

## IL CAPITANO INVESTMENTS PTY LTD



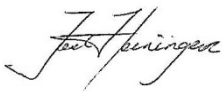
## Remediation Action Plan

86-94 Castlereagh and 77-79 Bathurst Street,  
Liverpool NSW

# Document Control

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## **APPENDIX B – PROPOSED DEVELOPMENT PLANS**

## **APPENDIX C – UNEXPECTED FINDS PROTOCOL**

# 1. INTRODUCTION

Il Capitano Investments Pty Ltd (the client) engaged EI Australia (EI) to prepare a Remediation Action Plan (RAP) for the property located at 86-94 Castlereagh and 77-79 Bathurst Street, Liverpool NSW (herein referred to as 'the site'). The purpose of this Remediation Action Plan is to guide remediation of the former service station/workshop and assist the client in making site suitable for the proposed mixed commercial/residential land use. The site (see **Figure A.1**) is located within the local Government Area of the Liverpool City Council, and is identified as Lots 7, 8, 9, 10 and 11 in DP. 7541, Lot 4 in DP.800326 and SP.38492.

Previous investigations completed at the site included:

- *DP (2005) Preliminary Contamination Assessment, Corner Memorial Avenue & Castlereagh Street, Liverpool.* Project No. 43021, dated May 2005;
- *DP (2013) Detailed Site Investigation, Lots 10 and 11, Corner of Memorial Avenue and Castlereagh Street, Liverpool NSW.* Project No. 43021.01 Rev1, dated August 2013;
- *DP (2018) Preliminary Site Investigation, Proposed Memorial Avenue Mixed Use Development, 86-94 Castlereagh Street & 77-79 Bathurst Street, Liverpool.* Project No. 86567.00, dated November 2018;
- *DP (2018) Preliminary Geotechnical Investigation, Proposed Mixed Use Development, 86-94 Castlereagh Street & 77-79 Bathurst Street, Liverpool NSW.* Project No. 92327.01, dated December 2018; and
- *EI (2019) Detailed Site Investigation, 86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool NSW.* Project No. E24273.02\_Rev0, dated 13 August 2019.

Based on these investigations, a portion of the site was a service station/mechanical workshop from approximately 1979/1980, with an underground petroleum storage system (UPSS), workshop hoists and pits and underground storage tanks (USTs) remaining in-situ (**Figure A.2**). Remediation of the infrastructures and any residual impacts resulting from the petroleum storage and site use is required to make the land suitable for the mixed residential/commercial development.

## 1.1 Proposed Development

To assist with the preparation of this report, the Client has supplied EI with the following documents regarding the proposed development of the site:

- Architectural Plans for Development Application, prepared by Allen Jack and Cotter, Project No: 18005, Drawing Nos. DA1001 and DA2000, Issue 1, dated 22 February 2019;
- Survey Plan prepared by Burton & Field Surveying & Land Development, Project No. S2863/77762, dated 4 April, 2019.

Based on the above drawings, EI understands that the proposed development involves the demolition of existing site structures, with the construction of two mixed-use apartment towers overlying a three-level basement car park. The basement car park is proposed to cover the entire site footprint (as illustrated in the proposed development plans attached in **Appendix C**).

The lowest basement is proposed to have a finished floor level of RL 11.00 mAHD. To achieve the BEL, an excavation depth of approximately 10 m Below Ground Level (mBGL) is expected.



Locally deeper excavations for lift overrun pits, footings, working platform, crane pads and service trenches may be required.

## 1.2 Remedial Objective

The main objective of the remediation action plan (RAP) is to inform and guide site remediation by providing detailed procedures so they may occur in a safe and acceptable manner which complies with relevant guidelines while preventing adverse effects on human and environmental receptors.

## 1.3 Remedial Scope

The remedial objective will be achieved by:

- Outlining the legislative framework and provision of guidance on approvals and licences required for the remediation works;
- Identifying stakeholders and their responsibilities required to complete the remediation;
- Provide a summary of previous investigations and available data, the site setting and contamination status which were relied on for development of the RAP;
- Definition of remediation goals and acceptance criteria;
- Review remediation technologies and evaluation of the most appropriate (or combination of) for the site, including methods and procedures to ensure works are completed in accordance with relevant environmental legislation (e.g. SEPP 55);
- Provision of information to assist the contractor in their preparation of a Work, Health and Safety Plan and other site management/planning documents; and
- Provision of a preliminary Sampling and Analytical Quality Plan (SAQP) for site validation and to evaluate the effectiveness of the remedial works.

## 1.4 Regulatory Framework

The following regulatory framework and guidelines were considered during the preparation of this report:

- ANZG (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*;
- Australian Standard (2008) *The removal and disposal of underground petroleum storage tanks*, AS 4976-2008 dated 19 February 2008.
- *Contaminated Land Management Act 1997*;
- DEC (2007) *Guidelines for the Assessment and Management of Groundwater Contamination*;
- DECCW (2008) *Guidelines for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2008*;
- EPA (1995) *Sampling Design Guidelines*;
- EPA (2014) Technical Note: Investigation of Service Station Sites;
- Liverpool Development Control Plan (2008);

- Liverpool Local Environmental Plan (2008);
- NEPC (2013) *Schedule B(1) Guideline on Investigation Levels for Soil and Groundwater*;
- NEPC (2013) *Schedule B(2) Guideline on Site Characterisation*;
- OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites*;
- POEO (2014) *Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2014*; and
- State Environment Protection Policy 55 (SEPP 55) – *Remediation of Land*.

## 1.5 Deviations from this RAP

While it may be possible to vary the sequence and/or details of the actual site remediation and validation works to meet site constraints, a qualified Environmental Scientist performing the roles of Environmental Management Coordinator and Remediation Supervisor will be appointed to the project to ensure that:

- Critical stages of the site remediation/validation process (including, but not limited to, proper site induction of site personnel in relation to contamination hazards and environmental management issues, marking of remediation areas, inspection of environmental monitoring systems, implementation of specified control measures and required data gap closure and validation sampling), are appropriately supervised, implemented and documented, with the relevant data collected for environmental reporting purposes; and
- Any deviations from the works specified in this RAP are properly documented and approved, as required under the OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites*.

Performing remedial works without the presence of a qualified environmental engineer/scientist when necessary may lead to project delays and extra costs due to additional environmental investigation requirements imposed by a Qualified Independent Consultant or the appointed Site Auditor, to confirm the environmental status of the site.

In worst case scenarios, waste materials removed from the site without proper characterisation and/or waste classification assessment, may lead to regulatory action and potential penalties, as described under the *Waste Regulation 2014*, the *Protection of the Environment Operations Act 1997* and the *Contaminated Land Management Act 1997*.

## 2. SITE DESCRIPTION

### 2.1 Property Identification, Location and Physical Setting

**Table 2-1 Site Identification, Location and Zoning**

| Attribute                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Street Address              | 86-94 Castlereagh & 77-79 Bathurst Streets, Liverpool NSW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Location Description        | <p>The Site is bounded by Memorial Avenue to the north, Castlereagh Street to the west, Commercial buildings (including a dry cleaner) and Bathurst Street to the east, and residential units and commercial offices to the south.</p> <p>The site comprises an active service station along with a mechanical workshop, car parking facility and fine dining restaurant. The site is covered with concrete hardstand across its entirety.</p>                                                                                                                                           |
| Site Coordinates            | <p>North-western corner of site (datum GDA94-MGA56):</p> <p>Easting: 307708.658.</p> <p>Northing: 6244264.239.</p> <p>(Source: <a href="http://maps.six.nsw.gov.au">http://maps.six.nsw.gov.au</a>)</p>                                                                                                                                                                                                                                                                                                                                                                                  |
| Site Area                   | Approx. 4,371 m <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Lot and Deposited Plan (DP) | <ul style="list-style-type: none"> <li>▪ Lots 7, 8, 9, 10 and 11 in DP. 7541;</li> <li>▪ Lot 4 in DP. 800326; and</li> <li>▪ SP. 38492</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| State Survey Marks          | <p>Four State Survey (SS) marks are situated in close proximity to the site:</p> <ul style="list-style-type: none"> <li>▪ SS154648: 1m north-west the corner of Memorial Avenue and Castlereagh Street;</li> <li>▪ SS154633: 27 m north-east of the site on the corner of Memorial Avenue and Bathurst Street;</li> <li>▪ PM61515D: 2 m east of the site on the corner of Norfolk Street and Bathurst Street; and</li> <li>▪ SS57086: located 27m south of the site on Norfolk Street..</li> </ul> <p>(Source: <a href="http://maps.six.nsw.gov.au">http://maps.six.nsw.gov.au</a>).</p> |
| Local Government Authority  | Liverpool City Council                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Parish                      | St Luke                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| County                      | Cumberland                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Current Zoning              | <p>B4 – Mixed Use</p> <p>(Liverpool Local Environment Plan, 2008)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## 2.2 Regional Setting

Local topography, geology, soil landscape and hydrogeological information are summarised in **Table 2-2**.

**Table 2-2 Regional Setting Information**

| Attribute                     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Topography                    | <p>The local topography of the site is generally flat with a slight fall towards the north/north-east.</p> <p>Relative Levels (RLs) ranged from approximately 20.93 mAHD in the west, to 20.80 mAHD in the east.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Site Drainage                 | <p>Site drainage is likely to be consistent with the general slope of the site. Stormwater is likely to be collected by pit and pipe drainage along Memorial Avenue, and drain to the municipal stormwater system.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Regional Geology              | <p>With reference to the 1:100 000 scale Geological Series Penrith Sheet 9030 (Ref. DMR, 1991), the site is underlain by Bringelly Shales of the Wianamatta Group, comprised of carbonaceous claystone, claystone, laminate, fine to medium-grained lithic sandstone, rare coal and tuff.</p>                                                                                                                                                                                                                                                                                                                                                                                       |
| Soil Landscapes               | <p>The Soil Conservation Service of NSW Soil Landscapes of the Sydney 1:100,000 Sheet (Chapman and Murphy, 2002) indicates that the site overlies the <i>Blacktown - Residual Landscape (bt)</i>.</p> <p>The landscape comprises gently undulating rises on Wianamatta Group shales. Local relief to 30 m, slopes usually &gt;5% with broad rounded crests and ridges with gently inclined slopes.</p> <p>Soils are identified as shallow to moderately deep (&gt;100 cm) hard setting mottled texture contrast soils, red and brown podzolic soils on crests grading to yellow podzolic soils on lower slopes and in drainage lines.</p>                                           |
| Acid Sulfate Soil Risk        | <p>With reference to the Liverpool Acid Sulfate Soil Risk Map (1:25,000 scale; Murphy, 1997), the subject land lies within the map class description of <i>No Known Occurrence</i>. In such cases, acid sulphate soils (ASS) are not known or expected to occur and "land management activities are not likely to be affected by ASS materials".</p> <p>The Liverpool Local Environmental Plan (LEP) 2008 Acid Sulfate Soils Map (Sheet ASS_011) indicated the site was situated in an area not classified as being affected by Acid Sulfate Soils.</p> <p>Given the site geology from the boreholes, further Acid Sulfate Soils Assessment was not considered to be warranted.</p> |
| Likelihood & Depth of Filling | <p>Based on observations during previous intrusive investigations (DP), the maximum depth of fill was recorded at approximately 1.5 mBGL. Deeper areas of fill are expected in the various tank pits across the site.</p> <p>The approximate depth of fill across the site is expected to be approximately 0.5 - 1.0 mBGL.</p>                                                                                                                                                                                                                                                                                                                                                      |
| Typical Soil Profile          | <p>A layer of anthropogenic filling overlying residual clays and shale bedrock.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

| Attribute                              | Description                                                                                                                                                                                                    |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Depth to Groundwater                   | The Standing Water Level (SWL) collected during the GME was reported between 2.25 and 6.70 mBGL.<br>Onsite groundwater conditions, including groundwater flow direction, are discussed in <b>Section 8.2</b> . |
| Nearest Surface Water Feature          | Brickmakers Creek, located approximately 565 m to the west.<br>The Georges River is also located approximately 690 m east of the site.                                                                         |
| Anticipated Groundwater Flow Direction | Groundwater is anticipated to flow hydraulically east, towards the Georges River.                                                                                                                              |

## 3. SITE CHARACTERISATION

### 3.1 Previous Investigations

A number of previous investigations have been conducted at the site, both by *Douglas Partners* (DP) and *EI Australia* (EI). The following reports are summarised below in **Table 3-1**.

- *DP (2005) Preliminary Contamination Assessment, Corner Memorial Avenue & Castlereagh Street, Liverpool*. Project No. 43021, dated May 2005;
- *DP (2013) Detailed Site Investigation, Lots 10 and 11, Corner of Memorial Avenue and Castlereagh Street, Liverpool NSW*. Project No. 43021.01 Rev1, dated August 2013;
- *DP (2018) Preliminary Site Investigation, Proposed Memorial Avenue Mixed Use Development, 86-94 Castlereagh Street & 77-79 Bathurst Street, Liverpool*. Project No. 86567.00, dated November 2018;
- *DP (2018) Preliminary Geotechnical Investigation, Proposed Mixed Use Development, 86-94 Castlereagh Street & 77-79 Bathurst Street, Liverpool NSW*. Project No. 92327.01, dated December 2018; and
- *EI (2019) Detailed Site Investigation, 86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool NSW*. Project No. E24273.02\_Rev0, dated 13 August 2019.

**Table 3-1 Summary of Previous Investigation Works and Findings**

| Assessment Details                                                                                                               | Project Tasks and Findings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b><i>DP (2005) – Preliminary Contamination Assessment – Corner Memorial Avenue and Castlereagh Street (Service Station)</i></b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Purpose                                                                                                                          | <ul style="list-style-type: none"> <li>▪ To assess the potential for contamination at the site; and</li> <li>▪ To provide recommendations on the need for further works, as necessary, to make the site suitable for the proposed development.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Scope of Works                                                                                                                   | <ul style="list-style-type: none"> <li>▪ Undertake site history searches (title deeds, aerial photographs, NSW WorkCover/Dangerous Goods, council records review);</li> <li>▪ Review available site information with reference to local geology and groundwater bores; and</li> <li>▪ Undertake a site inspection.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Key Findings                                                                                                                     | <ul style="list-style-type: none"> <li>▪ There is a low risk of contamination at 90-94 Castlereagh Street, with the only potential source of contamination arising from surficial spills/leaks from car parking;</li> <li>▪ Based on historical information, the site was occupied by residential houses until 1979/1980, at which time 86 Castlereagh Street was redeveloped for use as a service station;</li> <li>▪ The presence of four active USTs, bowzers, delivery lines, hydraulic hoists and an oil/water separator were identified in the service station of 86 Castlereagh Street;</li> <li>▪ USTs were noted as being no more than 25 years old, with no leaks recorded;</li> <li>▪ Solvent contamination risk from the neighbouring dry cleaner is considered to be low as the facility is considered down-gradient from the site.</li> </ul> |
| Conclusions and Recommendations                                                                                                  | Further investigation is required to determine the presence and extent of contamination at the site, including an intrusive assessment of both soil and groundwater.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

### **DP (2013) – Detailed Site Investigation**

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Purpose                         | <ul style="list-style-type: none"> <li>▪ To evaluate the potential for site contamination by means of intrusive sampling and laboratory analysis for relevant contaminants of concern.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Scope of Works                  | <ul style="list-style-type: none"> <li>▪ Review of previous report;</li> <li>▪ Conduct service location and ground penetrating radar (GPR) scan;</li> <li>▪ Drilling of seven (7) test boreholes to a maximum depth of 6 mBGL;</li> <li>▪ Conversion of three (3) test bores into groundwater monitoring wells;</li> <li>▪ Multiple level sampling from both fill and natural soil horizons and one round of groundwater sampling from the monitoring wells.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                        |
| Key Findings                    | <ul style="list-style-type: none"> <li>▪ The current and historic use of the site as a service station presents a potential source of contamination, including potential leakages of UPSS;</li> <li>▪ Primary contaminants of potential concern are listed as TPH, BTEX, PAH and lead.</li> <li>▪ Alternative potential contaminants of concern are listed as heavy metals, VOCs, phenols, OCP, OPP and asbestos;</li> <li>▪ Field observations only identified signs of contamination in one location, namely hydrocarbon odours in filling to a depth of 1.5 m (in the eastern portion of the petrol station);</li> <li>▪ No phase separated hydrocarbon or hydrocarbon odours were observed in groundwater;</li> <li>▪ All samples were reported within the adopted assessment criteria (with the exception of F1 marginally exceeding in one replicate sample).</li> </ul> |
| Conclusions and Recommendations | <ul style="list-style-type: none"> <li>▪ The monitoring wells installed within the service station should be monitored over a six month period for signs of petroleum contamination;</li> <li>▪ Tank integrity testing should be undertaken prior to any leasing of the site;</li> <li>▪ Contamination issues should be reviewed during the development application phase for any future redevelopment (further intrusive testing and assessment);</li> <li>▪ Preparation of a Remediation Action Plan (RAP) to detail the remediation works;</li> <li>▪ The site was considered to be rendered compatible with high density residential land use, following removal of the service station infrastructure and remediation of the associated contamination.</li> </ul>                                                                                                         |

### **DP (2018) – Preliminary Site Investigation**

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Purpose        | <ul style="list-style-type: none"> <li>▪ Identify potential sources of contamination from historical information (desktop study);</li> <li>▪ Assess data from previous investigations;</li> <li>▪ Obtain and assess additional data from the collection of groundwater samples from existing monitoring wells.</li> </ul>                                                                                                                                                                  |
| Scope of Works | <ul style="list-style-type: none"> <li>▪ Review all previous environmental reports for the site;</li> <li>▪ Review of topography/soil maps, historical title deeds, groundwater bore information, aerial photographs, EPA public registers and planning certificates from council;</li> <li>▪ Purging and sampling of three existing groundwater monitoring wells (where possible);</li> <li>▪ Preparation of report.</li> </ul>                                                           |
| Key Findings   | <ul style="list-style-type: none"> <li>▪ Groundwater monitoring and visual inspection reports were reviewed which were undertaken by MIG during 2015 and 2016. It was concluded in these reports that visual inspections of the groundwater samples showed no evidence of the presence of hydrocarbons.</li> <li>▪ Analysis of results for soil sampling (DP, 2013) indicated that TRH F1 contamination was noted marginally above health investigation limits at one location;</li> </ul> |



|                                 |                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 | <ul style="list-style-type: none"> <li>Groundwater at the service station had been impacted by petroleum hydrocarbons (TRH F1, benzene, naphthalene and MTBE), however, the concentrations were generally low, and not thought to pose an ecological risk;</li> </ul>                                                           |
| Conclusions and Recommendations | <ul style="list-style-type: none"> <li>A detailed site investigation should be completed, focussing on areas that have not been investigated;</li> <li>A Remediation Action Plan (RAP) should be prepared for remediation of the service station and any other contaminated identified in subsequent investigations.</li> </ul> |

#### ***DP (2018) – Preliminary Geotechnical Investigation***

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Purpose                      | To provide broad information on sub-surface conditions with preliminary comments given on site classification, site preparation measures, excavation conditions, the performance of suitable foundation systems and likely bearing pressures.                                                                                                                                                                                                                                                                                                                                                                                                            |
| Scope of Works               | <ul style="list-style-type: none"> <li>Drilling of four (4) cored boreholes to a maximum depth of 10.2 mBGL;</li> <li>Standard penetration tests (SPTs) were to be carried out at a depth of 1.0m then 1.5m intervals within all boreholes;</li> <li>Laboratory analysis of selected samples for point load testing and soil aggressivity;</li> </ul>                                                                                                                                                                                                                                                                                                    |
| Key Findings and Conclusions | <ul style="list-style-type: none"> <li>No groundwater seepage was observed in any borehole during drilling. During a GME the groundwater level was recorded at 13.9 and 12.4 mAHD;</li> <li>It is anticipated that the proposed basement excavation will require dewatering, as the design excavation level is proposed at 11.0 mAHD.</li> <li>The investigation indicated that sub-surface conditions underling the site comprised variable depths of filling overlying silty clay/clay of very stiff to hard consistency;</li> <li>Bedrock comprising shale of variable strength and weathering condition was encountered in all boreholes.</li> </ul> |

#### ***EI (2019) – Detailed Site Investigation***

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Purpose        | <ul style="list-style-type: none"> <li>Evaluate the potential for site contamination on the basis of historical land uses, anecdotal and documentary evidence of possible pollutant sources;</li> <li>To investigate the degree of any potential contamination by means of limited intrusive sampling and laboratory analysis, for relevant contaminants; and</li> <li>Where site contamination is confirmed, make recommendations for the appropriate management of any contaminated soils and/or groundwater.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Scope of Works | <ul style="list-style-type: none"> <li>Review all available environmental reports for the site, along with relevant topographical, geological, hydrogeological and soil landscape maps;</li> <li>Drilling of boreholes at thirteen (13) locations, along with the construction of four (4) groundwater monitoring bores;</li> <li>In addition, two (2) soil vapour sampling points were drilled by hand held power drill to the base of the concrete slab.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Key Findings   | <ul style="list-style-type: none"> <li>Based on historical information in previous investigations, the site was occupied by low-density residential houses until 1979/1980, at which time 86 Castlereagh Street was redeveloped for use as a service station;</li> <li>The sub-surface layers were found to comprise anthropogenic filling overlying residual clays and shale bedrock;</li> <li>An assessment against the NEPM (2013) HIL-B/HSL-D investigation levels found that no soil samples exceeded the adopted criteria.</li> <li>Standing water levels in wells were measured between 2.25 – 6.70 mBGL during the investigation;</li> <li>Results of groundwater samples compared against the NEPM (2013) HSL D and ANZG (2018) <i>Fresh Water Criteria</i> indicated that heavy metals exceeded the adopted criteria in three monitoring wells for cadmium, nickel and zinc. EI considered the exceedances to be representative of background water quality, and not thought</li> </ul> |

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 | <p>to represent a cause for environmental concern; and</p> <ul style="list-style-type: none"><li>▪ An assessment against the NEPM (2013) HIL-B/HSL-D investigation levels indicated that no soil vapour samples exceeded the adopted criteria.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Conclusions and Recommendations | <ul style="list-style-type: none"><li>▪ Due to the presence of tanks and associated infrastructure, the site will need to be remediated in accordance with the POEO <i>Underground Petroleum Storage Systems Regulation</i> (2014) and associated guidelines (<i>UPSS Regulation, 2008</i>);</li><li>▪ EI concluded that the site can be made suitable for the proposed development, so long as the following recommendations are implemented:<ul style="list-style-type: none"><li>› Conduct a Hazardous Materials Survey (HMS) of current site buildings. EI recommend that a HMS is conducted prior to site demolition;</li><li>› A Remedial Action Plan (RAP) should be prepared prior to the commencement of site works as part of the proposed development.</li></ul></li></ul> |

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## 4. CONCEPTUAL SITE MODEL

In accordance with NEPM (2013) Schedule B2 – Guideline on Site Characterisation and to aid in the assessment of data collection for the site, EI developed a conceptual site model (CSM) to assess plausible pollutant linkages between potential contamination sources, migration pathways and receptors.

From the DSI (EI, 2019), many primary sources of contamination have been removed from the site and only residual contamination presents a potential risk to receptors near the site.

### 4.1 Existing Site Contamination

Based on the findings of previous investigations, the following sources of contamination were identified, and considered relevant to this RAP:

#### 4.1.1 In-situ UPSS and USTs

Records obtained from a Dangerous Goods search within previous investigations (DP, 2005) indicated that five USTs had been installed across the site. The inferred location of these tanks and the associated UPSS based on this information is exemplified in **Figure A.2.**, with product storage details, including existing and historical infrastructure where available, have been summarised in **Table 4-2.**

**Table 4-1 UPSS Fuel/Chemical Storage Details**

| Tank ID<br>Location                           | Product<br>type   | Capacity<br>(L) | Year<br>installed | Construction<br>(assumed) | Corrosion<br>protection | Overfill<br>protection | Status          |
|-----------------------------------------------|-------------------|-----------------|-------------------|---------------------------|-------------------------|------------------------|-----------------|
| <b>Underground storage tanks</b>              |                   |                 |                   |                           |                         |                        |                 |
| 1                                             | ULP <sup>1</sup>  | 44,000          | UK <sup>4</sup>   | Steel                     | UK                      | UK                     | In-use          |
| 2                                             | E10<br>ULP        | 44,000          | 1979/1980         | Steel                     | UK                      | UK                     | In-use          |
| 3                                             | PULP <sup>2</sup> | 10,000          | 1979/1980         | Steel                     | UK                      | UK                     | In-use          |
| 4                                             | Diesel            | 12,000          | UK                | Steel                     | UK                      | UK                     | In-use          |
| <b>Waste oil &amp; other chemical storage</b> |                   |                 |                   |                           |                         |                        |                 |
| 5                                             | WO <sup>3</sup>   | 1,892           | 1979/1980         | Steel                     | UK                      | UK                     | UK <sup>5</sup> |

Note 1 ULP – Unleaded Petrol

Note 2 PULP – Premium Unleaded Petrol

Note 3 WO – Waste Oil

Note 4 UK – Unknown

Note 5 The WO tank is not thought to be in use, due to the presence of waste oil stored in above ground containers/tanks.

While the results of soil and groundwater analysis suggests the USTs integrity has not been compromised, the actual condition and assessment of surrounding soils will need to be assessed during the removal phase.

#### 4.1.2 Other Commercial Activities

The site is also used as a mechanical workshop, car parking facility and restaurant. However, based on the DSI conducted by EI (2019), there appears to limited impact from these activities.

The associated chemical and waste oil storage, along with the use of mechanical hoists within the mechanical workshop was noted however, together with inaccessible areas under the buildings will need to be factored into validation sampling of the site.

## 4.2 Contaminants of Potential Concern

Based on the findings reported in the DSI (EI, 2019), the chemicals of concern (COC) for site remediation, validation and data gap closure are as follows:

- **Soil** - Heavy metals (HM), total recoverable hydrocarbons (TRH), the monocyclic aromatic hydrocarbon compounds: *benzene*, *toluene*, *ethyl-benzene* and *xylene*s (BTEX), volatile-organic compounds (VOC) and polycyclic aromatic hydrocarbons (PAH) polychlorinated biphenyls (PCB)<sup>1</sup> and asbestos<sup>1</sup>.
- **Groundwater**<sup>2</sup> - HM, TRH, BTEX, PAH and volatile organic compounds (VOC), including chlorinated VOC and Phenols.

Note 1 PCBs and asbestos only to be considered within building fabrics containing hazardous materials.

Note 2 Only to be considered if visual contamination is identified during excavation of UPSS, tank pits and/or bulk excavation.

## 4.3 Potential Sources, Exposure Pathways and Receptors

Potential contamination sources, exposure pathways and human and environmental receptors that were considered relevant for the validation and remedial works at the site are summarised along with a qualitative assessment of the potential risks posed by complete exposure pathways in **Table 4-2**.

**Table 4-2 Conceptual Site Model**

| Potential Sources                                                                                                                                                   | Impacted Media           | Chemicals of Potential Concern          | Transport mechanism                                                                                                                                           | Exposure pathway                                                     | Potential receptor                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <p>Historic and current use of the site;<br/>Contamination from sub-surface infrastructure, including USTs;<br/>Excavation of UPSS and validation of tank pits.</p> | Soil                     | HM, TRH, PAH, BTEXN, VOC                | Excavation of UPSS may present a moderate risk of vapour inhalation to site workers should significantly impacted soil be present surrounding infrastructure. | Ingestion<br>Dermal contact<br>Inhalation of dust/particulates       | Construction and maintenance workers                                                              |
|                                                                                                                                                                     |                          |                                         | Atmospheric dispersion from soil to outdoor and indoor air spaces                                                                                             | Inhalation dust particulates                                         |                                                                                                   |
|                                                                                                                                                                     | Groundwater <sup>1</sup> | HMs, TRH, BTEXN, PAH, phenols, and VOCs | Volatilisation of contamination from groundwater to indoor or outdoor air spaces (onsite and offsite)                                                         | Inhalation of vapours                                                | End users of the site post-development<br>Construction and maintenance workers<br>Basements users |
|                                                                                                                                                                     |                          |                                         | Migration of dissolved phase impacts in groundwater                                                                                                           | Biota uptake,<br>Ingestion<br>Dermal contact                         | Aquatic ecosystems                                                                                |
|                                                                                                                                                                     |                          |                                         | Potential seepage into deep basement intercepting water table (on and offsite)                                                                                | Dermal contact<br>Ingestion                                          | Basements users<br>Construction and maintenance workers                                           |
| Building fabrics containing <sup>2</sup> - hazardous materials                                                                                                      |                          | Lead, PCB and asbestos                  | Release of hazardous materials during uncontrolled demolition of building fabrics                                                                             | Ingestion;<br>Dermal contact;<br>Inhalation of airborne contaminants | Construction and maintenance workers                                                              |

Note 1 Only to be considered if visual contamination is identified during excavation of UPSS, tank pits and/or bulk excavation.

Note 2 PCBs and asbestos only to be considered within building fabrics containing hazardous materials.

## 4.4 Data Gaps

Data gaps or uncertainties faced from the DSI (EI, 2019) are as follows:

- Potential presence of hazardous materials within existing building structures; and
- The quality of soils underneath existing buildings, as well as material directly below any UPSS, hoists and bowlers which could not be sampled due to safety and access restrictions.

## 5. REMEDIATION GOALS & CRITERIA

### 5.1 Remediation Goals

The remediation goals for this RAP are consistent with the NSW EPA, SEPP 55 guidelines and Council's contaminated land policy, and include:

- Meeting the conditions of the planning consent and to render the site suitable for the proposed land use(s);
- Demonstrating that the proposed remediation strategy for the site is environmentally justifiable practical and technically feasible;
- Adopting clean-up criteria appropriate for the future use of the site to mitigate possible impacts to human health and the environment;
- Consideration of the principles of ecologically sustainable development in line with Section 9 of the *Contaminated Land Management Act 1997*;
- Minimising waste generation under the *Waste Avoidance and Resource Recovery Act 2001*;
- To remediate all contamination at the site so there are no unacceptable risks to onsite and offsite receptors; and
- Demonstrating that the plans for site management of remediation work consider work health and safety, environmental management, and site contingencies.

### 5.2 Remediation Criteria

The assessment criteria proposed for this project are outlined in **Table 5-1** and **5-2**. These were selected from available published guidelines that are endorsed by national or state regulatory authorities, with due consideration of the exposure scenario that is expected for various parts of the site, the likely exposure pathways and the identified potential receptors.

### 5.2.1 Soil Criteria

**Table 5-1 Adopted Investigation Levels for Soil**

| Adopted Guidelines                                                | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NEPM, 2013<br>Soil HILs, HSLs, &<br>Management Limits for<br>TPHs | <p><b>Soil Health-based Investigation Levels (HILs)</b></p> <p>All soil samples will be assessed against the NEPM 2013 HIL-B thresholds for residential sites with minimal opportunities for soil access.</p> <p><b>Soil Health-based Screening Levels (HSLs)</b></p> <p>The NEPM 2013 <i>HSL-D</i><sup>1</sup> thresholds for commercial/industrial sites for vapour intrusion would be applied to assess for potential human health impacts from residual vapours resulting from petroleum, BTEX, &amp; naphthalene.</p> <p>Soils asbestos results to be assessed against the NEPM 2013 Soil HSL thresholds for “all forms of asbestos”.</p> <p><b>Management Limits for Petroleum Hydrocarbons</b></p> <p>Should the HSLs be exceeded for petroleum hydrocarbons, soil samples would also be assessed against the NEPM 2013 <i>Management Limits</i> for the TRH fractions F1 – F4 to assess propensity for phase-separated hydrocarbons (PSH), fire and explosive hazards &amp; adverse effects on buried infrastructure.</p> |

Note 1 As the proposed development contains a communal basement car park and commercial properties occupying the ground floor, HSL-D was used as per *Schedule B1, Note 1, Table 1A(3)* (NEPM Schedule B1, 2013).

### 5.2.2 Groundwater Criteria

**Table 5-2 Adopted Investigation Levels for Groundwater**

| Adopted Guidelines                                                          | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANZG 2018, GILs for<br>Fresh Waters; and<br>NEPM, 2013<br>Groundwater HSLs. | <p><b>Groundwater Investigation Levels (GILs) for Fresh Water</b></p> <p>ANZG 2018 provides GILs for typical, slightly-moderately disturbed aquatic ecosystems, Trigger Values (TVs) for the 95% level of protection of aquatic ecosystems; however, the 99% TVs were applied for the bio-accumulative metals <i>cadmium</i> and <i>mercury</i>.</p> <p><b>Health-based Screening Levels (HSLs)</b></p> <p>The NEPM 2013 groundwater HSLs for vapour intrusion were used to assess for potential human health impacts from residual vapours resulting from petroleum, BTEX and naphthalene impacts. The <i>HSL D</i><sup>1</sup> thresholds for commercial/industrial sites were applied for groundwater.</p> |

Note 1 As the proposed development contains a communal basement car park and commercial properties occupying the ground floor, HSL-D was used as per *Schedule B1, Note 1, Table 1A(4)* (NEPM Schedule B1, 2013).

### 5.2.3 Waste Classification Criteria

Prior to being removed from the site, excavated soils must be classified in accordance with the NSW EPA (2014) Waste Classification Guidelines (the ‘Waste Guidelines’). Under these guidelines, fill/soils may be classified into the following groups: *General Solid Waste*, *Restricted Solid Waste* or *Hazardous Waste*, subject to chemical assessment using NATA-registered laboratory methods for total and leachable contaminant levels.

The total contaminant threshold concentrations and leachate thresholds tested using the TCLP methodology for each relevant contaminant parameter will then be interpreted against the respective NSW EPA (2014) thresholds. Any soils containing asbestos would also be classified as *Special Waste - Asbestos Waste*. In accordance with the *NSW Waste Regulation 2014*, waste soils must only be disposed to a waste facility that is appropriately licenced to receive the



incoming waste. It is therefore recommended that confirmation is obtained from the waste facility prior the materials being removed from the site.

Should the analytical results exceed the SCC2 and/or TCLP2 thresholds, then the materials will be classified as *Hazardous Waste*. In such cases, material stabilisation treatment with EPA approval may be required prior to offsite disposal. Unexpected material may need to be segregated depending on the source of the waste, prior to conducting waste classification assessment. This approach is discussed in more detail under *Contingency Management* in **Section 8.2**.

## 6. SAMPLING, ANALYTICAL AND QUALITY PLAN (SAQP)

The sampling, analytical and quality plan (SAQP) ensures that the data collected is representative and provide a robust basis for site assessment decisions.

### 6.1 Data Quality Objectives

In accordance with the NEPM and the Australian Standard AS4482.1 *Guide to the Sampling and Investigation of Potentially Contaminated Soil*, Data Quality Objectives (DQO) were developed in a sequential manner as documented in **Table 6-1**.

**Table 6-1 Data Quality Objectives**

| Step                            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State the Problem               | Site activities related to the service station and mechanical workshop were found to have underground chemical storage infrastructure. Removal of these features as well as any impacted material around UPSS infrastructure is required to make the site suitable for mixed commercial and residential use, with communal basement car-parking.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Identify the Decision           | Based on the remedial objectives outlined in <b>Section 1.2</b> , the following decisions are identified as: <ul style="list-style-type: none"><li>▪ Has the nature and extent of soil and groundwater impacts onsite been defined?</li><li>▪ Does the level of impact coupled with the fate and transport of identified contaminants represent an unacceptable risk to identified human and/or environmental receptors on or offsite? and</li><li>▪ Will further remediation and/or special management be required before the site is suitable for the intended land use?</li></ul>                                                                                                                                                                                                                                                                                                      |
| Identify Inputs to the Decision | Inputs to the decision process include: <ul style="list-style-type: none"><li>▪ Previous investigation works;</li><li>▪ Details of the proposed site use;</li><li>▪ Understanding of current site use and historic activities that have occurred, including potential offsite sources of contamination;</li><li>▪ Geological and hydrogeological data relevant to the area, including physicochemical parameters for calculating ecological criteria;</li><li>▪ Field screening data and site observations for the presence of visual/olfactory contamination indicators;</li><li>▪ Contaminant concentrations in soil validation samples confirming effective removal of identified impacts; and</li><li>▪ Further input to the decision will be sample collection and handling, field and laboratory QAQC and confirmation that data quality indicators (DQIs) were achieved.</li></ul> |

| Step                                         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Define the Boundary of the Assessment        | <p><b>Lateral</b> – Works are limited to the site boundaries (<b>Figure A.2</b>)</p> <p><b>Vertical</b> – From existing ground surface, underlying fill and natural soil horizons, to the base of contaminated soil and/or bulk excavation level (BEL), including underlying water-bearing zones.</p> <p><b>Temporal</b> – The results will be valid on the day samples are collected and will remain valid if no changes to site use occur, and contamination (if present) does not migrate from off-site sources.</p> <p>Constraints of sampling requiring consideration include access restrictions (due to site operations and/or conditions) and presence of both above and underground services / structures.</p>                                                                     |
| Develop a Decision Rule                      | <p>The decision rules for validation are:</p> <ul style="list-style-type: none"> <li>Is the site suitable for the proposed land use?<br/><i>If the concentrations of contaminants that remain are below the relevant criteria for the intended land use; then the site will be deemed suitable for the proposed development.</i></li> <li>Is additional information required to determine the suitability of the site for its proposed use?<br/><i>Should additional information be required as determined by the conceptual site model (CSM), then appropriate recommendations will be provided.</i></li> </ul> <p>Decision criteria for analytical data are defined by the Data Quality Indicators (DQI) in <b>Table 7-2</b>.</p>                                                         |
| Specify Acceptable Limits on Decision Errors | <p>Specific limits for this project are to be in accordance with NEPM, appropriate data quality indicators (DQIs) for assessing the useability of the data, and EI standard procedures for field sampling and handling.</p> <p>To assess the useability of the data, pre-determined DQIs for completeness, comparability, representativeness, precision and accuracy, as presented below in <b>Table 7-2</b>.</p> <p>If any of the DQIs are not met, further assessment will be necessary to determine whether the non-conformance will significantly affect the useability of the data. Corrective actions may include requesting further information from samplers and/or analytical laboratories, downgrading of the quality of the data or alternatively, re-collection of samples.</p> |
| Optimise the Design for Obtaining Data       | <ul style="list-style-type: none"> <li>Written instructions will be issued to guide field personnel in the required fieldwork activities.</li> <li>Soil excavation is to be performed as per <b>Section 8</b>. Soil validation sampling is to be completed as per the methodology prescribed in <b>Section 10</b>.</li> <li>Validation sampling procedures that would be implemented to optimise data collection for achieving the DQOs.</li> <li>Review of the results will be undertaken to determine if further excavation and additional sampling is warranted. Additional investigations would be warranted where soil concentrations are found to exceed remediation criteria endorsed by the NSW EPA, relevant to the proposed land use(s).</li> </ul>                               |

## 6.2 Data Quality Indicators

To ensure that the data collected is of an acceptable quality, the data set will be evaluated against the data quality indicators (DQI) outlined in **Table 6-2**, which related to both field and laboratory-based procedures.

**Table 6-2 Data Quality Indicators**

| <b>Data Quality Objective</b> | <b>Data Quality Indicator</b>                                                                               | <b>Acceptable Range</b>                                                         |
|-------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Accuracy                      | Field – Trip blank (laboratory prepared)<br>Laboratory – Laboratory control spike and matrix spike          | < laboratory limit of reporting (LOR)<br>Prescribed by the laboratories         |
| Precision                     | Field – Blind replicate and spilt duplicate<br>Laboratory – Laboratory duplicate and matrix spike duplicate | <30% relative percentage difference (RPD [%])<br>Prescribed by the laboratories |
| Representativeness            | Field – Trip blank (laboratory prepared)<br>Laboratory – Method blank                                       | < laboratory limit of reporting (LOR)<br>Prescribed by the laboratories         |
| Completeness                  | Completion (%)                                                                                              | -                                                                               |

## 7. REMEDIATION TECHNOLOGY

### 7.1 Regulatory Overview

The policy framework for the NEPC (2013) *National Environmental Protection (Assessment of Site Contamination)* s6(16) indicates that the preferred hierarchy for site remediation options and/or management is:

- On-site treatment of the contamination so that it is destroyed or the associated risk is reduced to an acceptable level; and
- Off-site treatment of excavated soil, so that the contamination is destroyed or the associated risk is reduced to an acceptable level, after which soil is returned to the site; or, if the above are not practicable:
- Consolidation and isolation of the soil on-site by containment with a properly designed barrier; and
- Removal of contaminated material to an approved site or facility, followed, where necessary, by replacement with appropriate material; or
- Where the assessment indicates remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy.

When deciding which option to choose, the sustainability (environmental, economic and social) of each option should be considered, in terms of achieving an appropriate balance between the benefits and effects of undertaking the option.

Other considerations to mitigate groundwater contamination measures, as outlined by the EPA (2007) *Guidelines for the Assessment and Management of Groundwater Contamination*, include:

- Notifying of the affected property (under the CLM Act 1997) and the downgradient receptors;
- Containment of the contamination plume;
- Active or passive clean-up of contaminated groundwater (this may include the concept of clean-up to the extent practicable (CUTEP)), which may include ongoing monitoring of groundwater and/or contingency plans and management plans to mitigate risks; and
- Legislative control through restricting groundwater use in and down-gradient of the contaminant plume.

For this site, a number of remediation options were reviewed to examine the suitability of each method, the surrounding properties, geological and hydrogeological limitations and the following considerations:

- Development requirements (residential, with limited access to soils and landscaped areas);
- Prioritisation of works in areas of most concern;
- Ability of remedial method to treat contamination with respect to material and infrastructure limitations;
- Remedial timetable;

- Defensible method to ensure the site is remediated to appropriate levels / validation criteria; and
- Regulatory compliance.

## 7.2 Remediation Technologies Review

A number of soil remediation options were reviewed to examine the suitability of each method, with due regard for the surrounding land uses, as well as the geological and hydrogeological limitations.

Each of the available remediation technologies are summarised in terms of their suitability in **Table 7-1**.

**Table 7-1 Remedial Technology Review - Soils**

| Remediation Methodology | Description                                                                                                                                                                                                                                                                                         | Advantages                                                                                                                                                                                                                                                           | Disadvantages                                                                                                                                                                                                        | Suitability                                                                                                                                                                                                                                                                                                                |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No Action               | <p>'No Action' can be considered if:</p> <ul style="list-style-type: none"> <li>There is no measurable contamination;</li> <li>Contaminant concentrations are below assessment guidelines;</li> <li>Contaminants are not mobile; or</li> <li>Exposure to contaminated soils is unlikely.</li> </ul> | <p>No remediation costs</p> <p>Creates minimal disturbance to the site</p> <p>Retains material on-site</p>                                                                                                                                                           | <p>Not applicable to the kind of contamination encountered at the site.</p> <p>Would pose limitations on land use options.</p> <p>May require an Environmental Management Plan and ongoing monitoring.</p>           | <p>Not Suitable – As the key objective of the remedial strategy is to make the site suitable for mixed residential / commercial use without the need for ongoing monitoring.</p>                                                                                                                                           |
| On-site bioremediation  | <p>Excavated soils are thoroughly broken down and aerated, mixed with microorganisms and nutrients, stockpiled and aerated in above ground enclosures.</p>                                                                                                                                          | <p>Cost effective if soils are utilised on-site.</p> <p>Lower disposal costs.</p> <p>Limited requirement to import fill material to site.</p> <p>Retains material on-site.</p>                                                                                       | <p>Significant area of site required to land farm material.</p> <p>Undefined remediation timeframe.</p> <p>Potential for odour problems.</p> <p>Not suitable for metals or asbestos contamination.</p>               | <p>Not suitable – May be utilised for hydrocarbon impacted soils, however significant areas to complete this onsite may not be available.</p>                                                                                                                                                                              |
| In-situ treatment       | <p><i>In-situ</i> treatment of impacted soils within the smear zone and saturated zone using <i>in-situ</i> treatment methods such as soil vapour extraction, injection of oxidising agents etc.</p>                                                                                                | <p>Creates minimal disturbance to the site (no excavation).</p> <p>Cost effective for large scale site remediation of light to mid-weight petroleum hydrocarbons.</p> <p>Potential to simultaneously remediate dissolved phase hydrocarbons in site groundwater.</p> | <p>Not applicable to the kind of contamination encountered at the site.</p> <p>Expensive establishment costs.</p> <p>Potential for odour problems.</p> <p>Requires detailed design, pilot trials and management.</p> | <p>Not suitable – This method is designed for widespread hydrocarbon impacted soils. Since the present dataset does not provide evidence of any hydrocarbon contamination; this is not considered to be an economically viable option. Additionally, soils will be required to be excavated for basement construction.</p> |

| Remediation Methodology          | Description                                                                                                                                         | Advantages                                                                                                                                                                                                                                            | Disadvantages                                                                                                                                                                                                                                                                                                                                   | Suitability                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Consolidation and/or capping     | Risk minimisation approach where impacted soils are managed on-site by capping the ground surface with a clean, impermeable layer of fill material. | Effectively removes risk to human health by eliminating exposure pathways.                                                                                                                                                                            | Importance of capping design and materials utilised in the construction of capping layer.<br>Would pose limitations on land use options.<br>Typically requires an Environmental Management Plan and ongoing monitoring.                                                                                                                         | Not suitable – An environmental management plan (EMP) with ongoing monitoring would be required, due to the retention of contaminated materials on the site. This is in opposition to the key objective of the remedial strategy - to make the site suitable without the need for ongoing monitoring.                                                                                                        |
| Excavation and off-site disposal | Excavate impacted materials. Transport directly to a licensed landfill facility. Reinstatement site with imported clean fill material.              | Fast – impacted material removed immediately, significantly reducing potential for impact to groundwater. No storage or treatment problems. Reduced vapour/odour issues as impacted materials removed from site. Minimal design and management costs. | Transfer of waste to another location (licensed waste facility).<br>High costs associated with the disposal of waste soils and importation of clean backfill).<br>Requires waste classification prior to disposal, keeping of thorough waste records, waste tracking and reporting.<br>Sustainability issues related with disposal to landfill. | Suitable – For meeting the key project objective to make the site suitable for mixed residential / commercial use without the need for ongoing monitoring.<br>This will remove impacted fill, which would have to be removed from site for offsite disposal.<br>Additionally, fill materials will need to be disposed of for the basement excavation, regardless of whether contamination is present or not. |
| Natural attenuation              | Allowing the contaminants to biodegrade naturally following removal of the contamination source.                                                    | No remedial excavation of site. Retains materials on site. Sustainable, cost effective remediation method.                                                                                                                                            | Slow process.<br>Potential for contamination to further impact on the groundwater aquifer and nearby environmental receptors.<br>Typically requires an Environmental Management Plan and ongoing monitoring.                                                                                                                                    | Not Suitable – This approach is primarily suited to addressing groundwater contamination, which at the time of this report has not been identified. If groundwater contamination is identified, this remediation technology will be reassessed.                                                                                                                                                              |



## 7.3 Preferred Remediation Option

Based on the available remedial technologies, the proposed site development (mixed residential/commercial with associated three level basement car parking), the potential risks to human health and the environment, as well as the relative cost effectiveness of feasible remedial techniques, the preferred remedial option for the site is:

- Removal of USTs/UPSS and associated infrastructure; followed by
- Offsite disposal to licensed waste facilities of all surplus and impacted fill and natural soils up to a maximum depth of 10m BGL (11.00 mAH). This coincides with the proposed depth of the proposed three level basement carpark. Excavation of bedrock would be undertaken where necessary. All wastes shall be transported to appropriate, EPA-licensed facilities, after formal classification. All excavated (remediation) areas (e.g. tank pits) shall be validated by base and wall, soil sampling; and
- Site reinstatement with validated, imported (or recovered) excavated natural materials (where required).

## 7.4 Site Preparation, Licences & Approvals

### 7.4.1 Consent Requirements

In accordance with *SEPP 55 - Remediation of Land*, the category of the remediation works defines whether consent is required prior to the commencement of the works. Under *SEPP 55*, works where there is the potential for significant environmental impact are classed as *Category 1* and require development consent. *Category 2* works pose a low potential for environmental impact and do not therefore require prior consent. The determination for the subject site is outlined in **Table 6-4**.

**Table 7-2 Remediation Works Category Determination**

| Significant Environment Impact                                                                       | Yes/No | Category |
|------------------------------------------------------------------------------------------------------|--------|----------|
| Designated Development or State Significant Development                                              | No     | 2        |
| Critical or threatened species habitat                                                               | No     | 2        |
| Have significant impact on threatened species, populations, ecological communities or their habitats | No     | 2        |
| In area identified environmental significance such as scenic areas, wetlands (see list*)             | No     | 2        |
| Comply with a policy made under the contaminated land planning guidelines by the council.            | Yes    | 2        |
| Is work ancillary to designated development                                                          | Yes    | 2        |

**Notes:** \* Environmental significance list -coastal protection, conservation or heritage conservation, habitat area, habitat protection area, habitat or wildlife corridor, environment protection, escarpment, escarpment protection or escarpment preservation, floodway, littoral rainforest, nature reserve, scenic area or scenic protection, or wetland.

Based on the above assessment, the remediation works for the site are considered as Category 2 and will not require development consent. Category 2 works do however require notification to the consent authority; therefore, Council should be notified 30 days before commencement of the works. The 30-day limit does not prevent Council intervention after that time for a breach of the *EPA Act 1997* or non-compliance with *SEPP 55*. The notification also serves as the basis for updating Council records on properties in the local government area and must:

- Be in writing;
- Provide contact details for the notice;
- Briefly describe the remediation work;
- Show why the work is considered Category 2 remediation work;
- Specify the property description and street address on which the remediation work is to be carried out;
- Provide a location map; and
- Provide estimates for commencement and completion dates of the work.

Provision of this RAP, as well as an indication of commencement and completion dates of the works in writing, is usually sufficient to meet the requirements of this notification.

#### **7.4.2 Development Consent & Control Plans**

All works should be in accordance with Liverpool Council DCPs and any development consent issued by Council for the development.

#### **7.4.3 Other Licence Requirements**

The appointed site contractor should prepare an appropriate Construction Environmental Management Plan (CEMP), health and safety plans and other plans required by the Council DA and DCPs. Where asbestos removal is required, the contractor must be appropriately licensed to perform such works.

## 8. REMEDIATION WORKS

Site characterisations revealed the presence of UPSS and associated infrastructure which were unsuitable for the proposed residential site use. The quality of soil remaining onsite following remediation requires further assessment to ascertain site suitability. The remedial tasks required were:

- Removal of contaminant sources which will not be present at the end use of site, including site structures, UPSS and associated infrastructure and sediment and waste oil USTs, followed by validation; and
- Address existing data gaps by guiding future works and ensuring that all future samples collected are representative of end use condition proposed for the site.

Hazardous building materials were not assessed and may exist within onsite structures. A hazardous materials assessment will be required prior to demolition as required by the WHS Regulation (2017), to ensure no adverse effects to surrounding receptors.

### 8.1 Remediation Sequence

The sequence of work for the remediation is summarised in **Table 8-1**, with an indicative timeframe of each task. Further details provided in the sections below.

**Table 8-1 Summary of Remediation Sequence**

| Task                             | Timeframe   | Description of Work                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Preliminaries/Site Establishment | Weeks 1-3   | Development of pre-work plans (construction environmental management plan, occupational health and safety plan, hazardous material survey) approvals and permits to commence work.<br>Establishment of site pollution monitoring and control measures to be maintained for the duration of the works as outlined in the I management plans.               |
| Demolition of Structures         | Weeks 3-5   | Identify, remove, disconnect, and manage existing services as required. Ensure all USTs are empty and engage liquid waste management should any aqueous material remain.<br>Complete a hazardous materials inspection prior to the demolition of buildings and structures.                                                                                |
| Decommissioning of UPSS / UST    | Weeks 5-6   | The service station and canopy, mechanical workshop, underground storage tanks and associated fuel infrastructure will be removed from the site. If contaminated soil is identified near infrastructure during these works, the material will be chased out and stockpiled for classification and offsite disposal until no further impacts are observed. |
| Additional Assessment            | Weeks 6-7   | The additional investigation includes an assessment of soil quality underneath existing building footprints and underneath current infrastructure (USTs, UPSS, mechanical hoists).                                                                                                                                                                        |
| Waste Management                 | Weeks 7-8   | Provide a method for management of waste classification of soil for offsite disposal                                                                                                                                                                                                                                                                      |
| Excavation                       | Weeks 8-10  | Excavation of the site for basements and foundations                                                                                                                                                                                                                                                                                                      |
| Validation                       | Weeks 10-12 | Implement the sampling and validation plan to detailing the remedial works and provide conclusions on site suitability.                                                                                                                                                                                                                                   |

### 8.1.1 Preliminaries/Site Establishment

Notice should be given to Council at least 30 days prior to the commencement of remediation works. A list of all required work permits will be obtained from Council and arrangements are to be made to obtain the necessary approvals from the relevant regulatory authorities.

