUSIONS

A transport air quality corridor assessment has been conducted for the proposed multiple dwelling development to be located at 299 Coronation Drive, Milton, QLD.

The assessment addresses PO1 for the Transport Air Quality Corridor A sub-category relating to ventilation and air filtration, and PO3 of the transport air quality corridor B sub-category, which considers building form and landscape design elements that maximise wind movement around the proposed development and the dispersion of road traffic air pollutants. Those elements include: (a) maintaining gaps between buildings at 7 metres or higher; (b) variation in the building façade, in addition to balconies; (c) varying the building shape and form from that of neighbouring buildings; and (d) vegetation between the road and the building. The findings of the assessment are as follows:

- PO1 of Transport Air Quality Corridor A:
  - The nearest residential units on Level 4, comply with acceptable outcome AO1. These residential units are located outside the AO1 vertical distance of 10 metres from the ground. Therefore, there are no requirements for mechanical ventilation or filtration.
- PO3 of Transport Air Quality Corridor B – built form requirements:
  - The building height and setback trigger the need for a detailed assessment.
  - Street canyon effects are unlikely to occur due to the varying heights of surrounding buildings; multiple gaps in the streetscape (several intersecting streets where development cannot occur); and presence of Brisbane River beyond the Coronation Drive to the south (where development will not occur, thus limiting possibility for a street canyon).
  - The overall building design has sufficient roughness elements on the outside to promote turbulence and mixing air.
  - There is good separation to buildings to the north, south, east but not to the west.
  - Vegetation proposed includes shade-tolerant plants; range of shrubs; ground cover and deep planting on the ground floor as well as vine/vertical greenery on each floor.

Based on the assessment, the proposed development site represents a suitable location for the proposed development and achieves the requirements of the Transport Air Quality Corridor Overlay Code.

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