The site itself will be prepared in accordance with the requirements of the Site Management Plan outlined in **Section 9**. The site developer would also need to prepare and implement a Construction Environmental Management Plan (CEMP) and Site Work Health and Safety (WHS) Plan prior to any site works. Establishment of environmental controls, site access, security, fencing, warning signage and preparation of a Health Safety and Environment Plan is required prior to works commencement. A project plan should also be developed to outline engineering design for excavation support (if required), water treatment requirements and design, staging of excavation works, stockpiling, waste stabilisation, waste material loading, traffic management and waste tracking.

As part of the site preparation phase and preliminary tasks a remediation workshop should be conducted with the appointed contractor(s) to further develop any remedial measures, excavation plans and environmental management requirements.

Also prior to commencing work the site contractor is to complete a staging or project plan that outlines the basic stages of the remediation works. The staging plan should include, but not be limited to:

- Staging of the decommissioning and removal of tanks and associated equipment;
- Staging of areas to be excavated;
- Areas designated for waste segregation, screening and storage (stockpiling), amenities, soil and groundwater treatment (if required);
- Truck movements to allow loading to mitigate impacts to surrounding land users and council infrastructure; and
- Proposed environmental mitigation measures.

### 8.1.2 Demolition of Site Structures, Site Walkover

Removal of onsite structures is required to access the underlying UPSS and chase impacts (if required). Prior to demolition, a hazardous material survey is required in accordance with WHS regulations (2017) and removal of the material in accordance with the plan will be completed by a suitably qualified hazardous materials removal contractor. Building demolition should be in accordance with Australian standard (AS)2601 – 2001 and wherever possible, waste should be segregated into metal, wood and brick / concrete.

Prior to, and following the removal of hardstand pavement, a site walkover is to be conducted by a qualified and experienced environmental scientist/engineer to assess for any visual signs of contamination, supplementary asbestos contamination in surface fill soils, and buried building waste (potentially containing asbestos) that may have been buried beneath the existing pavements.

Should unexpected finds be discovered during the course of the site remediation program, then the procedures described under the Contingency Management (**Section 8.2**) and Unexpected Finds Protocol (**Appendix C**) are to be implemented until the site remediation goals have been achieved and the site is deemed suitable for the intended land use.

### 8.1.3 Decommissioning of UST/UPSS

All infrastructure will require removal to achieve access to underlying strata and a staged approach limiting the size and extent of excavations will minimise any aesthetic impact to

adjacent properties. Records obtained from a dangerous goods search and highlighted in previous investigations (DP, 2005) indicate the following infrastructure remaining at the site:

- 3 x UST containing petroleum (44,000L, 12,000L, and 10,000L), fuel and vent lines, and two bowser islands in the central to western portion of the service station;
- 1 x UST (44,000 L) containing petroleum, fuel and vent lines (if present) in the eastern portion of the service station;
- 1 x waste oil UST (1,892L), eastern portion of service station next to mechanical workshop; and
- Hydraulic hoists in mechanical workshop.

The site plan (**Appendix A, Figure A.2**) shows the inferred locations of these features within the site. Procedures for removal of the building, tanks and canopy are:

- Complete a hazardous materials assessment on site buildings and hazardous material removal contractors will effectively remove and dispose of any offending material;
- Complete building demolition in accordance with AS2601-2001. Where possible, segregate waste streams;
- A licensed liquid waste transporter will be required to remove any liquid contents from the UST and UPSS infrastructure and dispose of any liquid waste to a suitably licensed liquid waste facility;
- The contractor must provide appropriate documentation for the waste disposal; and
- Tanks should then be excavated, rendered safe and transported off-site by a licensed contractor for destruction/disposal.

The contractor must provide formalised certification of the tank destruction/disposal for the works described below, supervision will be required by a suitably qualified environmental professional to reduce volatilisation risks and ensure the remedial works are completed in accordance with the DECC (2010) *UPSS Technical Note: Decommissioning, abandonment and removal of UPSS* and AS4976-2008 (R2016) *The removal and disposal of underground petroleum storage systems*.

- Above ground infrastructure including mechanical hoists, oil water separators, bowzers, fuel lines and vent lines will be removed followed by decommissioning and excavation of the USTs. Once the USTs have been decommissioned and excavated, they will be rendered safe for transport by a licensed contractor for offsite destruction/disposal. The contractor must provide formalised certification of the tank destruction/disposal;
- Any soil showing signs of contamination will be screened using a photoionization device (PID) and all soil producing readings greater than 30 parts per million (ppm) will be excavated, segregated and stockpiled awaiting further classification. Any impacted soil will be 'chased' and removed until no further signs of contamination are present and PID readings are <30 ppm;
- Excavated soil is to be managed in accordance with the methodologies presented in **Section 6.3** and remain segregated from clean soil awaiting waste classification. Should significant volumes of material or contaminant concentrations be identified other remediation options outlined in **Table 6-3** may be suited, and samples will be collected to evaluate the suitability of this method. Once classified, material will be transported to an off-site waste disposal facility to minimise dust and odour issues;

- All excavation works should be undertaken by licensed contractors experienced in the decommissioning and removal of fuel infrastructure, demolition of buildings and the remediation of hydrocarbon contaminated soils; and
- Validation of excavations will be required as described in **Section 8.1.6** of this report.

No soil impacts were detected during the DSI, however potentially impacted soils may be detected below the tanks, bowzers and other fuel infrastructure and should be segregated during excavation works and classified in accordance with the Waste Guidelines (EPA, 2014) before being removed from site to an approved disposal facility.

#### 8.1.4 Additional Assessment

##### Soil

During, or prior to, the remediation works to be undertaken at the site, further soil characterisation should be undertaken to address identified data gaps. Additional works shall include test pits and/or boreholes in areas underneath building footprints which previously could not be accessed. Sampling will extend to natural soils or to at least 2 mBGL, whichever comes first. Analysis shall target fill and natural soil at each location, to be analysed for contaminants of concern presented in **Section 5.2**. If further contamination of potential risk is identified, further remedial works may be required and will be addressed via an addendum to this RAP.

Potential sampling locations have been identified in **Figure A.3** and may be replaced by validation sampling should impacts extend to beyond tank pit locations.

##### Groundwater

An additional round of groundwater monitoring may be required should gross contamination be identified underneath USTs and/or their associated infrastructure. Previous investigations did not identify significantly impacted groundwater resulting from UPSS and off-site migration of groundwater contamination is therefore unlikely.

Effort should be made to preserve existing on-site groundwater monitoring wells during site demolition, however, additional well installation may be required should soil impacts indicate impact to groundwater is likely to have occurred in areas where wells were previously not installed. Should further contamination of potential risk be identified, further remedial works may be required and will be addressed via an addendum to this RAP.

If additional monitoring is required, it will be completed using MicroPurge techniques to analyse for HM, TRH, BTEX, PAH, VOC (including c.VOC), phenols, and hardness (as CaCO<sub>2</sub>). Field measurements of pH, ORP, electrical conductivity, dissolved oxygen and TDS will also be collected.

#### 8.1.5 Waste Management

- 1 Prior to any soil material being removed from the site, a formal waste classification certificate shall be completed, in accordance with the EPA (2014a) *Waste Classification Guidelines*.
- 2 Soil samples designated for waste classification will be collected at a rate of one sample per 25m<sup>3</sup> (minimum of three per stockpile), up to 250m<sup>3</sup>. For soil exceeding 250m<sup>3</sup> but less than 2,500m<sup>3</sup>, a minimum of 10 samples is required and 95% UCL statistical calculations of contaminant concentrations may be compared to the criteria. Samples are to be analysed for HMs, TRH, BTEX, PAH, organochlorine / organophosphorus pesticides (OCP / OPP), polychlorinated biphenyls (PCBs) and asbestos.
- 3 Any asbestos identified will be treated as an unexpected find and the unexpected finds protocol (**Appendix C**) will be engaged.

- 4 Results of analysis will be compared to the waste classification criteria set out in the NSW EPA (2014) *Waste Classification Guidelines* and a classification certificate will be provided, to enable offsite disposal.
- 5 Ensuring that the waste fill/soil streams are kept separate, material will be loaded, transported and disposed offsite to waste landfill facilities that are appropriately licensed to receive the materials corresponding to the documented waste classifications.
- 6 In accordance with the *POEO (Waste) Regulation 2014*, waste movements will be tracked and disposal receipts (dockets) will be maintained by the site manager and copies provided to EI for final reporting purposes.

#### 8.1.6 Validation

All fill and contaminated soil needing to be remediated must be removed from the site and a shallow validation assessment of freshly exposed natural soil must be completed prior to the commencement of bulk excavation works. Natural soil is potentially classifiable as virgin excavated natural material (VENM), however, surface inspection and validation by near surface sampling and analysis is required.

All findings and investigation methodologies of the additional investigations will be reported within a validation report. Should significant contamination be identified, further works will be addressed via an addendum to this RAP. These works may include soil vapour sampling, indoor air quality assessment, active groundwater remediation and bioremediation of significantly contaminated soil.

Once site validation has been achieved, the findings of the work will be reported and conclusions on suitability of the land will be evaluated.

## 8.2 Remedial Contingencies

At this stage it is anticipated that the proposed remedial technologies should be effective in dealing with the contamination present, however, remedial contingencies may be required should scenarios detailed in **Table 7-3** arise.

**Table 8-2 Remedial Contingencies**

| Scenario                                                                                                                           | Remedial Contingencies/Actions Required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Highly contaminated soils / sludges not identified during previous investigations are encountered, particularly at site boundaries | Work to be suspended until the Environmental Project Manager can assess impacted materials and associated risks. The leachability of contaminants to be assessed, before disposal options are considered. Follow the unexpected finds protocol in <b>Appendix C</b> of this RAP.                                                                                                                                                                                                                                                                                                                                                                                      |
| Underground tanks (i.e. USTs that have not been previously identified) are encountered at the site                                 | Should unexpected USTs be identified at the site, a GPR survey and visual inspection may be conducted by a certified and experienced service locator, to confirm the presence / absence of any further UPSS and any unknown subsurface infrastructure.<br><br>Systems to be removed and the excavations appropriately validated and backfilled by an experienced contractor. Tank removal works to be reported by an appropriate environmental consultant, in accordance with EPA (2014b) <i>Technical Note: Investigation of Service Station Sites</i> and Australian Standard AS4976 (2008). Follow the unexpected finds protocol in <b>Appendix C</b> of this RAP. |
| Asbestos wastes are encountered                                                                                                    | Work to be suspended and asbestos removed by a suitably qualified contractor, in accordance with SafeWork NSW regulations. Follow the unexpected finds protocol in <b>Appendix C</b> of this RAP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |



|                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Residual soil impacts remain on-site post removal of USTs                                                                                     | Assess potential vapour hazard and delineate plume.<br>Should significant soil vapour contamination be identified, consider soil vapour monitoring program and the implementation of a vapour membrane barrier system within the final development design.                                                                                                                                                                                                                            |
| Contaminated groundwater (including LNAPL or DNAPL) encountered                                                                               | Review groundwater conditions on site (if required) and determine need for further investigation/remediation and/or longer-term management plan.<br>Any dewatering may require approval under the <i>Water Management Act 2000</i> .<br>Remedial options may include natural attenuation, extraction, bioremediation, PSH recovery using active pumping (including hydraulic control), installation of a groundwater permeability barrier, <i>in situ</i> oxidation or stabilisation. |
| Contaminated groundwater plume is identified and is migrating off-site, or there are increases in concentration due to increased infiltration | Review contaminant increase and analytes. Review active remediation alternatives (if necessary). Ensure down-gradient monitoring is undertaken. Carry out fate and transport modelling and assess the need for further action.                                                                                                                                                                                                                                                        |
| Contamination is identified near heritage items or significant trees (if identified)                                                          | Stop work. Review contaminant concentrations and risks to heritage items / flora. Assess human health and environmental risks if contamination remains in place. Review natural attenuation options.                                                                                                                                                                                                                                                                                  |
| Changes in proposed basement excavation depth                                                                                                 | Review remediation works for the site.                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Changes in proposed land use(s) at the site                                                                                                   | Review remediation works for the site.                                                                                                                                                                                                                                                                                                                                                                                                                                                |



## 9. SITE MANAGEMENT

### 9.1 Roles and Responsibilities

Roles and responsibilities of key personnel required to make up the remedial management team, to support the completion of remedial works are provided in **Table 9-1**, and details of people responsible should be kept up to date throughout the remedial works.

**Table 9-1 Remedial Management Team**

| Team Member                       | Organisation                    | Responsibilities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Property Owner                    | Il Capitano Investments Pty Ltd | <ul style="list-style-type: none"> <li>Overall responsibility of site and key liaison for council.</li> <li>Appoint site contractors and all other members of the remediation.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Project Manager – Site Operations | Il Capitano Investments Pty Ltd | <ul style="list-style-type: none"> <li>Overall site management and day to day decision maker.</li> <li>Key communicator between site and owner.</li> <li>Ensure relevant control plans are developed and implemented and appoints required staff to the roles required</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Remediation Contractor            | TBA                             | <ul style="list-style-type: none"> <li>Site preparation including the implementation of environmental controls required by the site management plans and relevant legislation.</li> <li>Completion of remedial tasks in accordance with the methods of the RAP and relevant legislation.</li> <li>Ensure consultant is informed of remedial schedules and is employed for key components, such as waste classification and validation.</li> <li>Effectiveness of mitigating measures required for remedial activities.</li> <li>Ensure appropriate handling of all material and correct offsite disposal of waste under appropriate documentation. Copies of all waste documents are required by the environmental consultant for inclusion to the site validation report.</li> <li>Reporting any environmental issues, complaints or unexpected finds to the project manager and environmental consultant.</li> </ul> |
| Environmental Consultant          | EI Australia                    | <ul style="list-style-type: none"> <li>Development of the remediation objectives and strategy.</li> <li>Support all other members of RMT in understanding the requirements of the RAP and the potential risks posed should measures not be implemented.</li> <li>Supervision of key remediation components, collection of all environmental samples and provide guidance to ensure the remediation is understood and effective.</li> <li>Complete site validation tasks and detail the works in a validation report concluding on site suitability.</li> </ul>                                                                                                                                                                                                                                                                                                                                                         |
| Local Authority                   | Liverpool City Council          | <ul style="list-style-type: none"> <li>Responsible for the granting of all consents and ensuring the recommendations of environmental reports are implemented.</li> <li>Regulator of consent conditions</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

| Team Member                                                                   | Organisation | Responsibilities                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Qualified Independent Consultant – NSW Accredited Site Auditor (if appointed) | TBA          | <ul style="list-style-type: none"> <li>Reviews RAP and Site Validation Report, along with preparation of Site Audit Statement and Site Audit Report.</li> <li>Review of updates, revisions or amendments as applicable.</li> <li>Provide interim audit advice of consultant or client submissions.</li> <li>Conduct inspections during remedial works.</li> </ul> |

## 9.2 Materials Handling and Management

**Table 9-2** summarises the measures that should be implemented in respect of materials handling during remedial and bulk excavation works at site.

**Table 9-2 Materials Handling and Management Requirements**

| Item                             | Description/ Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Excavation Contractors           | Excavation should be completed by a suitably qualified contractor to ensure staff are aware of the sites environmental and health and safety requirements, and that all adverse effects are mitigated, isolated or reduced.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Stockpiling of Materials         | <p>All stockpiles will be maintained as follows:</p> <ul style="list-style-type: none"> <li>Present on sealed surfaces such as concrete, asphalt, or high-density polyethylene. If placed on bare soil, the land will be over-excavated to ensure adequate removal of all impacted material and located in areas of the site which do not pose environmental risk (e.g. sheltered areas).</li> <li>No greater than 2m in height, be appropriately battered and sediment measures surrounding each base to manage stormwater runoff. Material will either be covered or kept moist to prevent dust blow.</li> <li>Stockpiles will be in approved locations of the site, selected to mitigate environmental impacts while facilitating material handling requirements. Any contaminated material will only be stockpiled in non-remediated areas of the site or at locations that do not pose any risk (e.g. sheltered areas).</li> </ul>                                                                                                                                     |
| Transport of Material (off-site) | <p>Material shall be transported via a clearly distinguished haul route defined within construction management plans. All haulage routes for trucks transporting soil, materials, equipment and machinery shall comply with all road traffic rules.</p> <p>Implementation of sediment measures to reduce the mechanical movement of soil onto public roadways or vehicle wheels is required, such as wheel washing/cleaning facilities placed at each site entry/exit. Any residue from the cleaning facility will be collected and deemed contaminated unless proven otherwise.</p> <p>Spoil material will require offsite disposal. Trucks transporting soils from the site are to be covered with tarpaulins (or equivalent). All deliveries of soil, materials equipment or machinery should be completed during the approved hours of remediation and exit the site in a forward direction.</p> <p>Removal of waste materials from the site shall only be carried out by a recognised contractor holding the appropriate EPA NSW licenses, consents and approvals.</p> |

| Item                      | Description/ Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Material Tracking         | <p>Materials excavated from the site should be tracked from the time of their excavation until their disposal ("cradle to grave"). Tracking of the excavated materials should be completed by recording the following:</p> <ul style="list-style-type: none"> <li>▪ Origin of material;</li> <li>▪ Material type;</li> <li>▪ Approximate volume; and</li> <li>▪ Truck registration number.</li> </ul> <p>Disposal locations will be determined by the remediation contractor and the receiving facility, weighbridge dockets and waste certification information should be provided to the environmental consultant for validation reporting.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Importation of Material   | <p>Landscaping soil, or material imported as fill for planter boxes, is to be certified as either Virgin Excavated Natural Material (VENM) or Excavated Natural Material (ENM) criteria by the supplying contractor. Copies of certification are to be provided to site management and the Environmental Consultant. Any material outside of these classifications are to be sampled for characterisation, which can be achieved by:</p> <ol style="list-style-type: none"> <li>1. Collecting one soil sample per 100m<sup>3</sup> of imported soil in deposited areas.</li> <li>2. Analysis of samples for contaminants of concern, including TRH, BTEX, PAH, HMs, PFAS, OCP / OPP, PCBs and asbestos (at least).</li> <li>3. Acceptance will be achieved once all contaminant concentrations are reported to be below the site criteria.</li> <li>4. Analysis results should be presented to the Environmental Consultant for inclusion in the site validation report.</li> </ol> <p>Visual inspection of the imported material to confirm consistency is recommended, and should excavated materials be identified as potentially contaminated or unsuitable for reuse, the following procedure should be undertaken:</p> <ul style="list-style-type: none"> <li>▪ Visually assess if the contaminated material can be isolated from other material, and stockpile separately if possible.</li> <li>▪ Stockpile in contaminated material area and sample in accordance with waste classification procedure detailed in <b>Section 10.1</b>.</li> <li>▪ Subject to classification, 'clean' materials may then be reused as filling material on-site or disposed of at an appropriate receiving facility.</li> </ul> |
| Excessive rainfall        | <p>Ensure sediment and surface water controls are operating correctly. If possible, divert surface water away from active work areas or excavations.</p> <p>Stockpiles should be covered to minimise run off.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Excessive dust            | <p>Use water spray to suppress the dust or stop site activities generating the dust until it settles.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Excessive noise           | <p>Identify the source, and isolate if possible. Modify the actions of the source or erect temporary noise barriers if required.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Excessive odours/vapours. | <p>Stage works to minimise odours/vapours. If excessive organic odours/vapours are being generated, stop works and monitor ambient air across the site, and at site boundaries with a PID.</p> <p>Implement control measures including respirators for on-site workers, use of odour suppressants, wetting down of excavated material</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## 10. VALIDATION SAMPLING & ANALYSIS

### QUALITY PLAN

The remediation of the site will be deemed acceptable based on the achievement of the following validation objectives:

- **Remedial Excavations** – Validation of all remedial excavation areas where infrastructure or contaminated soils have been removed will involve sampling and analysis to ensure that contaminant concentrations are below the soil remediation criteria (**Section 5.2**). The sampling frequency will be in accordance with the NEPM (2013) and EPA (1995) sampling design guidelines, along with the EPA (2014) *Technical Note* regarding the investigation of service station sites. All tests shall be performed by NATA-accredited environmental analytical laboratories;
- **Backfill Materials** – Should backfilling be required, validation of imported fill materials used for the backfilling of remediated areas would be required to verify their suitability for the proposed land use.

#### 10.1 Validation Sampling Methodology

The recommended validation methodology for sample collection is presented in **Table 10-1**.

**Table 10-1 Validation Sampling Design**

| Remediation Area                             | Sampling Density                                                                                                                                                                                                       | Potential Contaminants                                                                                                        |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| UST/UPSS pits and associated infrastructure. | Wall – 1 sampling location per wall or per 5 m length of excavation wall.<br>Base – 1 sample per 25 m <sup>2</sup> .<br>Fuel lines – 1 sample per 10 m                                                                 | Lead, total recoverable hydrocarbons (TRH), monocyclic aromatic hydrocarbons (BTEX), polycyclic aromatic hydrocarbons (PAHs). |
| Final natural ground surface                 | 10 m grid (surface)                                                                                                                                                                                                    | HM, TRH, BTEX, PAHs, OC/OP pesticides, PCBs, asbestos.                                                                        |
| Stockpiled material                          | Any soil material stockpiled on-site for off-site disposal, will be sampled for waste classification purposes at a rate of one per 25 m <sup>3</sup> (with a minimum of 3 samples for stockpiles <25 m <sup>3</sup> ). | HM, TRH, BTEX, PAHs, OC/OP pesticides, PCBs, asbestos.                                                                        |
| Imported fill materials                      | If material is required to be sourced from off-site to reinstate excavations, it should be certified suitable for the intended use by sampling at a rate of one per 100 m <sup>3</sup> .                               | HM, TRH, BTEX, PAHs, OC/OP pesticides, PCBs, asbestos.                                                                        |

Excavation of contaminated material shall continue until the analytical results indicate compliance with the criteria (i.e. either the concentrations of all contaminants are within the criteria, or the 95% UCL average contaminant concentration for each detected parameter is within the criteria). If results indicate that additional excavation is necessary, the excavation shall be extended until the excavation surface samples indicate that the location is validated as meeting the criteria for each respective contaminant.

Soil sampling and handling of the collected samples will be as described in **Table 10-2**.

**Table 10-2 Validation Sample Collection and Handling Procedures**

| Action                                     | Description of Required Works                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sample Collection                          | <p>Soil validation sampling will be directly from the exposed surface of excavation, or from the material brought to the surface by the backhoe/excavator bucket. Validation samples will be field screened for the presence of volatiles on site using a PID. Analysis of the head-space within a snap lock bag filled with sampled soil (at an approximate 1:5 soil to air ratio) and left to equilibrate. A small hole is made through the snap lock seal and the probe of the PID inserted. The VOC reading for the sample is recorded and provides information as a guide to vapour impacts to site.</p> <p>If groundwater sampling is required, it will be completed using micropurge techniques within the top 0.5 m of the water column. Water level gauging, well purging and field testing of water quality parameters will be collected and data shall be recorded to comply with routine chain of custody requirements.</p>                                                                                                                                         |
| Sampling, Handling, Transport and Tracking | <ul style="list-style-type: none"> <li>▪ The use of stainless-steel or disposable (one time use) sampling equipment;</li> <li>▪ All sampling equipment (including hand tools or excavator parts) to be washed in a 3% solution of phosphate free detergent (Decon 90), followed by a rinse with potable water prior to each sample being collected;</li> <li>▪ Direct transfer of the sample into new glass jars, bottles, vials or plastic bags is preferred, with each plastic bag individually sealed to eliminate cross contamination during transportation to the laboratory;</li> <li>▪ Label sample containers with individual and unique identification including Project No., Sample No., depth, date and time of sampling;</li> <li>▪ Place sample containers into a chilled, enclosed and secure container for transport to the laboratory; and</li> <li>▪ Provide chain of custody documentation to ensure that sample tracking and custody can be cross-checked at any point in the transfer of samples from the field to the environmental laboratory.</li> </ul> |
| Sample Containers & Holding Times          | <ul style="list-style-type: none"> <li>▪ Metals - 250g glass jar / refrigeration 4°C / 6 months (maximum holding period);</li> <li>▪ TRH/BTEX - 250g glass jar / refrigeration 4°C / 14 days (maximum holding period);</li> <li>▪ PAH - 250g glass jar / refrigeration 4°C / 14 days (maximum holding period); and</li> <li>▪ Asbestos – up to a 10 Litre resealable plastic (polyethylene) bag / no refrigeration / indefinite holding time.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| Action                                           | Description of Required Works                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Field QA/QC                                      | <p>Quality assurance (QA) and quality control (QC) procedures will be adopted throughout the field sampling program to ensure sampling precision and accuracy, which will be assessed through the analysis of 10% field duplicate/replicate samples.</p> <p>Appropriate sampling procedures will be undertaken to prevent cross contamination, in accordance with EI's Standard Operating Procedures Manual. This will ensure:</p> <ul style="list-style-type: none"> <li>Standard operating procedures are followed;</li> <li>Site safety plans are developed prior to works commencement;</li> <li>Split duplicate field samples are collected and analysed;</li> <li>Samples are stored under secure, temperature-controlled conditions;</li> <li>Chain of custody documentation is employed for the handling, transport and delivery of samples to the contracted environmental laboratory; and</li> <li>Contaminated soil, fill or groundwater originating from the site area is disposed in accordance with relevant regulatory guidelines.</li> </ul> <p>In total, field QA/QC will include one in 10 samples to be tested as intra-laboratory, blind field duplicates, one in 20 samples to be tested as inter-laboratory, split field duplicates, as well as one VOC trip blank, one VOC spike sample and one equipment wash blank sample per sample batch.</p> |
| Laboratory Quality Assurance and Quality Control | <p>The contract laboratory will conduct in-house QA/QC procedures involving the routine analysis of:</p> <ul style="list-style-type: none"> <li>Reagent blanks;</li> <li>Spike recoveries;</li> <li>Laboratory duplicates;</li> <li>Calibration standards and blanks;</li> <li>QC statistical data; and</li> <li>Control standards and recovery plots.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Achievement of Data Quality Objectives           | <p>Data quality objectives (<b>Table 6-1</b>) are to be achieved and an assessment of the overall data quality should be presented in the final validation report, in accordance with the EPA (2017) <i>Guidelines for the NSW Site Auditor Scheme</i>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## 10.2 Validation Reporting

All fieldwork, chemical analyses, discussions, conclusions and recommendations will be documented in a validation report for the site. The validation report will be prepared in general accordance with requirements of the EPA (2011) *Guidelines for Consultants Reporting on Contaminated Sites* and EPA (2017) *Guidelines for the NSW Site Auditor Scheme* and will confirm that the site has been remediated to a suitable standard for the proposed development.

The Site Validation Report will be submitted for Council and/or Site Auditor review at the completion of the remediation works program.

## 11. CONCLUSIONS

Based on the information available from previous investigations at the site, this RAP has been prepared to inform the remediation works at 86-94 Castlereagh and 77-79 Bathurst Street, Liverpool NSW. Demolition of site structures and removal of underground storage tanks, waste oil separators, vehicle hoists and underground petroleum storage systems is required to remediate the site to a condition suitable for the proposed mixed residential/commercial use.

The preferred approach involves excavation and offsite disposal of impacted fill materials. Groundwater beneath the site has been found to be suitable for the proposed use, however, may require additional assessment once remediation is complete. It is envisaged that the remediation works will be implemented in stages, as follows:

- Demolition of structures
- Decommissioning of UPSS/UST
- Additional Assessment
- Waste Management
- Excavation
- Validation

Material management procedures are provided to characterise soil for offsite disposal, and contingency measures are provided for any unexpected finds. In summary, EI considers that the site can be made suitable for the proposed mixed commercial and residential land use through the implementation of the works described in this RAP.

## 12. STATEMENT OF LIMITATIONS

This report has been prepared for the exclusive use of Il Capitano Investments Pty Ltd (the client), being the only intended beneficiary of our work. The scope of the RAP is limited to that agreed with our client.

No other party should rely on the document without the prior written consent of EI, and EI undertakes no duty, or accepts any responsibility or liability, to any third party who purports to rely upon this document without EI's approval.

EI has used a degree of care and skill ordinarily exercised in similar investigations by reputable members of the environmental industry in Australia as at the date of this document. No other warranty, expressed or implied, is made or intended. Each section of this report must be read in conjunction with the whole of this report, including its appendices and attachments.

The methods and conclusions presented in this report are based on a limited investigation of conditions, with specific sampling locations chosen to be as representative as possible under the given circumstances.

EI's professional opinions are reasonable and based on its professional judgment, experience, training and results from analytical data. EI may also have relied upon information provided by the Client and other third parties to prepare this document, some of which may not have been verified by EI.

EI's professional opinions contained in this document are subject to modification if additional information is obtained through further investigation, observations, or validation testing and analysis during remedial activities. In some cases, further testing and analysis may be required, which may result in a further report with different conclusions.



## REFERENCES

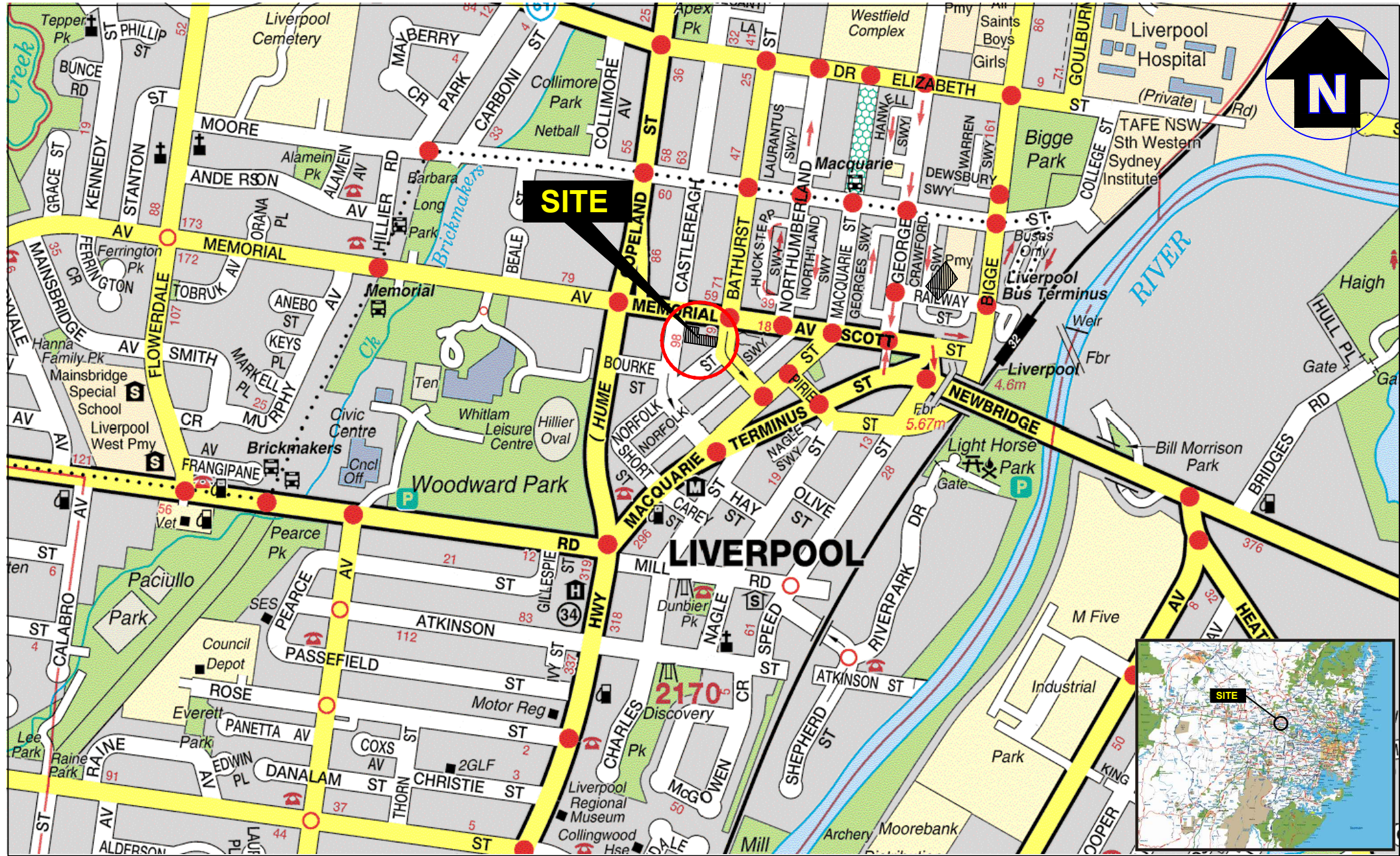
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## Appendix A - Figures

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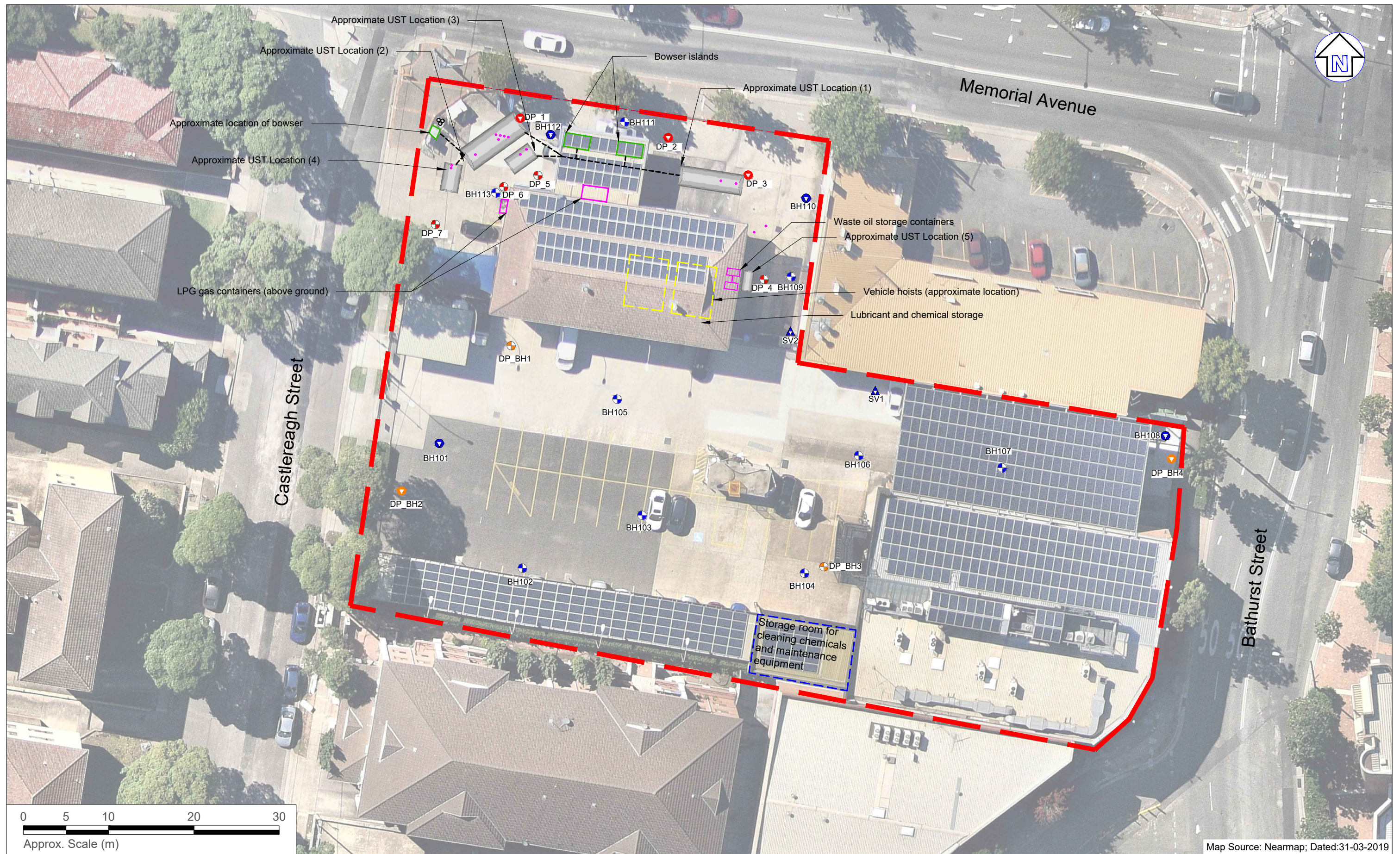




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| Drawn:    | L.C.         |
| Approved: | J.H.         |
| Date:     | 04-07-19     |
| Scale:    | Not To Scale |

**Il Capitano Investments Pty Ltd**  
 Remediation Action Plan  
 86-94 Castlereagh and 77-79 Bathurst Streets,  
 Liverpool NSW  
 Site Locality Plan





#### LEGEND

- Approximate site boundary
- Approximate groundwater well location
- Approximate borehole location
- Approximate soil vapour sampling location
- Approximate location of storage container
- Approximate UST locations
- (1) 44 KL UST - ULP (2) 44 KL UST - E10 ULP (3) 10 KL UST - PULP (4) 12 KL UST - Diesel Fuel (5) 1,892L UST - Waste oil
- Approximate borehole location (DP, 2013)
- Approximate monitoring well location (DP, 2013)
- Approximate borehole location (DP, 2018)
- Approximate borehole location (DP, 2018)
- Approximate location of bowser
- Approximate location of tank vents as seen during site inspection
- Approximate location of UST dip and fill points
- Approximate (inferred) location of UST infrastructure



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| Drawn:    | L.C.     |
| Approved: | J.H.     |
| Date:     | 04-07-19 |

**Il Capitano Investments Pty Ltd**  
Remediation Action Plan  
86-94 Castlereagh and 77-79 Bathurst Streets,  
Liverpool NSW  
Sampling Location Plan

Figure:  
**A.2**  
Project:  
E24273 E06\_Rev0



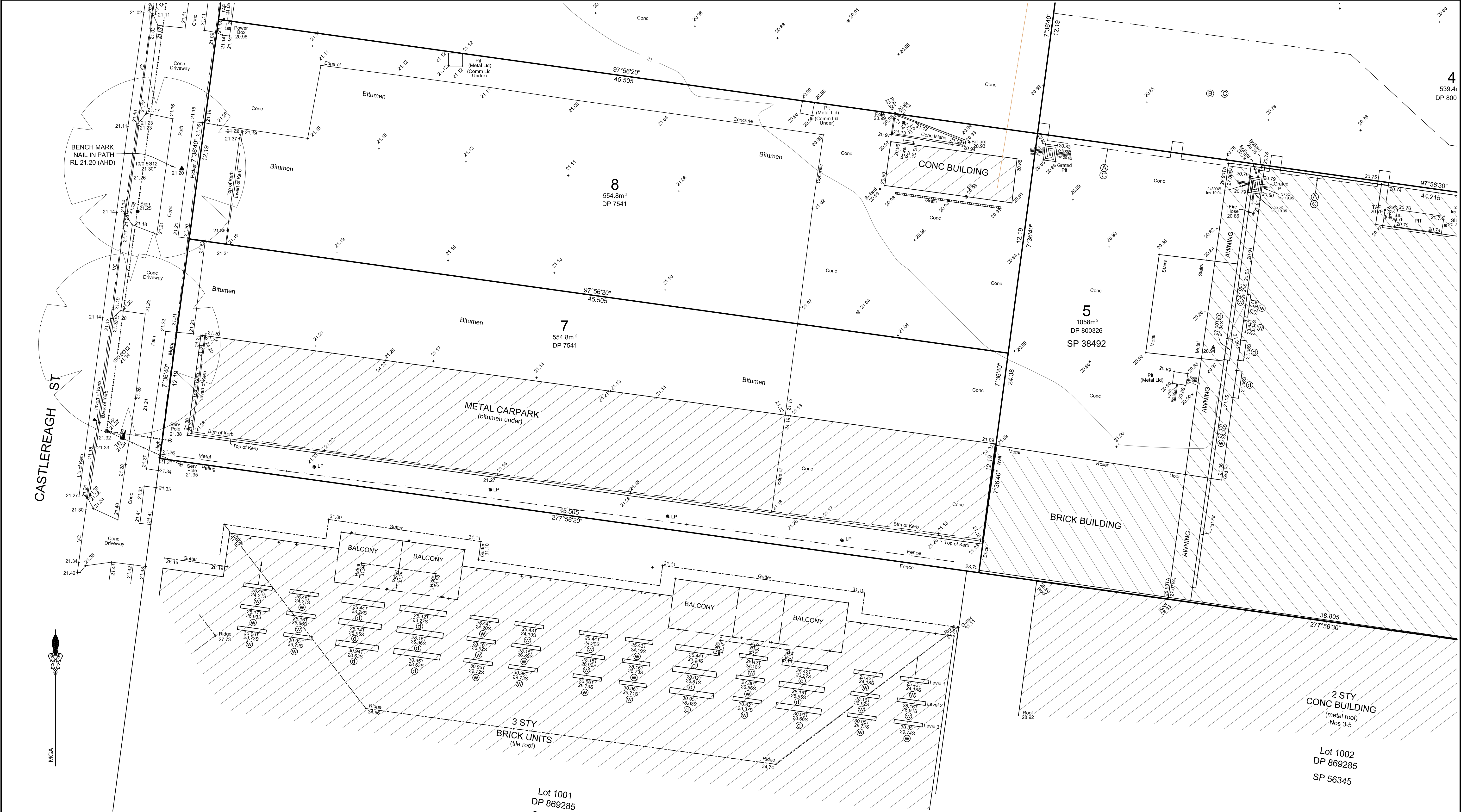
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## Appendix B – Proposed Development Plans

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NOTES 1 :-  
1) Bearings, Area & Distances are by Title and / or deeds only.  
2) No boundary investigation has been carried out.  
3) Relationship of improvements to boundaries is diagrammatic only. Where offsets are critical they should be confirmed by further survey.  
4) Contours shown depict the topography. Except at spot levels shown they do not necessarily represent the exact level at any particular point.  
5) Services shown hereon have been determined from visual evidence only. Prior to any design, demolition, excavation or construction on site the relevant authority should be contacted to establish detailed location and depth.  
6) These notes form an integral part of this plan & should not be separated.  
7) Location of sewer subject to confirmation from Sydney Water or relevant authority.  
8) The Symbols are not to scale and are indicative only.  
9) Tree dimensions are approximate only, shown as 15(spread) 0.5 (trunk) & 12(height).  
10) Australian Height Datum (AHD) was established from SSM 154648, RL 20.656, Source : SCIMS Survey Mark Report.  
11) The Sewer Location is interpreted from Hydra & is Approximate Only.

Denotes Door  
Denotes Window  
RLs with suffix "T" are at top of window/door  
RLs with suffix "S" are at sill of window/door  
RLs with suffix "TA" are at top of awning  
RLs with suffix "BA" are at sill of awning  
RLs with suffix "TB" are at top of balcony

KEY  
ET : Electric Turret  
LP : Light Pole  
PP : Power Pole  
GM : Gas Meter  
HYD : Hydrant  
SV : Stop Valve  
WC : Water Connection  
WM : Water Meter  
SWP : Stormwater Pit  
DP : Downpipe  
LIN : Lintel  
SIL : Sewer Insp. Lid  
SMH : Sewer Manhole  
SMS : Sewer Maint. Shaft  
TEL : Telecom Pit  
PC : Pram Crossing  
VC : Vehicle Crossing  
DH&W: Drillhole & Wing

RIGHT OF WAY 2.5 WIDE & 0.31 WIDE VIDE DP 800326  
RIGHT OF WAY 2.5 WIDE & VARIABLE WIDTH VIDE DP 800326  
HEIGHT RESTRICTION ZONE LIMITED IN HEIGHT TO 23.7 (AHD)  
DIPPING POINTS AND ACCESS HOLES  
AC ~ DENOTES AIRCON UNIT  
MN ~ DENOTES MONITORING WELL

|                                                                                                                                                                                                                                                                                  |  |                                                                                                                                                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                                                                                                                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                              |  |  |                                                                                                |  |
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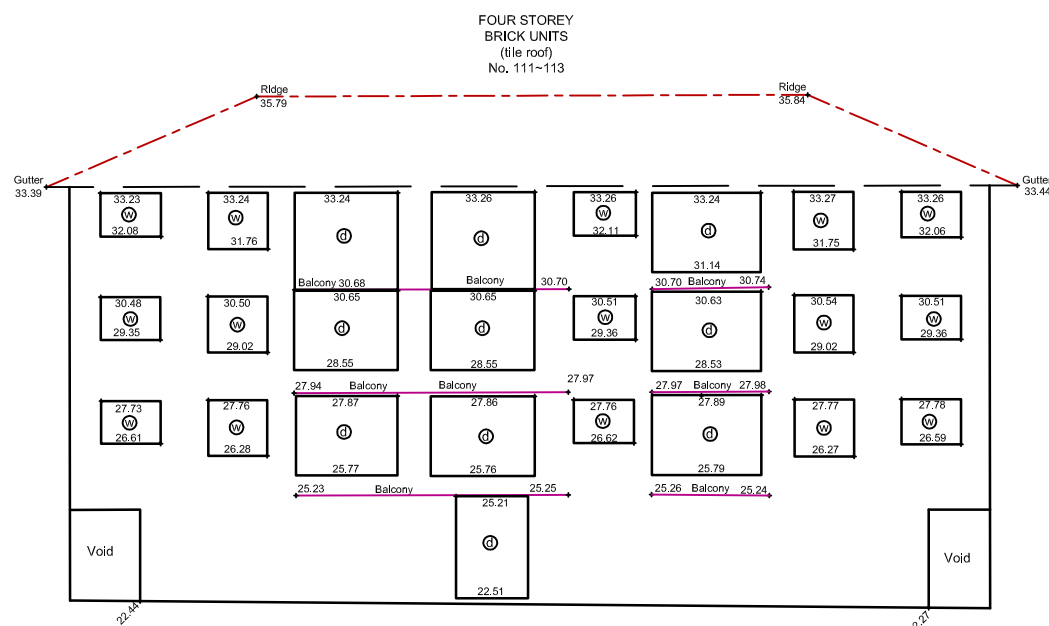
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| CLIENT: SAM SOFI                                                                                                                               |          |
| PROJECT: CONTOUR & DETAIL SURVEY FOR LOTS 7 to 11 IN DP 7541, LOT 4 IN DP 800326 & SP 38492, 86-94 CASTLEREAGH & 77-79 BATHURTS STs, LIVERPOOL |          |
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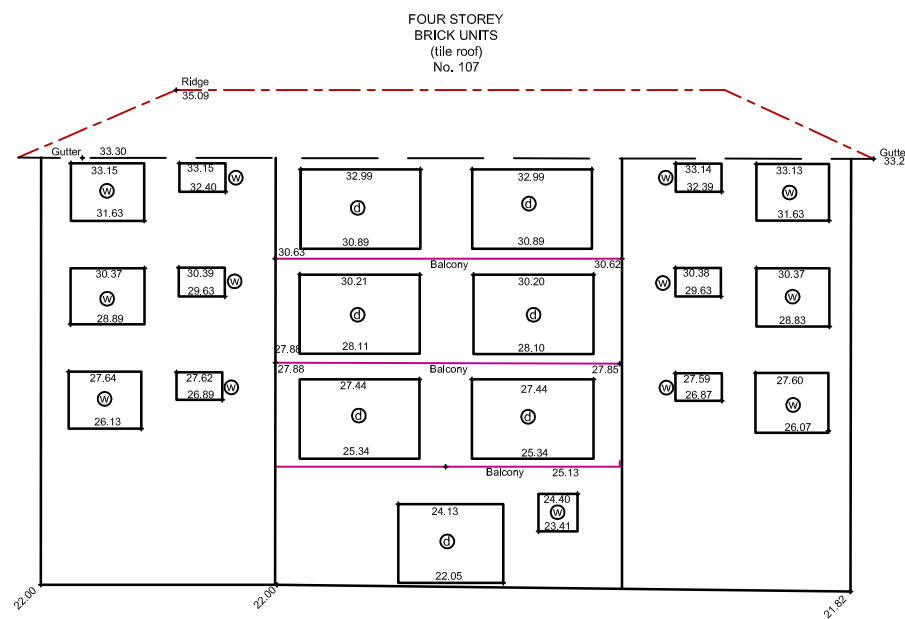
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⊙ Denotes Door  
⊗ Denotes Window

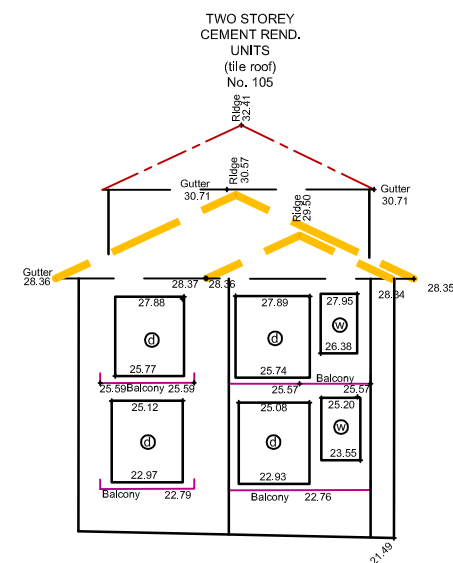


STREETSCAPE - EXISTING

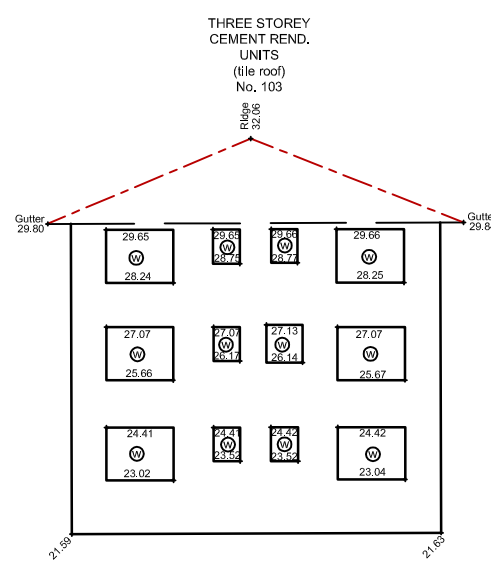


HOUSES

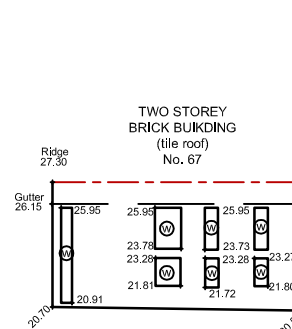
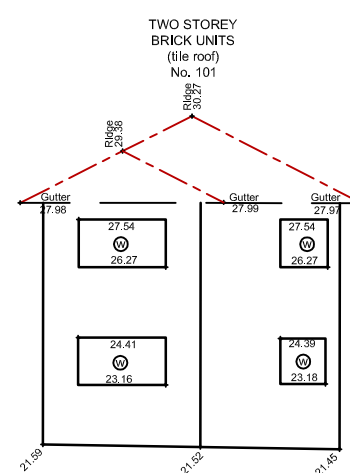
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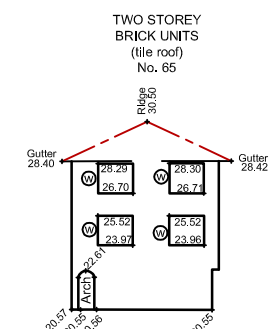
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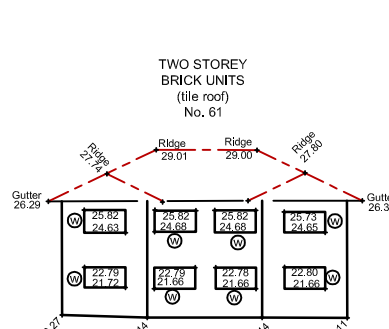
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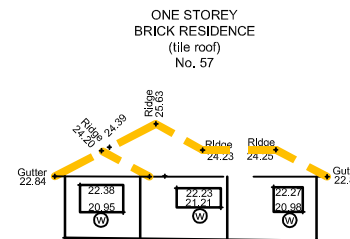
STREETSCAPE - EXISTING



HOUSES

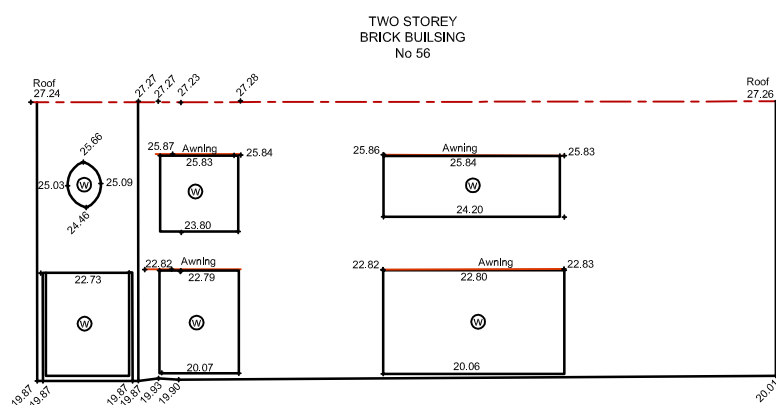


ALONG



MEMORIAL

AVENUE

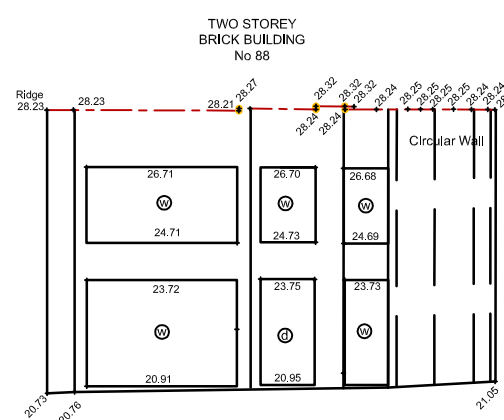


STREETSCAPE - EXISTING

HOUSES

ALONG

BATHURST



STREET

NOT TO SCALE (see model)

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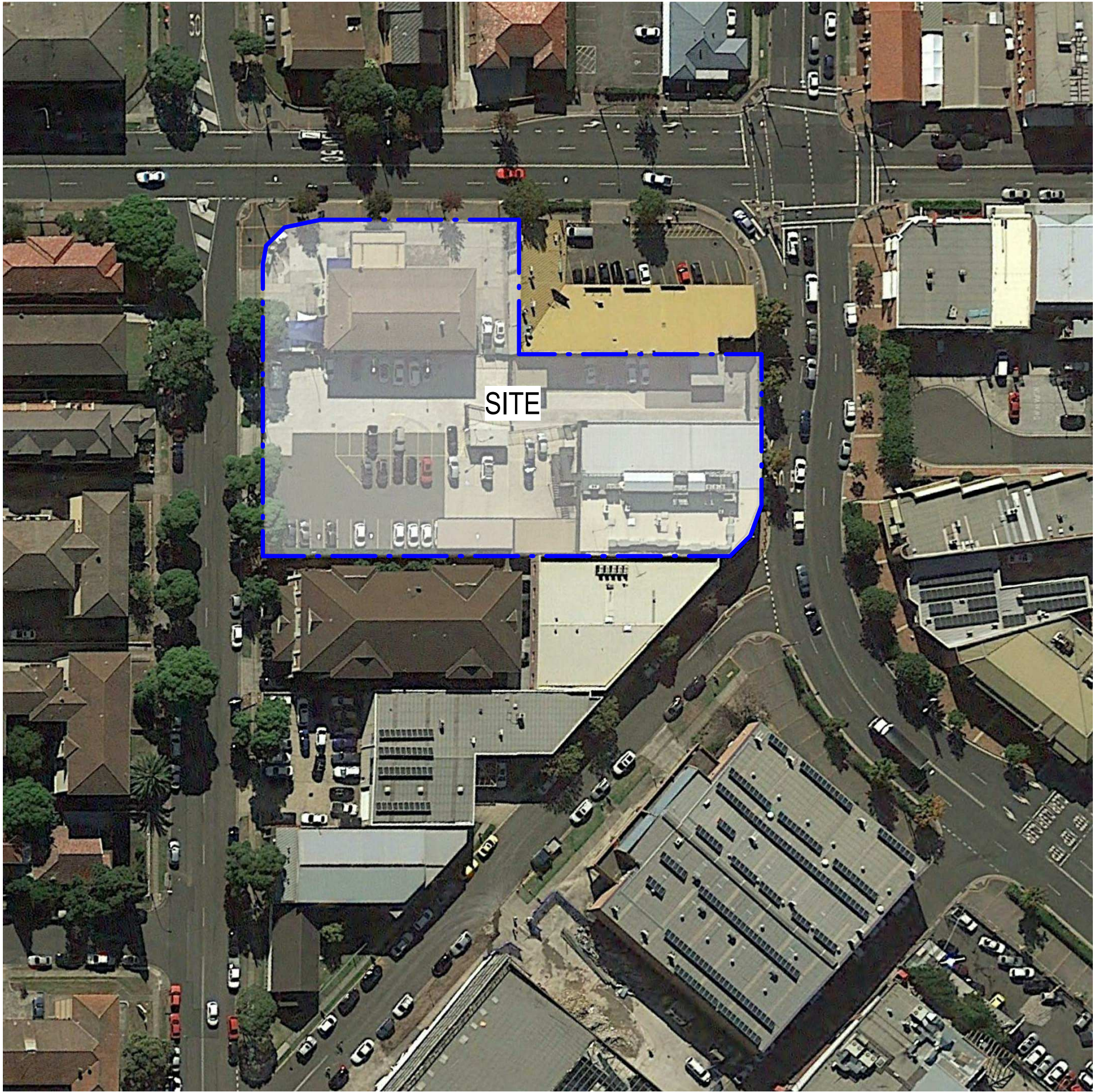
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| REVISION   |             |                           |
|------------|-------------|---------------------------|
|            |             |                           |
|            |             |                           |
|            |             |                           |
|            |             |                           |
| DATE:      | REF:        | DESIGN:                   |
| 15/04/2018 | S2863/77762 | DRAWN: JMK<br>CHECKED: BT |

|                                                                                                                                                                          |          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| CLIENT: SAM SOFI                                                                                                                                                         |          |
| PROJECT: <b>STREETSCAPE ALONG EXISTING HOUSES FOR LOTS 7 to 11 IN DP 7541, LOT 4 IN DP 800326 &amp; SP 38492, 86-94 CASTLEREAGH &amp; 77-79 BATHURSTS STs, LIVERPOOL</b> |          |
| LGA: LIVERPOOL                                                                                                                                                           |          |
| COMP REF: J:\77762\....\77762_C                                                                                                                                          | SIZE: A1 |

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|-------------------------|
| ISSUE: A                |
| SHEET: 4<br>OF 4 SHEETS |
| DATUM: AHD<br>SCALE:    |

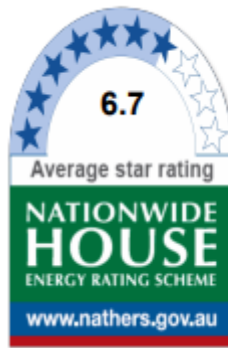




# DEVELOPMENT APPLICATION

## MEMORIAL AVENUE, LIVERPOOL

77-79 Bathurst Street &  
86-94 Castlereagh Street  
LIVERPOOL NSW 2170



Certificate no.: 0003578100  
Assessor Name: Hamidul islam  
Accreditation no.: 100982  
Certificate date: 31 January 2019  
Dwelling Address: 86 Memorial Avenue  
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### DRAWING LIST

| Sheet  | Sheet Name                             | Revision |
|--------|----------------------------------------|----------|
| DA0002 | PERSPECTIVE - AERIAL VIEW FROM NORTH   | 1        |
| DA0003 | PERSPECTIVE - BATHURST STREET VIEW     | 1        |
| DA0004 | PERSPECTIVE - MEMORIAL AVENUE VIEW     | 1        |
| DA0005 | PERSPECTIVE - PODIUM VIEW              | 1        |
| DA1001 | SITE PLAN                              | 1        |
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| DA1003 | EAST & WEST STREETSCAPES               | 1        |
| DA2000 | GROUND FLOOR PLAN                      | 1        |
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| DA2003 | BASEMENT 3                             | 1        |
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| DA2101 | LEVEL 1 PLAN                           | 1        |
| DA2102 | LEVEL 2 PLAN                           | 1        |
| DA2103 | LEVEL 3 PLAN                           | 1        |
| DA2104 | LEVEL 4 PLAN                           | 1        |
| DA2105 | LEVEL 5 PLAN                           | 1        |
| DA2106 | LEVEL 6 PLAN                           | 1        |
| DA2107 | LEVEL 7 PLAN                           | 1        |
| DA2108 | LEVEL 8 PLAN                           | 1        |
| DA2109 | LEVELS 9-17 PLAN                       | 1        |
| DA2118 | LEVELS 18-23 PLAN                      | 1        |
| DA2124 | ROOF PLAN                              | 1        |
| DA3101 | NORTH ELEVATION - MEMORIAL AVENUE      | 1        |
| DA3102 | WEST ELEVATION - CASTLEREAGH STREET    | 1        |
| DA3103 | SOUTH ELEVATION                        | 1        |
| DA3104 | EAST ELEVATION - BATHURST STREET       | 1        |
| DA3105 | EAST AND WEST COURTYARD ELEVATIONS     | 1        |
| DA3112 | MATERIAL ELEVATION                     | 1        |
| DA3201 | SECTION 1                              | 1        |
| DA3202 | SECTION 2                              | 1        |
| DA3203 | SECTION 3 AND 4                        | 1        |
| DA3204 | RESTAURANT SECTION                     | 1        |
| DA4101 | WALL SECTION 1                         | 1        |
| DA4102 | WALL SECTION 2                         | 1        |
| DA4501 | ADAPTABLE APARTMENT PLANS              | 1        |
| DA8501 | SHADOW DIAGRAMS - 21 JUNE              | 1        |
| DA8511 | SUN EYE VIEWS 1                        | 1        |
| DA8512 | SUN EYE VIEWS 2                        | 1        |
| DA8513 | SUN EYE VIEWS 3                        | 1        |
| DA8520 | PROJECT SUMMARY                        | 1        |
| DA8521 | 96-98 CASTLEREAGH ST SOLAR ACCESS      | 1        |
| DA8531 | ADG SOLAR ACCESS ANALYSIS              | 1        |
| DA8532 | ADG NATURAL VENTILATION ANALYSIS       | 1        |
| DA8533 | ADG OPEN SPACE/DEEP SOIL               | 1        |
| DA8534 | GFA DIAGRAMS                           | 1        |

| APARTMENT MIX- TOWERS COMBINED |       |            |
|--------------------------------|-------|------------|
| Occupancy                      | Count | Percentage |

|       |     |       |
|-------|-----|-------|
| 1B+1B | 18  | 6.8%  |
| 1B+1S | 10  | 3.8%  |
| 2B+2B | 206 | 78.0% |
| 3B+2B | 30  | 11.4% |

Grand total: 264

| APARTMENT MIX- EAST TOWER |       |
|---------------------------|-------|
| Occupancy                 | Count |

|       |    |
|-------|----|
| 1B+1B | 18 |
| 1B+1S | 8  |
| 2B+2B | 53 |
| 3B+2B | 13 |

Grand total: 92

| APARTMENT MIX- WEST TOWER |       |
|---------------------------|-------|
| Occupancy                 | Count |

|       |     |
|-------|-----|
| 1B+1S | 2   |
| 2B+2B | 153 |
| 3B+2B | 17  |

Grand total: 172

| PARKING SCHEDULE |            |       |
|------------------|------------|-------|
| Level            | Allocation | Count |

|            |             |    |
|------------|-------------|----|
| BASEMENT 1 | Residential | 51 |
| BASEMENT 1 | Retail      | 12 |
| BASEMENT 1 | Visitor     | 27 |

BASEMENT 1: 90

|            |             |     |
|------------|-------------|-----|
| BASEMENT 2 | Residential | 112 |
|------------|-------------|-----|

BASEMENT 2: 112

|            |             |     |
|------------|-------------|-----|
| BASEMENT 3 | Residential | 116 |
|------------|-------------|-----|

BASEMENT 3: 116

Grand total: 318

| AREA SCHEDULE - GFA |      |
|---------------------|------|
| Level               | Area |

|                  |                      |
|------------------|----------------------|
| APARTMENT - EAST |                      |
| GROUND LEVEL     | 49 m <sup>2</sup>    |
| LEVEL 1          | 751 m <sup>2</sup>   |
| LEVEL 2          | 818 m <sup>2</sup>   |
| LEVEL 3          | 819 m <sup>2</sup>   |
| LEVEL 4          | 527 m <sup>2</sup>   |
| LEVEL 5          | 527 m <sup>2</sup>   |
| LEVEL 6          | 527 m <sup>2</sup>   |
| LEVEL 7          | 527 m <sup>2</sup>   |
| LEVEL 8          | 346 m <sup>2</sup>   |
| LEVEL 9          | 346 m <sup>2</sup>   |
| LEVEL 10         | 346 m <sup>2</sup>   |
| LEVEL 11         | 346 m <sup>2</sup>   |
| LEVEL 12         | 346 m <sup>2</sup>   |
| LEVEL 13         | 346 m <sup>2</sup>   |
| LEVEL 14         | 346 m <sup>2</sup>   |
| LEVEL 15         | 346 m <sup>2</sup>   |
| LEVEL 16         | 346 m <sup>2</sup>   |
| LEVEL 17         | 346 m <sup>2</sup>   |
| APARTMENT - EAST | 8,001 m <sup>2</sup> |

|                  |                       |
|------------------|-----------------------|
| APARTMENT - WEST |                       |
| GROUND LEVEL     | 48 m <sup>2</sup>     |
| LEVEL 1          | 316 m <sup>2</sup>    |
| LEVEL 2          | 763 m <sup>2</sup>    |
| LEVEL 3          | 763 m <sup>2</sup>    |
| LEVEL 4          | 372 m <sup>2</sup>    |
| LEVEL 5          | 663 m <sup>2</sup>    |
| LEVEL 6          | 663 m <sup>2</sup>    |
| LEVEL 7          | 719 m <sup>2</sup>    |
| LEVEL 8          | 719 m <sup>2</sup>    |
| LEVEL 9          | 719 m <sup>2</sup>    |
| LEVEL 10         | 719 m <sup>2</sup>    |
| LEVEL 11         | 719 m <sup>2</sup>    |
| LEVEL 12         | 719 m <sup>2</sup>    |
| LEVEL 13         | 719 m <sup>2</sup>    |
| LEVEL 14         | 719 m <sup>2</sup>    |
| LEVEL 15         | 719 m <sup>2</sup>    |
| LEVEL 16         | 719 m <sup>2</sup>    |
| LEVEL 17         | 719 m <sup>2</sup>    |
| LEVEL 18         | 719 m <sup>2</sup>    |
| LEVEL 19         | 719 m <sup>2</sup>    |
| LEVEL 20         | 719 m <sup>2</sup>    |
| LEVEL 21         | 719 m <sup>2</sup>    |
| LEVEL 22         | 719 m <sup>2</sup>    |
| LEVEL 23         | 719 m <sup>2</sup>    |
| APARTMENT - WEST | 15,818 m <sup>2</sup> |

|              |                    |
|--------------|--------------------|
| COMMERCIAL   |                    |
| GROUND LEVEL | 111 m <sup>2</sup> |
| COMMERCIAL   | 111 m <sup>2</sup> |

|              |                    |
|--------------|--------------------|
| GARBAGE      |                    |
| GROUND LEVEL | 34 m <sup>2</sup>  |
| GROUND LEVEL | 154 m <sup>2</sup> |
| GROUND LEVEL | 26 m <sup>2</sup>  |
| GARBAGE      | 214 m <sup>2</sup> |

|              |                       |
|--------------|-----------------------|
| RETAIL       |                       |
| GROUND LEVEL | 402 m <sup>2</sup>    |
| GROUND LEVEL | 441 m <sup>2</sup>    |
| GROUND LEVEL | 562 m <sup>2</sup>    |
| LEVEL 1      | 447 m <sup>2</sup>    |
| RETAIL       | 1,853 m <sup>2</sup>  |
|              | 25,998 m <sup>2</sup> |

### Basix Building Fabric Requirements (Memorial Avenue)

| Element        | Material Type                                                                                                                                                                  | Detail                                                           |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| External walls | Concrete Block + R2.5 Insulation + PB                                                                                                                                          | Light colour                                                     |
| Internal walls | Plasterboard on studs                                                                                                                                                          | Intra-tenancy walls                                              |
|                | Hebel + Plasterboard                                                                                                                                                           | Inter-tenancy walls                                              |
| Windows        | Hebel + R1.0 Insulation + Plasterboard (to corridor/lift/stairwell)                                                                                                            |                                                                  |
|                | ALM-002-01 A Aluminium B SG Clear (window size as in drawings)                                                                                                                 | NFRC Glazing System values:<br>⇒ U ≤ 6.70 and SHGC = 0.70 (± 5%) |
|                | ALM-002-03 A Aluminium B SG High Solar Gain Low-E (window size as in drawings)<br><b>Modifying Units - Tower E:</b> 014, 024, 034, 173.<br><b>Tower W:</b> 231, 232, 233, 238. | NFRC Glazing System values:<br>⇒ U ≤ 5.40 and SHGC = 0.58 (± 5%) |
| Skylights      | ALM-002-03 A Aluminium B SG High Solar Gain Low-E (All window height 1.8 meter except balcony window)                                                                          | NFRC Glazing System values:<br>⇒ U ≤ 5.40 and SHGC = 0.58 (± 5%) |
|                | <b>Modifying Units-Tower E:</b> 015, 025, 035, 042, 044, 052, 054, 062, 064, 072, 074, 082, 092, 102, 112, 122, 132, 142, 152, 162, 172, 174.                                  |                                                                  |
| Floor          | Concrete slab<br>Concrete slab + R1.0 Insulation (to car park and outside air)                                                                                                 | Tile (kitchen, living & wet)<br>Carpet (bedrooms)                |
| Ceiling        | Plasterboard + R3.0 Insulation (Roof above)<br>Plasterboard + R2.0 Insulation (below balcony)                                                                                  | Light colour                                                     |
| Roof           | Concrete                                                                                                                                                                       |                                                                  |

| Revisions  | Description                 |
|------------|-----------------------------|
| No. Date   |                             |
| 1 22-02-19 | ISSUED FOR D.A. SUBMISSION. |

Ver App'd

Key

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Project  
MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
86-94 Castlereagh Street  
LIVERPOOL NSW 2170

Proj. No. 18005

Drawing Title  
COVER SHEET

Sheet Status  
NOT FOR CONSTRUCTION

Scale  
Drawing No.  
DA0000 1

Issue





|                                             |  |  |     |  |                                           |  |                                                                                                                                                                                 |  |                                                                                                                                           |  |                                                                                                         |  |       |  |                         |  |       |  |
|---------------------------------------------|--|--|-----|--|-------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------|--|-------|--|-------------------------|--|-------|--|
| Revisions<br>No. Date Description Ver App'd |  |  | Key |  | Client<br>Il Capitano Investments Pty Ltd |  | Architect<br><div>AJ+C<br/>ALLEN JACK+COTTIER</div> <div>79 Myrtle Street Chippendale NSW 2008 AUSTRALIA<br/>ph +61 2 9311 8222 fx +61 2 9311 8200<br/>ABN 53 003 782 250</div> |  | Project<br>MEMORIAL AVENUE, LIVERPOOL<br>77-79 Bathurst Street &<br>86-94 Castlereagh Street<br>LIVERPOOL NSW 2170<br><br>Proj. No. 18005 |  | Drawing Title<br>PERSPECTIVE -<br>AERIAL VIEW FROM<br>NORTH<br><br>Sheet Status<br>NOT FOR CONSTRUCTION |  | Scale |  | Drawing No.<br>DA0002 1 |  | Issue |  |
| 1 22-02-19 ISSUED FOR D.A. SUBMISSION.      |  |  |     |  |                                           |  |                                                                                                                                                                                 |  |                                                                                                                                           |  |                                                                                                         |  |       |  |                         |  |       |  |

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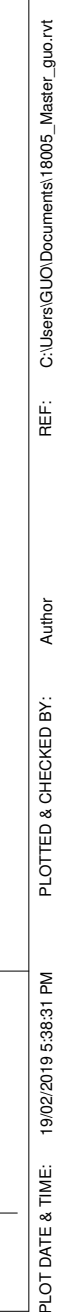
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| Revisions<br>No. Date Description Ver App'd |  |  | Key |  | Client<br>II Capitano Investments Pty Ltd |  | Architect<br><div>AJ+C<br/>ALLEN JACK+COTTIER</div> <div>79 Myrtle Street Chippendale NSW 2008 AUSTRALIA<br/>ph +61 2 9311 8222 fx +61 2 9311 8200<br/>ABN 53 003 782 250</div> |  | Project<br>MEMORIAL AVENUE, LIVERPOOL<br>77-79 Bathurst Street &<br>86-94 Castlereagh Street<br>LIVERPOOL NSW 2170<br><br>Proj. No. 18005 |  | Drawing Title<br>PERSPECTIVE -<br>BATHURST STREET<br>VIEW<br><br>Sheet Status<br>NOT FOR CONSTRUCTION |  | Scale | Drawing No.<br>DA0003 1 | Issue |
| 1 22-02-19 ISSUED FOR D.A. SUBMISSION.      |  |  |     |  |                                           |  |                                                                                                                                                                                 |  |                                                                                                                                           |  |                                                                                                       |  |       |                         |       |



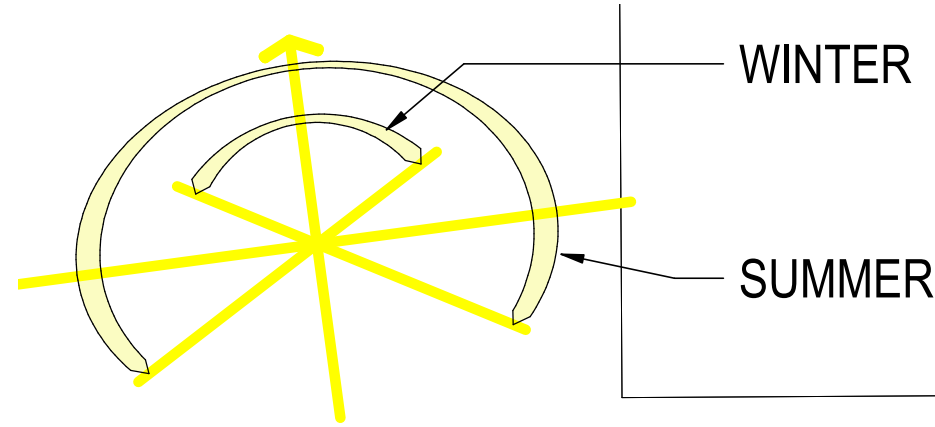


|     |          |                             | <div>Revisions</div> <table><tr><th>No.</th><th>Date</th><th>Description</th></tr><tr><td>1</td><td>22-02-19</td><td>ISSUED FOR D.A. SUBMISSION.</td></tr></table> | No. | Date | Description | 1 | 22-02-19                        | ISSUED FOR D.A. SUBMISSION. | Ver                                                                                                                                                                                | App'd                                                                                                   |                                          |  | Key |        | Client | Architect | Project | Drawing Title | Scale | Drawing No. | Issue |
|-----|----------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------|-------------|---|---------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------|--|-----|--------|--------|-----------|---------|---------------|-------|-------------|-------|
| No. | Date     | Description                 |                                                                                                                                                                    |     |      |             |   |                                 |                             |                                                                                                                                                                                    |                                                                                                         |                                          |  |     |        |        |           |         |               |       |             |       |
| 1   | 22-02-19 | ISSUED FOR D.A. SUBMISSION. |                                                                                                                                                                    |     |      |             |   |                                 |                             |                                                                                                                                                                                    |                                                                                                         |                                          |  |     |        |        |           |         |               |       |             |       |
|     |          |                             |                                                                                                                                                                    |     |      |             |   | II Capitano Investments Pty Ltd |                             | <div><div>AJ+C</div><div>ALLEN JACK+COTTIER</div><div>79 Myrtle Street Chippendale NSW 2008 AUSTRALIA<br/>ph +61 2 9311 8222 fx +61 2 9311 8200<br/>ABN 53 003 782 250</div></div> | MEMORIAL AVENUE, LIVERPOOL<br>77-79 Bathurst Street &<br>86-94 Castlereagh Street<br>LIVERPOOL NSW 2170 | PERSPECTIVE -<br>MEMORIAL AVENUE<br>VIEW |  |     | DA0004 | 1      |           |         |               |       |             |       |
|     |          |                             |                                                                                                                                                                    |     |      |             |   |                                 |                             |                                                                                                                                                                                    |                                                                                                         | Sheet Status<br>NOT FOR CONSTRUCTION     |  |     |        |        |           |         |               |       |             |       |

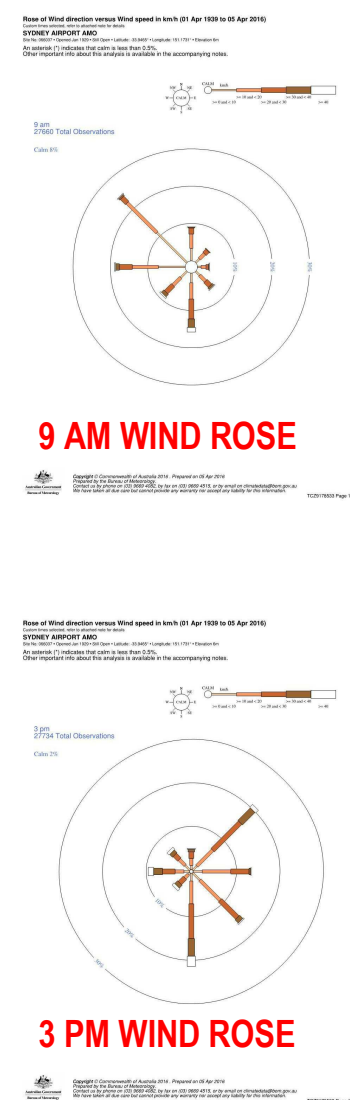






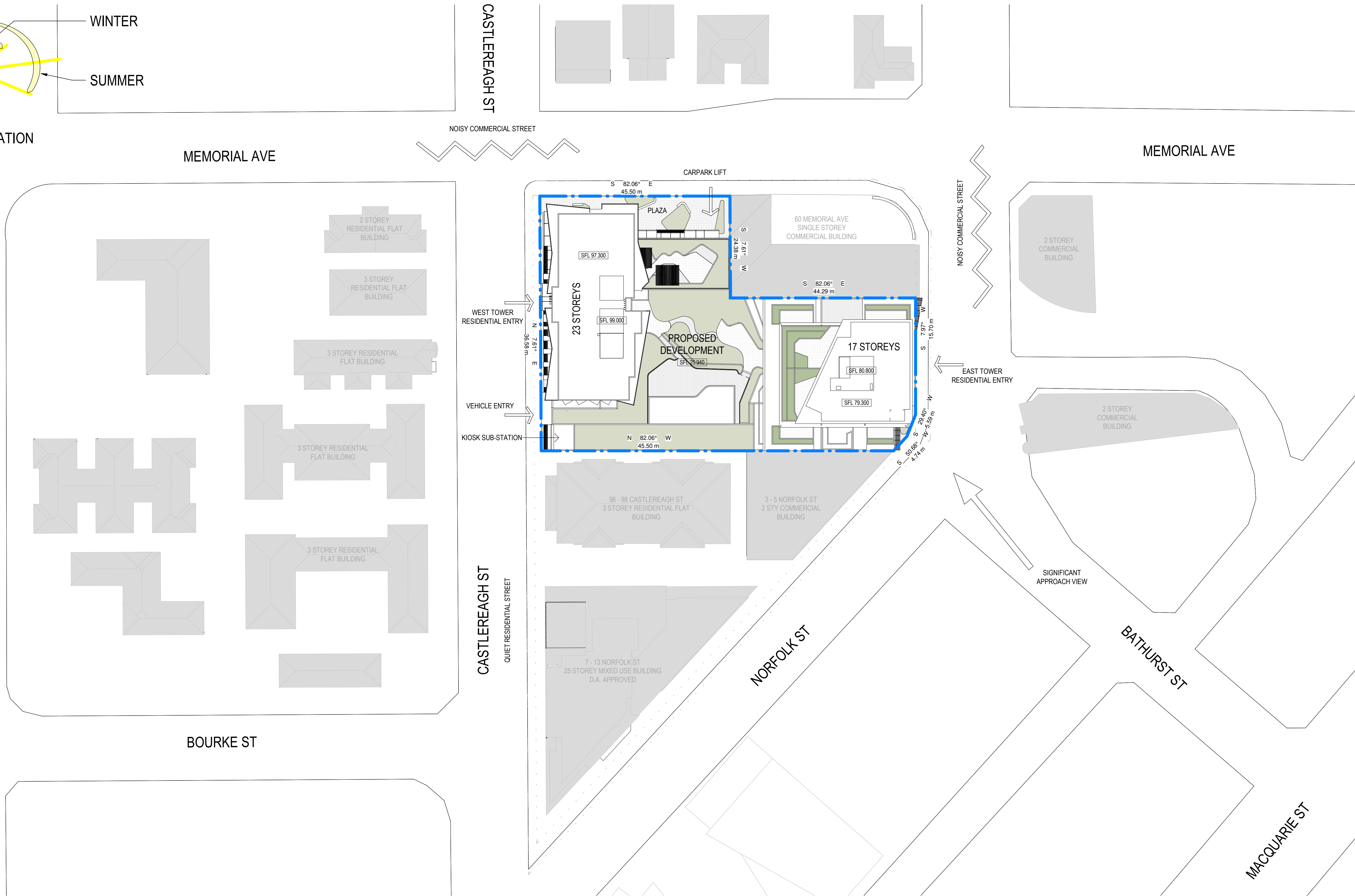


SOLAR ORIENTATION



9 AM WIND ROSE

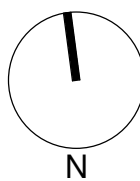
3 PM WIND ROSE



Revisions  
No. Date Description  
1 22-02-19 ISSUED FOR D.A. SUBMISSION.

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Project  
MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
86-94 Castlereagh Street  
LIVERPOOL NSW 2170

Proj. No. 18005

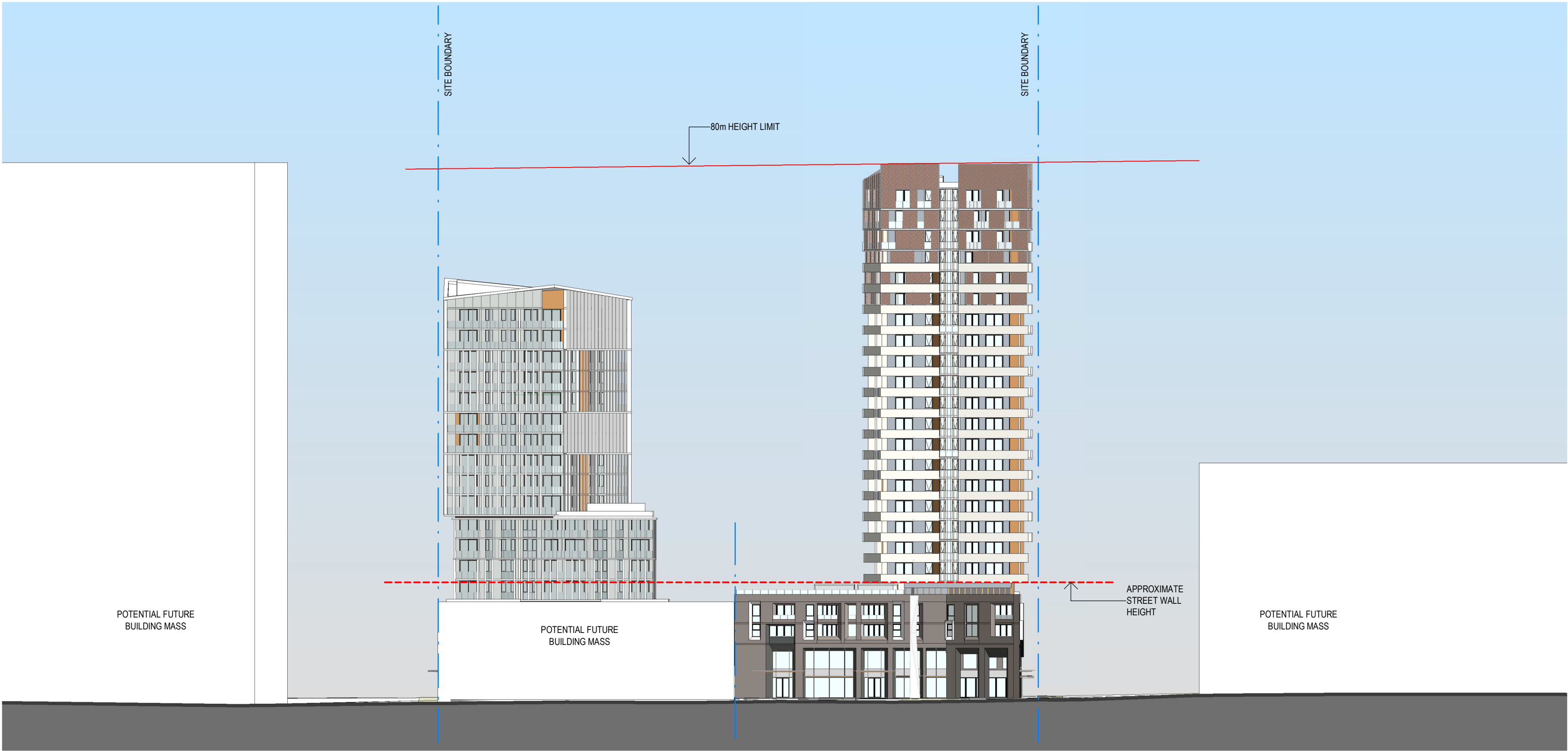
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**SITE PLAN**

Sheet Status  
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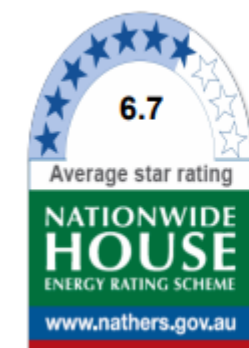
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1 : 500 @A1  
Drawing No.  
**DA1001 1**  
Issue







BATHURST STREET 60 MEMORIAL AVENUE 86 MEMORIAL AVENUE CASTLEREAGH ST



Certificate no.: 0003578100  
Assessor Name: Hamidul islam  
Accreditation no.: 100982  
Certificate date: 31 January 2019  
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77-79 Bathurst Street &  
86-94 Castlereagh Street  
LIVERPOOL NSW 2170

Proj. No. 18005

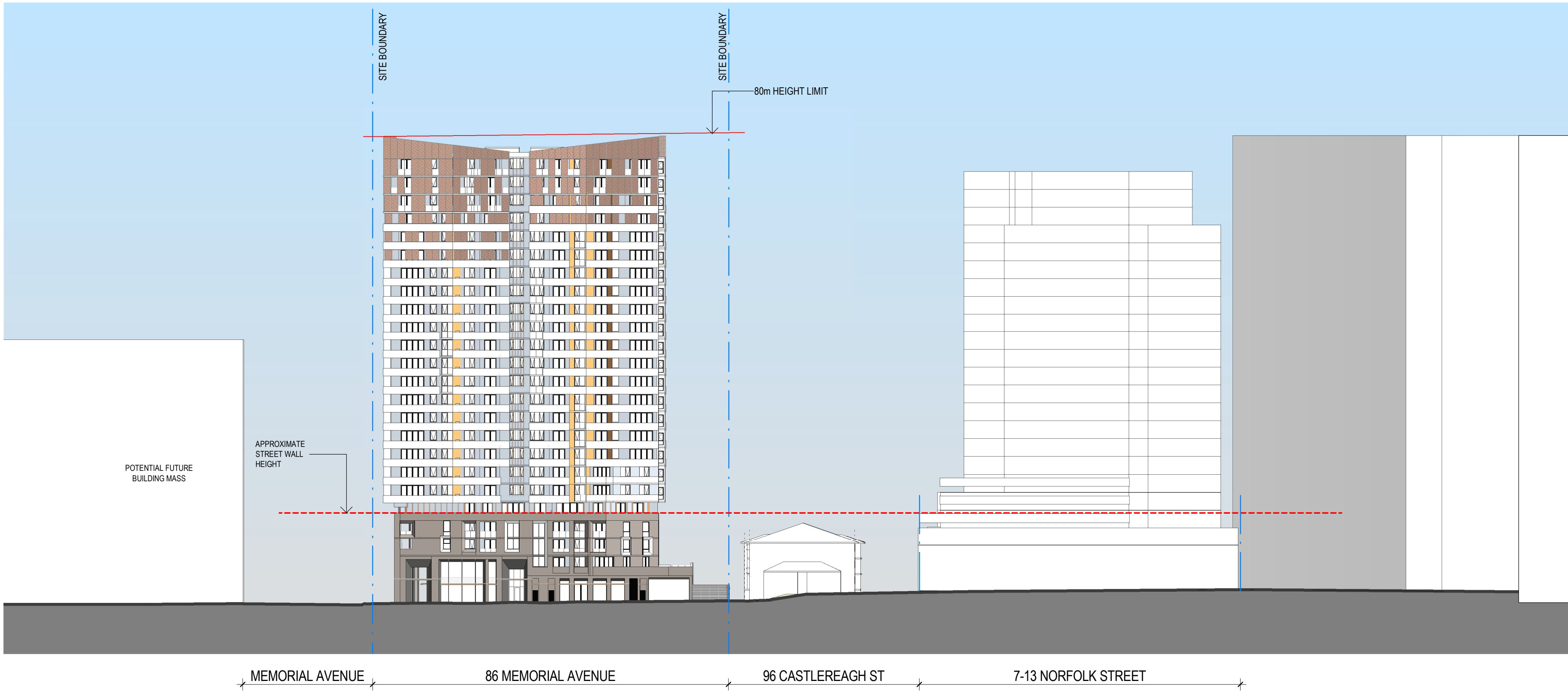
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NORTH ELEVATION  
STREETSCAPE

Sheet Status  
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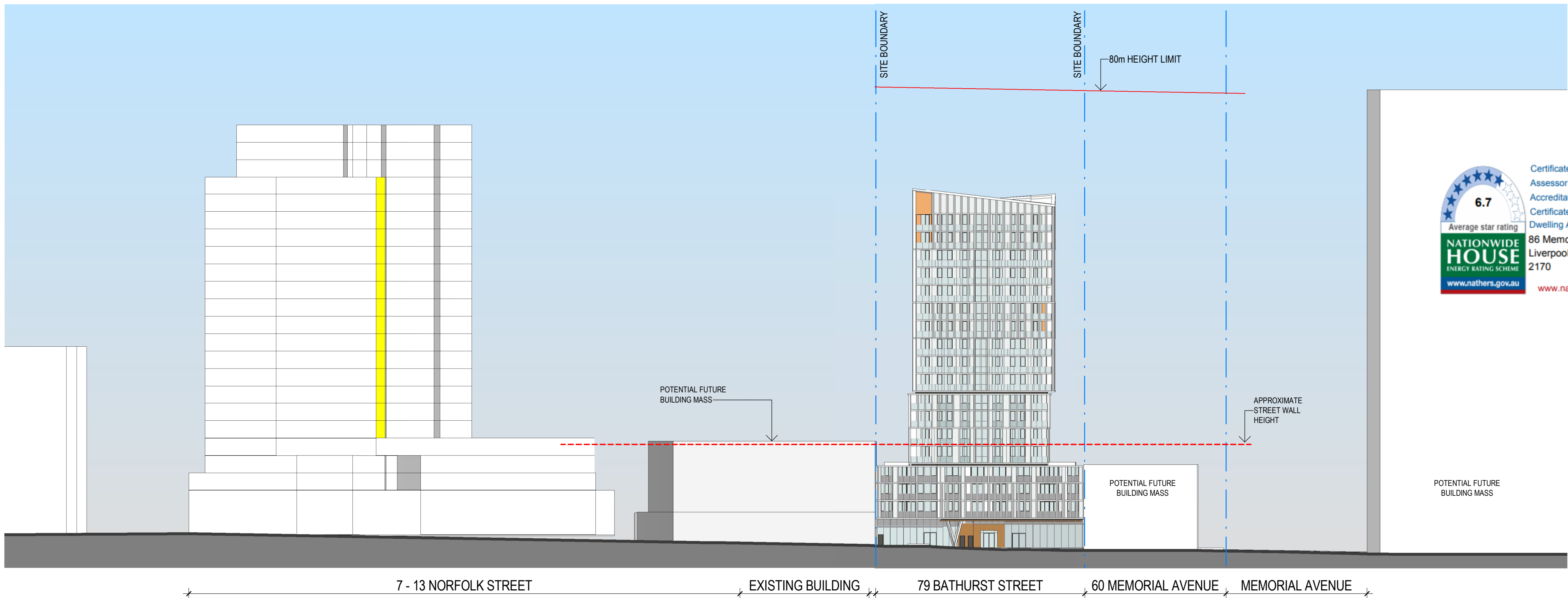
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Issue

0 5 10 20 40 m





2 WEST ELEVATION STREETSCAPE  
1:500



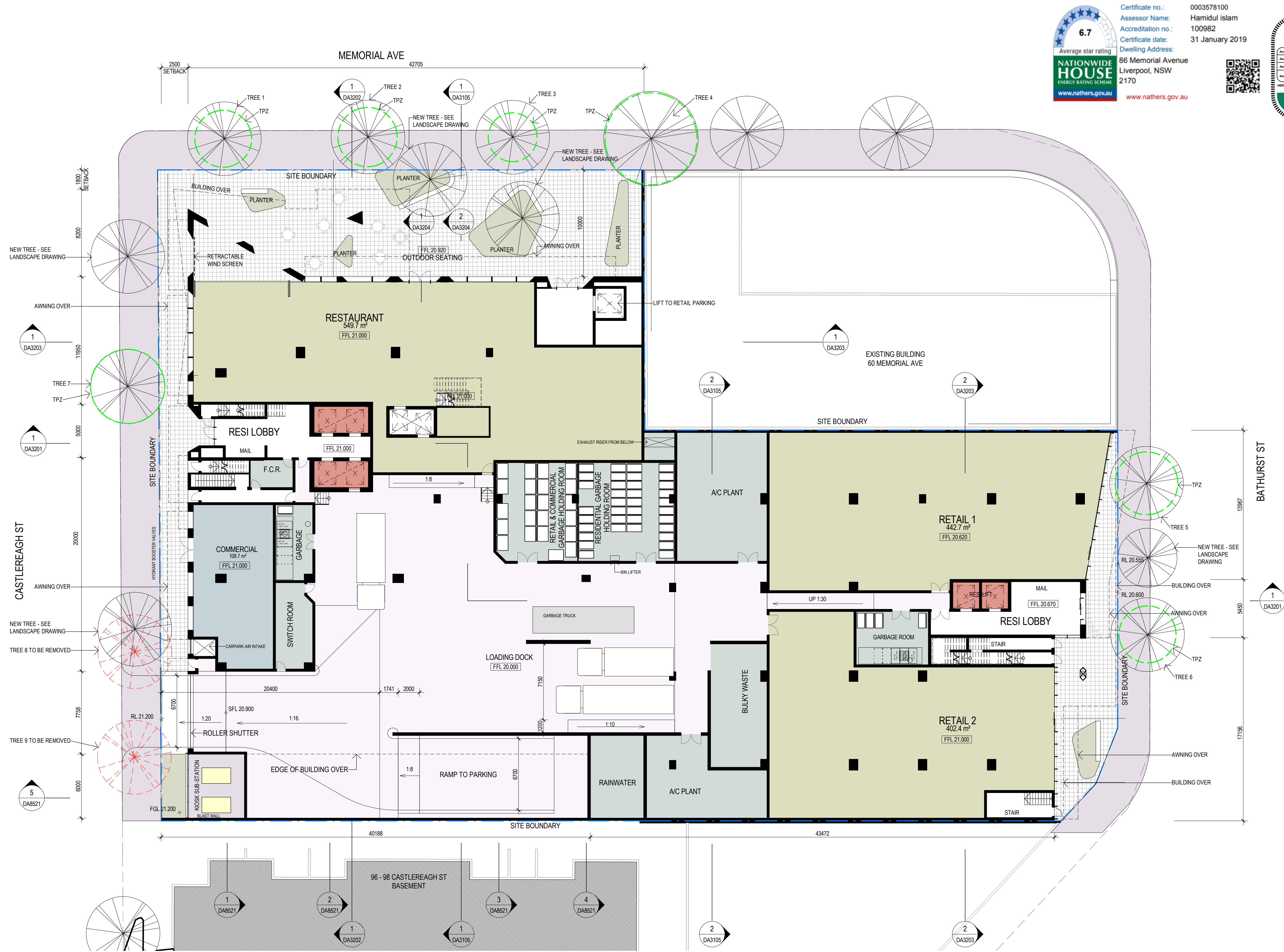
1 NORFOLK STREET ELEVATION  
1:500



Certificate no.: 0003578100  
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Accreditation no.: 100982  
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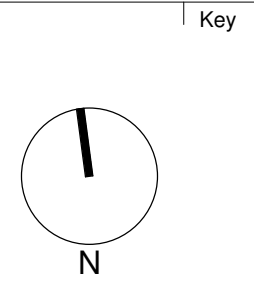
**6.7**  
Average star rating  
**NATIONWIDE**  
ENERGY RATING SCHEME  
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**ABSA**  
Accreditation Period: 2018-2020  
Assessor Name: Hamidul Islam  
Assessor Number: 100982  
Assessor Signature: [Signature]  
2018 Assessments completed within the accreditation period are part of the ABSA quality audit system.



| Revisions No. | Date     | Description                 |
|---------------|----------|-----------------------------|
| 1             | 22-02-19 | ISSUED FOR D.A. SUBMISSION. |

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Client  
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ALLEN JACK+COTTIER  
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ph +61 2 9311 8222 fx +61 2 9311 8200  
ABN 53 003 782 250

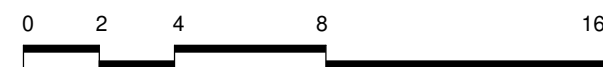
Project  
MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
86-94 Castlereagh Street  
LIVERPOOL NSW 2170

Proj. No. 18005

Drawing Title  
**GROUND FLOOR PLAN**

Sheet Status  
NOT FOR CONSTRUCTION

Scale  
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Drawing No.  
**DA2000 1**



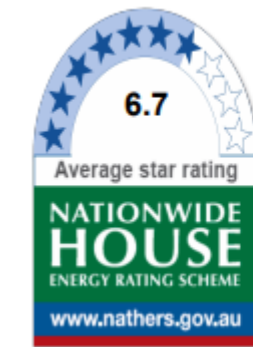
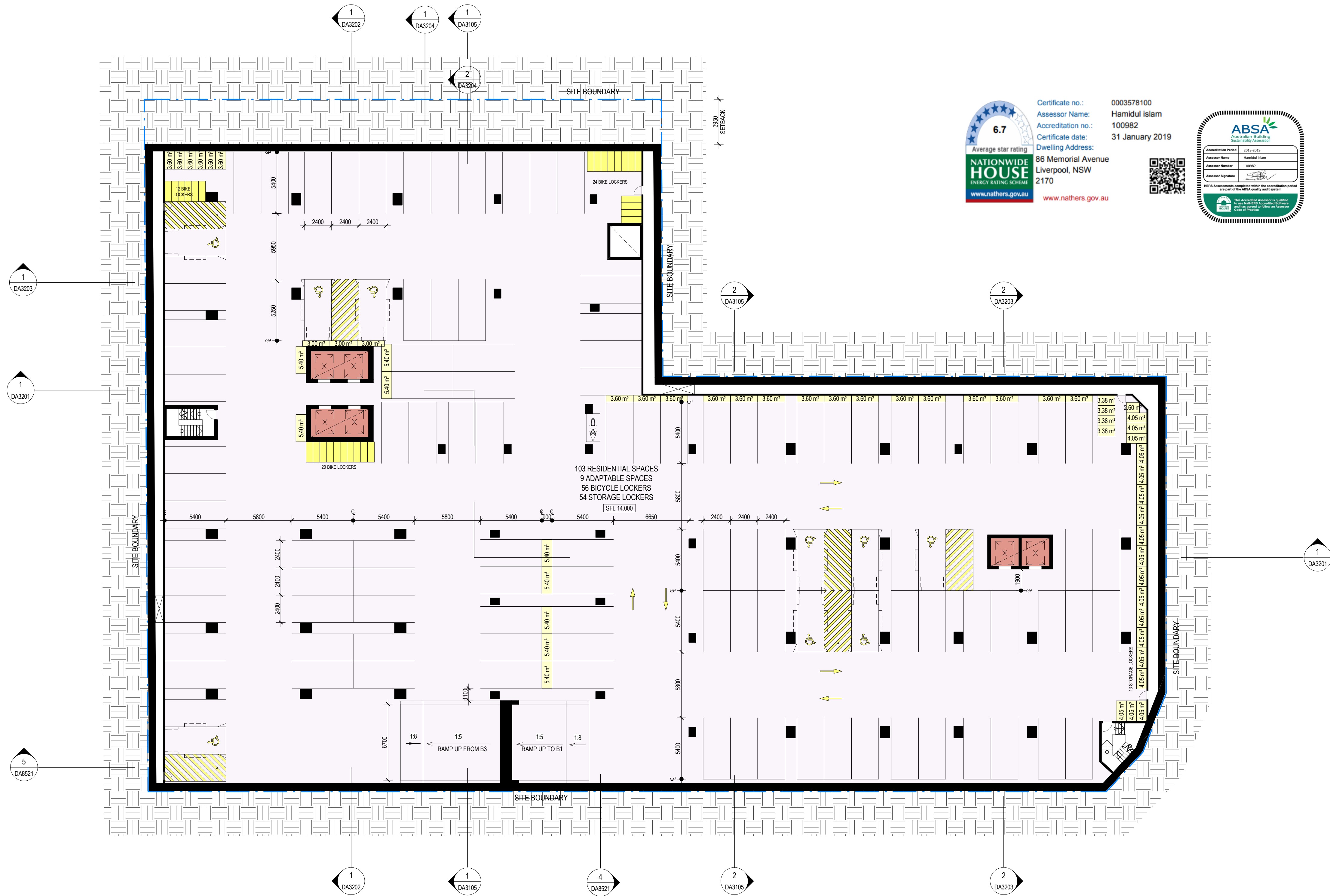




Certificate no.: 0003578100  
Assessor Name: Hamidul Islam  
Accreditation no.: 100982  
Certificate date: 31 January 2019  
Dwelling Address: 86 Memorial Avenue  
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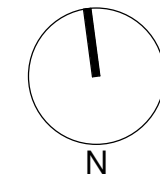


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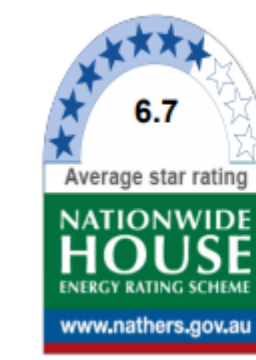
Drawing Title  
BASEMENT 2

Sheet Status  
NOT FOR CONSTRUCTION

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Drawing No.  
DA2002 1  
Issue





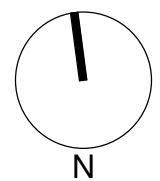


Certificate no.: 0003578100  
Assessor Name: Hamidul islam  
Accreditation no.: 100982  
Certificate date: 31 January 2019  
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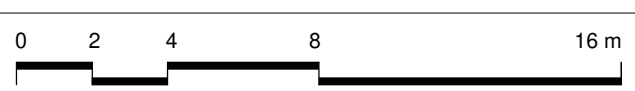
Project  
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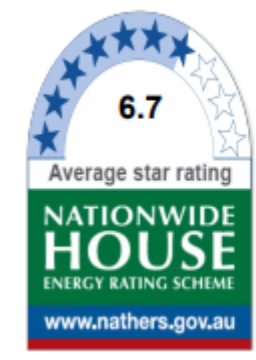
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BASEMENT 3

Sheet Status  
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Issue





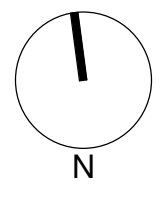


Certificate no.: 0003578100  
Assessor Name: Hamdul islam  
Accreditation no.: 100982  
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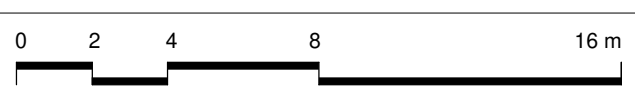
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Proj. No. 18005

Drawing Title  
**BASEMENT 1 FUTURE PARKING CONNECTIVITY**  
Sheet Status  
NOT FOR CONSTRUCTION

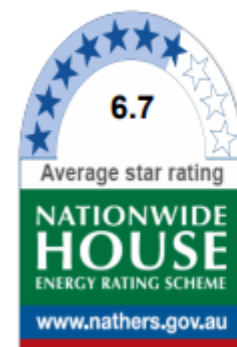
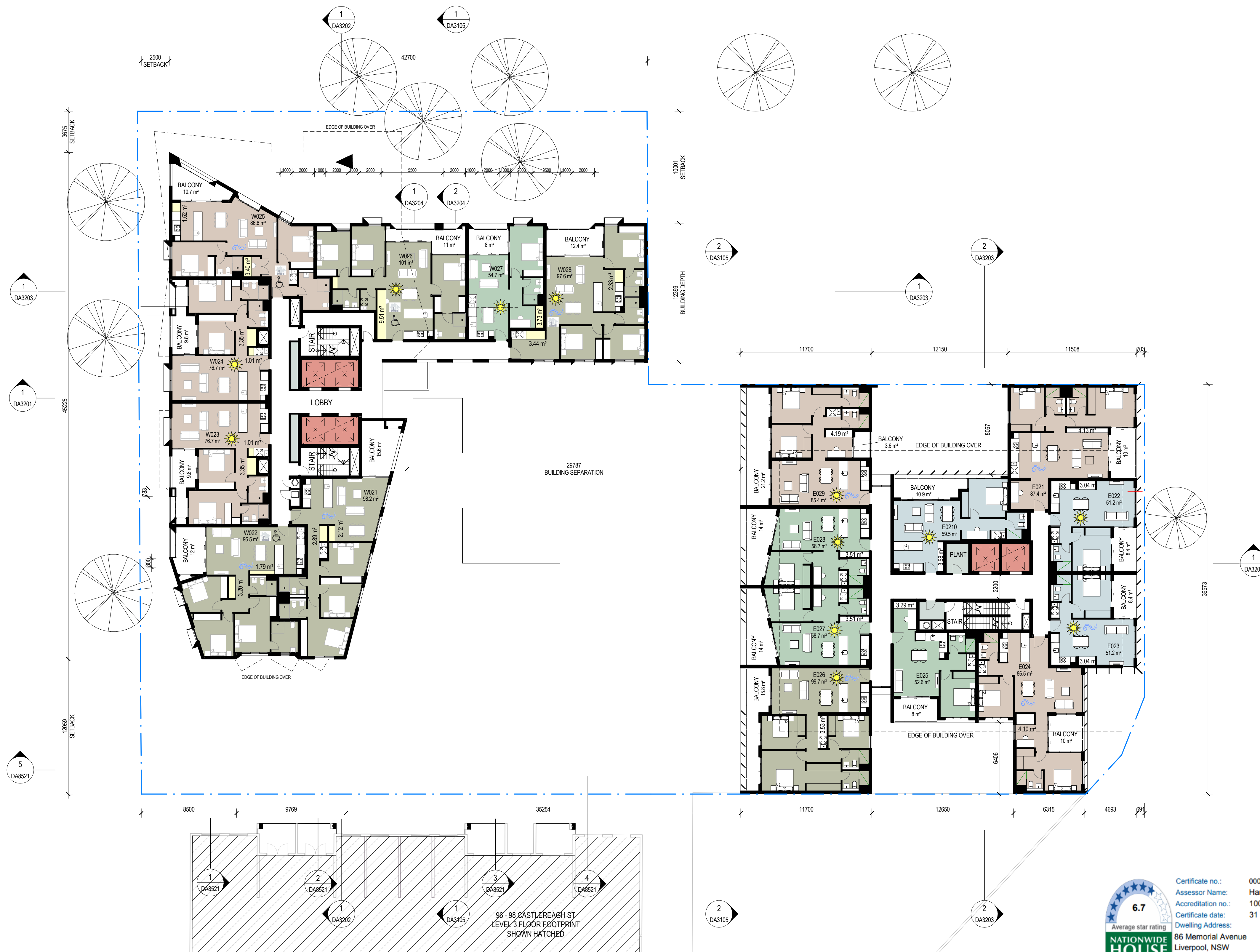
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Issue









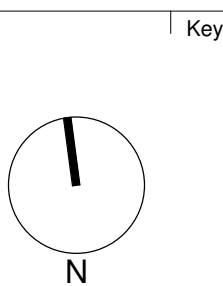


Certificate no.: 0003578100  
Assessor Name: Hamidul Islam  
Accreditation no.: 100982  
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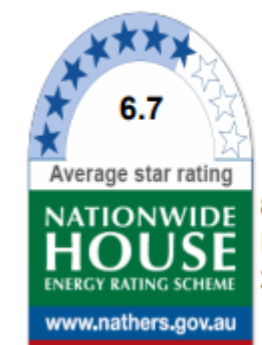
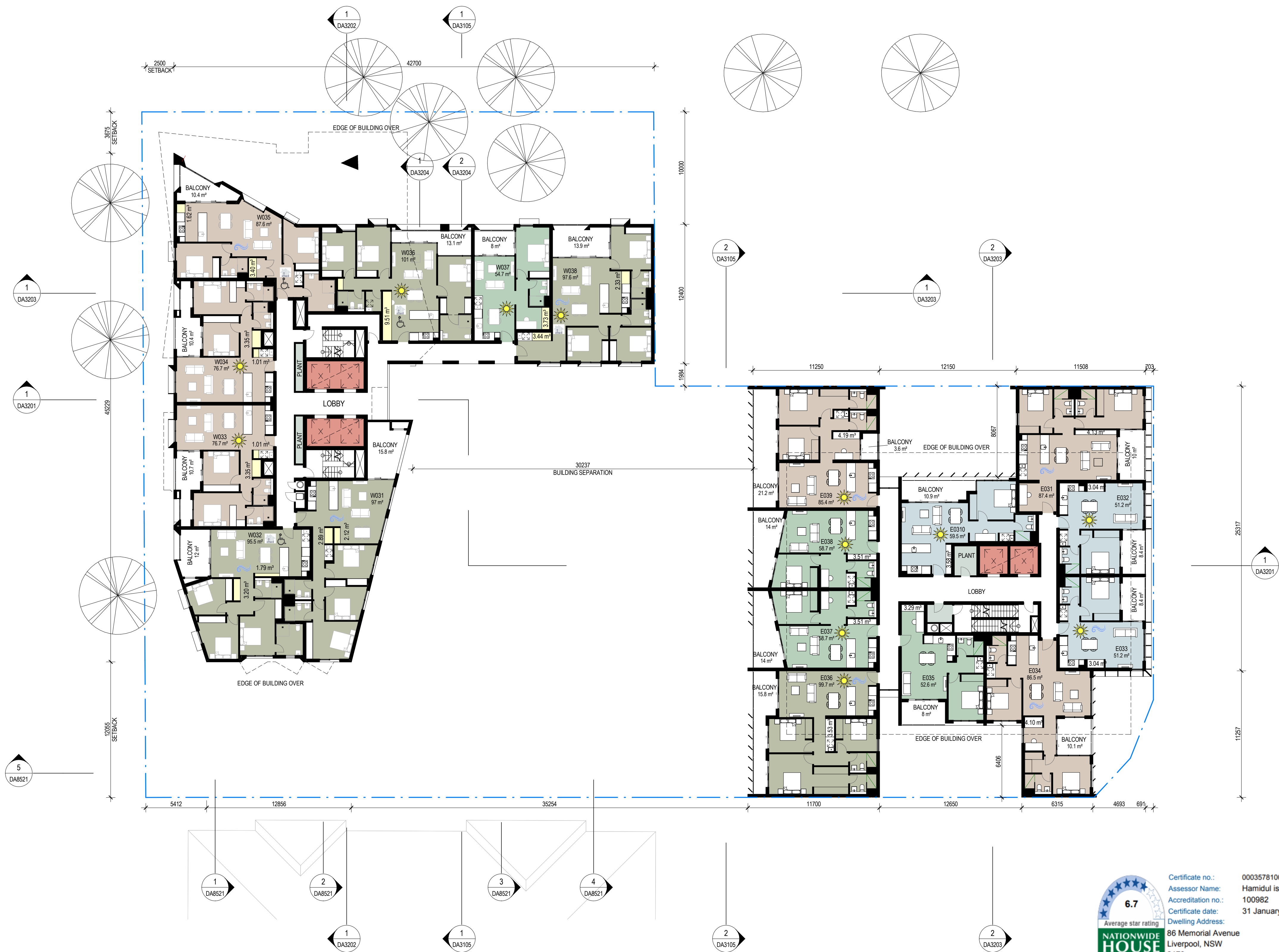
Proj. No. 18005

Drawing Title  
LEVEL 2 PLAN

Sheet Status  
NOT FOR CONSTRUCTION

Scale  
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Drawing No.  
DA2102 1  
Issue



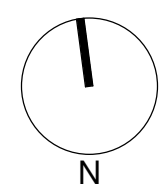


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Proj. No. 18005

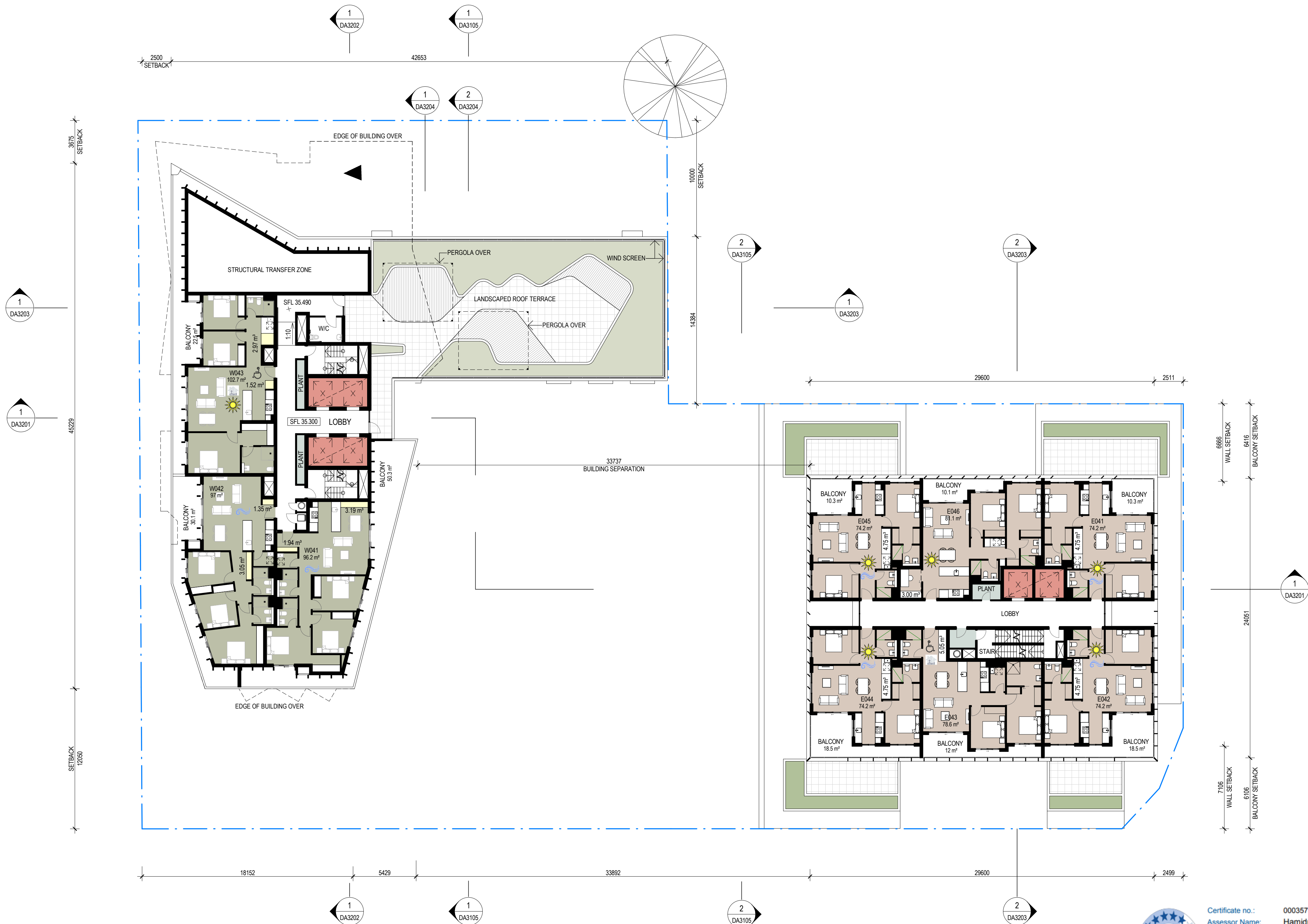
Drawing Title  
LEVEL 3 PLAN

Sheet Status  
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Scale  
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Drawing No.  
DA2103 1  
Issue





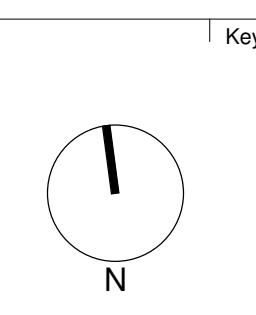


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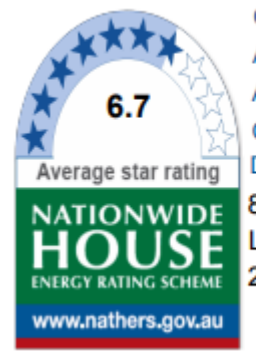
Project  
MEMORIAL AVENUE, LIVERPOOL  
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86-94 Castlereagh Street  
LIVERPOOL NSW 2170  
Proj. No. 18005

Drawing Title  
**LEVEL 4 PLAN**  
Sheet Status  
NOT FOR CONSTRUCTION

Scale  
1 : 200 @A1  
Drawing No.  
**DA2104 1**  
Issue





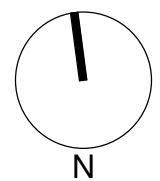


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Accreditation no.: 100982  
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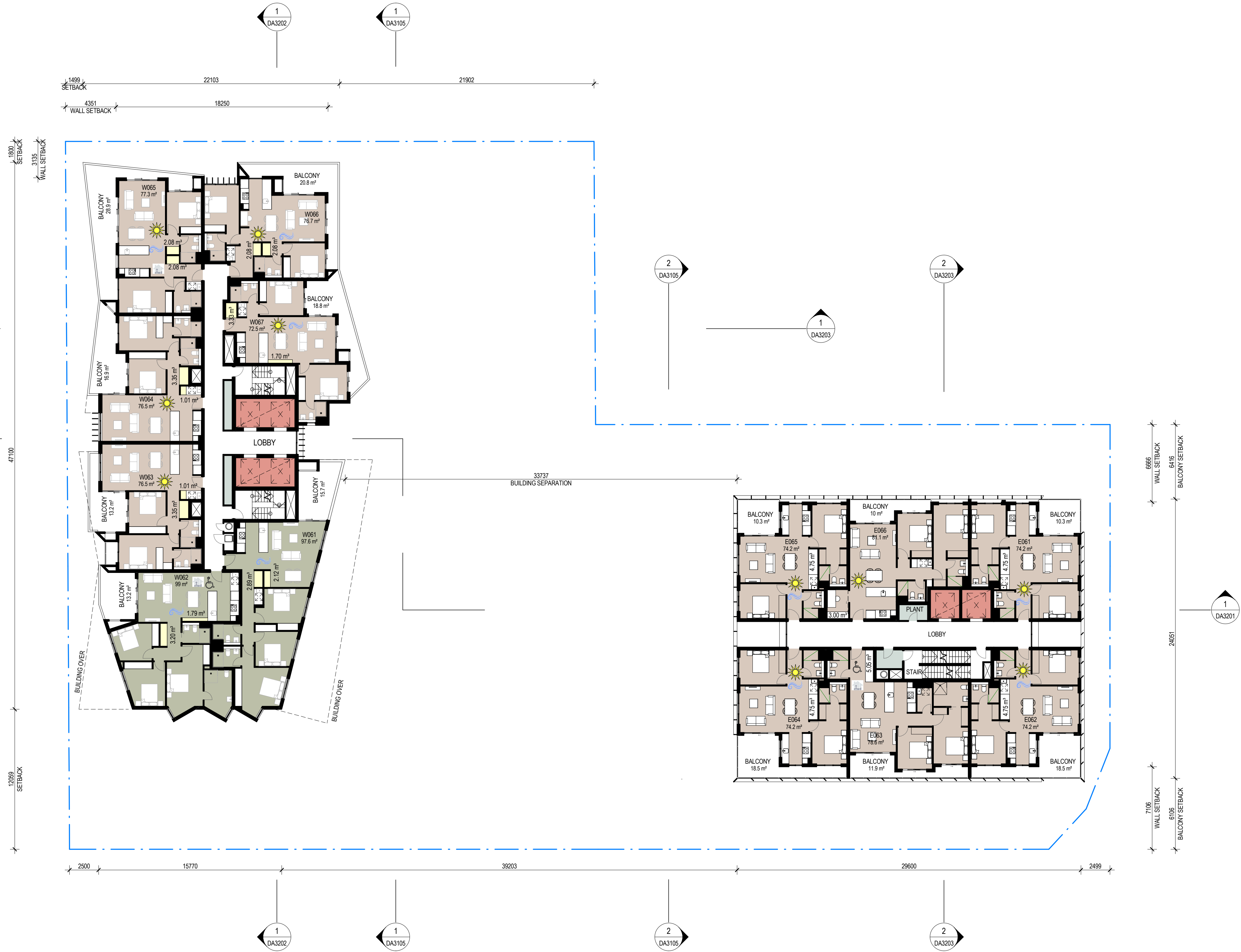
Project  
MEMORIAL AVENUE, LIVERPOOL  
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86-94 Castlereagh Street  
LIVERPOOL NSW 2170  
Proj. No. 18005

Drawing Title  
**LEVEL 5 PLAN**  
Sheet Status  
NOT FOR CONSTRUCTION

Scale  
1 : 200 @A1  
Drawing No.  
**DA2105 1**  
Issue







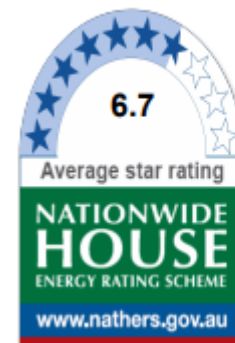
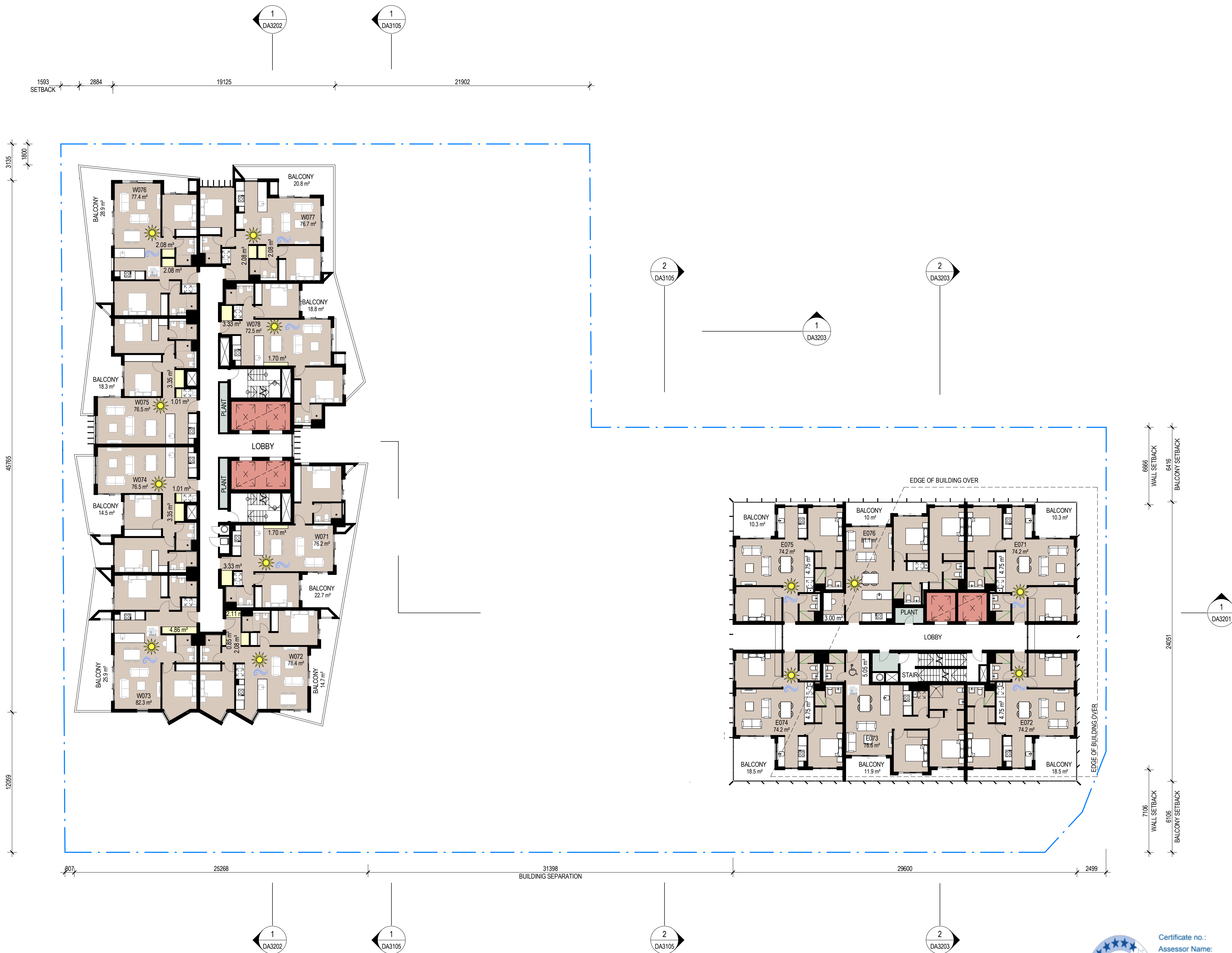
Average star rating  
**6.7**  
NATIONWIDE  
ENERGY RATING SCHEME  
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Assessor Name: Hamidul islam  
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| <div>Revisions<br/>No. Date Description<br/>1 22-02-19 ISSUED FOR D.A. SUBMISSION.</div> | <div>Ver App'd</div> | <div>Key<br/>N</div> | <div>Client<br/>Il Capitano Investments Pty Ltd</div> | <div>Architect<br/><b>AJ+C</b><br/>ALLEN JACK+COTTIER<br/>79 Myrtle Street Chippendale NSW 2008 AUSTRALIA<br/>ph +61 2 9311 8222 fx +61 2 9311 8200<br/>ABN 53 003 782 250</div> | <div>Project<br/>MEMORIAL AVENUE, LIVERPOOL<br/>77-79 Bathurst Street &amp;<br/>86-94 Castlereagh Street<br/>LIVERPOOL NSW 2170<br/><br/>Proj. No. 18005</div> | <div>Drawing Title<br/><b>LEVEL 6 PLAN</b><br/><br/>Sheet Status<br/>NOT FOR CONSTRUCTION</div> | <div>Scale<br/>1 : 200 @A1<br/><br/>Drawing No.<br/><b>DA2106 1</b><br/><br/>Issue</div> |
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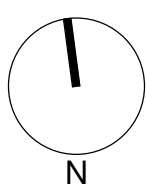


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Proj. No. 18005

Drawing Title

LEVEL 7 PLAN

Sheet Status

NOT FOR CONSTRUCTION

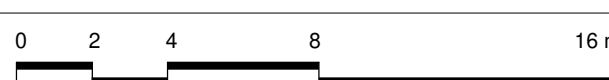
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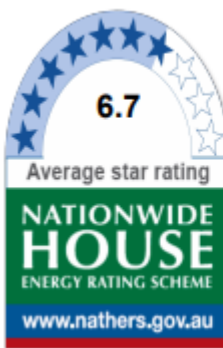
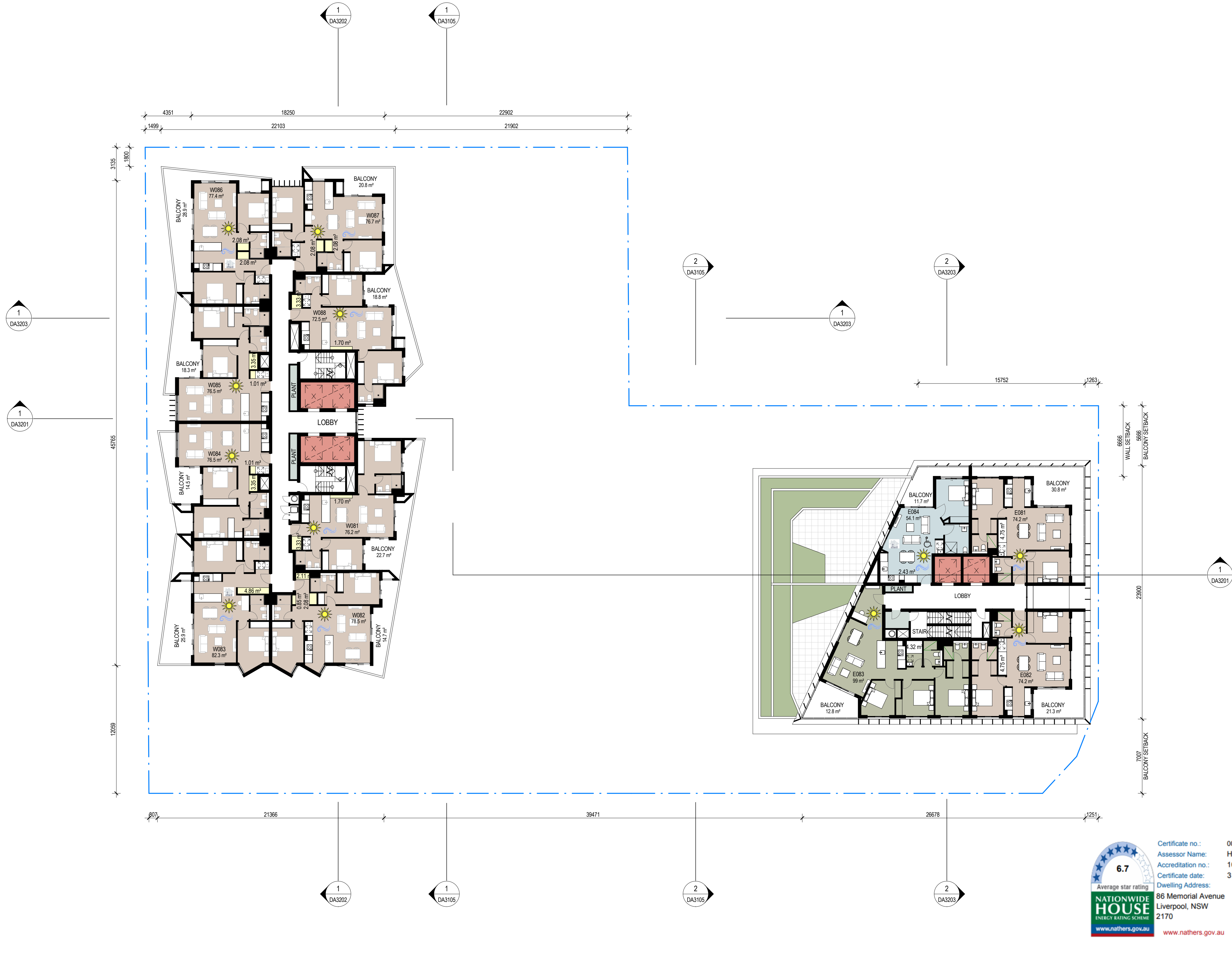
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DA2107 1

Issue





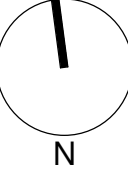


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ABN 53 003 782 250

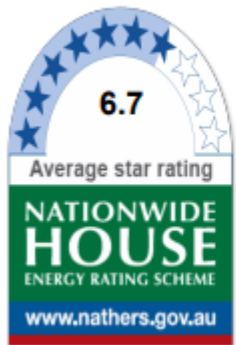
Project  
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77-79 Bathurst Street &  
86-94 Castlereagh Street  
LIVERPOOL NSW 2170  
Proj. No. 18005

Drawing Title  
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Sheet Status  
NOT FOR CONSTRUCTION

Scale  
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Drawing No.  
**DA2108 1**  
Issue



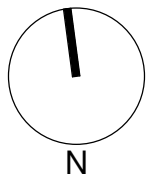




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Assessor Name: Hamidul Islam  
Accreditation no.: 100982  
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Proj. No. 18005

Drawing Title  
**LEVELS 9-17 PLAN**  
Sheet Status  
NOT FOR CONSTRUCTION

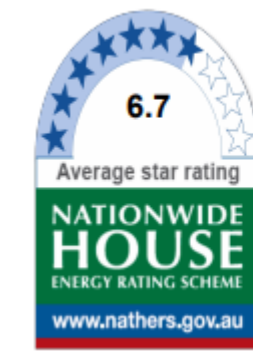
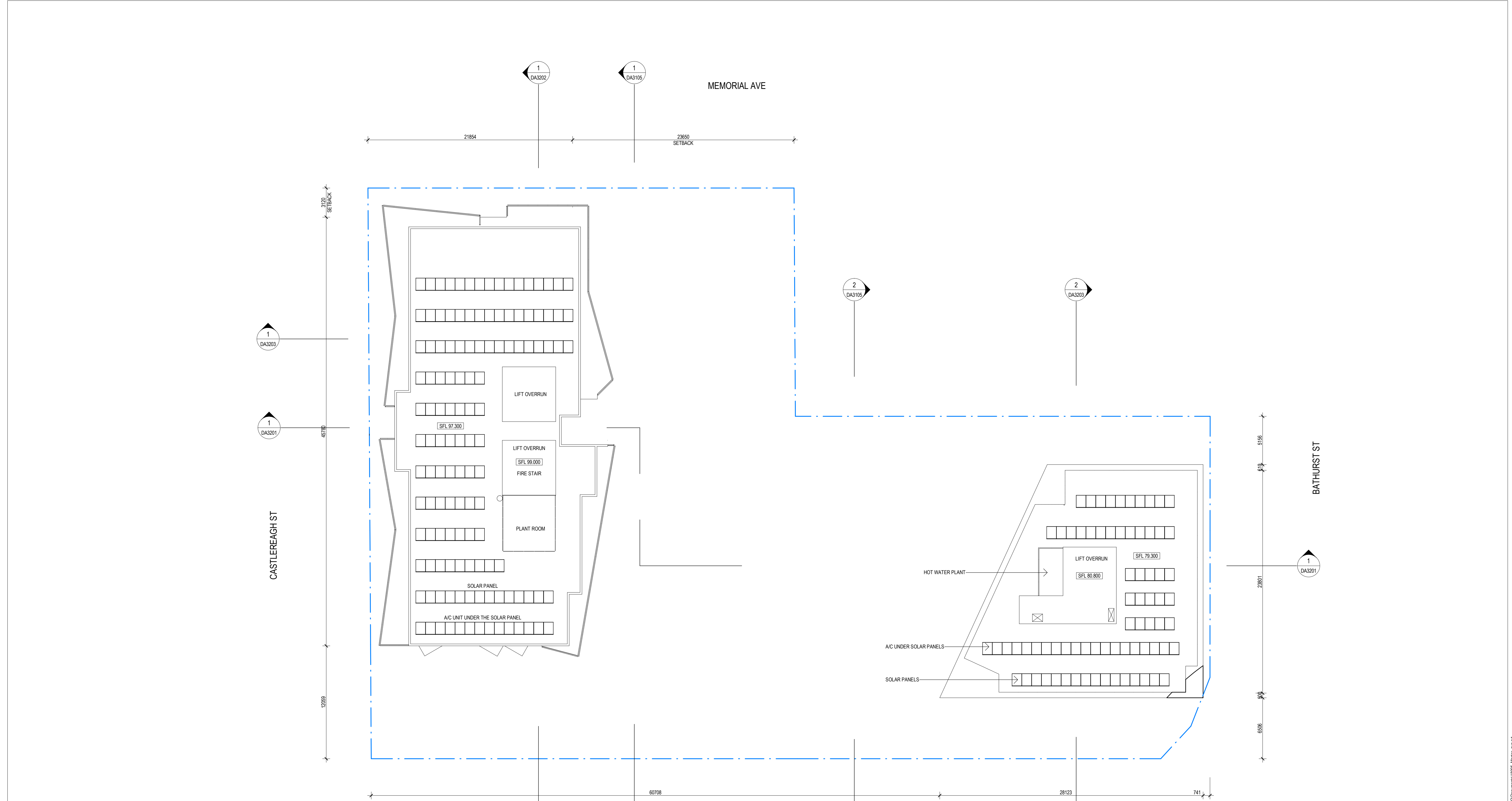
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Drawing No.  
**DA2109 1**  
Issue











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Assessor Name: Hamidul islam  
Accreditation no.: 100982  
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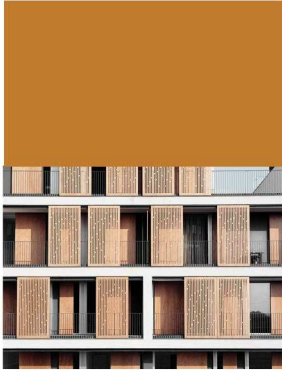
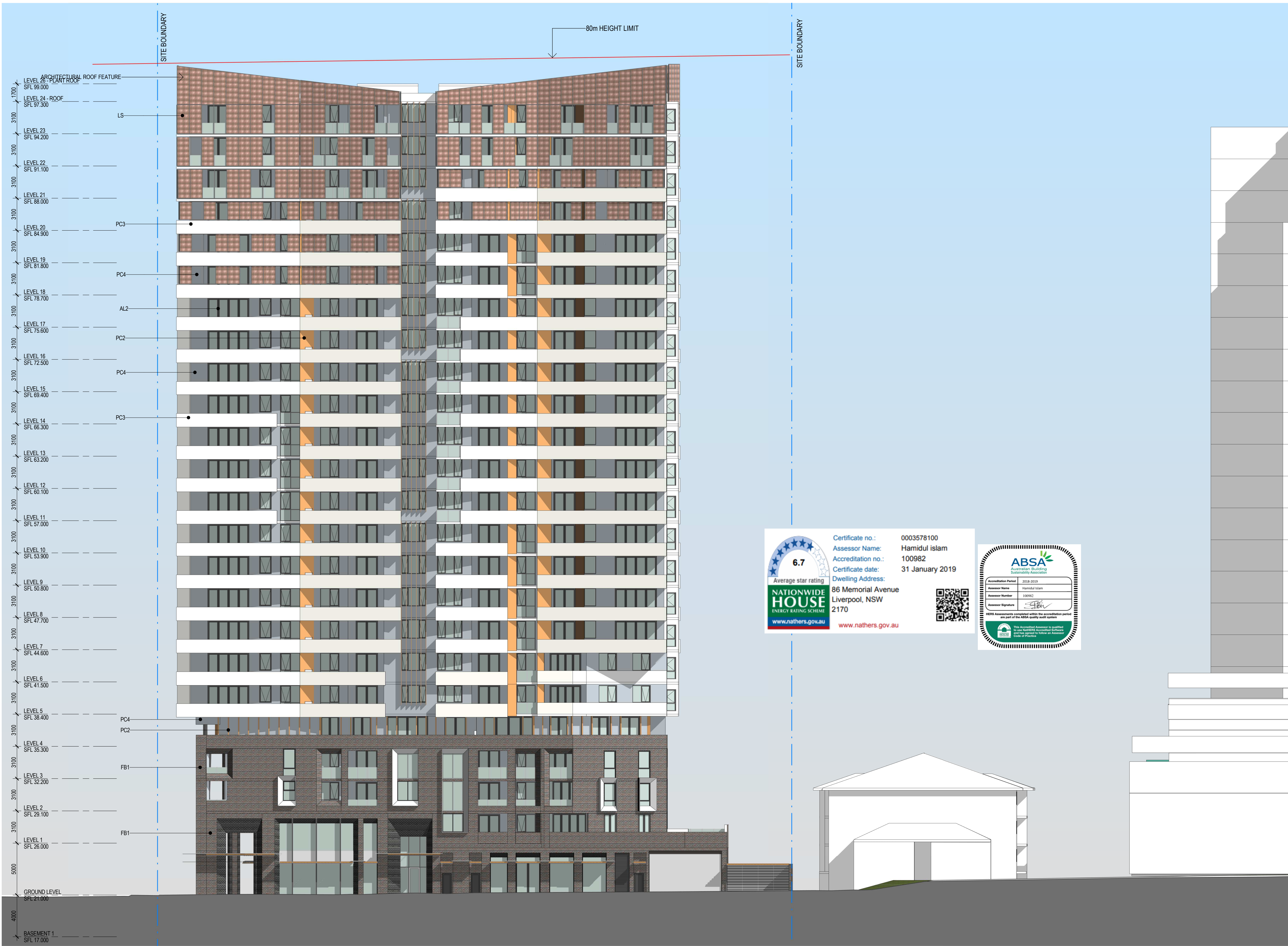


|                                                                             |           |          |                                           |                                                                                                                                                           |                                                                                                                                       |                                                                    |                                      |                         |       |
|-----------------------------------------------------------------------------|-----------|----------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------|-------------------------|-------|
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|-----------------------------------------------------------------------------|-----------|----------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------|-------------------------|-------|









LS - DULUX GOLD  
TREASURE  
LOUVRE SCREENS



AL1 - DULUX DURALLOY  
CLASSIC PEARL WHITE  
ALUMINIUM WHITE FINIS



AL2 - DULUX DURALLOY  
MONUMENT WINDOW  
AND DOOR FRAMES



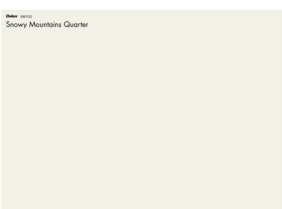
AL3 - DULUX DURALLOY  
SHOJI WHITE BALCONY  
FRAMES



PC1 - DULUX  
MILTON MOON  
EXTERIOR WALL



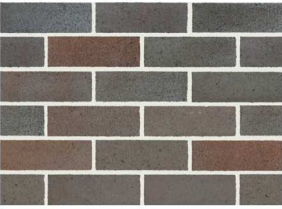
PC2 - DULUX TUSCAN  
SUNSET BLADE WALLS  
TO BALCONIES



PC3 - DULUX SNOWY  
MOUNTAINS QUARTER  
BALCONY WALLS



PC4 - DULUX SILVER  
SLIDE EXTERIOR WALLS



FB1 - BOWRAL DRY  
PRESSED BOWRAL BLUE



FB2 - BURLESQUE  
CHARMING BLACK



PC - PRECAST CONCRETE  
PANEL WITH SHADOW  
LINE PAINTED PC3



BAL - GLASS BALUSTRADE



86 MEMORIAL AVENUE

96 CASTLEREAGH STREET

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Proj. No. 18005

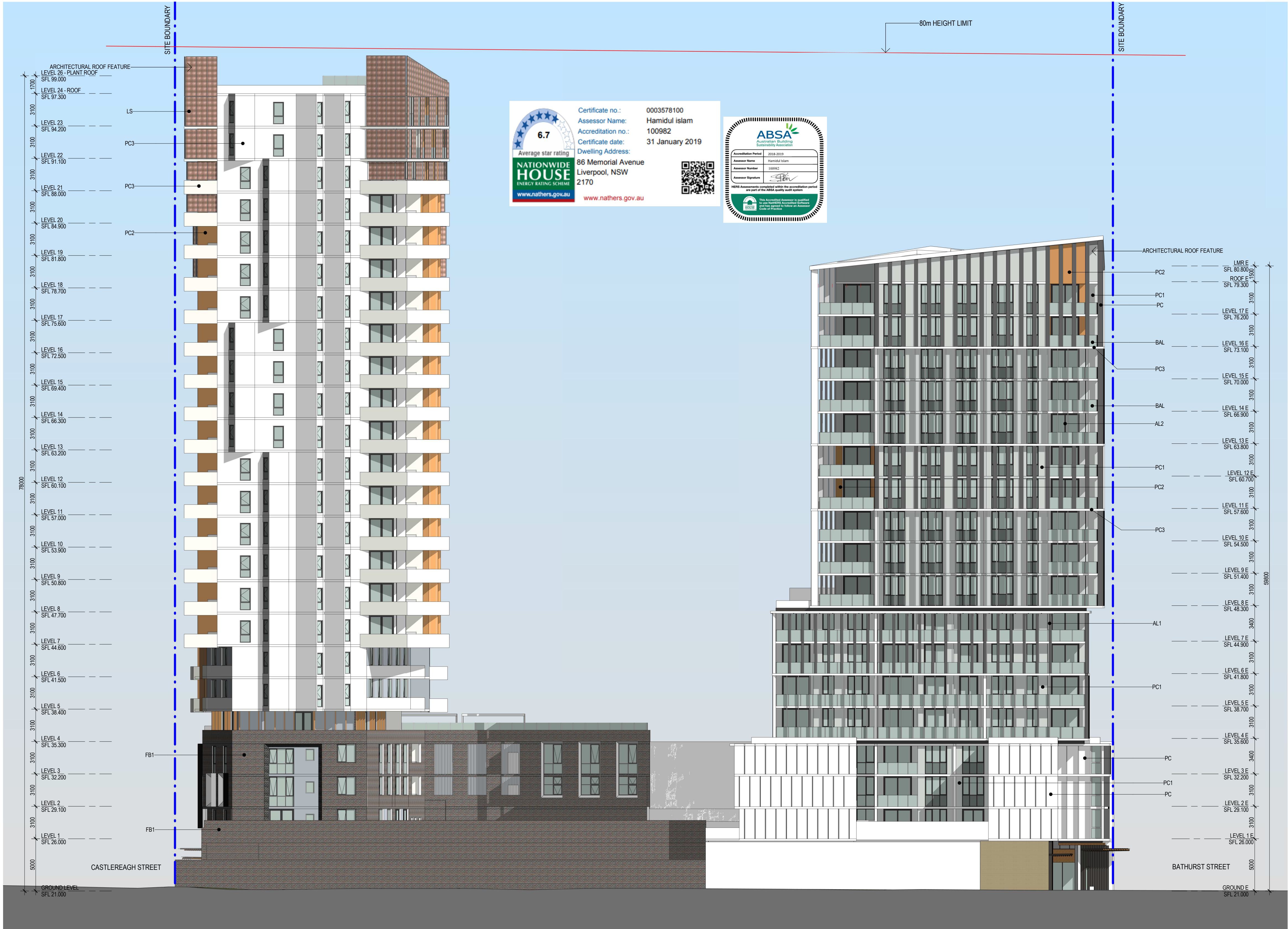
Drawing Title  
WEST ELEVATION -  
CASTLEREAGH  
STREET

Sheet Status  
NOT FOR CONSTRUCTION

Scale  
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Drawing No.  
DA3102 1  
Issue

0 2 4 8 16 m



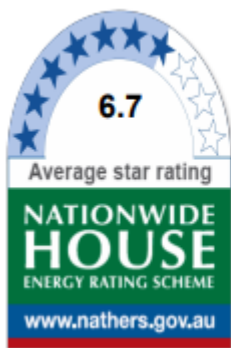


- LS - DULUX GOLD TREASURE LOUVRE SCREENS
- AL1 - DULUX DURALLOY CLASSIC PEARL WHITE ALUMINIUM WHITE FINIS
- AL2 - DULUX DURALLOY MONUMENT WINDOW AND DOOR FRAMES
- AL3 - DULUX DURALLOY SHOJI WHITE BALCONY FRAMES
- PC1 - DULUX MILTON MOON EXTERIOR WALL
- PC2 - DULUX TUSCAN SUNSET BLADE WALLS TO BALCONIES
- PC3 - DULUX SNOWY MOUNTAINS QUARTER BALCONY WALLS
- PC4 - DULUX SILVER SLIDE EXTERIOR WALLS
- FB1 - BOWRAL DRY PRESSED BOWRAL BLUE
- FB2 - BURLESQUE CHARMING BLACK
- PC - PRECAST CONCRETE PANEL WITH SHADOW LINE PAINTED PC3
- BAL - GLASS BALUSTRADE

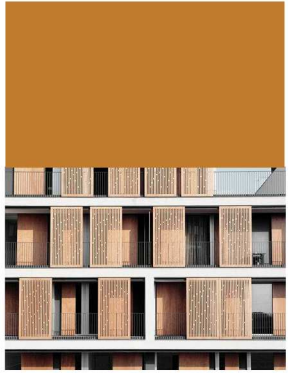
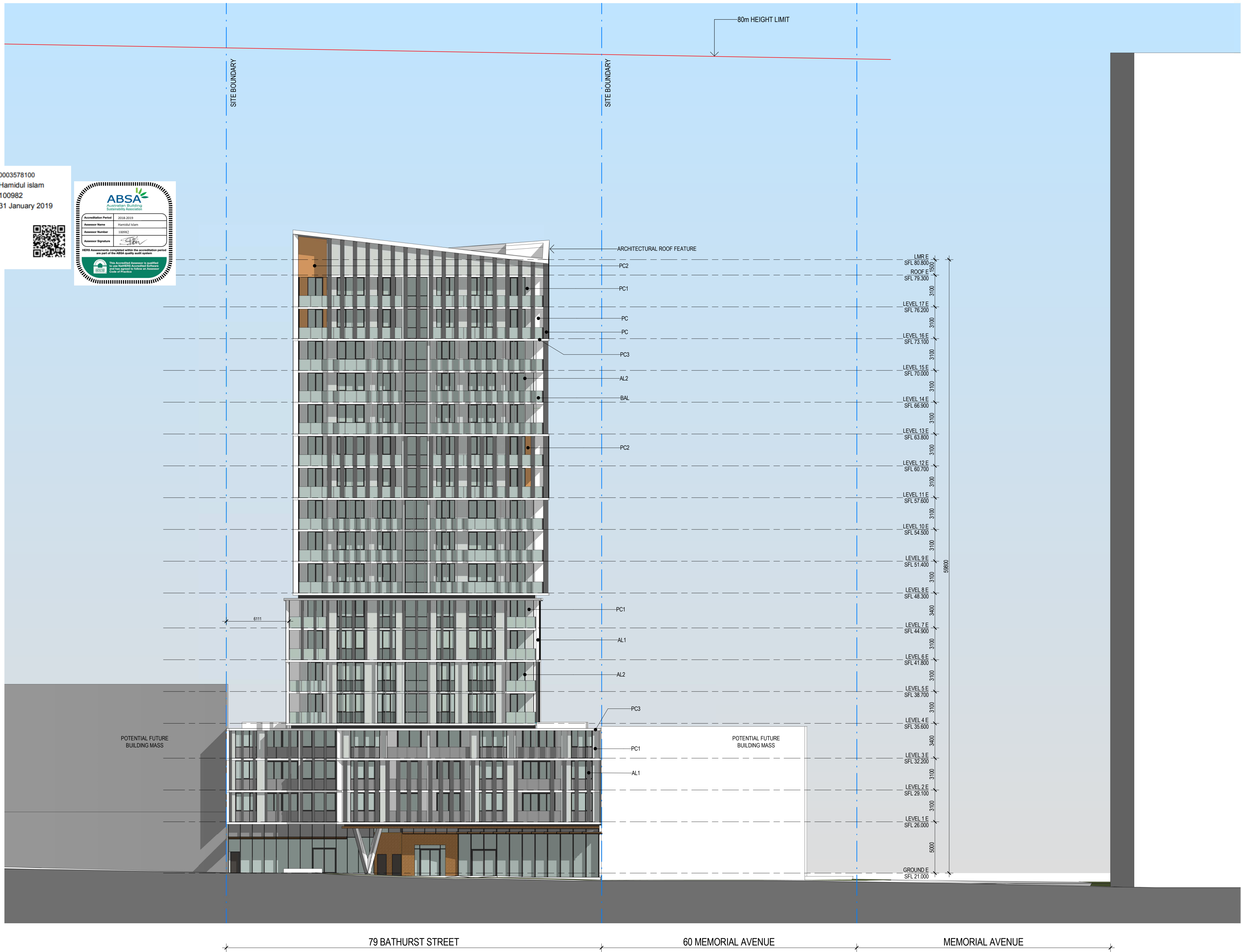


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| Revisions<br>No. Date Description Ver App'd | Client<br>II Capitano Investments Pty Ltd | Architect<br>AJ+C<br>ALLEN JACK+COTTIER<br>79 Myrtle Street Chippendale NSW 2008 AUSTRALIA<br>ph +61 2 9311 8222 fx +61 2 9311 8200<br>ABN 53 003 782 250 | Project<br>MEMORIAL AVENUE, LIVERPOOL<br>77-79 Bathurst Street &<br>86-94 Castlereagh Street<br>LIVERPOOL NSW 2170<br>Proj. No. 18005 | Drawing Title<br>SOUTH ELEVATION<br>Sheet Status<br>NOT FOR CONSTRUCTION | Scale<br>1 : 200 @A1<br>Drawing No.<br>DA3103 1<br>Issue<br>1 |
| 1 22-02-19 ISSUED FOR D.A. SUBMISSION.      |                                           |                                                                                                                                                           |                                                                                                                                       |                                                                          |                                                               |





Certificate no.: 0003578100  
Assessor Name: Hamidul Islam  
Accreditation no.: 100982  
Certificate date: 31 January 2019  
Dwelling Address: 86 Memorial Avenue  
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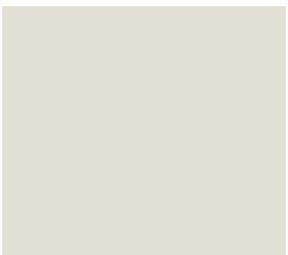
LS - DULUX GOLD  
TREASURE  
LOUVRE SCREENS



AL1 - DULUX DURALLOY  
CLASSIC PEARL WHITE  
ALUMINIUM WHITE FINIS



AL2 - DULUX DURALLOY  
MONUMENT WINDOW  
AND DOOR FRAMES



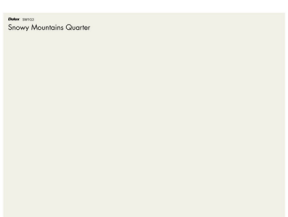
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SHOJI WHITE BALCONY  
FRAMES



PC1 - DULUX  
MILTON MOON  
EXTERIOR WALL



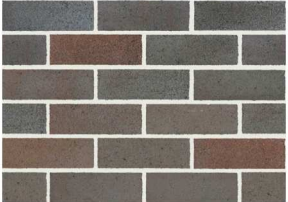
PC2 - DULUX TUSCAN  
SUNSET BLADE WALLS  
TO BALCONIES



PC3 - DULUX SNOWY  
MOUNTAINS QUARTER  
BALCONY WALLS



PC4 - DULUX SILVER  
SLIDE EXTERIOR WALLS



FB1 - BOWRAL DRY  
PRESSED BOWRAL BLUE



FB2 - BURLESQUE  
CHARMING BLACK



PC - PRECAST CONCRETE  
PANEL WITH SHADOW  
LINE PAINTED PC3



BAL - GLASS BALUSTRADE

Revisions  
No. Date Description  
1 22-02-19 ISSUED FOR D.A. SUBMISSION.

Ver App'd

Key

Client  
Il Capitano Investments Pty Ltd

Architect  
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Project  
MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
86-94 Castlereagh Street  
LIVERPOOL NSW 2170

Proj. No. 18005

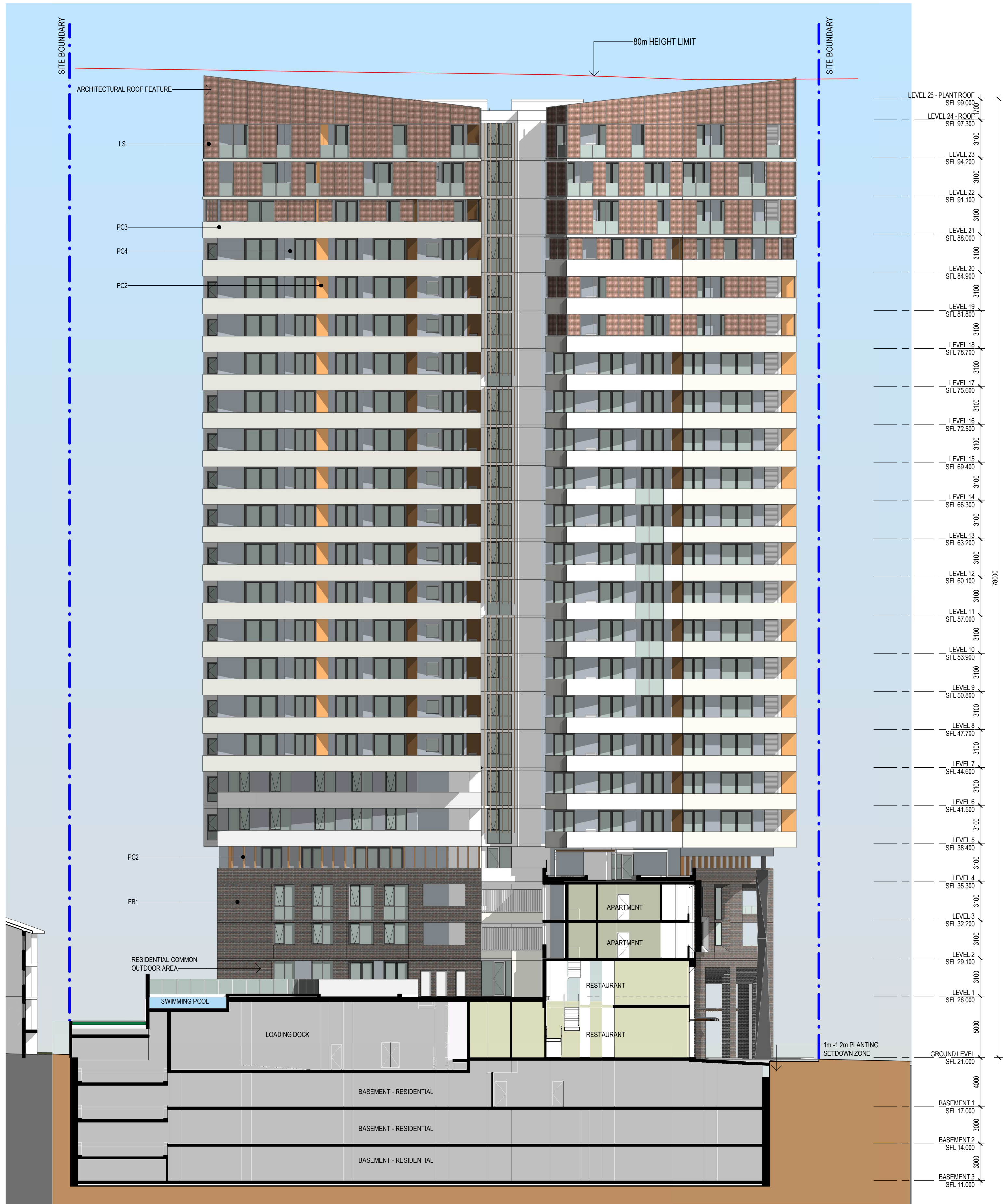
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BATHURST STREET**

Sheet Status  
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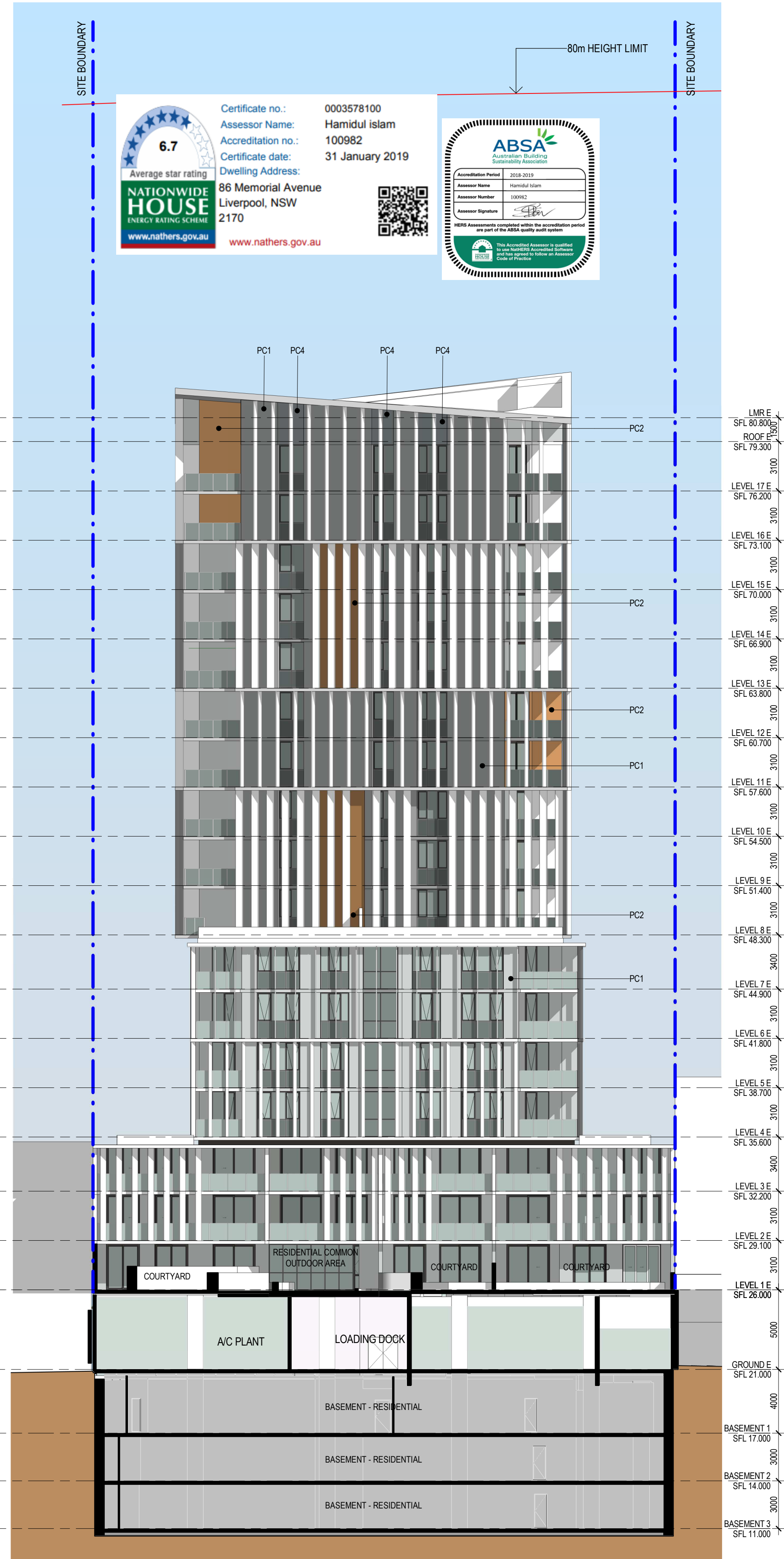
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Drawing No.  
**DA3104 1**  
Issue

0 2 4 8 16 m





1 EAST COURTYARD ELEVATION  
1:200



2 WEST COURTYARD ELEVATION  
1:200

Revisions  
No. Date Description  
1 22-02-19 ISSUED FOR D.A. SUBMISSION.

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Project  
MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
86-94 Castlereagh Street  
LIVERPOOL NSW 2170

Proj. No. 18005

Drawing Title

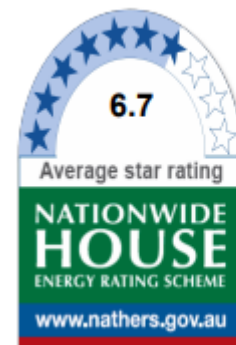
EAST AND WEST  
COURTYARD  
ELEVATIONS

Sheet Status  
NOT FOR CONSTRUCTION

Scale Drawing No. Issue  
1:200 @A1 DA3105 1

0 2 4 8 16 m





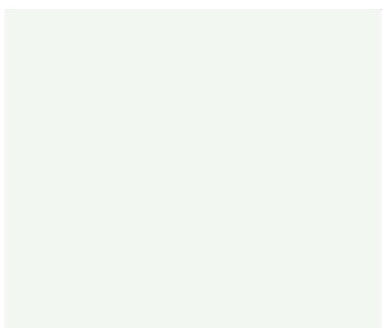
Certificate no.: 0003578100  
Assessor Name: Hamidul Islam  
Accreditation no.: 100982  
Certificate date: 31 January 2019  
Dwelling Address: 86 Memorial Avenue  
Liverpool, NSW  
2170  
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DULUX MILTON MOON  
- EXTERIOR WALL  
PC1



GLASS BALUSTRADE  
BAL



DULUX DURALLOY  
CLASSIC PEARL WHITE  
- ALUMINIUM WHITE FINIS  
AL1



PRECAST CONCRETE PANEL WITH  
SHADOW LINE PAINTED PC3  
PC



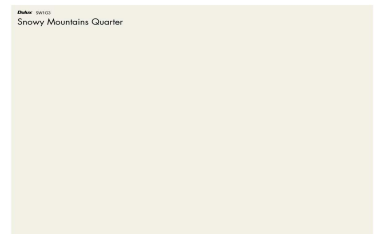
DULUX GOLD TREASURE  
- LOUVRE SCREENS  
LS



DULUX DURALLOY MONUMENT  
- WINDOW AND DOOR FRAMES  
AL2



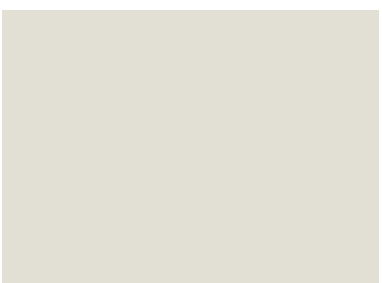
DULUX TUSCAN SUNSET  
- BLADE WALLS TO BALCONIES  
PC2



DULUX SNOWY MOUNTAINS  
QUARTER  
- BALCONY WALLS  
PC3



DULUX SILVER SLIDE  
- EXTERIOR WALLS  
PC3



DULUX DURALLOY SHOJI WHITE  
- BALCONY FRAMES  
AL3



BOWRAL DRY PRESSED  
BOWRAL BLUE  
FB1



BURLESQUE  
CHARMING BLACK - ENTRANCE  
FB2

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|---------------|----------|-----------------------------|-----|-------|
| 1             | 22-02-19 | ISSUED FOR D.A. SUBMISSION. |     |       |

Key

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Project

MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
86-94 Castlereagh Street  
LIVERPOOL NSW 2170

Proj. No. 18005

Drawing Title

MATERIAL  
ELEVATION

Sheet Status

NOT FOR CONSTRUCTION

Scale

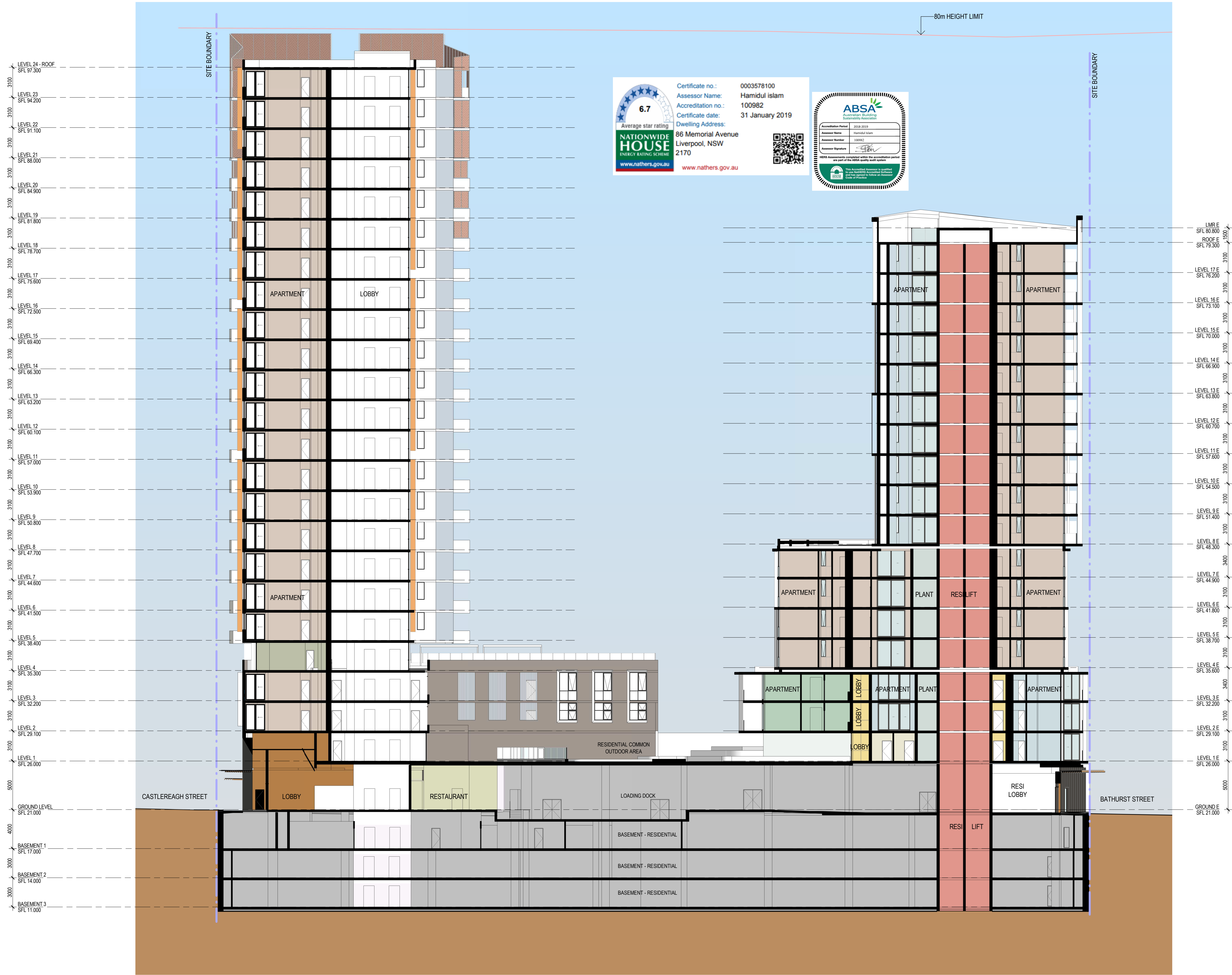
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Drawing No.

DA3112 1

Issue





Revisions  
No. Date Description  
1 22-02-19 ISSUED FOR D.A. SUBMISSION.

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Project  
MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
86-94 Castlereagh Street  
LIVERPOOL NSW 2170

Proj. No. 18005

Drawing Title

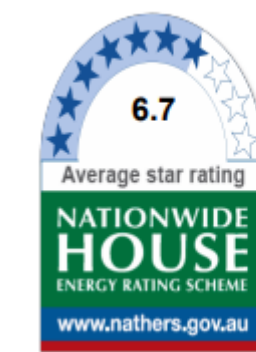
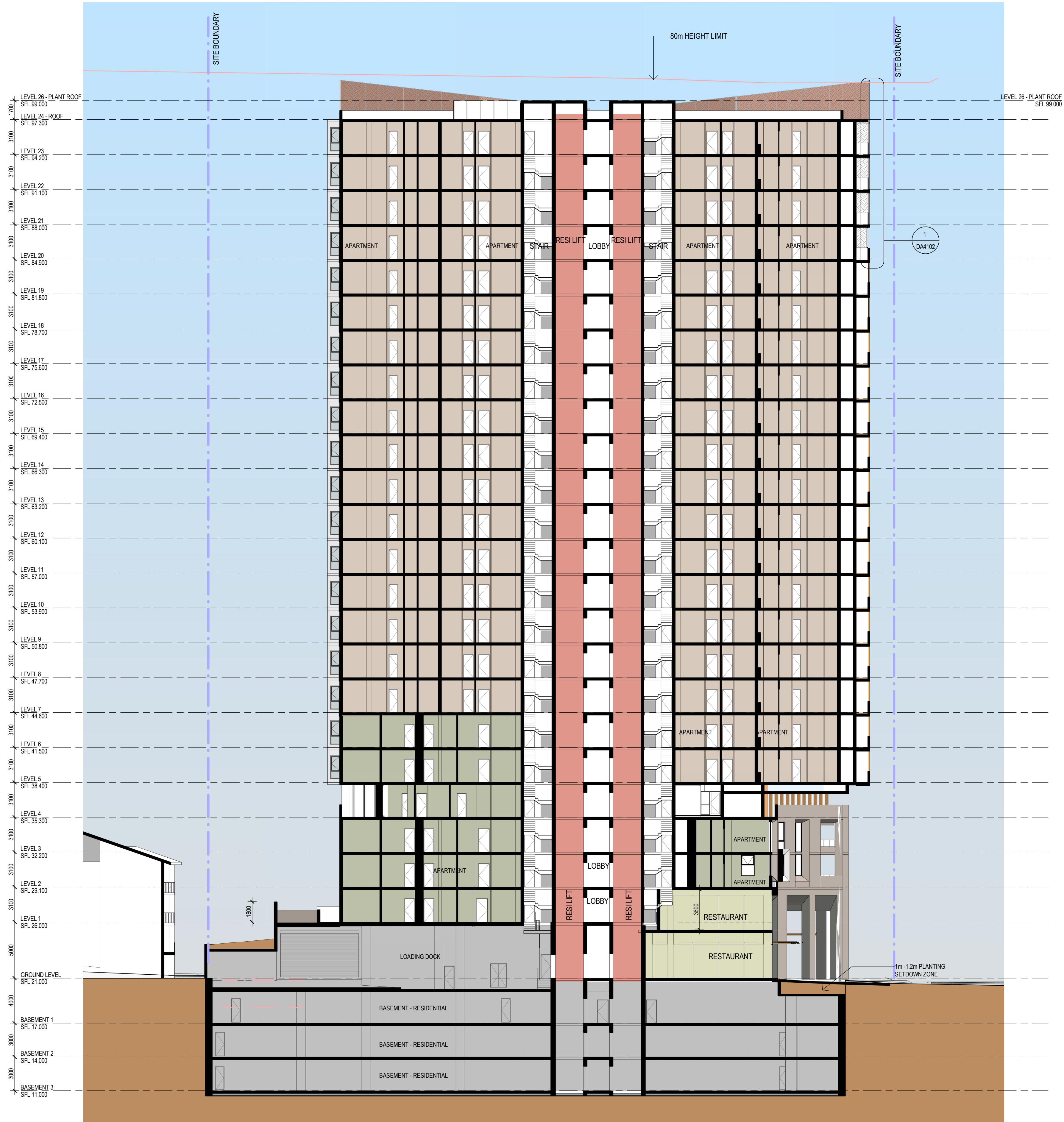
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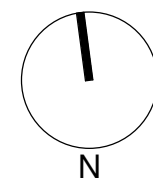




Certificate no.: 0003578100  
Assessor Name: Hamidul Islam  
Accreditation no.: 100982  
Certificate date: 31 January 2019  
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ABN 53 003 782 250

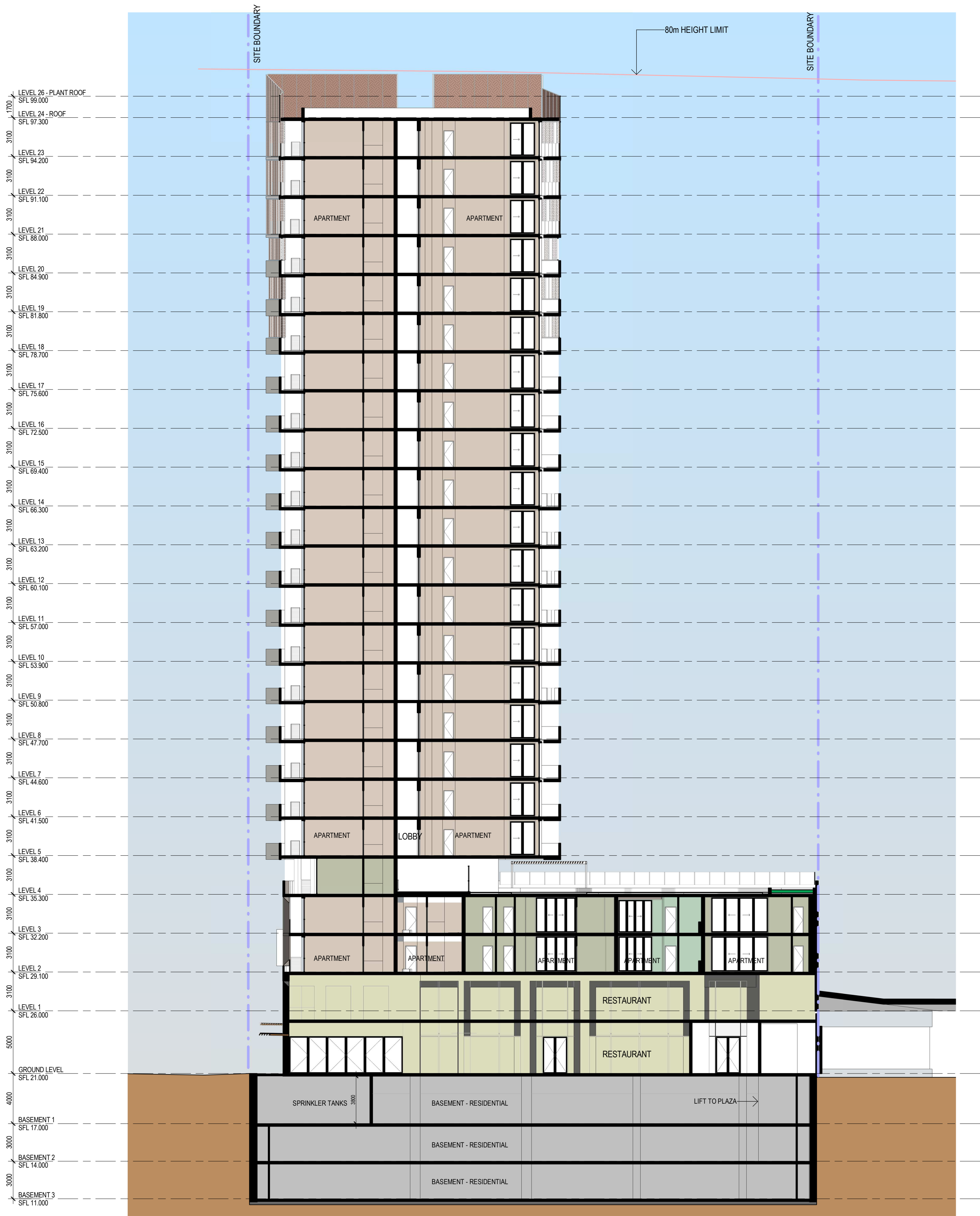
Project  
MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
86-94 Castlereagh Street  
LIVERPOOL NSW 2170  
Proj. No. 18005

Drawing Title  
SECTION 2  
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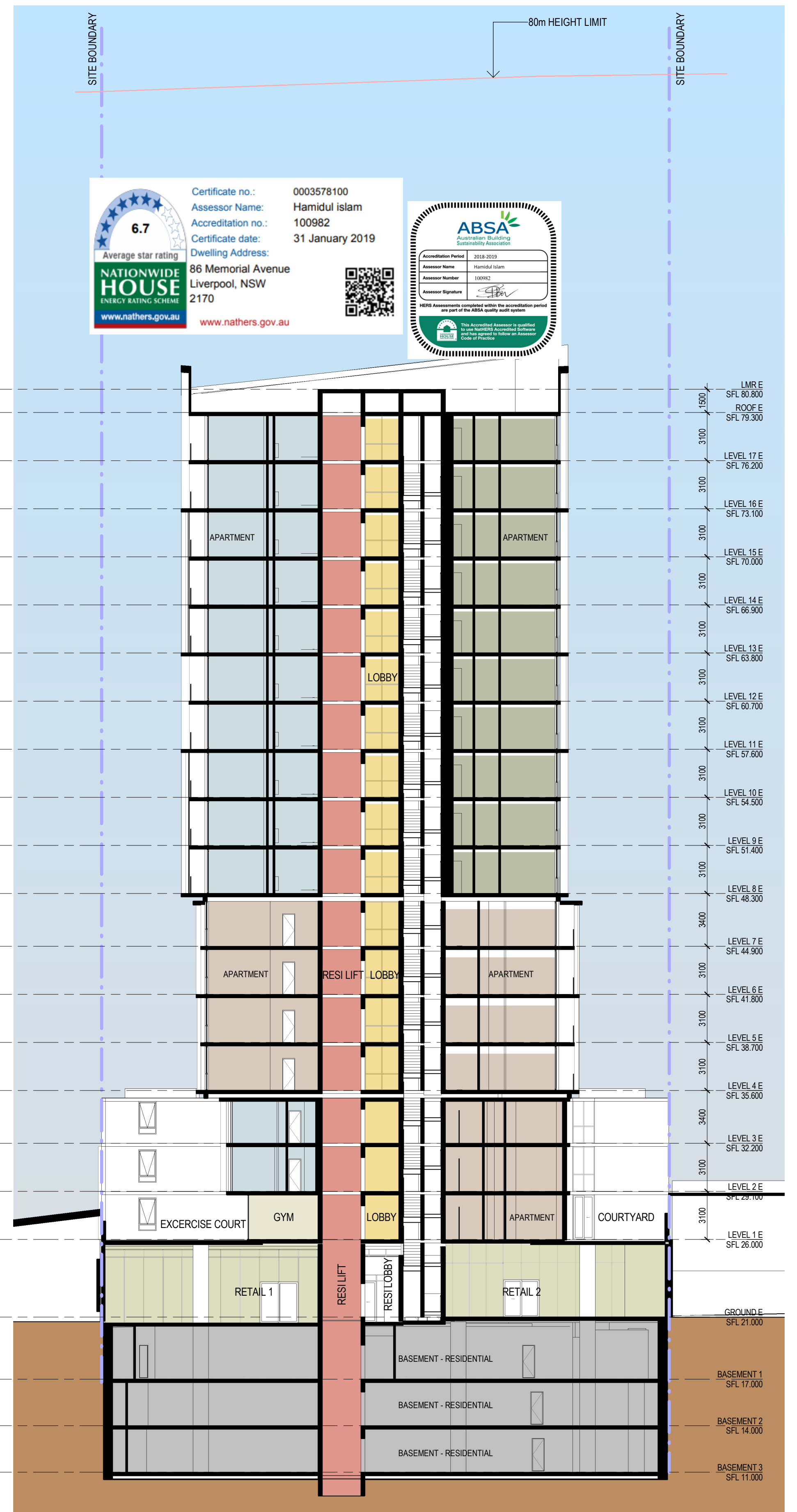
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Issue







1 SECTION 3 DA  
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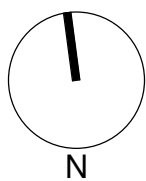


2 SECTION 4 DA  
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No. Date Description  
1 22-02-19 ISSUED FOR D.A. SUBMISSION.

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Project  
MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
86-94 Castlereagh Street  
LIVERPOOL NSW 2170

Proj. No. 18005

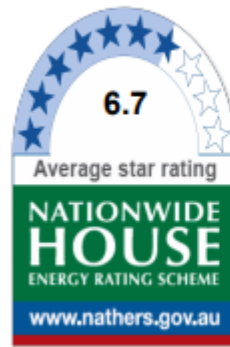
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SECTION 3 AND 4

Sheet Status  
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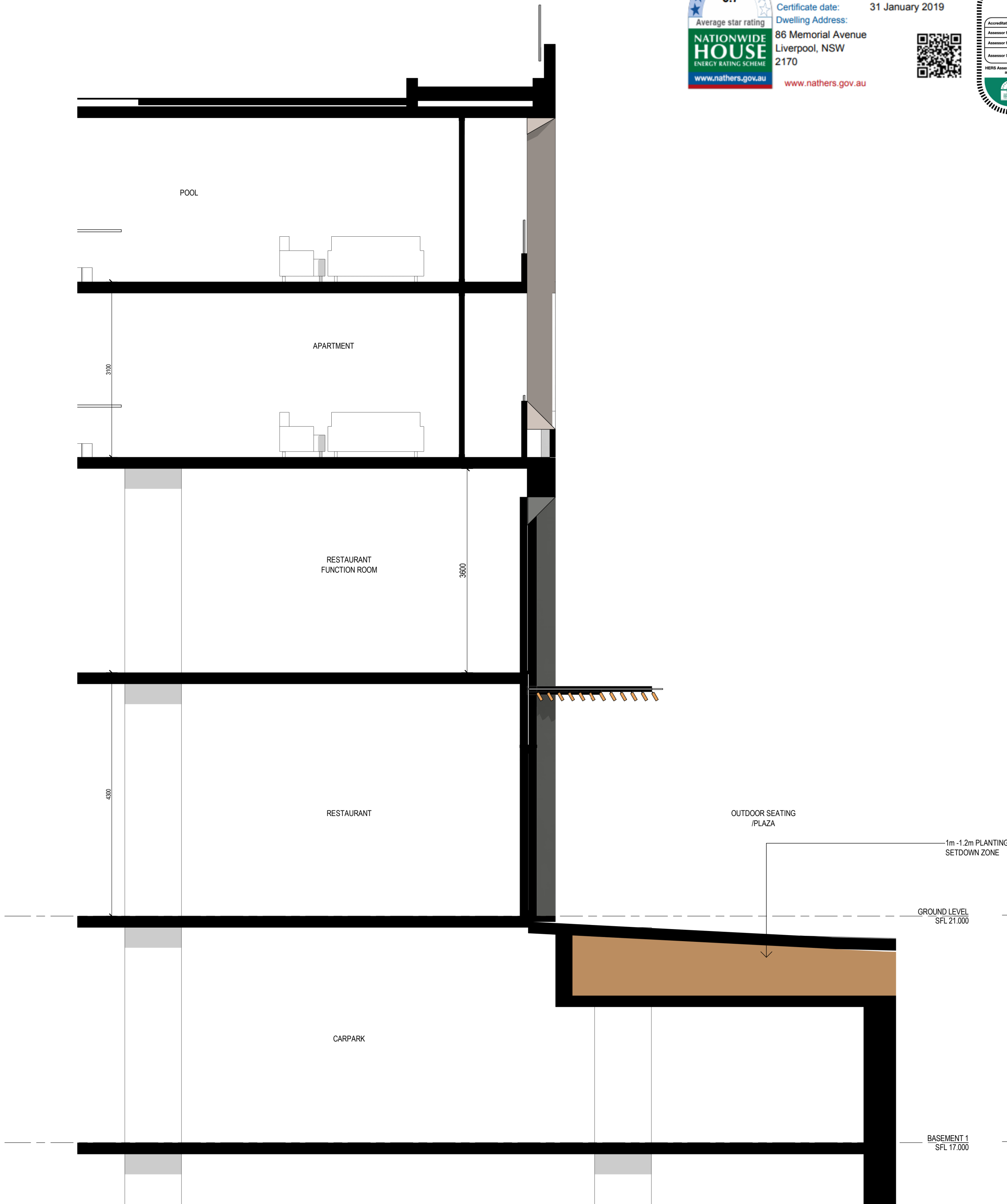
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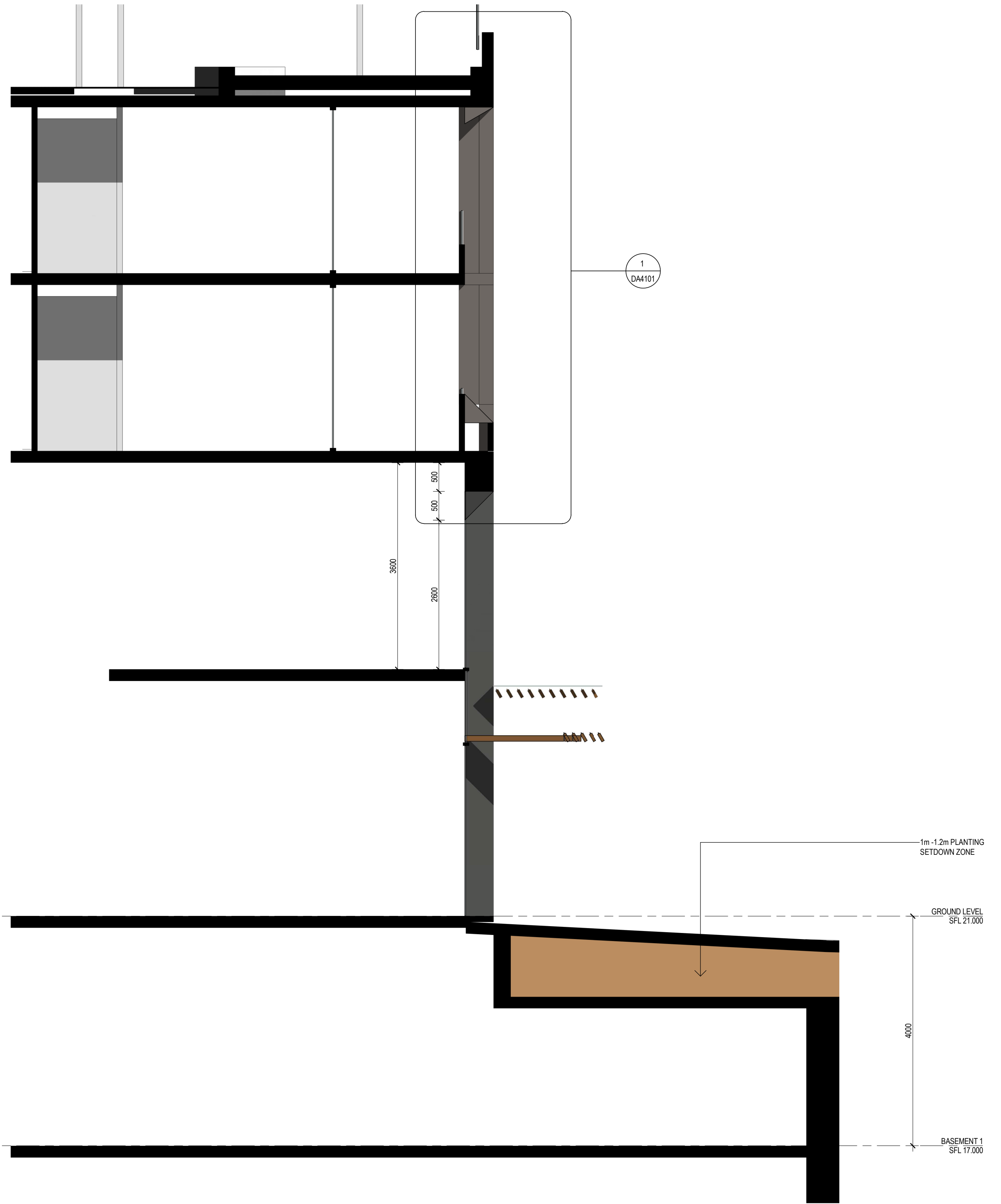




Certificate no.: 0003578100  
Assessor Name: Hamidul Islam  
Accreditation no.: 100982  
Certificate date: 31 January 2019  
Dwelling Address: 86 Memorial Avenue  
Liverpool, NSW 2170  
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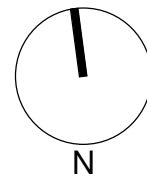


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1:50



2 Section through restaurant opening  
1:50

| Revisions No. | Date   | Description  | Ver | App'd |
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| 1             | XXXXXX | SECOND ISSUE |     |       |



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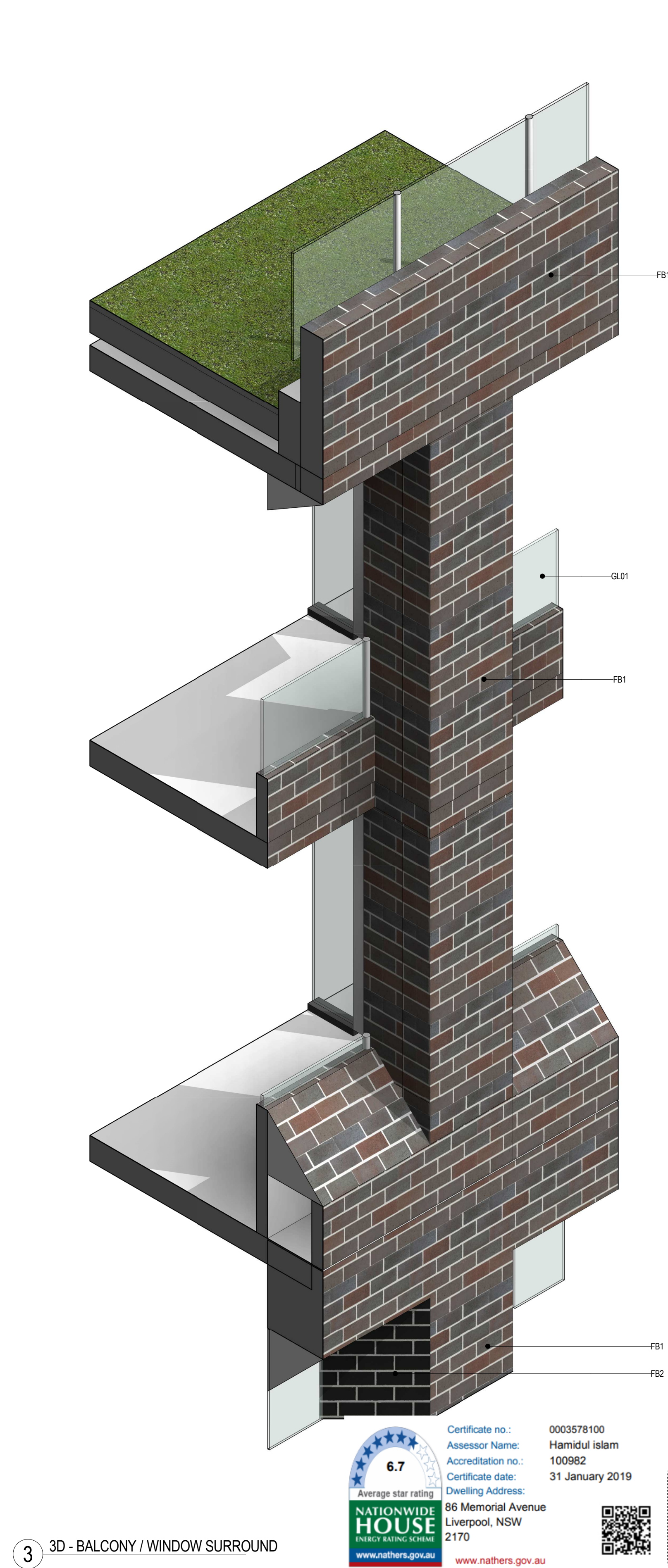
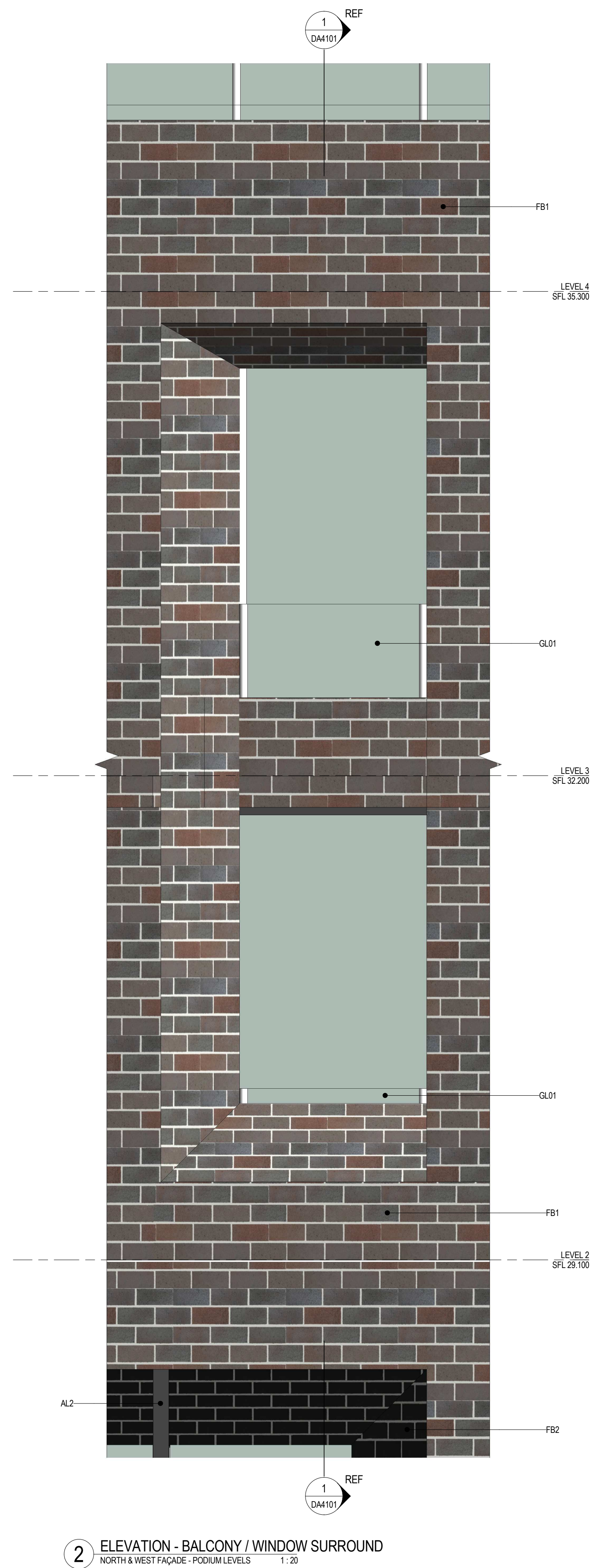
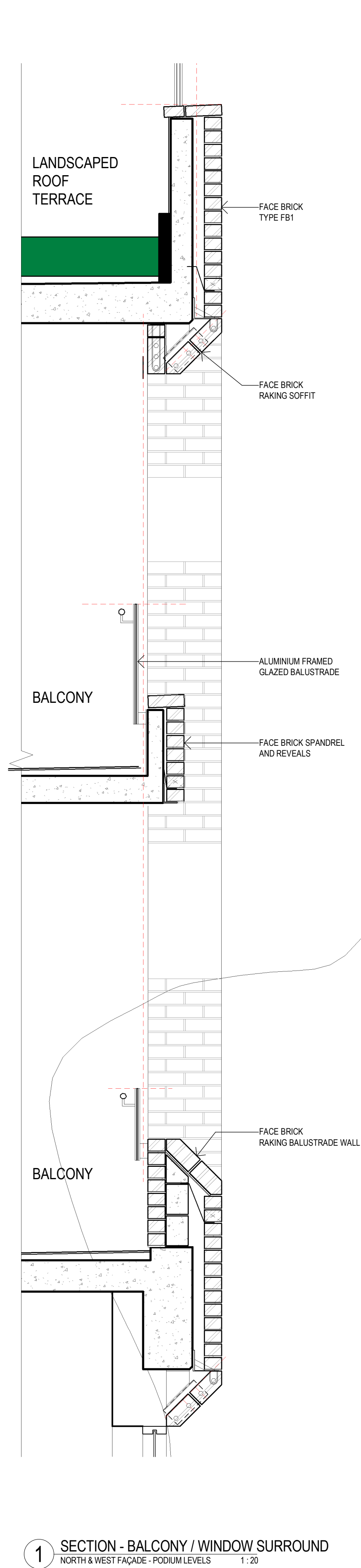
Architect  
**AJ+C**  
ALLEN JACK+COTTIER  
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ABN 53 003 782 250

Project  
MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
86-94 Castlereagh Street  
LIVERPOOL NSW 2170  
Proj. No. 18005

Drawing Title  
**RESTAURANT SECTION**  
Sheet Status  
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Drawing No.  
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Issue



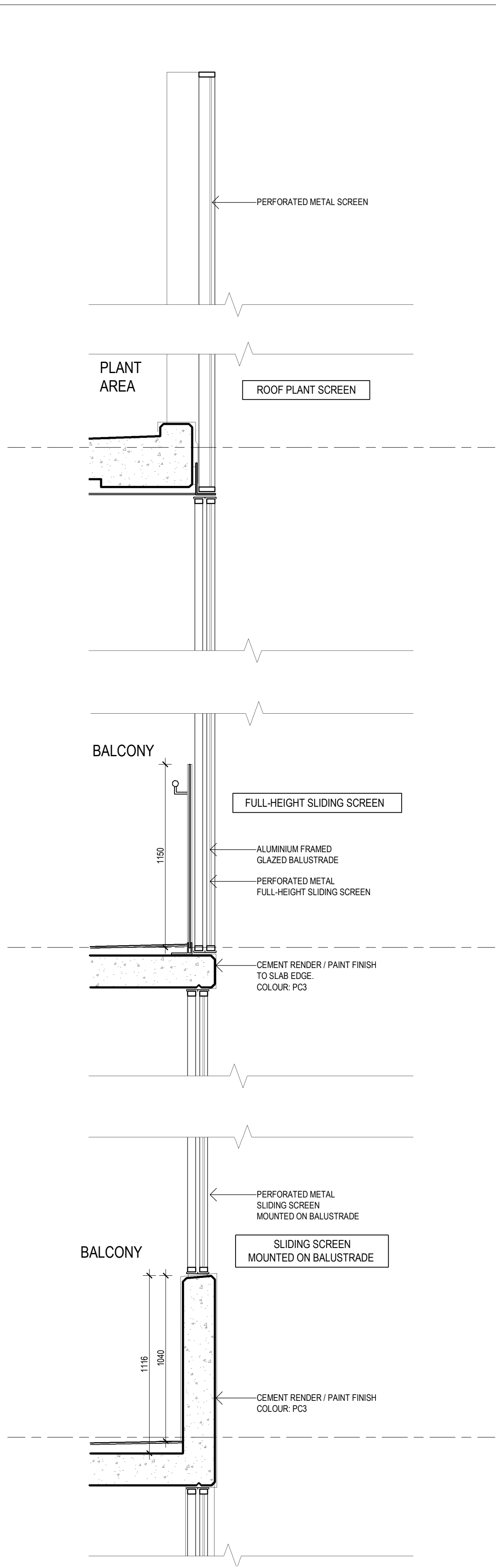


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|---------------------------------------------|-----|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|--------------------------------|-------------------------|-------|
| Revisions<br>No. Date Description Ver App'd | Key | Client<br>Il Capitano Investments Pty Ltd | Architect<br>AJ+C<br>ALLEN JACK+COTTIER<br>79 Myrtle Street Chippendale NSW 2008 AUSTRALIA<br>ph +61 2 9311 8222 fx +61 2 9311 8200<br>ABN 53 003 782 250 | Project<br>MEMORIAL AVENUE, LIVERPOOL<br>77-79 Bathurst Street &<br>86-94 Castlereagh Street<br>LIVERPOOL NSW 2170<br>Proj. No. 18005 | Drawing Title<br>WALL SECTION 1<br>Sheet Status<br>NOT FOR CONSTRUCTION | Scale<br>0 200 400 800 1600 mm | Drawing No.<br>DA4101 1 | Issue |
| 1 22-02-19 ISSUED FOR D.A. SUBMISSION.      |     |                                           |                                                                                                                                                           |                                                                                                                                       |                                                                         |                                |                         |       |

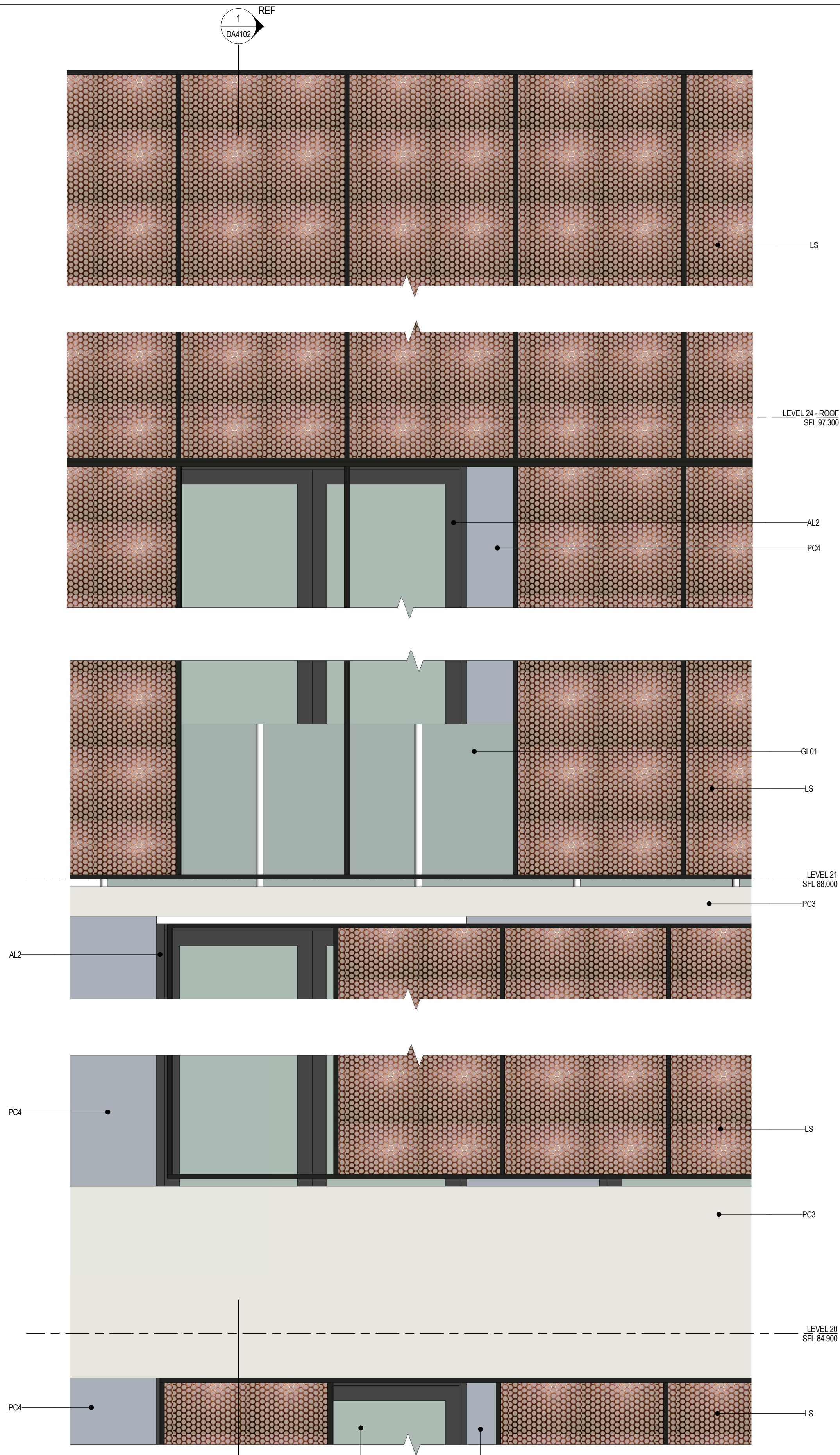
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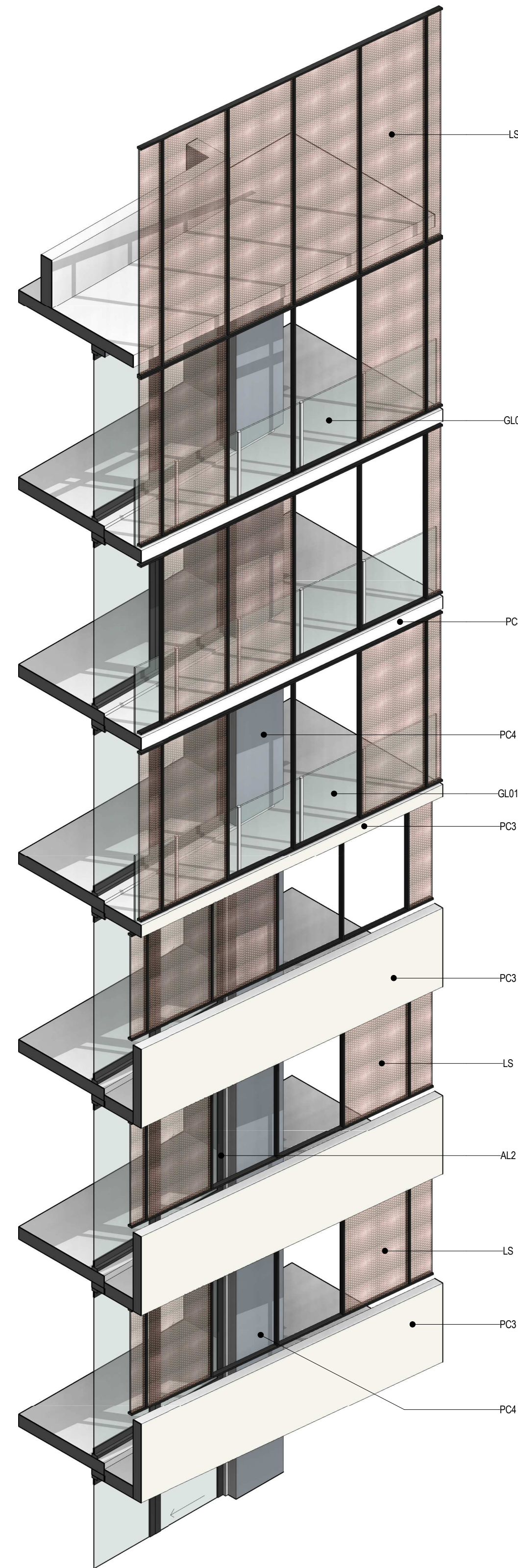




1 SECTION - SLIDING & FIXED SCREENS TO FAÇADE  
TOWER LEVELS WHERE SHOWN  
1:20



2 ELEVATION - SLIDING & FIXED SCREENS TO FAÇADE  
TOWER LEVELS WHERE SHOWN  
1:20



3 3D - SLIDING & FIXED SCREENS TO FAÇADE



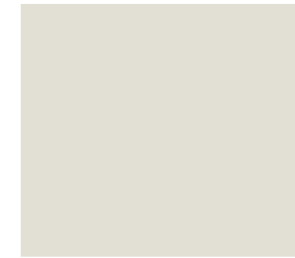
LS - DULUX GOLD TREASURE LOUVRE SCREENS



AL1 - DULUX DURALLOY CLASSIC PEARL WHITE ALUMINIUM WHITE FINIS



AL2 - DULUX DURALLOY MONUMENT WINDOW AND DOOR FRAMES



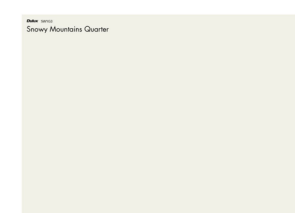
AL3 - DULUX DURALLOY SHOJI WHITE BALCONY FRAMES



PC1 - DULUX MILTON MOON EXTERIOR WALL



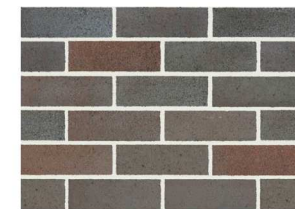
PC2 - DULUX TUSCAN SUNSET BLADE WALLS TO BALCONIES



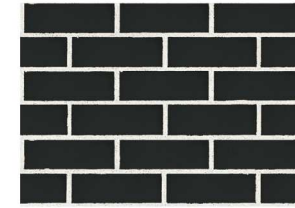
PC3 - DULUX SNOWY MOUNTAINS QUARTER BALCONY WALLS



PC4 - DULUX SILVER SLIDE EXTERIOR WALLS



FB1 - BOWRAL DRY PRESSED BOWRAL BLUE



FB2 - BURLESQUE CHARMING BLACK



PC - PRECAST CONCRETE PANEL WITH SHADOW LINE PAINTED PC3

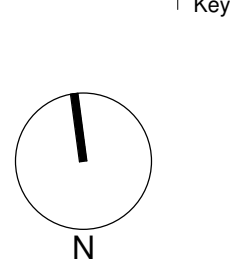


BAL - GLASS BALUSTRADE



Revisions  
No. Date Description  
1 22-02-19 ISSUED FOR D.A. SUBMISSION.

Ver App'd



Key

Client  
Il Capitano Investments Pty Ltd

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Project  
MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
88-94 Castlereagh Street  
LIVERPOOL NSW 2170

Proj. No. 18005

Drawing Title  
WALL SECTION 2

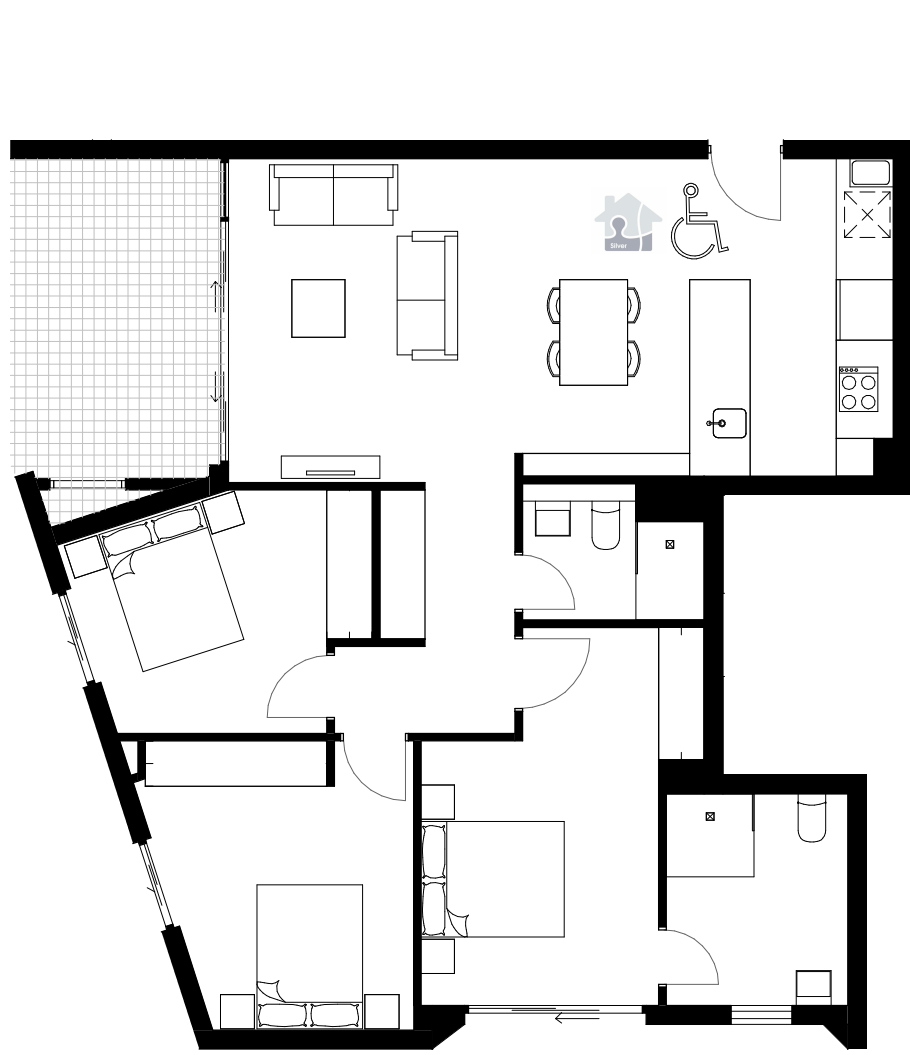
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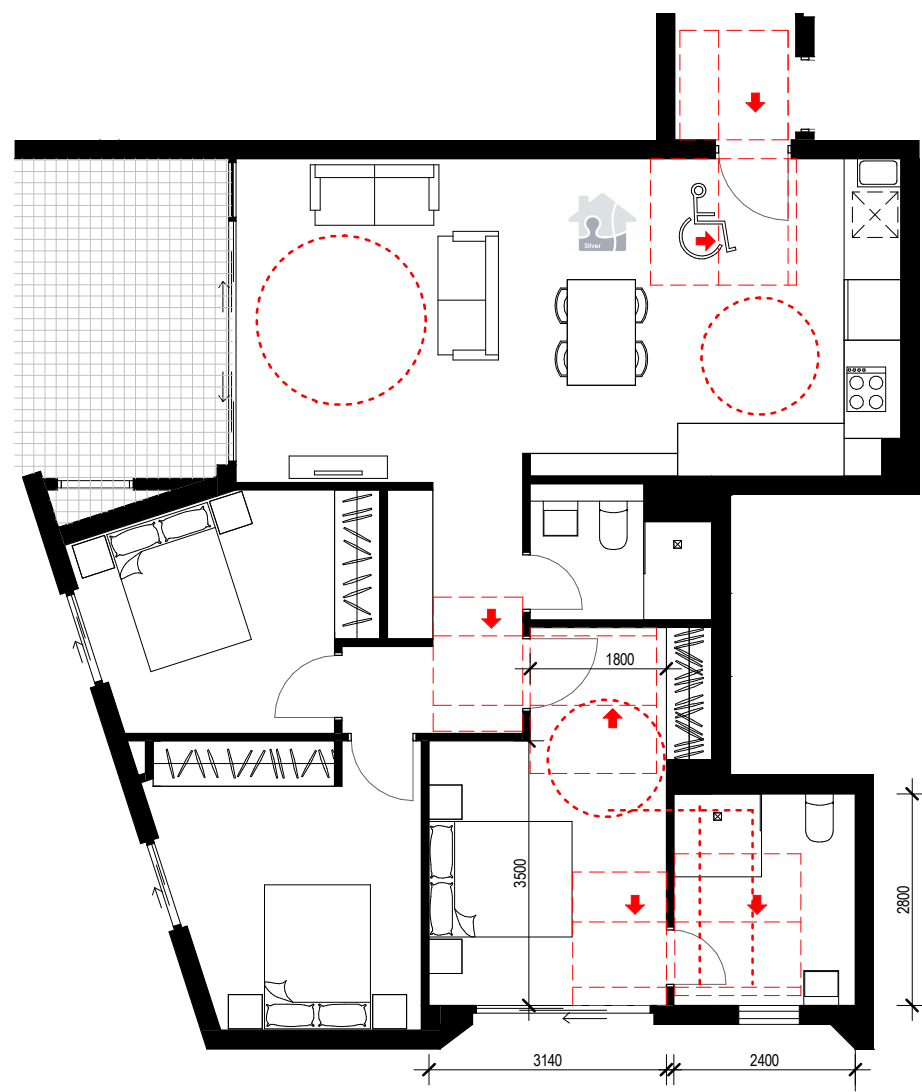
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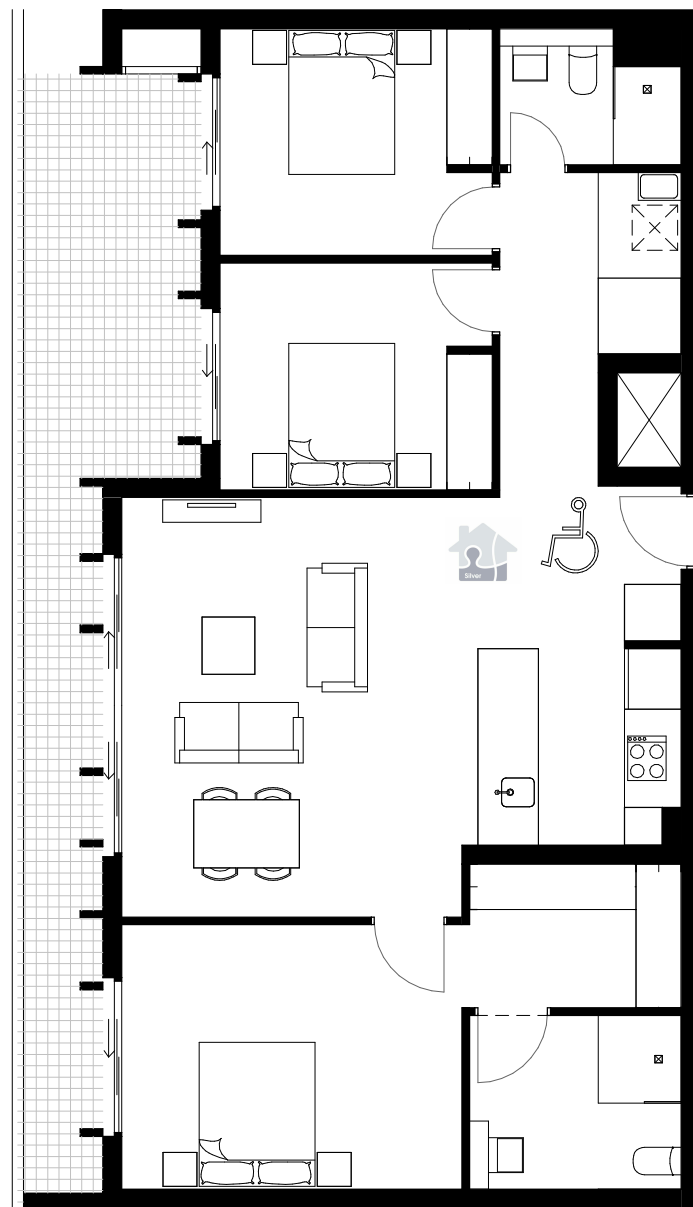


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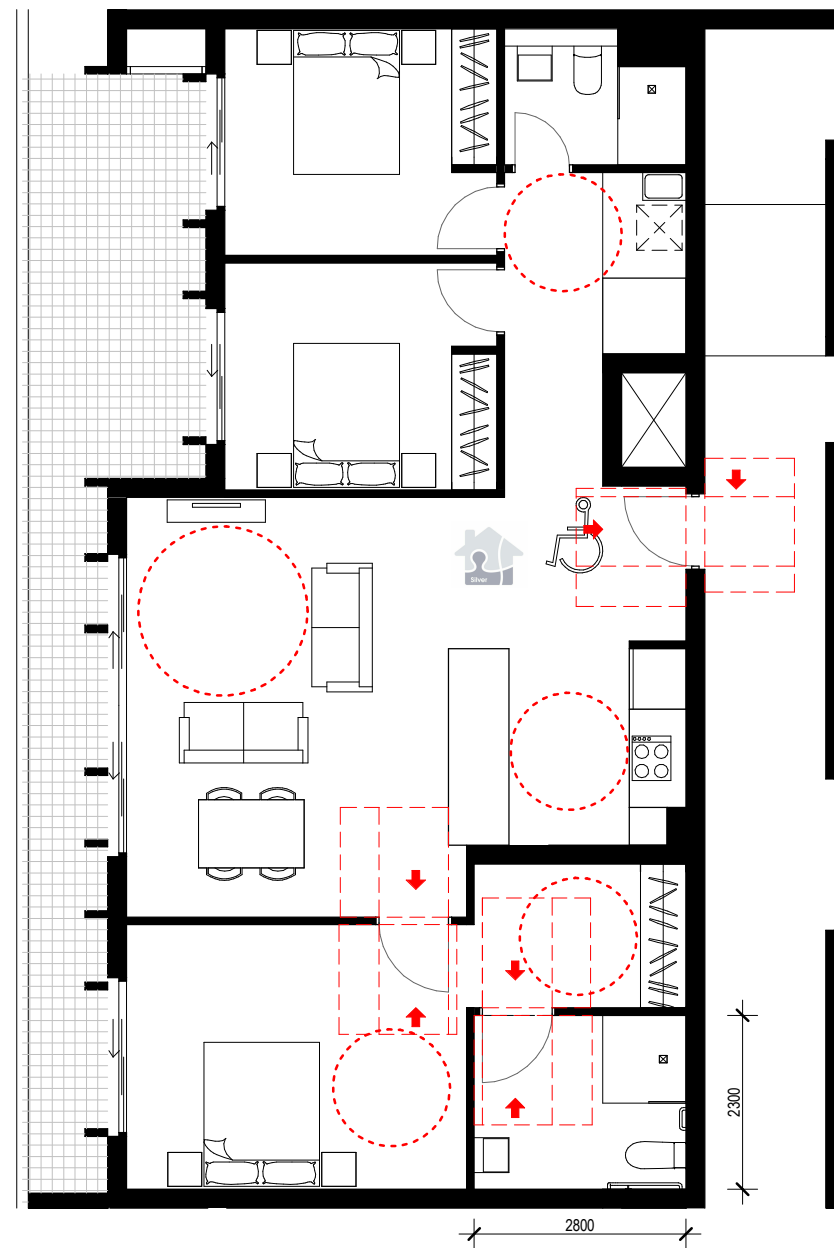


2 ADAPTABLE 1 POST - ADAPTATION  
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| W022     | LEVEL 2 |
| W032     | LEVEL 3 |
| W052     | LEVEL 5 |
| W062     | LEVEL 6 |
| TOTAL: 5 |         |



3 ADAPTABLE 2 PRE - ADAPTATION  
1:100

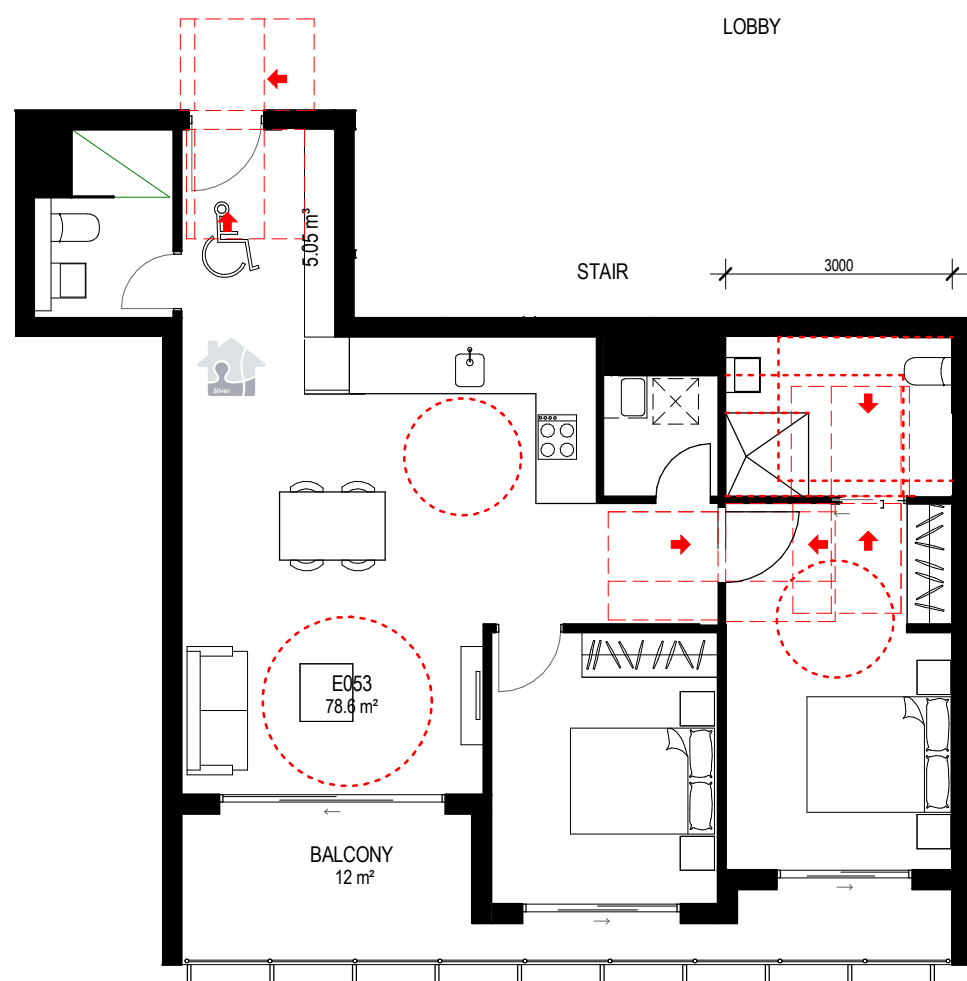


4 ADAPTABLE 2 POST - ADAPTATION  
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|----------|---------|
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| TOTAL: 1 |         |

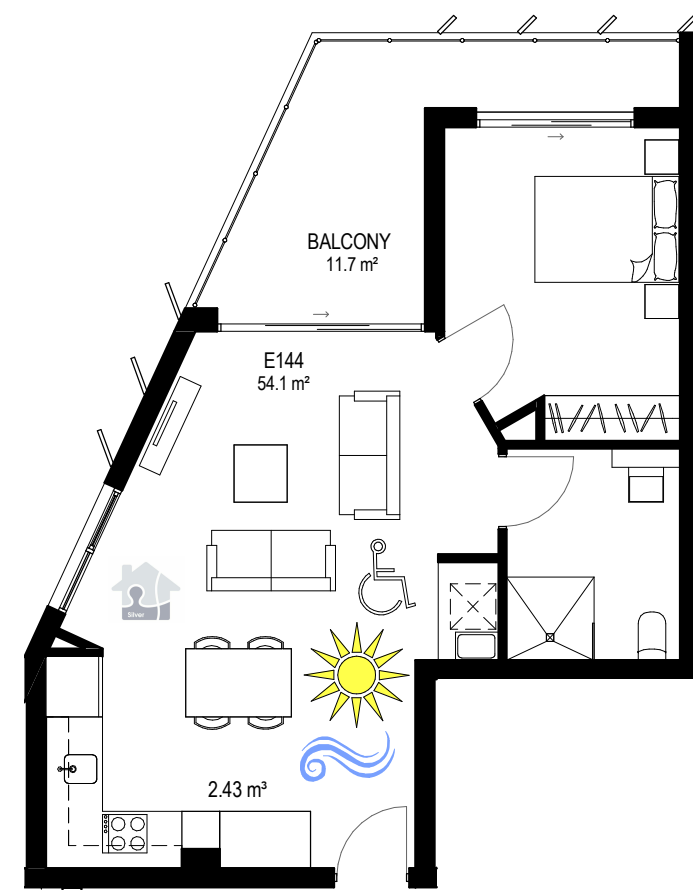


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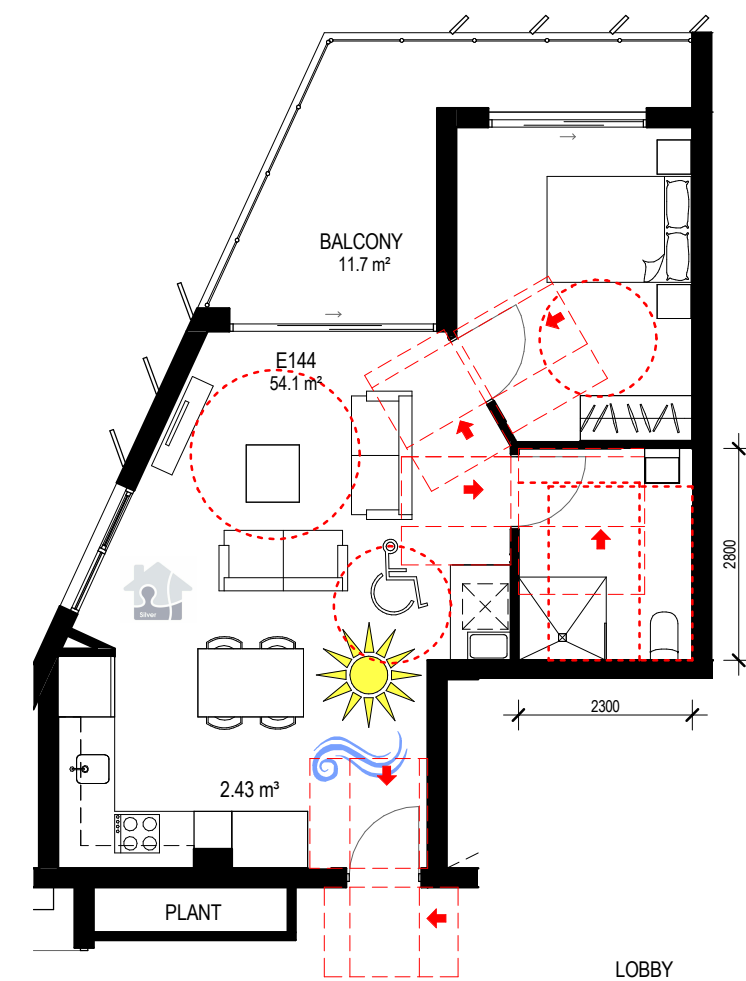


6 ADAPTABLE 3 POST - ADAPTATION  
1:100

| Number   | Level     |
|----------|-----------|
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| E053     | LEVEL 5 E |
| E063     | LEVEL 6 E |
| E073     | LEVEL 7 E |
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7 ADAPTABLE 4 PRE - ADAPTATION  
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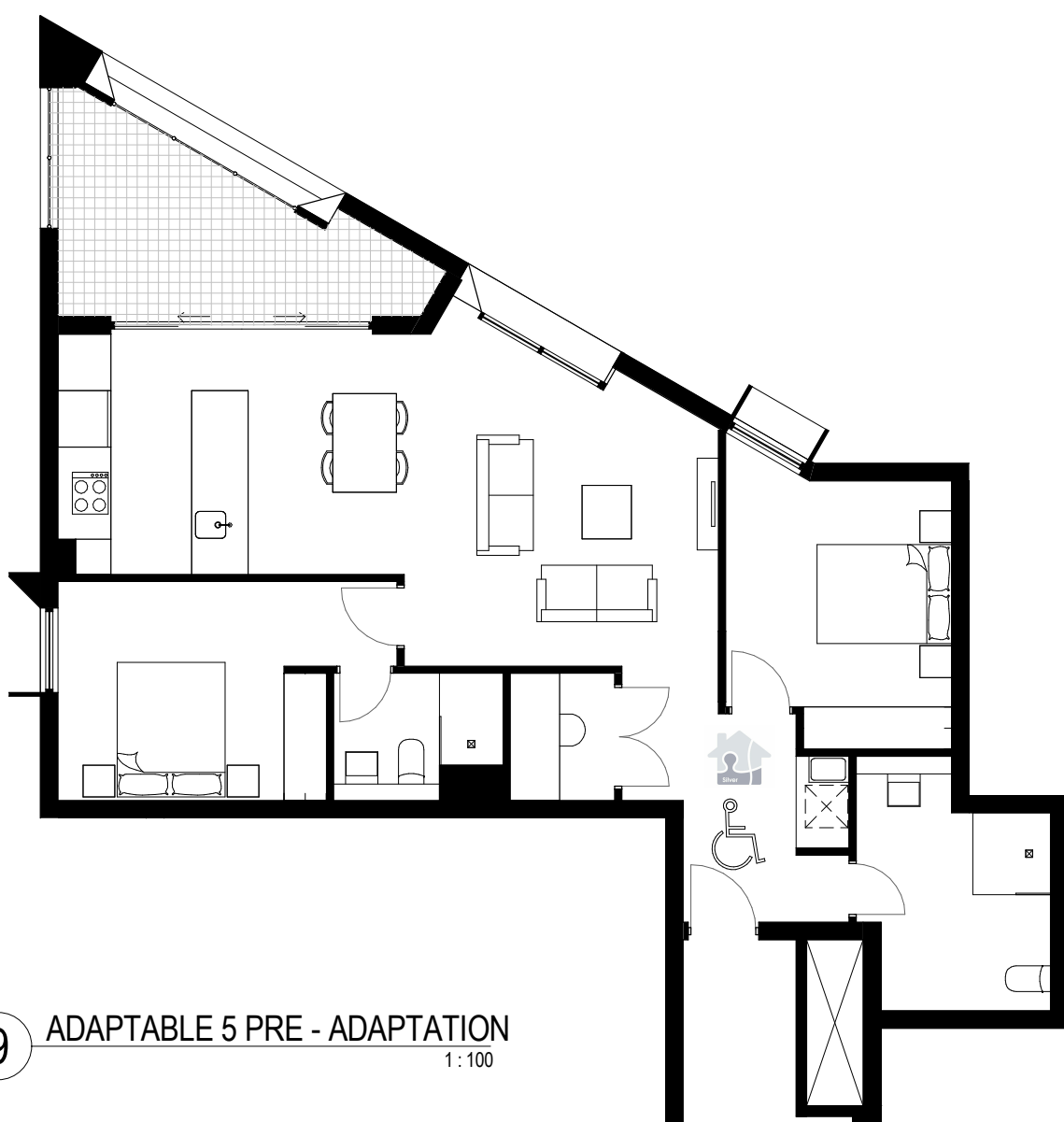


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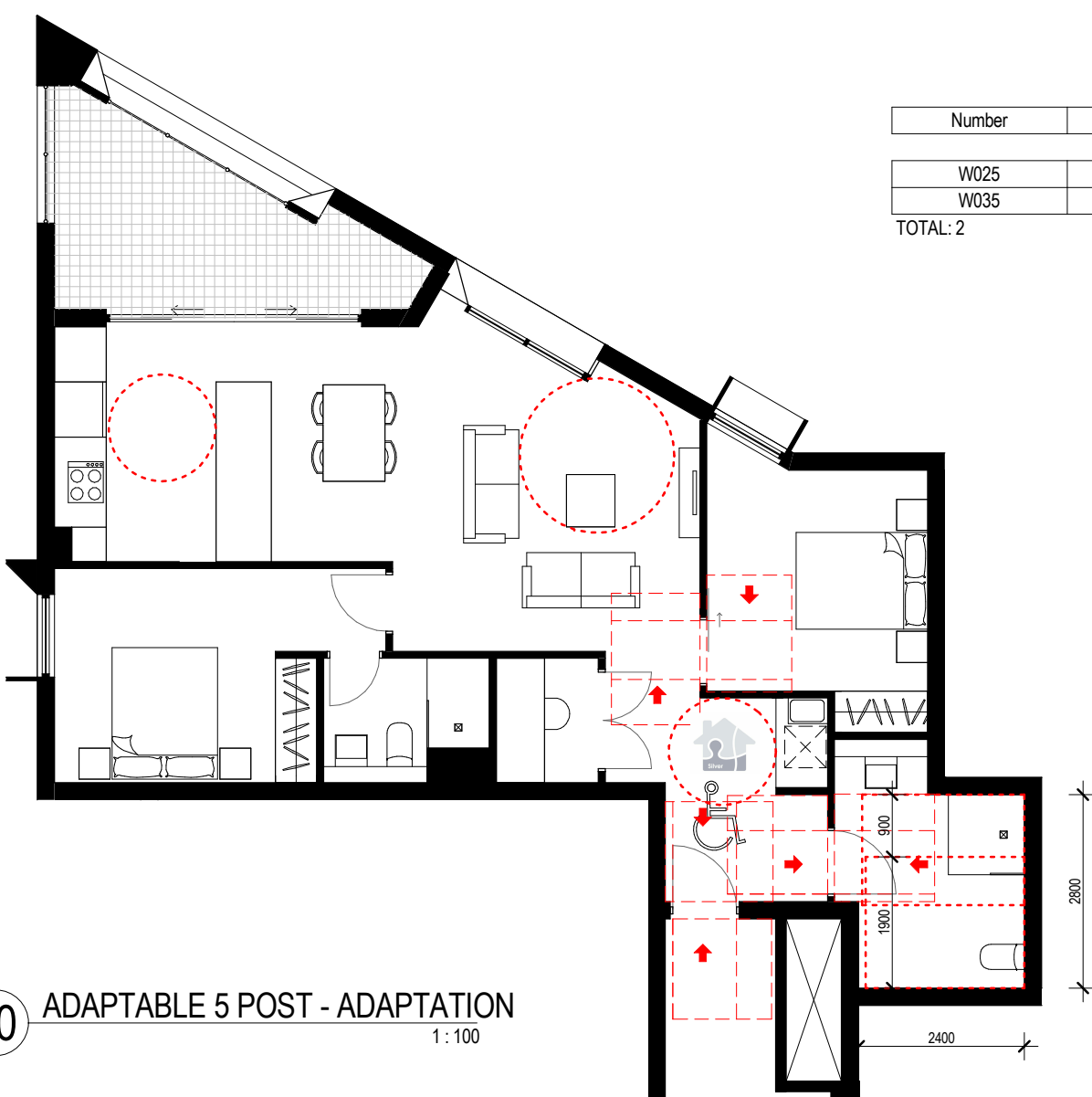
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|-----------|------------|
| E084      | LEVEL 8 E  |
| E094      | LEVEL 9 E  |
| E104      | LEVEL 10 E |
| E114      | LEVEL 11 E |
| E124      | LEVEL 12 E |
| E134      | LEVEL 13 E |
| E144      | LEVEL 14 E |
| E154      | LEVEL 15 E |
| E164      | LEVEL 16 E |
| E174      | LEVEL 17 E |
| TOTAL: 10 |            |



Certificate no.: 0003578100  
Assessor Name: Hamdul Islam  
Accreditation no.: 100982  
Certificate date: 31 January 2019  
Dwelling Address: 86 Memorial Avenue  
Liverpool, NSW  
2170  
www.nathurs.gov.au

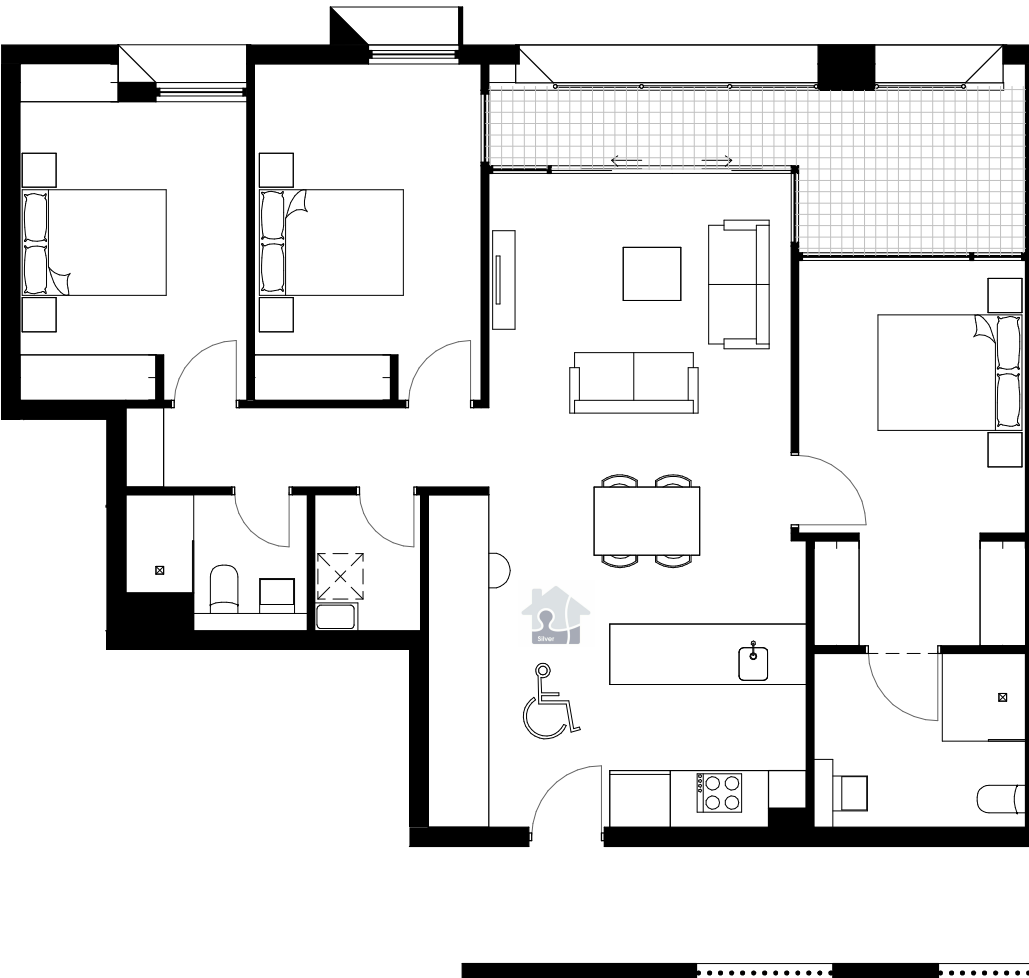


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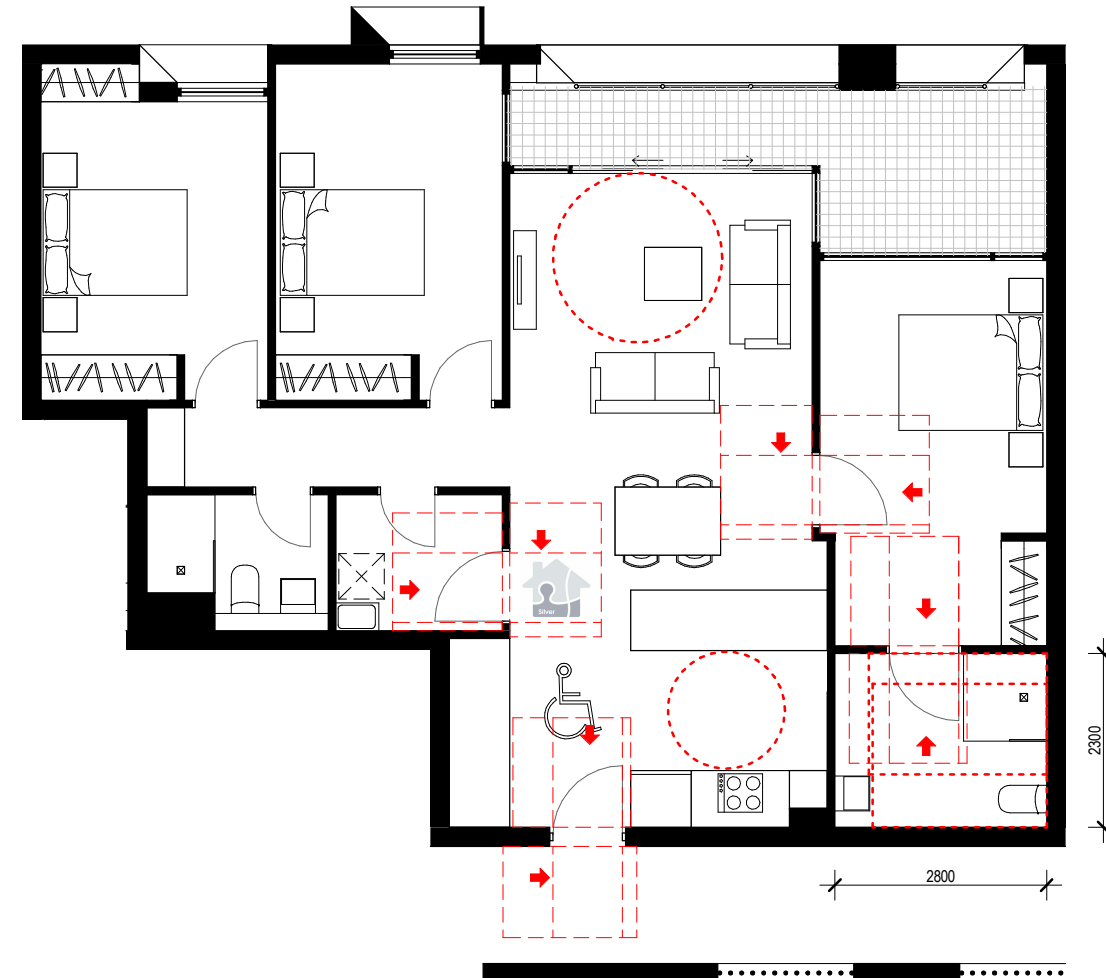


10 ADAPTABLE 5 POST - ADAPTATION  
1:100

| Number   | Level   |
|----------|---------|
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| W035     | LEVEL 3 |
| TOTAL: 2 |         |



11 ADAPTABLE 6 PRE - ADAPTATION  
1:100



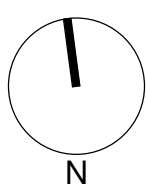
12 ADAPTABLE 6 POST - ADAPTATION  
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|----------|---------|
| W026     | LEVEL 2 |
| W036     | LEVEL 3 |
| TOTAL: 2 |         |

| Revisions  | Description                 |
|------------|-----------------------------|
| No. Date   |                             |
| 1 22-02-19 | ISSUED FOR D.A. SUBMISSION. |

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Key



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ABN 53 003 782 250

Project

MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
86-94 Castlereagh Street  
LIVERPOOL NSW 2170

Proj. No. 18005

Drawing Title

ADAPTABLE  
APARTMENT PLANS

Sheet Status

NOT FOR CONSTRUCTION

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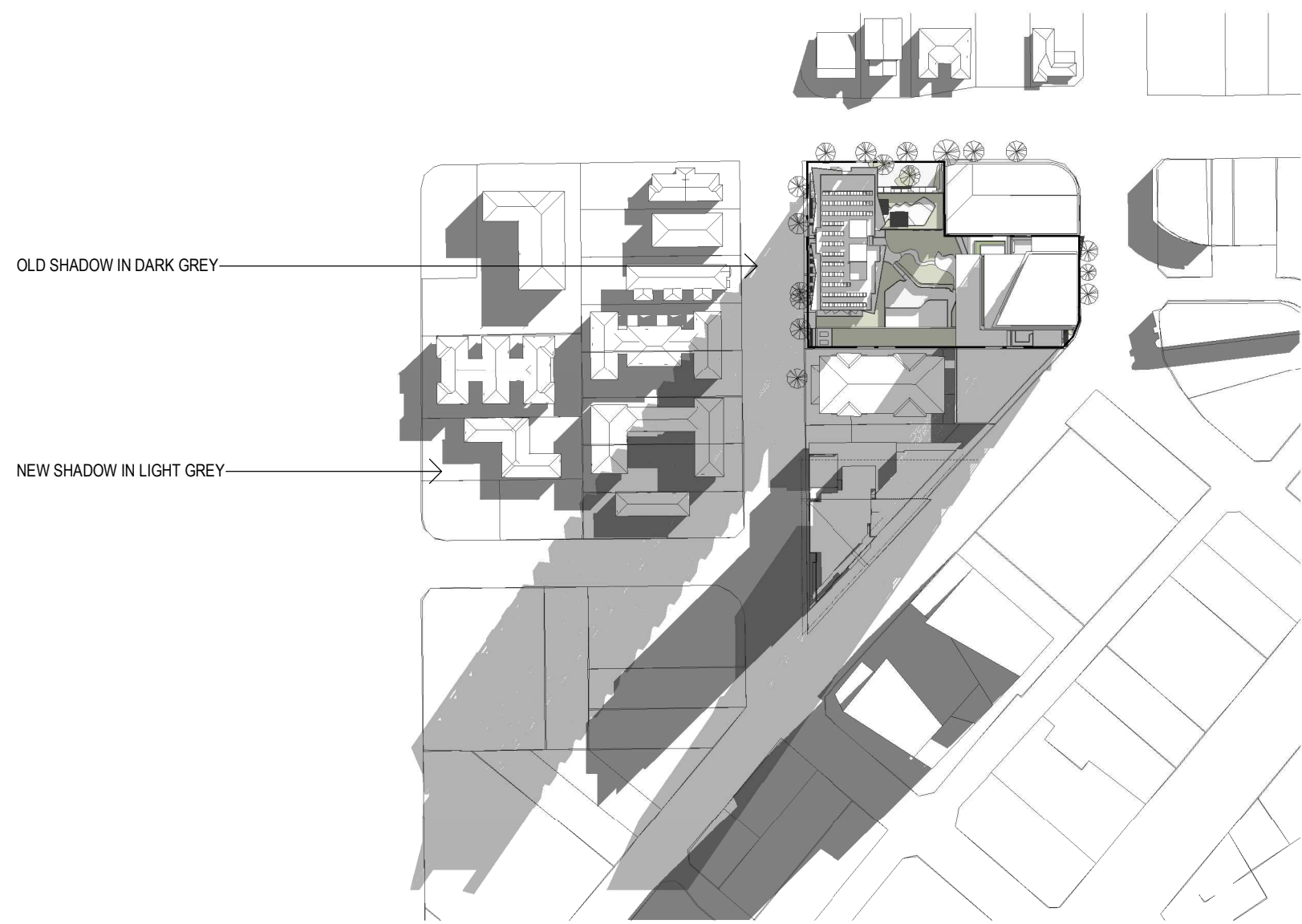
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DA5101 1

Issue



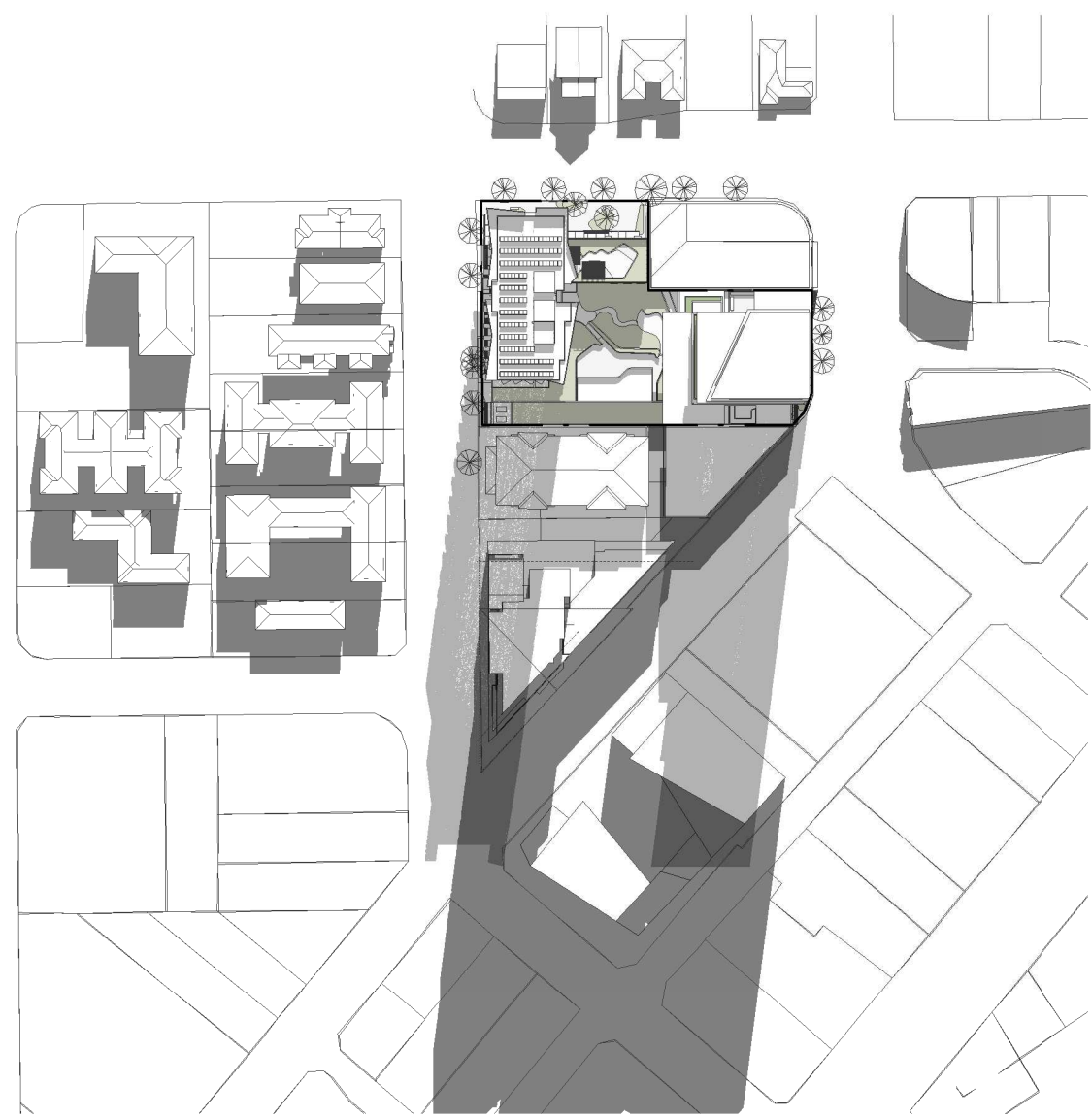




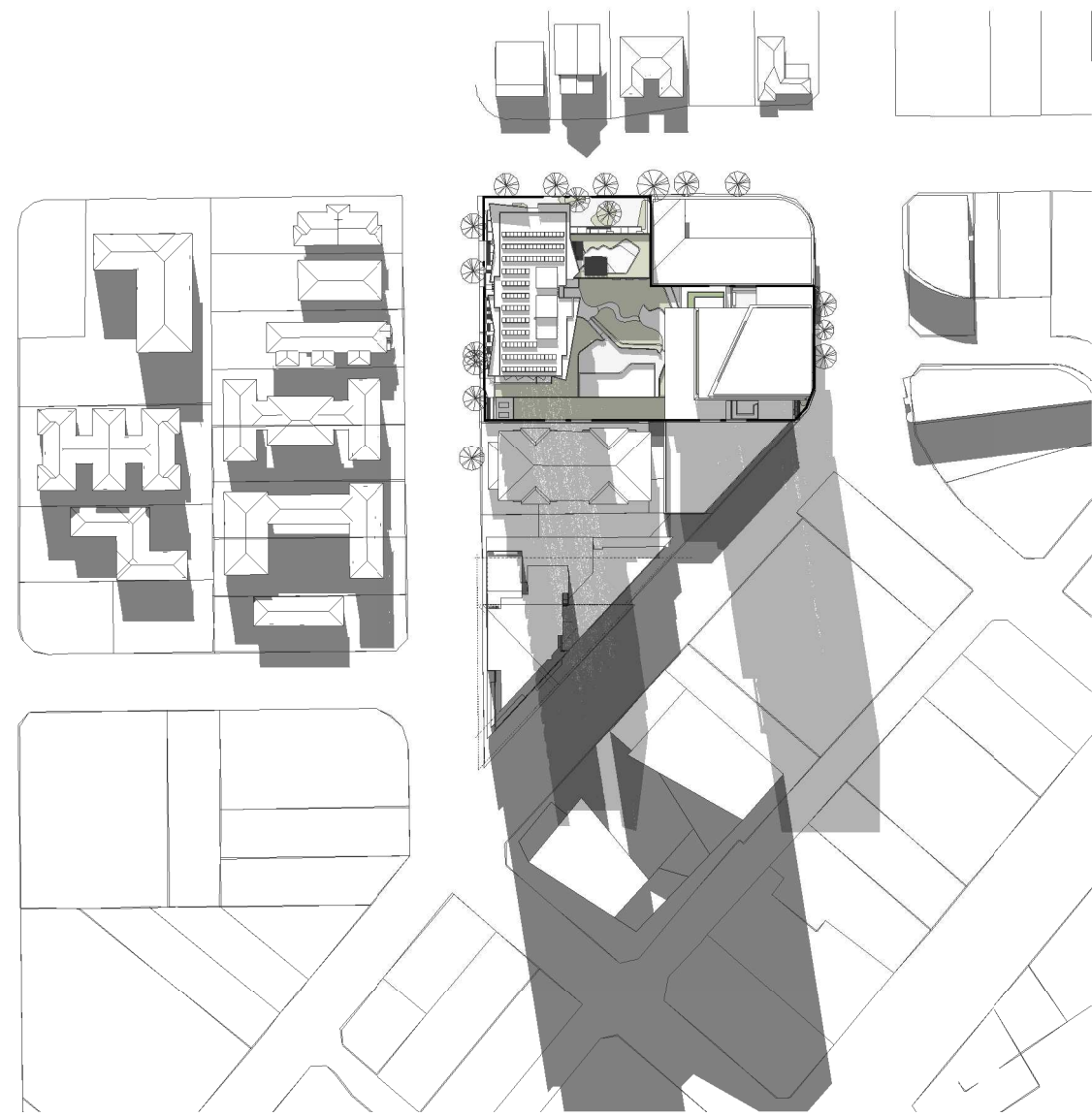
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2 Shadow 1000



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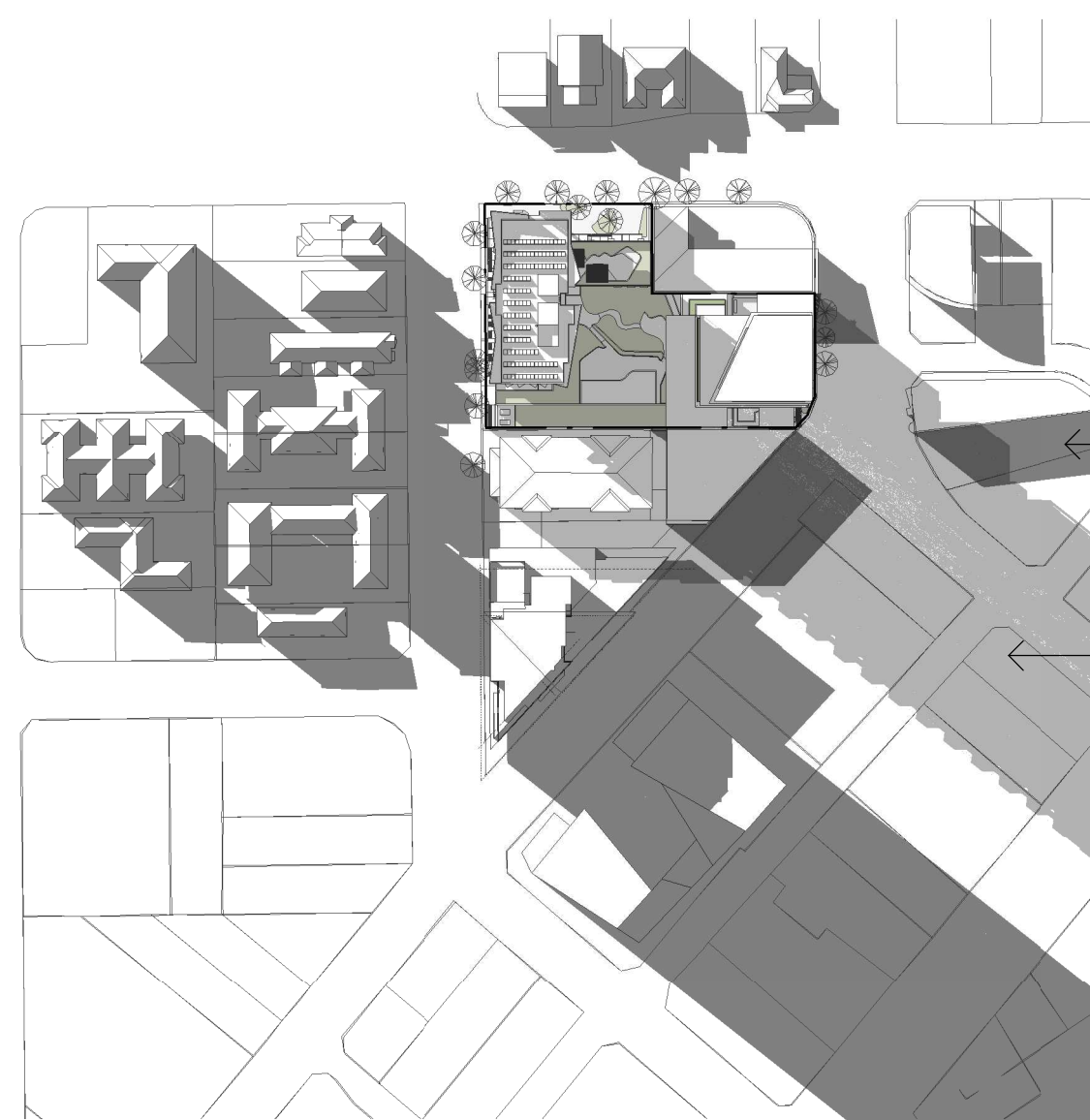
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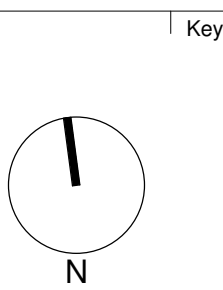
7 Shadow 1500



Certificate no.: 0003578100  
Assessor Name: Hamdul Islam  
Accreditation no.: 100982  
Certificate date: 31 January 2019  
Dwelling Address: 86 Memorial Avenue  
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| 1             | 22-02-19 | ISSUED FOR D.A. SUBMISSION. |     |       |



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ABN 53 003 782 250

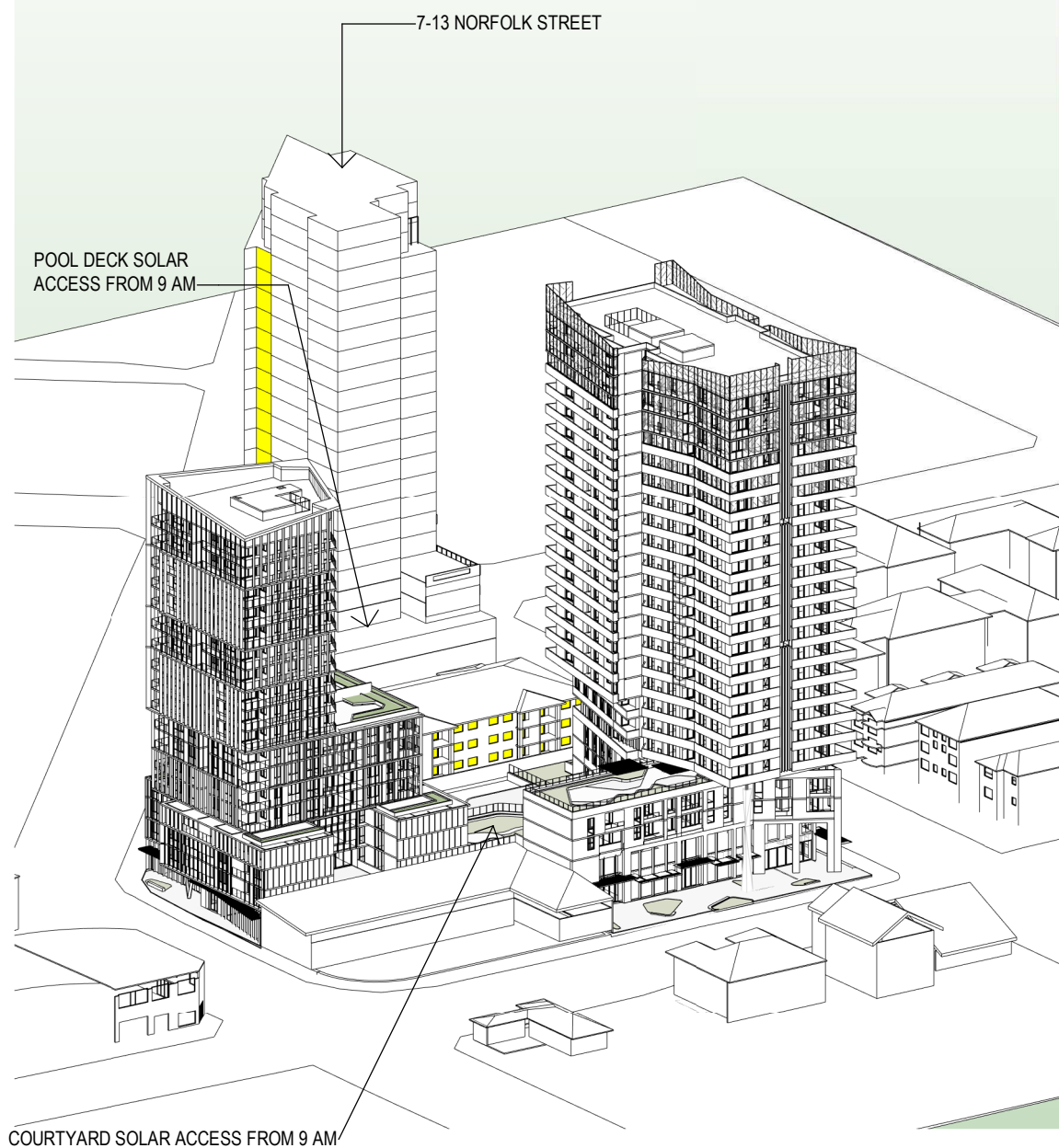
Project  
MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
86-94 Castlereagh Street  
LIVERPOOL NSW 2170  
Proj. No. 18005

Drawing Title  
**SHADOW DIAGRAMS  
- 21 JUNE**  
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NOT FOR CONSTRUCTION

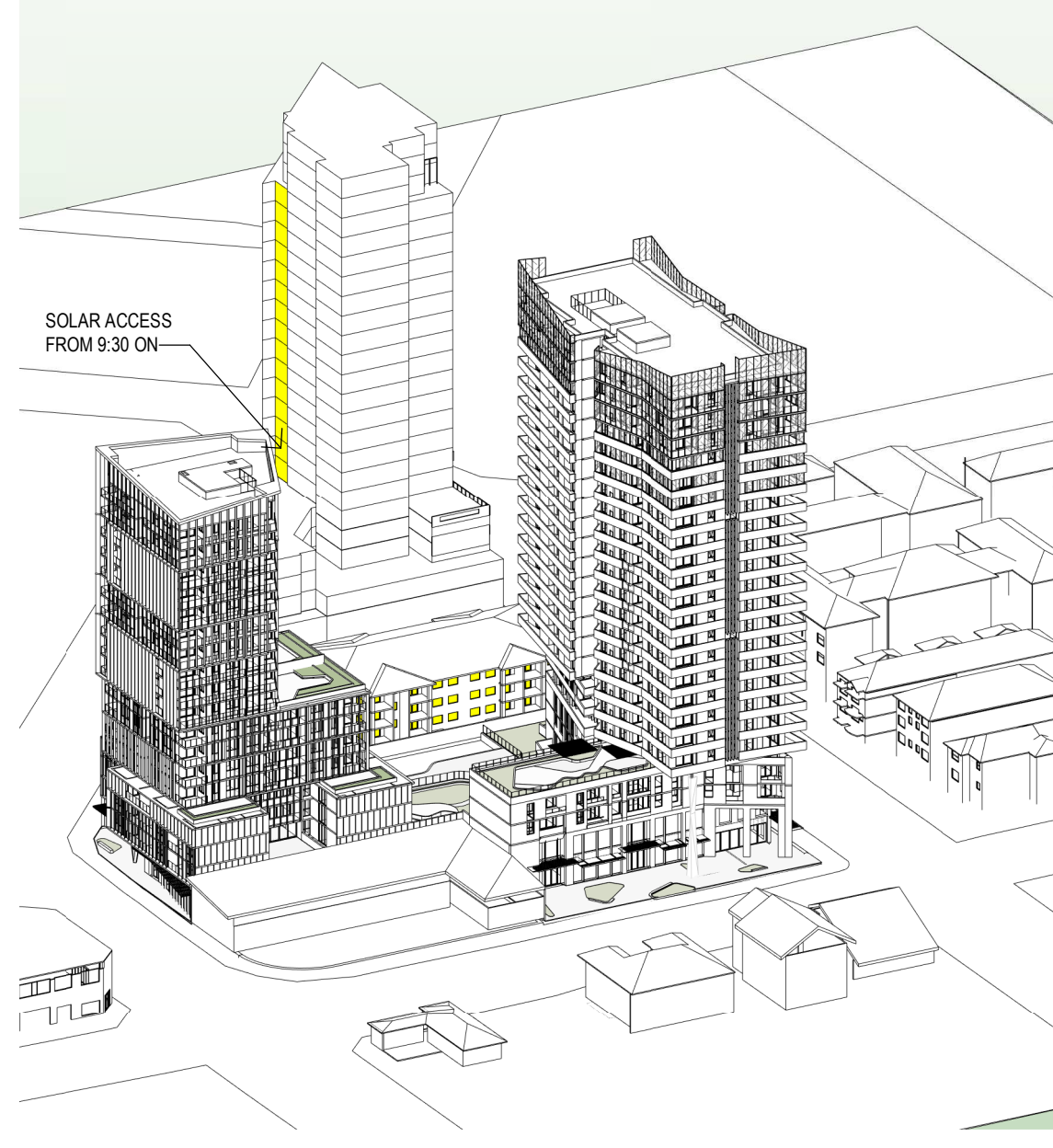
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Issue



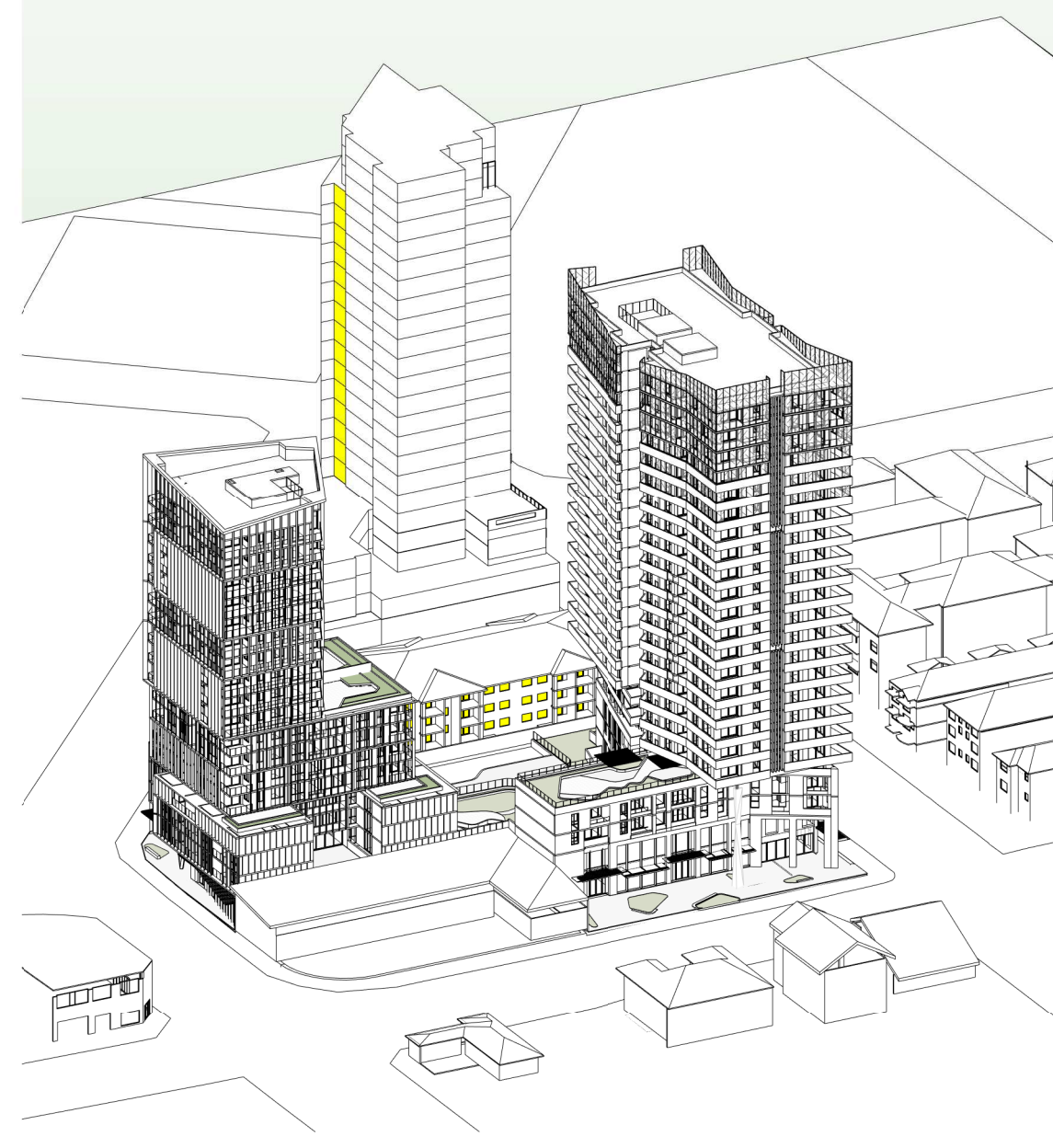




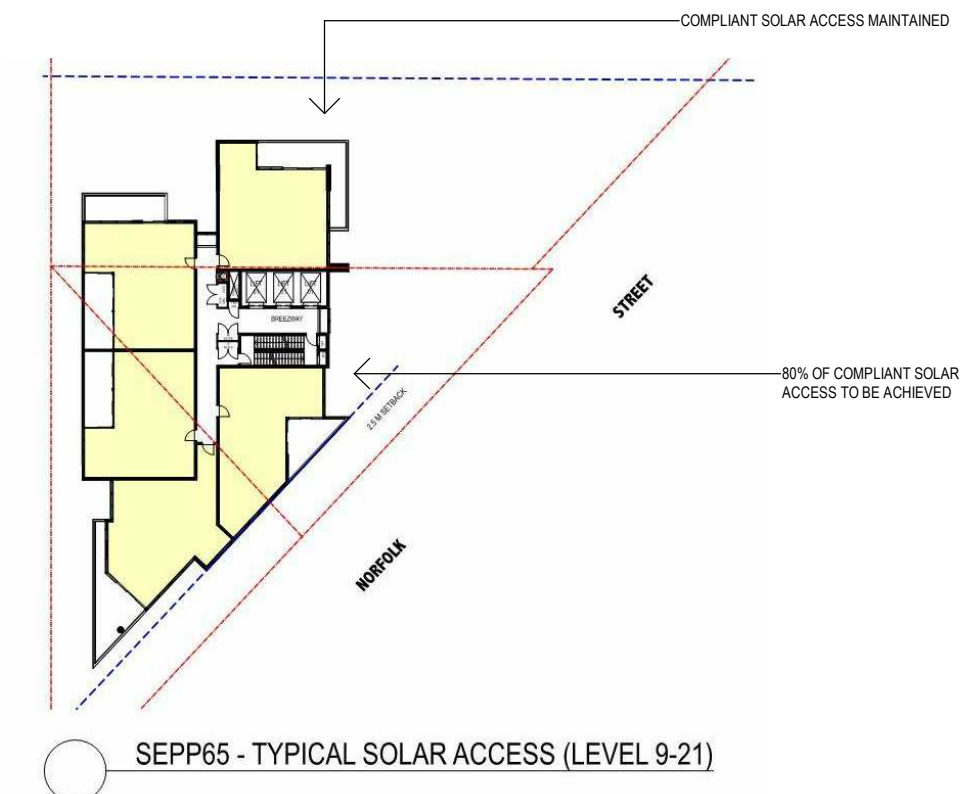
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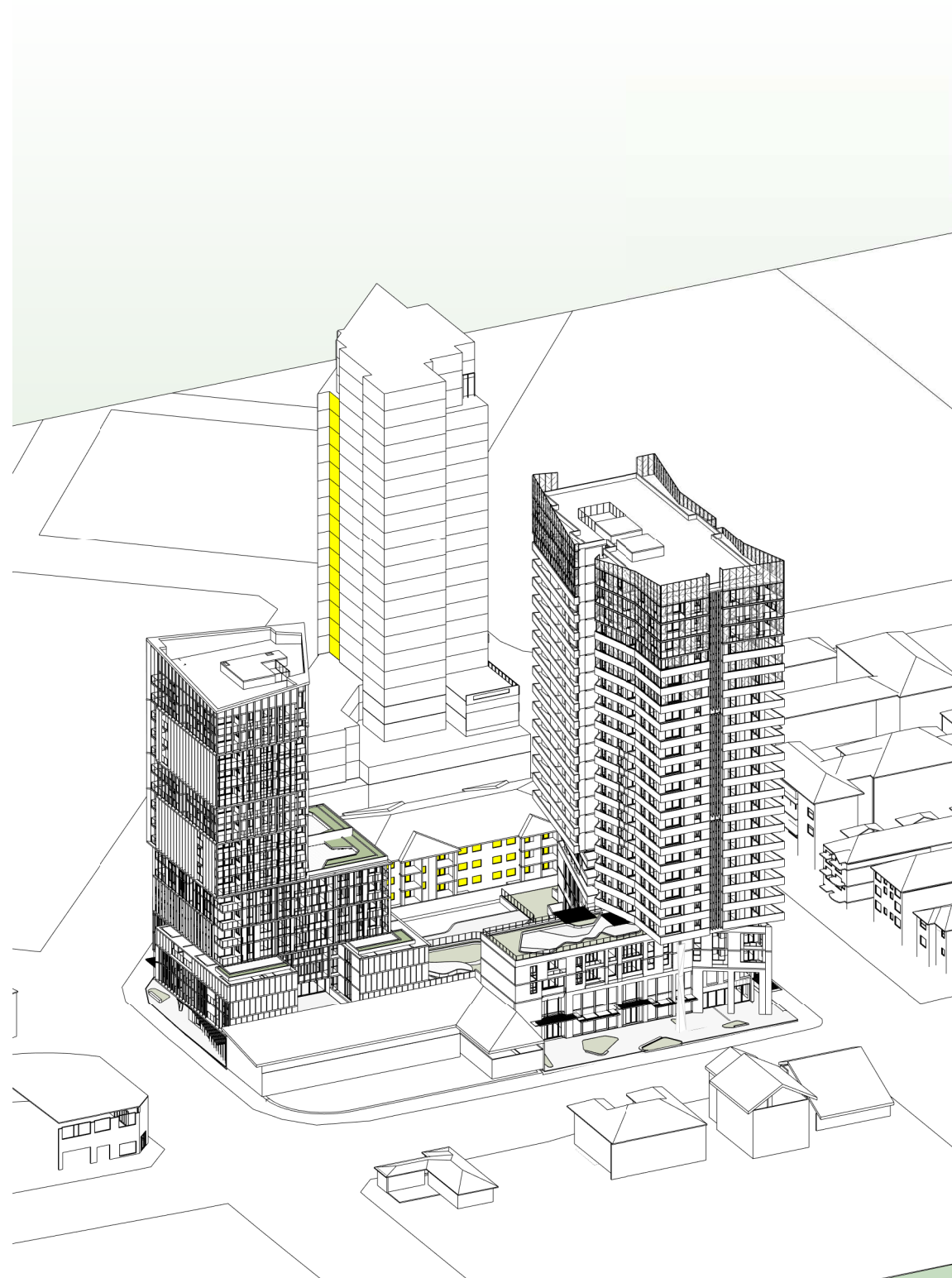
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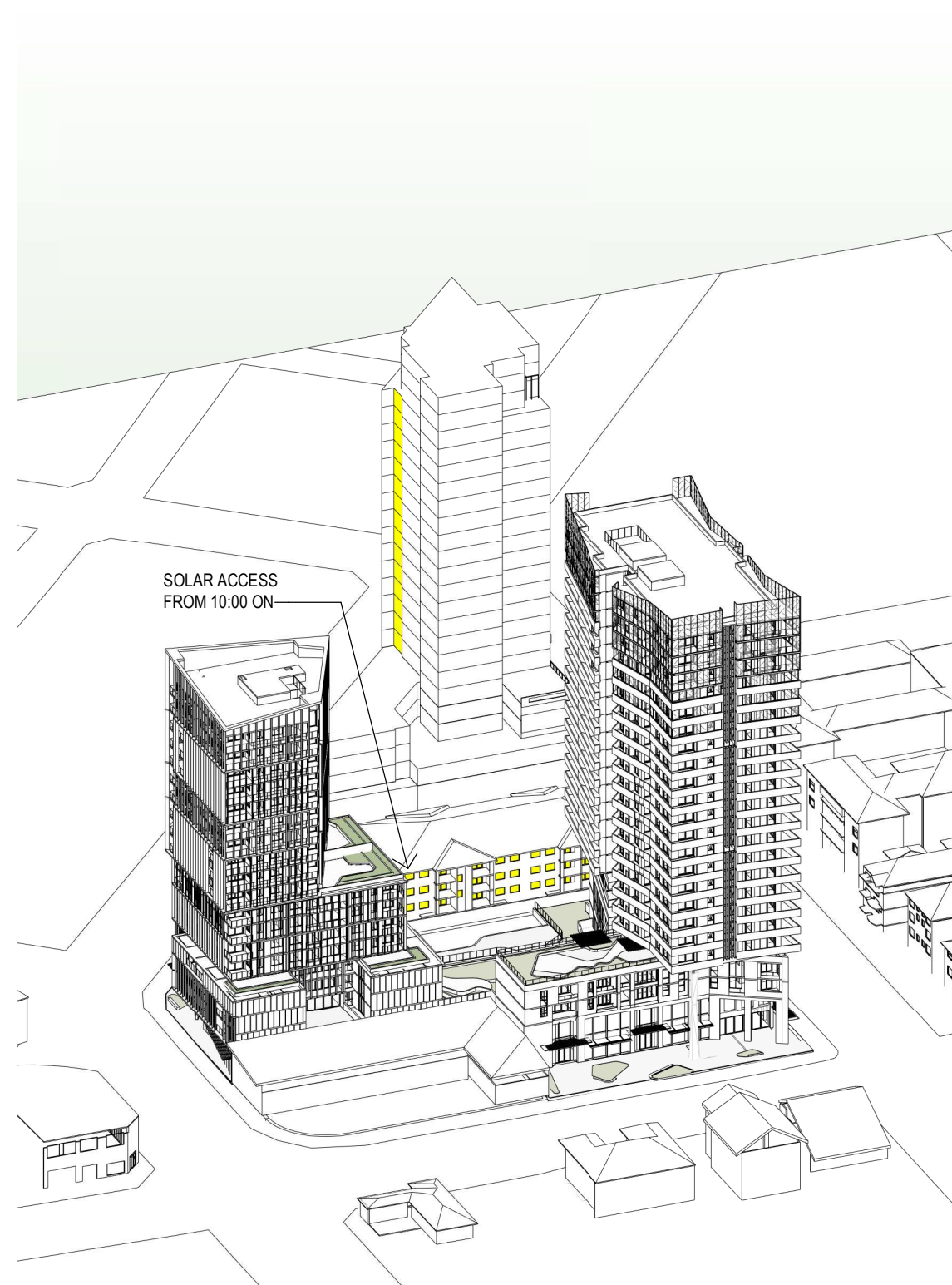
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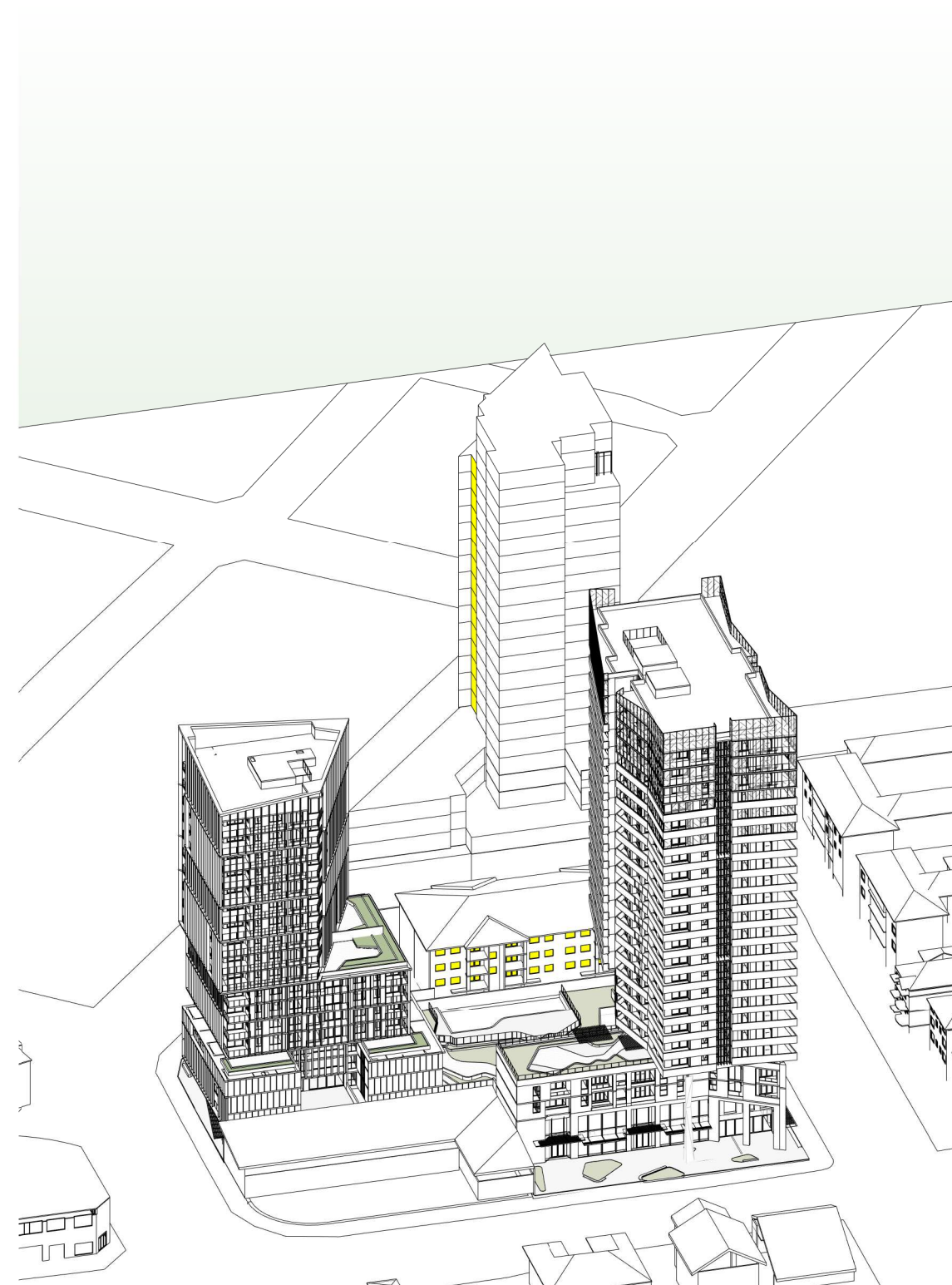
7-13 NORFOLK STREET SEPP65 SOLAR ACCESS



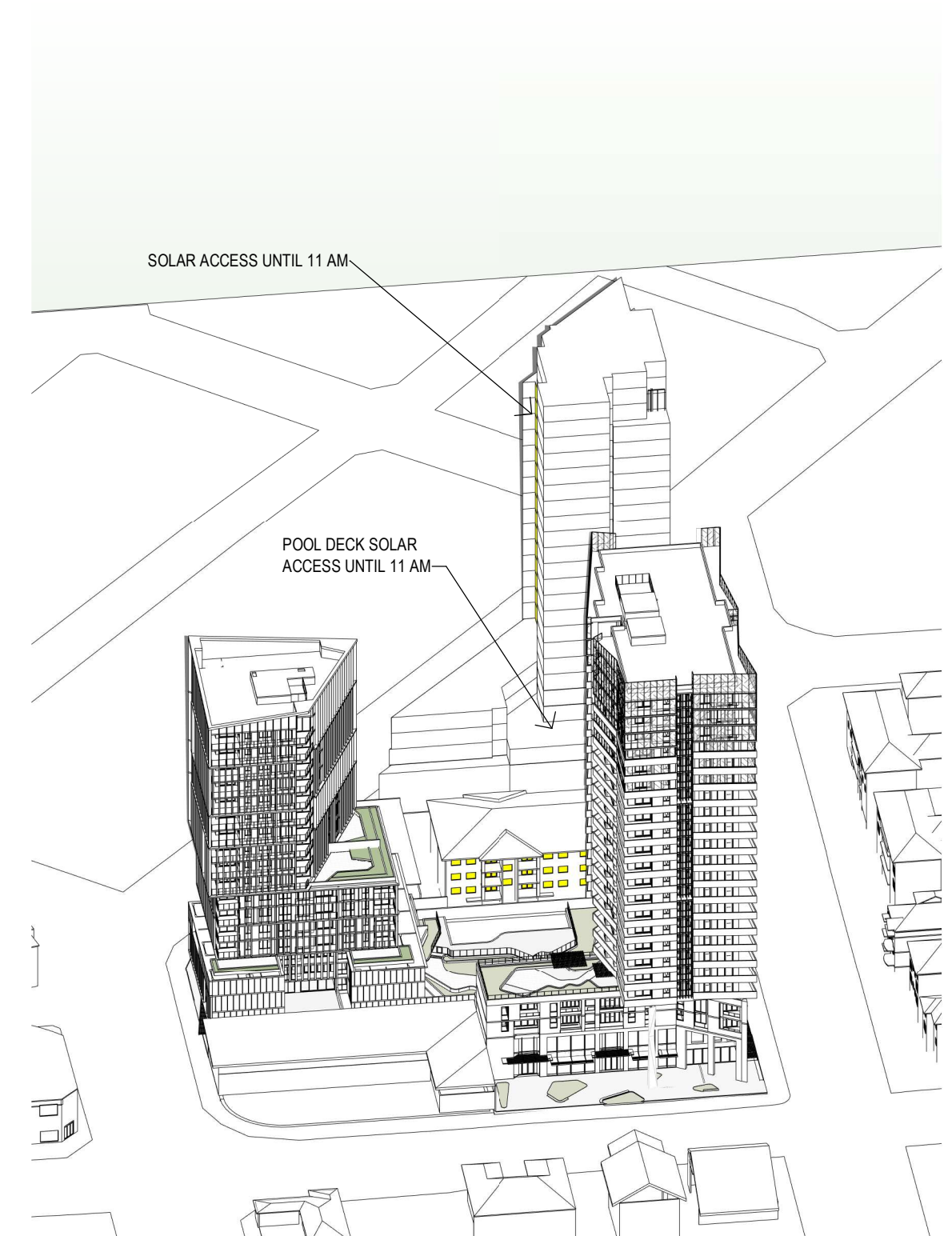
4 21 JUNE 0940 AM - SUN EYE VIEW DA



5 21 JUNE 1000 AM - SUN EYE VIEW DA



6 JUNE 22 1030 AM - SUN EYE VIEW DA



7 JUNE 22 1100 AM - SUN EYE VIEW DA



Revisions  
No. Date Description  
1 22-02-19 ISSUED FOR D.A. SUBMISSION.

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Key

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ABN 53 003 782 250

Project  
MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
88-94 Castlereagh Street  
LIVERPOOL NSW 2170

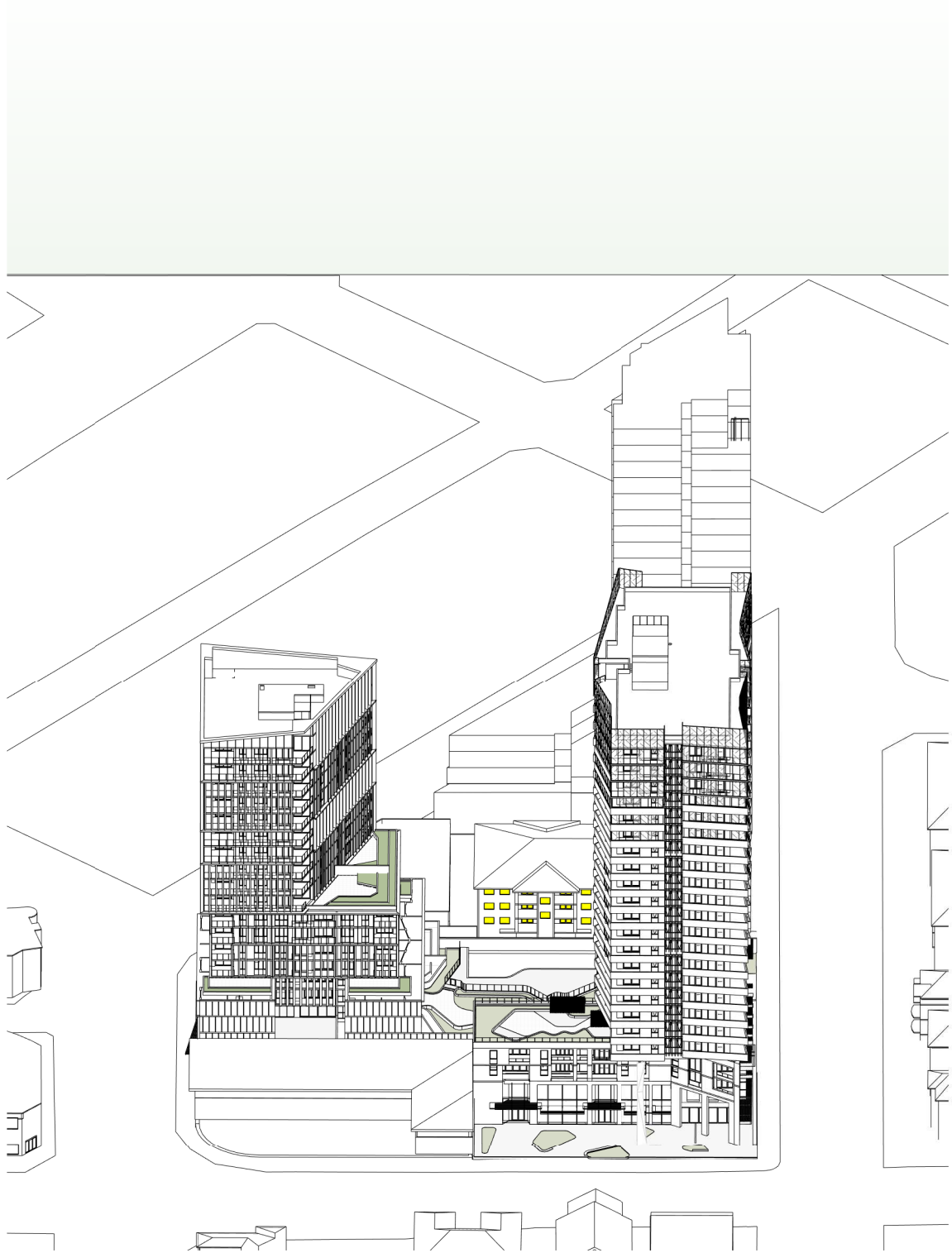
Proj. No. 18005

Drawing Title  
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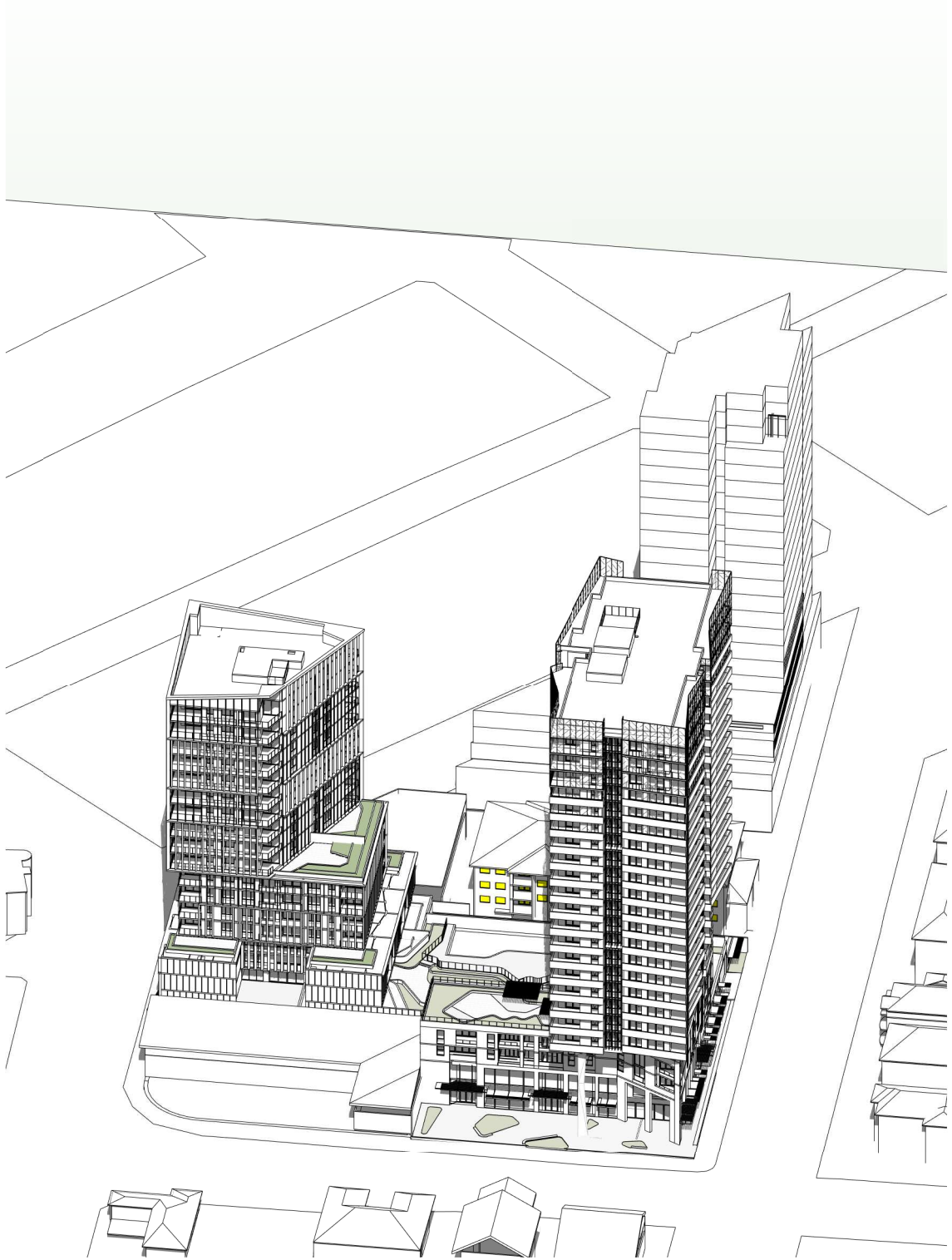
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Scale  
Drawing No.  
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Issue

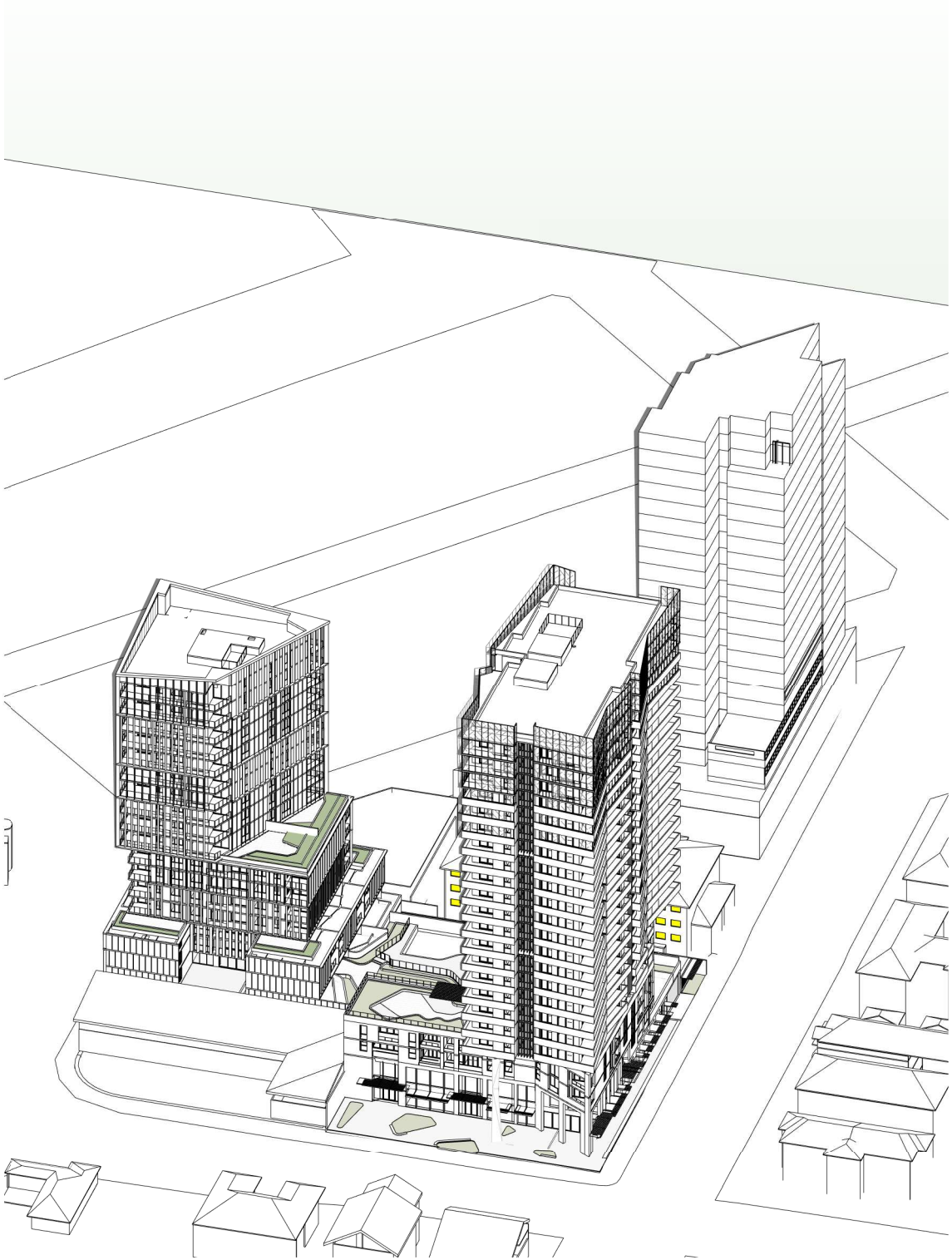




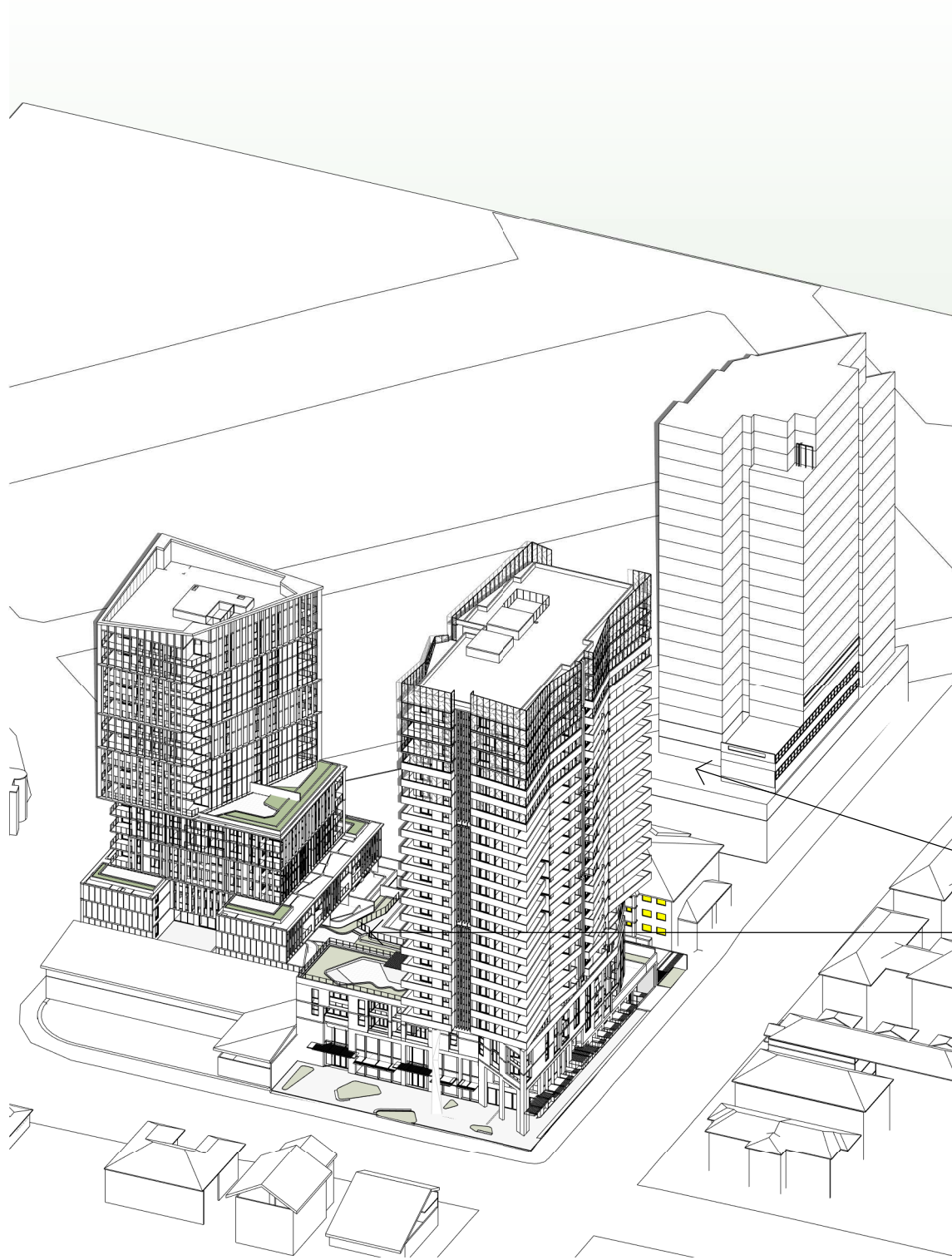
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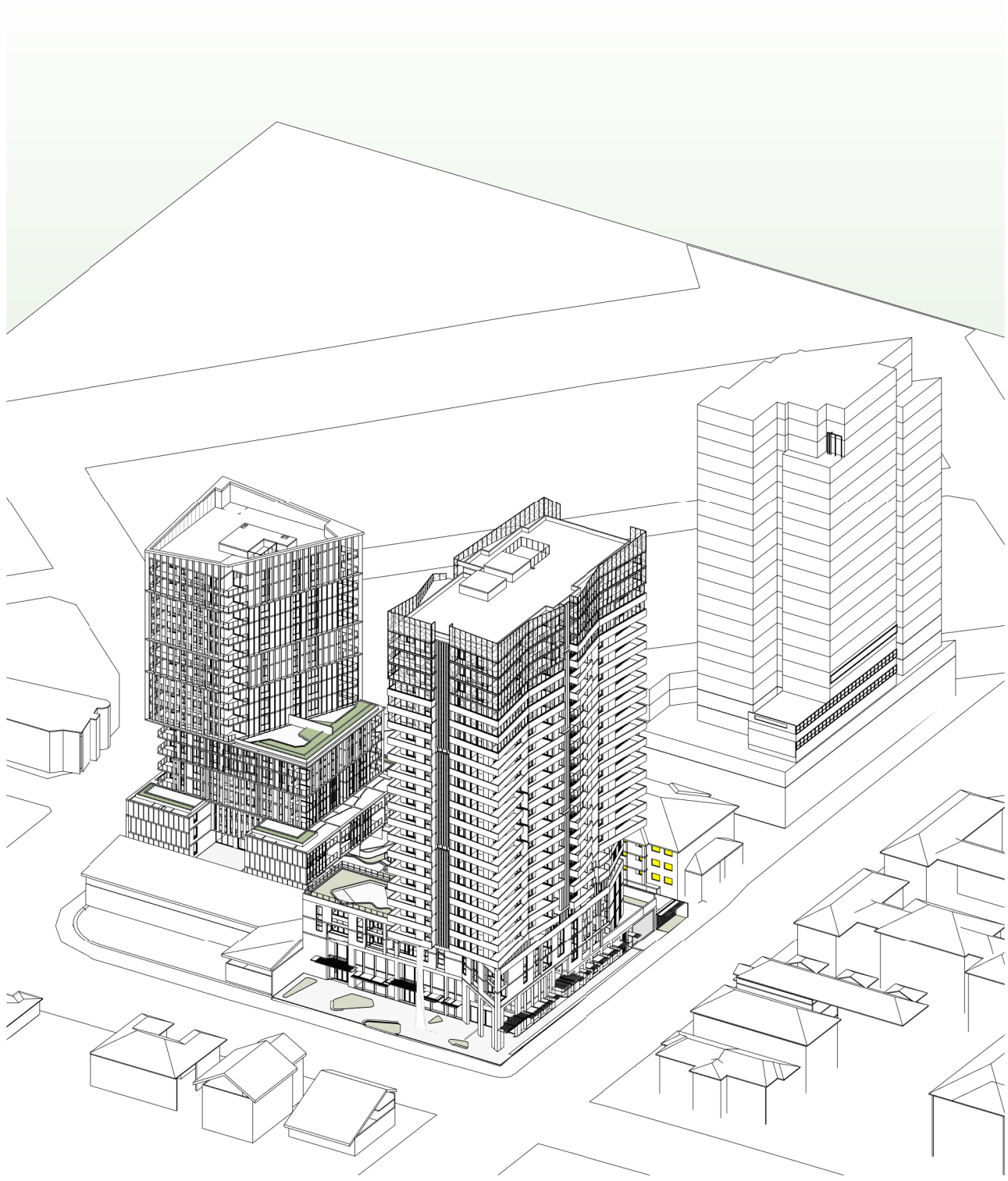
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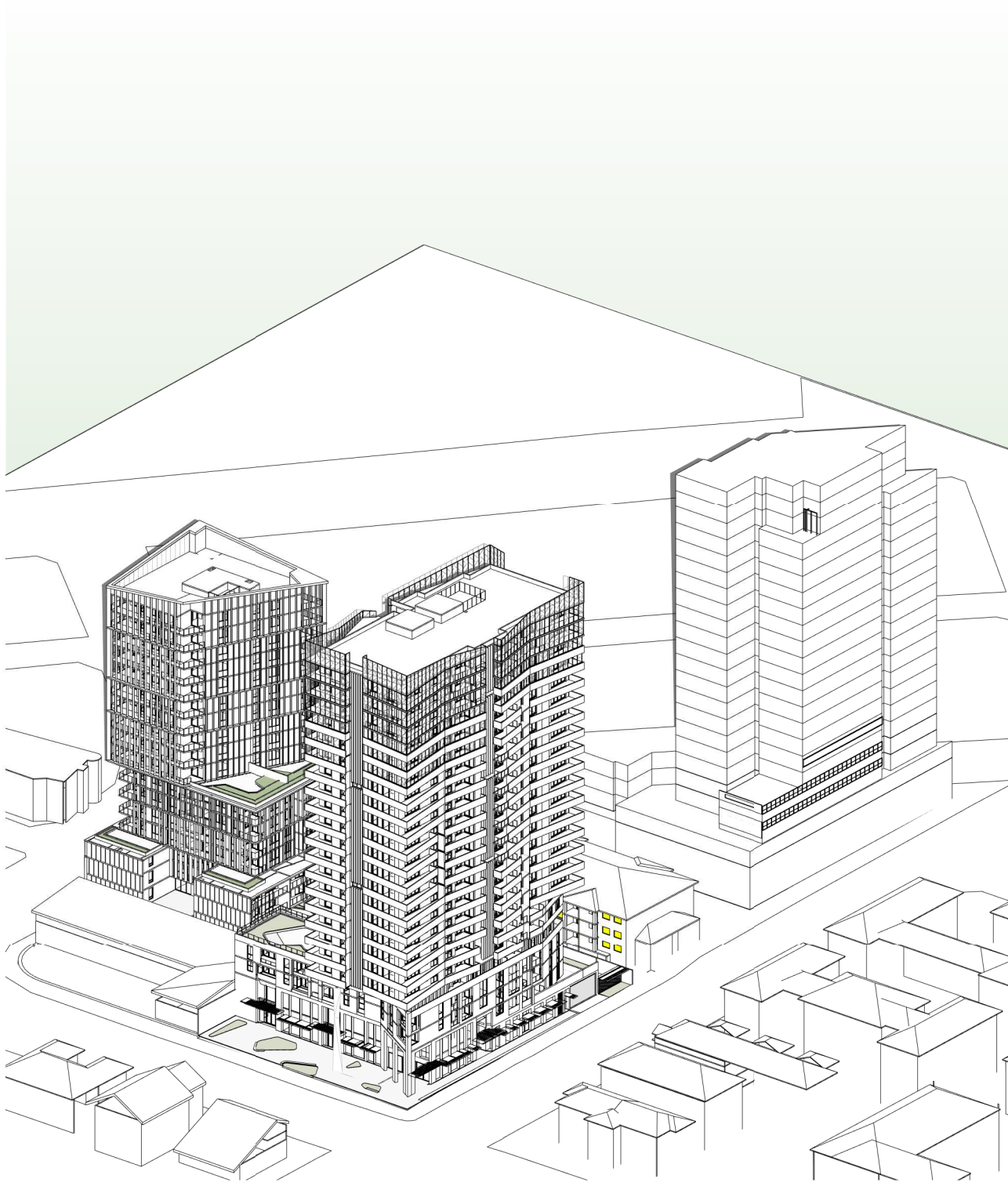
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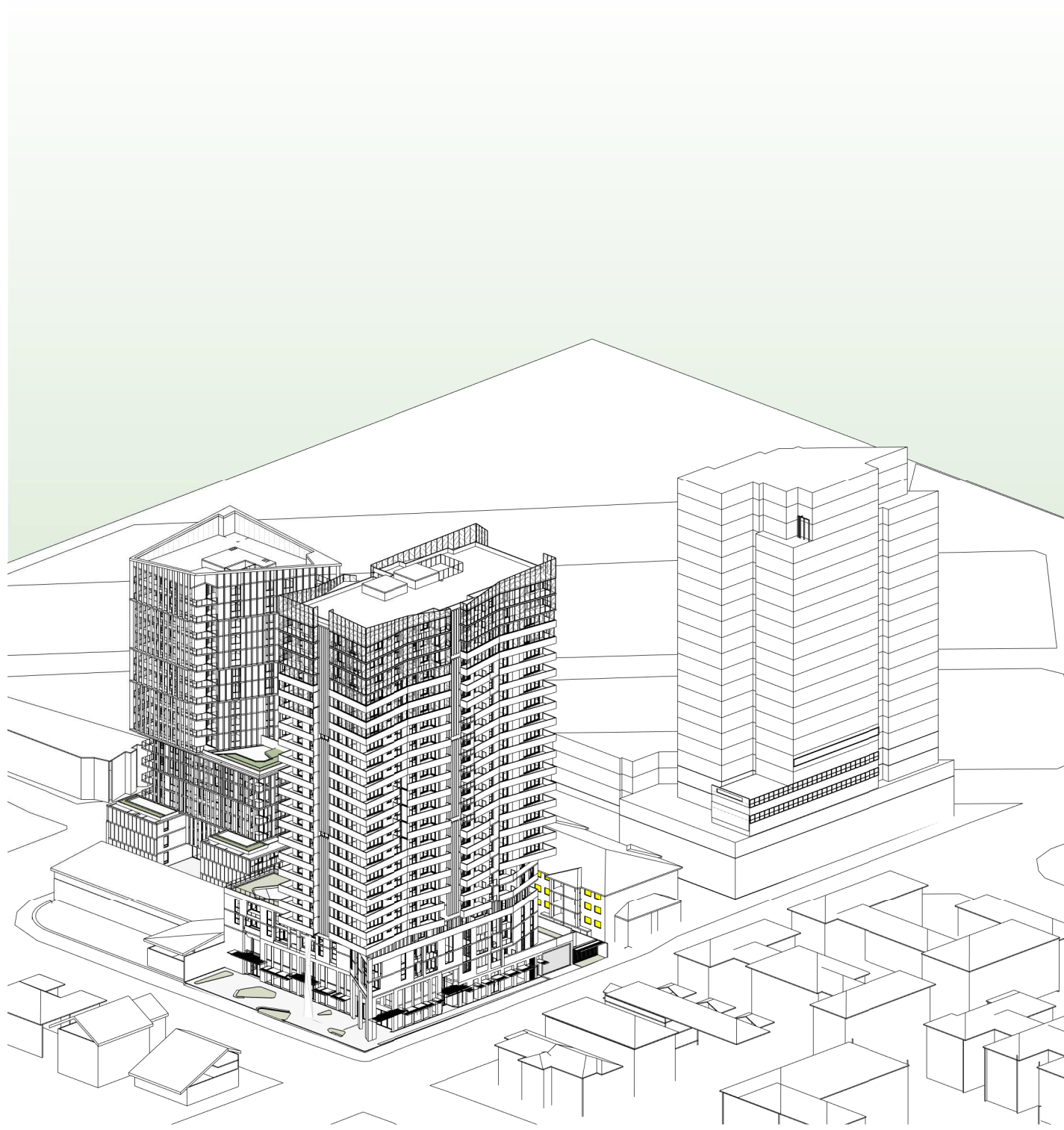
4 JUNE 22 1300 PM - SUN EYE VIEW DA



5 JUNE 22 1330 PM - SUN EYE VIEW DA



6 JUNE 22 1400 PM - SUN EYE VIEW DA



7 JUNE 22 1430 PM - SUN EYE VIEW DA

6.7  
Average star rating  
NATIONWIDE  
HOUSE  
SAFETY RATING 4.5/5.0  
www.nabers.gov.au

Certificate no.: 0003578100  
Assessor Name: Hamidul Islam  
Accreditation no.: 100982  
Certificate date: 31 January 2019  
Dwelling Address:  
86 Memorial Avenue  
Liverpool, NSW  
2170  
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ABSA  
Green Star Rating  
Green Star Rating 4.5/5.0  
www.absa.gov.au

| Revisions | No.      | Date                        | Description | Ver | App'd |
|-----------|----------|-----------------------------|-------------|-----|-------|
| 1         | 22-02-19 | ISSUED FOR D.A. SUBMISSION. |             |     |       |

| Key |
|-----|
|     |

|                                 |
|---------------------------------|
| Client                          |
| II Capitano Investments Pty Ltd |

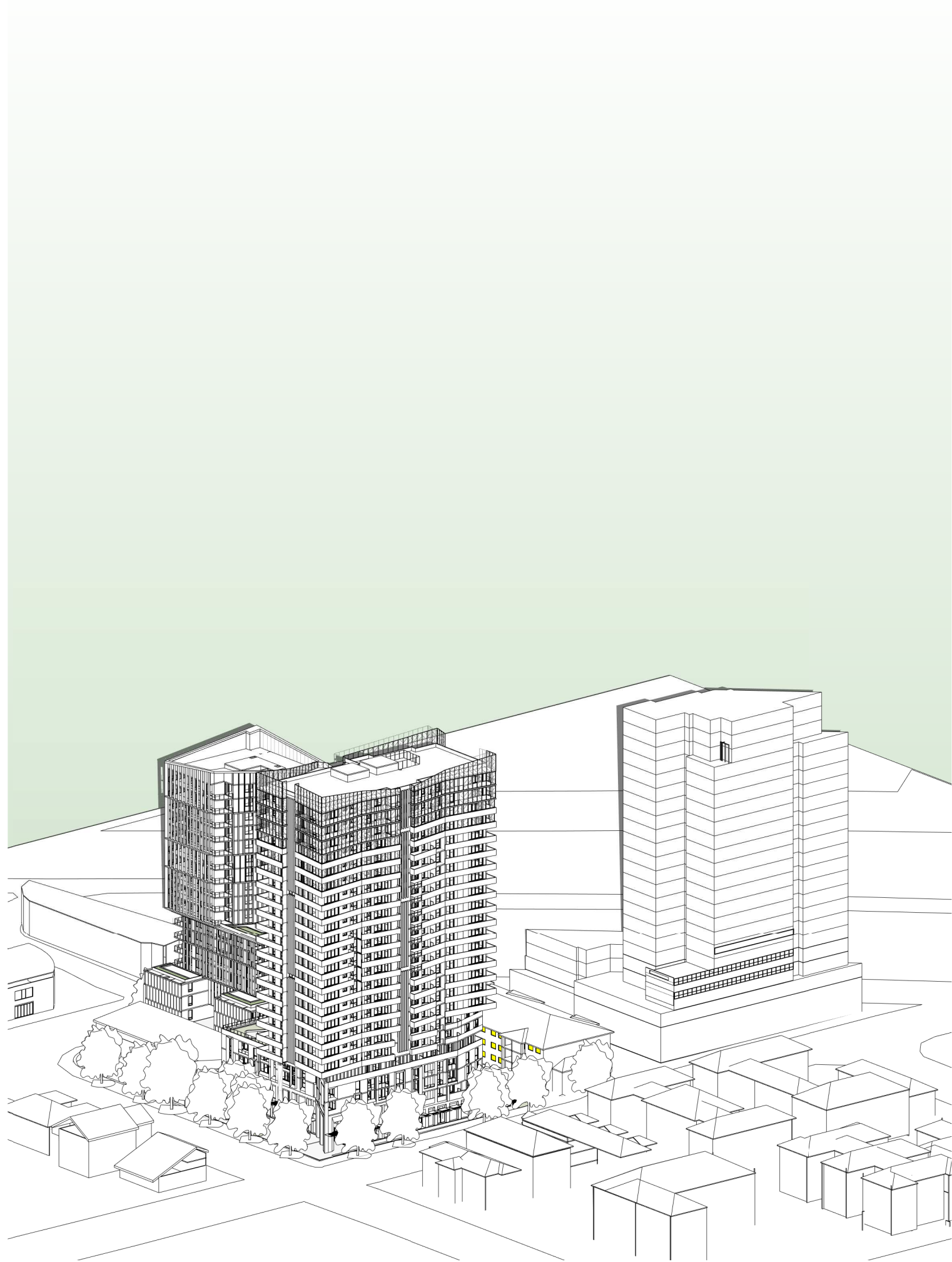
|                                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Architect                                                                                                                                         |
| <p>ALLEN JACK+COTTIER</p> <p>79 Myrtle Street Chippendale NSW 2008 AUSTRALIA<br/>ph +61 2 9311 8222 fx +61 2 9311 8200<br/>ABN 53 003 782 250</p> |

|                                                                           |
|---------------------------------------------------------------------------|
| Project                                                                   |
| MEMORIAL AVENUE, LIVERPOOL                                                |
| 77-79 Bathurst Street &<br>86-94 Castlereagh Street<br>LIVERPOOL NSW 2170 |
| Proj. No. 18005                                                           |

|                      |
|----------------------|
| Drawing Title        |
| SUN EYE VIEWS 2      |
| Sheet Status         |
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| DA8512 1    |
| Issue       |
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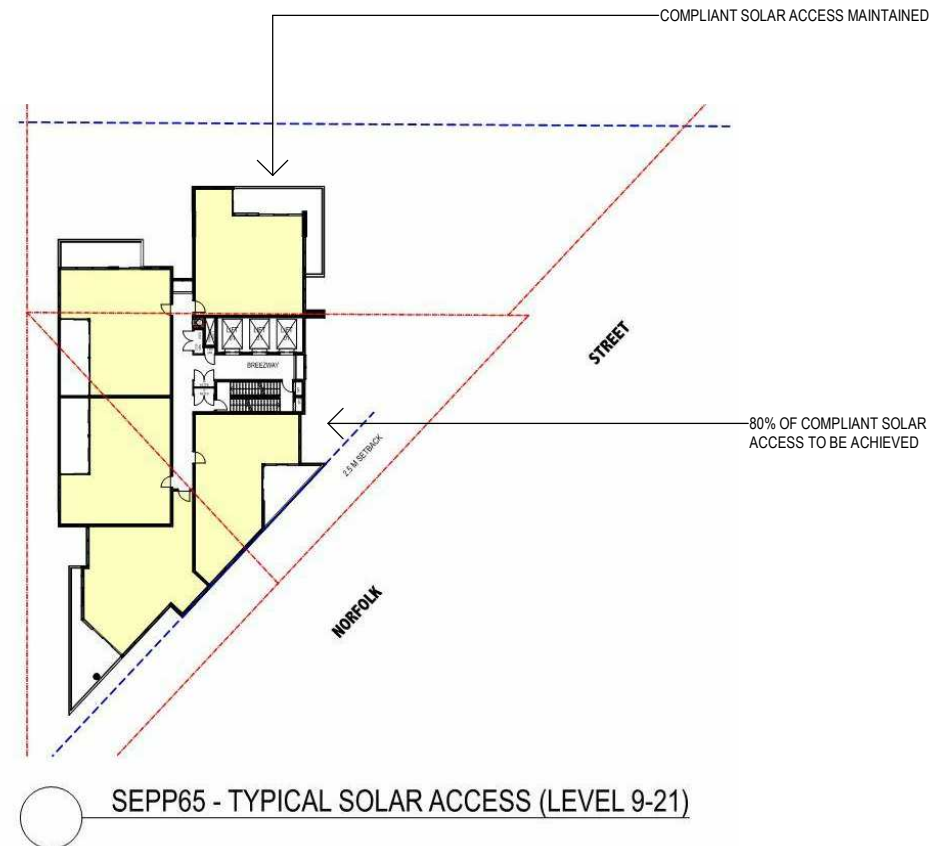
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2 21 JUNE 1530 PM - SUN EYE VIEW DA



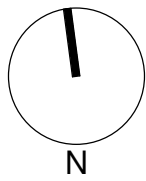
3 21 JUNE 1600 PM - SUN EYE VIEW DA



7-13 NORFOLK STREET SEPP65 SOLAR ACCESS



| Revisions | No.      | Date                        | Description | Ver | App'd |
|-----------|----------|-----------------------------|-------------|-----|-------|
| 1         | 22-02-19 | ISSUED FOR D.A. SUBMISSION. |             |     |       |



Client  
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Project  
MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
88-94 Castlereagh Street  
LIVERPOOL NSW 2170

Proj. No. 18005

Drawing Title  
**SUN EYE VIEWS 3**

Sheet Status  
NOT FOR CONSTRUCTION

Scale  
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Drawing No.  
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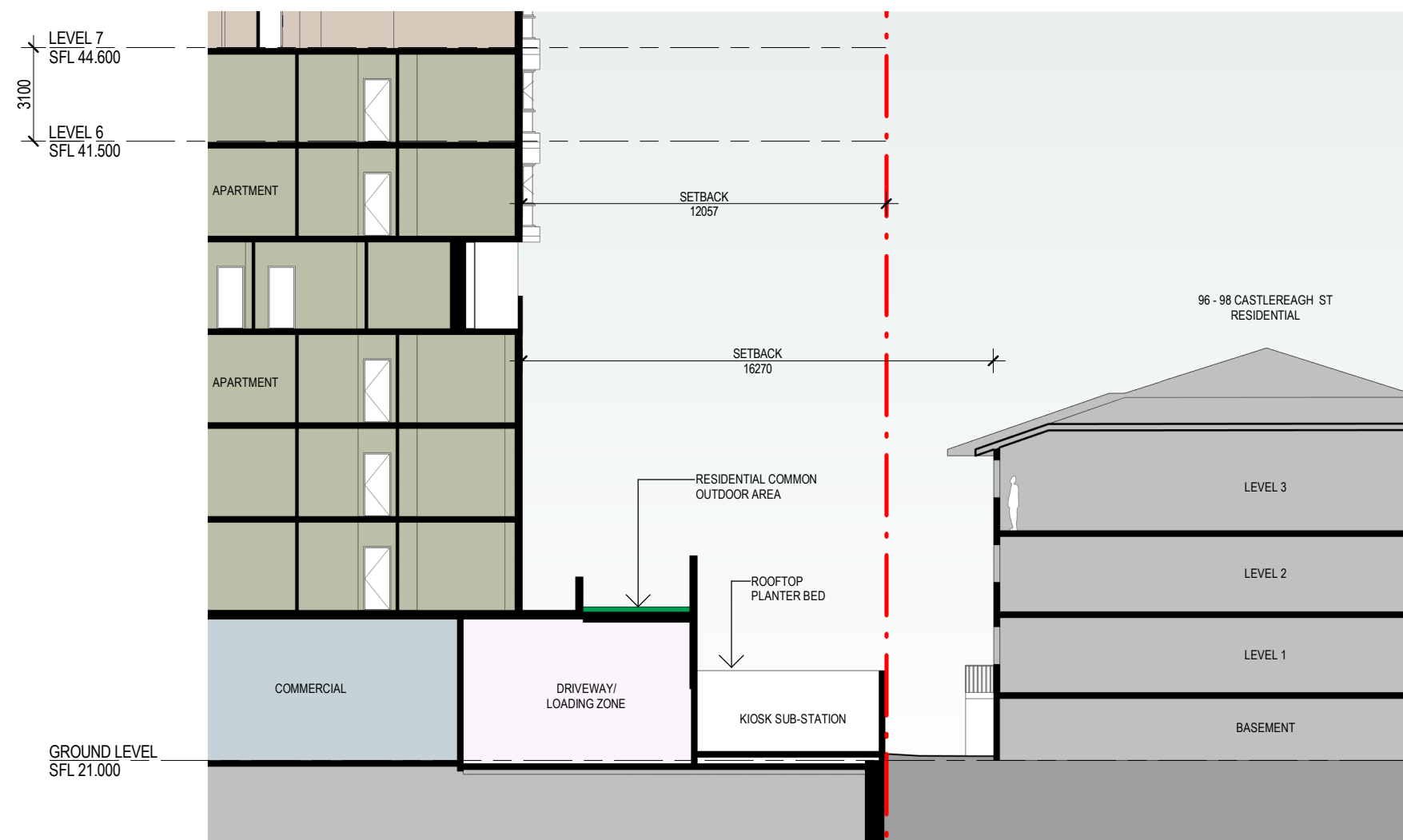
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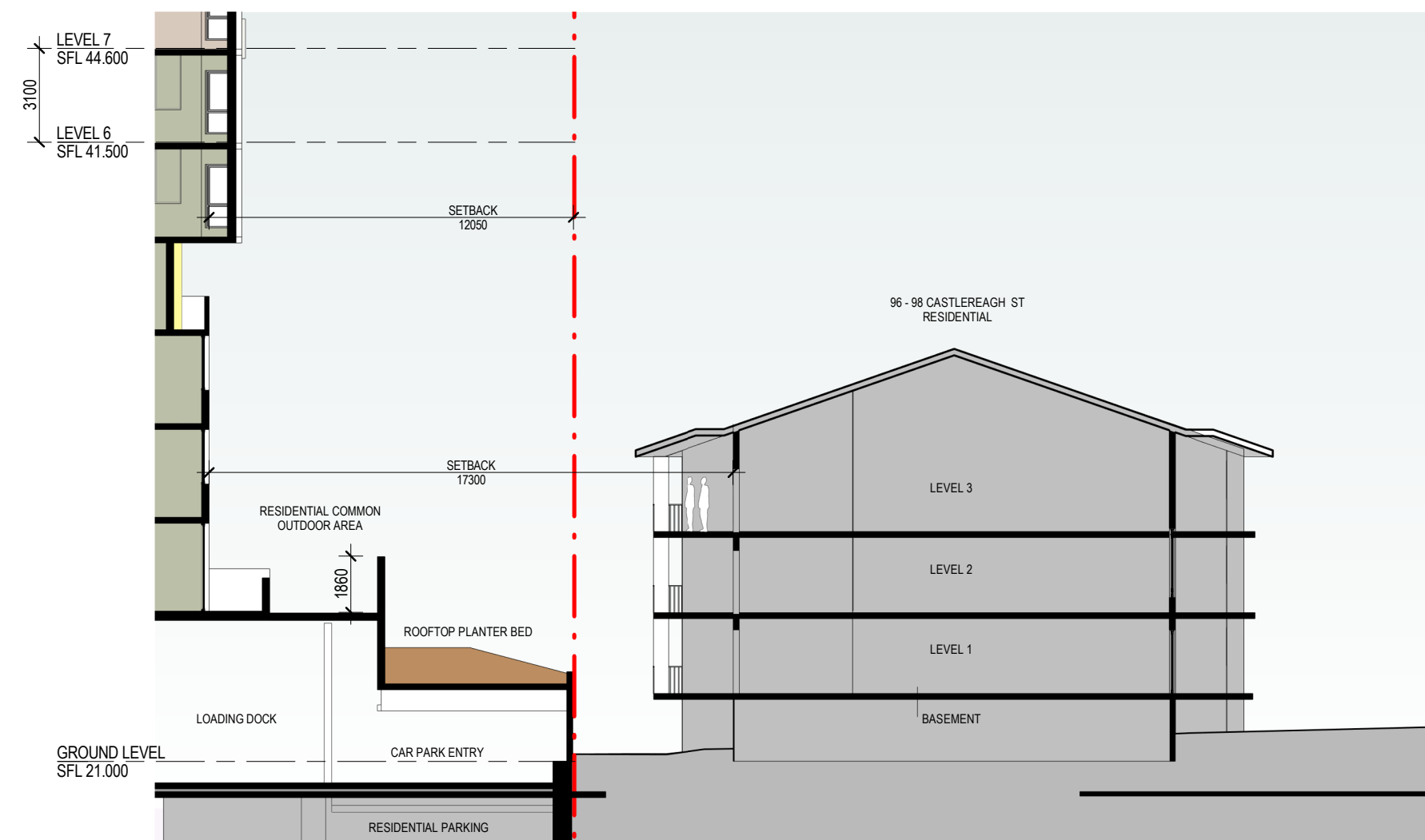
| APARTMENT SCHEDULE - WEST DA |           |                      |                     |        |           |                 |                      |                  |              |  |
|------------------------------|-----------|----------------------|---------------------|--------|-----------|-----------------|----------------------|------------------|--------------|--|
| Number                       | Occupancy | Area                 | Balcony Area        | Aspect | Adaptable | Livable Housing | Apt Storage Volume   | Cross Ventilated | Solar Access |  |
| LEVEL 1                      |           |                      |                     |        |           |                 |                      |                  |              |  |
| W011                         | 2B+2B     | 76.4 m <sup>2</sup>  | 10.5 m <sup>2</sup> | West   | No        |                 | 4.40 m <sup>3</sup>  |                  | Yes          |  |
| W012                         | 3B+2B     | 95.5 m <sup>2</sup>  | 48.5 m <sup>2</sup> | West   | Yes       | Yes             | 4.20 m <sup>3</sup>  | Yes              |              |  |
| W013                         | 3B+2B     | 96.8 m <sup>2</sup>  | 37.6 m <sup>2</sup> | East   | No        |                 | 5.10 m <sup>3</sup>  | Yes              |              |  |
| LEVEL 2                      |           |                      |                     |        |           |                 |                      |                  |              |  |
| W021                         | 3B+2B     | 98.2 m <sup>2</sup>  | 15.8 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              |              |  |
| W022                         | 3B+2B     | 95.5 m <sup>2</sup>  | 11.0 m <sup>2</sup> | West   | Yes       | Yes             | 5.20 m <sup>3</sup>  | Yes              |              |  |
| W023                         | 2B+2B     | 76.7 m <sup>2</sup>  | 10.3 m <sup>2</sup> | West   | No        |                 | 4.40 m <sup>3</sup>  |                  | Yes          |  |
| W024                         | 2B+2B     | 76.7 m <sup>2</sup>  | 10.0 m <sup>2</sup> | West   | No        |                 | 4.40 m <sup>3</sup>  |                  | Yes          |  |
| W025                         | 2B+2B     | 86.8 m <sup>2</sup>  | 10.7 m <sup>2</sup> | North  | Yes       | Yes             | 5.00 m <sup>3</sup>  | Yes              |              |  |
| W026                         | 3B+2B     | 101.0 m <sup>2</sup> | 13.2 m <sup>2</sup> | North  | No        | Yes             | 11.20 m <sup>3</sup> | Yes              |              |  |
| W027                         | 1B+1S     | 54.7 m <sup>2</sup>  | 8.9 m <sup>2</sup>  | North  | No        |                 | 3.70 m <sup>3</sup>  | Yes              |              |  |
| W028                         | 3B+2B     | 97.6 m <sup>2</sup>  | 12.4 m <sup>2</sup> | North  | No        | Yes             | 5.80 m <sup>3</sup>  | Yes              | Yes          |  |
| LEVEL 3                      |           |                      |                     |        |           |                 |                      |                  |              |  |
| W031                         | 3B+2B     | 97.0 m <sup>2</sup>  | 15.8 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              |              |  |
| W032                         | 3B+2B     | 95.5 m <sup>2</sup>  | 10.9 m <sup>2</sup> | West   | Yes       | Yes             | 4.40 m <sup>3</sup>  | Yes              |              |  |
| W033                         | 2B+2B     | 76.7 m <sup>2</sup>  | 10.6 m <sup>2</sup> | West   | No        |                 | 4.40 m <sup>3</sup>  |                  | Yes          |  |
| W034                         | 2B+2B     | 76.7 m <sup>2</sup>  | 10.0 m <sup>2</sup> | West   | No        |                 | 4.40 m <sup>3</sup>  |                  | Yes          |  |
| W035                         | 2B+2B     | 87.6 m <sup>2</sup>  | 10.4 m <sup>2</sup> | North  | Yes       | Yes             | 5.00 m <sup>3</sup>  | Yes              |              |  |
| W036                         | 3B+2B     | 101.0 m <sup>2</sup> | 10.0 m <sup>2</sup> | North  | Yes       | Yes             | 8.20 m <sup>3</sup>  | Yes              |              |  |
| W037                         | 1B+1S     | 54.7 m <sup>2</sup>  | 7.7 m <sup>2</sup>  | North  | No        |                 | 3.70 m <sup>3</sup>  | Yes              |              |  |
| W038                         | 3B+2B     | 97.6 m <sup>2</sup>  | 13.9 m <sup>2</sup> | North  | No        | Yes             | 5.77 m <sup>3</sup>  | Yes              | Yes          |  |
| LEVEL 4                      |           |                      |                     |        |           |                 |                      |                  |              |  |
| W041                         | 3B+2B     | 96.2 m <sup>2</sup>  | 51.1 m <sup>2</sup> | East   | No        |                 | 5.13 m <sup>3</sup>  | Yes              |              |  |
| W042                         | 3B+2B     | 97.0 m <sup>2</sup>  | 31.2 m <sup>2</sup> | West   | No        |                 | 4.40 m <sup>3</sup>  | Yes              |              |  |
| W043                         | 3B+2B     | 102.7 m <sup>2</sup> | 23.9 m <sup>2</sup> | West   | Yes       | Yes             | 4.49 m <sup>3</sup>  | Yes              |              |  |
| LEVEL 5                      |           |                      |                     |        |           |                 |                      |                  |              |  |
| W051                         | 3B+2B     | 97.6 m <sup>2</sup>  | 15.9 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              |              |  |
| W052                         | 3B+2B     | 95.0 m <sup>2</sup>  | 13.7 m <sup>2</sup> | West   | Yes       | Yes             | 4.40 m <sup>3</sup>  | Yes              |              |  |
| W053                         | 2B+2B     | 76.5 m <sup>2</sup>  | 12.6 m <sup>2</sup> | West   | No        |                 | 4.30 m <sup>3</sup>  |                  | Yes          |  |
| W054                         | 2B+2B     | 76.5 m <sup>2</sup>  | 16.3 m <sup>2</sup> | West   | No        |                 | 4.30 m <sup>3</sup>  |                  | Yes          |  |
| W055                         | 2B+2B     | 77.3 m <sup>2</sup>  | 28.3 m <sup>2</sup> | West   | No        | Yes             | 4.10 m <sup>3</sup>  | Yes              | Yes          |  |
| W056                         | 2B+2B     | 76.7 m <sup>2</sup>  | 20.8 m <sup>2</sup> | North  | No        |                 | 4.10 m <sup>3</sup>  | Yes              | Yes          |  |
| W057                         | 2B+2B     | 72.5 m <sup>2</sup>  | 17.8 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| LEVEL 6                      |           |                      |                     |        |           |                 |                      |                  |              |  |
| W061                         | 3B+2B     | 97.6 m <sup>2</sup>  | 15.9 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              |              |  |
| W062                         | 3B+2B     | 99.0 m <sup>2</sup>  | 12.1 m <sup>2</sup> | West   | Yes       | Yes             | 5.20 m <sup>3</sup>  | Yes              |              |  |
| W063                         | 2B+2B     | 76.5 m <sup>2</sup>  | 13.2 m <sup>2</sup> | West   | No        |                 | 4.30 m <sup>3</sup>  |                  | Yes          |  |
| W064                         | 2B+2B     | 76.5 m <sup>2</sup>  | 16.9 m <sup>2</sup> | West   | No        |                 | 4.30 m <sup>3</sup>  |                  | Yes          |  |
| W065                         | 2B+2B     | 77.3 m <sup>2</sup>  | 28.3 m <sup>2</sup> | West   | No        | Yes             | 4.10 m <sup>3</sup>  | Yes              | Yes          |  |
| W066                         | 2B+2B     | 76.7 m <sup>2</sup>  | 20.8 m <sup>2</sup> | North  | No        |                 | 4.10 m <sup>3</sup>  | Yes              | Yes          |  |
| W067                         | 2B+2B     | 72.5 m <sup>2</sup>  | 17.8 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| LEVEL 7                      |           |                      |                     |        |           |                 |                      |                  |              |  |
| W071                         | 2B+2B     | 76.2 m <sup>2</sup>  | 22.0 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| W072                         | 2B+2B     | 78.4 m <sup>2</sup>  | 14.7 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| W073                         | 2B+2B     | 82.3 m <sup>2</sup>  | 25.9 m <sup>2</sup> | West   | No        | Yes             | 4.90 m <sup>3</sup>  | Yes              | Yes          |  |
| W074                         | 2B+2B     | 76.5 m <sup>2</sup>  | 14.5 m <sup>2</sup> | West   | No        |                 | 4.36 m <sup>3</sup>  |                  | Yes          |  |
| W075                         | 2B+2B     | 76.5 m <sup>2</sup>  | 18.3 m <sup>2</sup> | West   | No        |                 | 4.36 m <sup>3</sup>  |                  | Yes          |  |
| W076                         | 2B+2B     | 76.5 m <sup>2</sup>  | 18.3 m <sup>2</sup> | West   | No        | Yes             | 4.36 m <sup>3</sup>  | Yes              | Yes          |  |
| W077                         | 2B+2B     | 76.7 m <sup>2</sup>  | 20.8 m <sup>2</sup> | North  | No        |                 | 4.10 m <sup>3</sup>  | Yes              | Yes          |  |
| W078                         | 2B+2B     | 72.5 m <sup>2</sup>  | 17.8 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| LEVEL 8                      |           |                      |                     |        |           |                 |                      |                  |              |  |
| W081                         | 2B+2B     | 76.2 m <sup>2</sup>  | 22.0 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| W082                         | 2B+2B     | 76.5 m <sup>2</sup>  | 14.7 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| W083                         | 2B+2B     | 82.3 m <sup>2</sup>  | 25.9 m <sup>2</sup> | West   | No        | Yes             | 4.90 m <sup>3</sup>  | Yes              | Yes          |  |
| W084                         | 2B+2B     | 76.5 m <sup>2</sup>  | 14.5 m <sup>2</sup> | West   | No        |                 | 4.36 m <sup>3</sup>  |                  | Yes          |  |
| W085                         | 2B+2B     | 76.5 m <sup>2</sup>  | 18.3 m <sup>2</sup> | West   | No        |                 | 4.36 m <sup>3</sup>  |                  | Yes          |  |
| W086                         | 2B+2B     | 77.4 m <sup>2</sup>  | 28.3 m <sup>2</sup> | North  | No        | Yes             | 4.10 m <sup>3</sup>  | Yes              | Yes          |  |
| W087                         | 2B+2B     | 76.7 m <sup>2</sup>  | 20.8 m <sup>2</sup> | North  | No        |                 | 4.10 m <sup>3</sup>  | Yes              | Yes          |  |
| W088                         | 2B+2B     | 72.5 m <sup>2</sup>  | 17.1 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| LEVEL 9                      |           |                      |                     |        |           |                 |                      |                  |              |  |
| W091                         | 2B+2B     | 76.2 m <sup>2</sup>  | 22.0 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| W092                         | 2B+2B     | 78.5 m <sup>2</sup>  | 14.7 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| W093                         | 2B+2B     | 82.3 m <sup>2</sup>  | 25.9 m <sup>2</sup> | West   | No        | Yes             | 4.90 m <sup>3</sup>  | Yes              | Yes          |  |
| W094                         | 2B+2B     | 76.5 m <sup>2</sup>  | 14.5 m <sup>2</sup> | West   | No        |                 | 4.36 m <sup>3</sup>  |                  | Yes          |  |
| W095                         | 2B+2B     | 76.5 m <sup>2</sup>  | 18.3 m <sup>2</sup> | West   | No        |                 | 4.36 m <sup>3</sup>  |                  | Yes          |  |
| W096                         | 2B+2B     | 77.4 m <sup>2</sup>  | 28.3 m <sup>2</sup> | North  | No        | Yes             | 4.10 m <sup>3</sup>  | Yes              | Yes          |  |
| W097                         | 2B+2B     | 76.7 m <sup>2</sup>  | 20.8 m <sup>2</sup> | North  | No        |                 | 4.10 m <sup>3</sup>  | Yes              | Yes          |  |
| W098                         | 2B+2B     | 72.5 m <sup>2</sup>  | 17.8 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| LEVEL 10                     |           |                      |                     |        |           |                 |                      |                  |              |  |
| W101                         | 2B+2B     | 76.2 m <sup>2</sup>  | 22.0 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| W102                         | 2B+2B     | 78.5 m <sup>2</sup>  | 14.7 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| W103                         | 2B+2B     | 82.3 m <sup>2</sup>  | 25.9 m <sup>2</sup> | West   | No        | Yes             | 4.90 m <sup>3</sup>  | Yes              | Yes          |  |
| W104                         | 2B+2B     | 76.5 m <sup>2</sup>  | 14.5 m <sup>2</sup> | West   | No        |                 | 4.36 m <sup>3</sup>  |                  | Yes          |  |
| W105                         | 2B+2B     | 76.5 m <sup>2</sup>  | 18.3 m <sup>2</sup> | West   | No        |                 | 4.36 m <sup>3</sup>  |                  | Yes          |  |
| W106                         | 2B+2B     | 77.4 m <sup>2</sup>  | 28.3 m <sup>2</sup> | North  | No        | Yes             | 4.10 m <sup>3</sup>  | Yes              | Yes          |  |
| W107                         | 2B+2B     | 76.7 m <sup>2</sup>  | 20.8 m <sup>2</sup> | North  | No        |                 | 4.10 m <sup>3</sup>  | Yes              | Yes          |  |
| W108                         | 2B+2B     | 72.5 m <sup>2</sup>  | 17.8 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| LEVEL 11                     |           |                      |                     |        |           |                 |                      |                  |              |  |
| W111                         | 2B+2B     | 76.2 m <sup>2</sup>  | 22.0 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| W112                         | 2B+2B     | 78.5 m <sup>2</sup>  | 14.7 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| W113                         | 2B+2B     | 82.3 m <sup>2</sup>  | 29.2 m <sup>2</sup> | West   | No        | Yes             | 4.90 m <sup>3</sup>  | Yes              | Yes          |  |
| W114                         | 2B+2B     | 76.5 m <sup>2</sup>  | 14.7 m <sup>2</sup> | West   | No        |                 | 4.36 m <sup>3</sup>  |                  | Yes          |  |
| W115                         | 2B+2B     | 76.5 m <sup>2</sup>  | 18.3 m <sup>2</sup> | West   | No        |                 | 4.36 m <sup>3</sup>  |                  | Yes          |  |
| W116                         | 2B+2B     | 77.4 m <sup>2</sup>  | 24.8 m <sup>2</sup> | North  | No        | Yes             | 4.10 m <sup>3</sup>  | Yes              | Yes          |  |
| W117                         | 2B+2B     | 76.7 m <sup>2</sup>  | 20.8 m <sup>2</sup> | North  | No        |                 | 4.10 m <sup>3</sup>  | Yes              | Yes          |  |
| W118                         | 2B+2B     | 72.5 m <sup>2</sup>  | 17.8 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| LEVEL 12                     |           |                      |                     |        |           |                 |                      |                  |              |  |
| W121                         | 2B+2B     | 76.2 m <sup>2</sup>  | 22.0 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| W122                         | 2B+2B     | 78.5 m <sup>2</sup>  | 14.7 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| W123                         | 2B+2B     | 82.3 m <sup>2</sup>  | 29.2 m <sup>2</sup> | West   | No        | Yes             | 4.90 m <sup>3</sup>  | Yes              | Yes          |  |
| W124                         | 2B+2B     | 76.5 m <sup>2</sup>  | 14.7 m <sup>2</sup> | West   | No        |                 | 4.36 m <sup>3</sup>  |                  | Yes          |  |
| W125                         | 2B+2B     | 76.5 m <sup>2</sup>  | 18.3 m <sup>2</sup> | West   | No        |                 | 4.36 m <sup>3</sup>  |                  | Yes          |  |
| W126                         | 2B+2B     | 77.4 m <sup>2</sup>  | 24.8 m <sup>2</sup> | North  | No        | Yes             | 4.10 m <sup>3</sup>  | Yes              | Yes          |  |
| W127                         | 2B+2B     | 76.7 m <sup>2</sup>  | 20.8 m <sup>2</sup> | North  | No        |                 | 4.10 m <sup>3</sup>  | Yes              | Yes          |  |
| W128                         | 2B+2B     | 72.5 m <sup>2</sup>  | 17.8 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| LEVEL 13                     |           |                      |                     |        |           |                 |                      |                  |              |  |
| W131                         | 2B+2B     | 76.2 m <sup>2</sup>  | 22.0 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| W132                         | 2B+2B     | 78.5 m <sup>2</sup>  | 14.7 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |
| W133                         | 2B+2B     | 82.2 m <sup>2</sup>  | 29.2 m <sup>2</sup> | West   | No        | Yes             | 4.90 m <sup>3</sup>  | Yes              | Yes          |  |
| W134                         | 2B+2B     | 76.5 m <sup>2</sup>  | 14.7 m <sup>2</sup> | West   | No        |                 | 4.36 m <sup>3</sup>  |                  | Yes          |  |
| W135                         | 2B+2B     | 76.5 m <sup>2</sup>  | 18.3 m <sup>2</sup> | West   | No        |                 | 4.36 m <sup>3</sup>  |                  | Yes          |  |
| W136                         | 2B+2B     | 77.4 m <sup>2</sup>  | 24.8 m <sup>2</sup> | North  | No        | Yes             | 4.10 m <sup>3</sup>  | Yes              | Yes          |  |
| W137                         | 2B+2B     | 76.7 m <sup>2</sup>  | 20.8 m <sup>2</sup> | North  | No        |                 | 4.10 m <sup>3</sup>  | Yes              | Yes          |  |
| W138                         | 2B+2B     | 72.5 m <sup>2</sup>  | 17.8 m <sup>2</sup> | East   | No        |                 | 5.00 m <sup>3</sup>  | Yes              | Yes          |  |

| APARTMENT SCHEDULE - WEST DA |           |                         |                     |        |           |                        |                     |                  |              |       |  |
|------------------------------|-----------|-------------------------|---------------------|--------|-----------|------------------------|---------------------|------------------|--------------|-------|--|
| Number                       | Occupancy | Area                    | Balcony Area        | Aspect | Adaptable | Livable Housing        | Apt Storage Volume  | Cross Ventilated | Solar Access |       |  |
| LEVEL 14                     |           |                         |                     |        |           |                        |                     |                  |              |       |  |
| W141                         | 2B+2B     | 76.2 m <sup>2</sup>     | 22.0 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W142                         | 2B+2B     | 78.5 m <sup>2</sup>     | 14.7 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W143                         | 2B+2B     | 82.2 m <sup>2</sup>     | 29.2 m <sup>2</sup> | West   | No        | Yes                    | 4.90 m <sup>3</sup> | Yes              | Yes          |       |  |
| W144                         | 2B+2B     | 76.5 m <sup>2</sup>     | 14.7 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W145                         | 2B+2B     | 76.5 m <sup>2</sup>     | 18.3 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W146                         | 2B+2B     | 77.4 m <sup>2</sup>     | 24.8 m <sup>2</sup> | North  | No        | Yes                    | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W147                         | 2B+2B     | 76.7 m <sup>2</sup>     | 20.8 m <sup>2</sup> | North  | No        |                        | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W148                         | 2B+2B     | 72.5 m <sup>2</sup>     | 17.1 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| LEVEL 15                     |           |                         |                     |        |           |                        |                     |                  |              |       |  |
| W151                         | 2B+2B     | 76.2 m <sup>2</sup>     | 22.0 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W152                         | 2B+2B     | 78.5 m <sup>2</sup>     | 14.7 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W153                         | 2B+2B     | 82.2 m <sup>2</sup>     | 29.2 m <sup>2</sup> | West   | No        | Yes                    | 4.90 m <sup>3</sup> | Yes              | Yes          |       |  |
| W154                         | 2B+2B     | 76.5 m <sup>2</sup>     | 14.7 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W155                         | 2B+2B     | 76.5 m <sup>2</sup>     | 18.3 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W156                         | 2B+2B     | 77.4 m <sup>2</sup>     | 28.3 m <sup>2</sup> | North  | No        | Yes                    | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W157                         | 2B+2B     | 76.7 m <sup>2</sup>     | 20.8 m <sup>2</sup> | North  | No        |                        | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W158                         | 2B+2B     | 72.5 m <sup>2</sup>     | 17.8 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| LEVEL 16                     |           |                         |                     |        |           |                        |                     |                  |              |       |  |
| W161                         | 2B+2B     | 76.2 m <sup>2</sup>     | 22.0 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W162                         | 2B+2B     | 78.5 m <sup>2</sup>     | 14.7 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W163                         | 2B+2B     | 82.2 m <sup>2</sup>     | 29.2 m <sup>2</sup> | West   | No        | Yes                    | 4.90 m <sup>3</sup> | Yes              | Yes          |       |  |
| W164                         | 2B+2B     | 76.5 m <sup>2</sup>     | 14.7 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W165                         | 2B+2B     | 76.5 m <sup>2</sup>     | 18.3 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W166                         | 2B+2B     | 77.4 m <sup>2</sup>     | 28.3 m <sup>2</sup> | North  | No        | Yes                    | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W167                         | 2B+2B     | 76.7 m <sup>2</sup>     | 20.8 m <sup>2</sup> | North  | No        |                        | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W168                         | 2B+2B     | 72.5 m <sup>2</sup>     | 17.8 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| LEVEL 17                     |           |                         |                     |        |           |                        |                     |                  |              |       |  |
| W171                         | 2B+2B     | 76.2 m <sup>2</sup>     | 22.0 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W172                         | 2B+2B     | 78.5 m <sup>2</sup>     | 14.7 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W173                         | 2B+2B     | 82.3 m <sup>2</sup>     | 29.2 m <sup>2</sup> | West   | No        | Yes                    | 4.90 m <sup>3</sup> | Yes              | Yes          |       |  |
| W174                         | 2B+2B     | 76.5 m <sup>2</sup>     | 14.7 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W175                         | 2B+2B     | 76.5 m <sup>2</sup>     | 18.3 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W176                         | 2B+2B     | 77.4 m <sup>2</sup>     | 28.3 m <sup>2</sup> | North  | No        | Yes                    | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W177                         | 2B+2B     | 76.7 m <sup>2</sup>     | 20.8 m <sup>2</sup> | North  | No        |                        | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W178                         | 2B+2B     | 72.5 m <sup>2</sup>     | 17.8 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| LEVEL 18                     |           |                         |                     |        |           |                        |                     |                  |              |       |  |
| W181                         | 2B+2B     | 76.2 m <sup>2</sup>     | 22.0 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W182                         | 2B+2B     | 78.5 m <sup>2</sup>     | 14.7 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W183                         | 2B+2B     | 82.3 m <sup>2</sup>     | 25.9 m <sup>2</sup> | West   | No        | Yes                    | 4.90 m <sup>3</sup> | Yes              | Yes          |       |  |
| W184                         | 2B+2B     | 76.5 m <sup>2</sup>     | 14.4 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W185                         | 2B+2B     | 76.5 m <sup>2</sup>     | 18.3 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W186                         | 2B+2B     | 77.4 m <sup>2</sup>     | 28.3 m <sup>2</sup> | North  | No        | Yes                    | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W187                         | 2B+2B     | 76.7 m <sup>2</sup>     | 20.8 m <sup>2</sup> | North  | No        |                        | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W188                         | 2B+2B     | 72.5 m <sup>2</sup>     | 17.8 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| LEVEL 19                     |           |                         |                     |        |           |                        |                     |                  |              |       |  |
| W191                         | 2B+2B     | 76.2 m <sup>2</sup>     | 22.0 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W192                         | 2B+2B     | 78.5 m <sup>2</sup>     | 14.7 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W193                         | 2B+2B     | 82.3 m <sup>2</sup>     | 25.9 m <sup>2</sup> | West   | No        | Yes                    | 4.90 m <sup>3</sup> | Yes              | Yes          |       |  |
| W194                         | 2B+2B     | 76.5 m <sup>2</sup>     | 14.4 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W195                         | 2B+2B     | 76.5 m <sup>2</sup>     | 18.3 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W196                         | 2B+2B     | 77.4 m <sup>2</sup>     | 28.3 m <sup>2</sup> | North  | No        | Yes                    | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W197                         | 2B+2B     | 76.7 m <sup>2</sup>     | 20.8 m <sup>2</sup> | North  | No        |                        | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W198                         | 2B+2B     | 72.5 m <sup>2</sup>     | 17.8 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| LEVEL 20                     |           |                         |                     |        |           |                        |                     |                  |              |       |  |
| W201                         | 2B+2B     | 76.2 m <sup>2</sup>     | 22.0 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W202                         | 2B+2B     | 78.5 m <sup>2</sup>     | 14.7 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W203                         | 2B+2B     | 82.3 m <sup>2</sup>     | 29.2 m <sup>2</sup> | West   | No        | Yes                    | 4.90 m <sup>3</sup> | Yes              | Yes          |       |  |
| W204                         | 2B+2B     | 76.5 m <sup>2</sup>     | 14.5 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W205                         | 2B+2B     | 76.5 m <sup>2</sup>     | 18.3 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W206                         | 2B+2B     | 77.4 m <sup>2</sup>     | 28.3 m <sup>2</sup> | North  | No        | Yes                    | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W207                         | 2B+2B     | 76.7 m <sup>2</sup>     | 21.3 m <sup>2</sup> | North  | No        |                        | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W208                         | 2B+2B     | 72.5 m <sup>2</sup>     | 17.8 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| LEVEL 21                     |           |                         |                     |        |           |                        |                     |                  |              |       |  |
| W211                         | 2B+2B     | 76.2 m <sup>2</sup>     | 22.0 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W212                         | 2B+2B     | 78.5 m <sup>2</sup>     | 14.7 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W213                         | 2B+2B     | 82.3 m <sup>2</sup>     | 25.9 m <sup>2</sup> | West   | No        | Yes                    | 4.90 m <sup>3</sup> | Yes              | Yes          |       |  |
| W214                         | 2B+2B     | 76.5 m <sup>2</sup>     | 14.5 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W215                         | 2B+2B     | 76.5 m <sup>2</sup>     | 18.5 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W216                         | 2B+2B     | 77.4 m <sup>2</sup>     | 28.9 m <sup>2</sup> | North  | No        | Yes                    | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W217                         | 2B+2B     | 76.7 m <sup>2</sup>     | 21.7 m <sup>2</sup> | North  | No        |                        | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W218                         | 2B+2B     | 72.5 m <sup>2</sup>     | 18.1 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| LEVEL 22                     |           |                         |                     |        |           |                        |                     |                  |              |       |  |
| W221                         | 2B+2B     | 76.2 m <sup>2</sup>     | 22.4 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W222                         | 2B+2B     | 78.5 m <sup>2</sup>     | 15.0 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W223                         | 2B+2B     | 82.2 m <sup>2</sup>     | 26.2 m <sup>2</sup> | West   | No        | Yes                    | 4.90 m <sup>3</sup> | Yes              | Yes          |       |  |
| W224                         | 2B+2B     | 76.5 m <sup>2</sup>     | 19.3 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W225                         | 2B+2B     | 76.5 m <sup>2</sup>     | 18.5 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W226                         | 2B+2B     | 77.4 m <sup>2</sup>     | 28.9 m <sup>2</sup> | North  | No        | Yes                    | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W227                         | 2B+2B     | 76.7 m <sup>2</sup>     | 21.7 m <sup>2</sup> | North  | No        |                        | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W228                         | 2B+2B     | 72.5 m <sup>2</sup>     | 18.1 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| LEVEL 23                     |           |                         |                     |        |           |                        |                     |                  |              |       |  |
| W231                         | 2B+2B     | 76.2 m <sup>2</sup>     | 22.4 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W232                         | 2B+2B     | 78.5 m <sup>2</sup>     | 15.0 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| W233                         | 2B+2B     | 82.2 m <sup>2</sup>     | 26.2 m <sup>2</sup> | West   | No        | Yes                    | 4.90 m <sup>3</sup> | Yes              | Yes          |       |  |
| W234                         | 2B+2B     | 76.5 m <sup>2</sup>     | 19.3 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W235                         | 2B+2B     | 76.5 m <sup>2</sup>     | 18.5 m <sup>2</sup> | West   | No        |                        | 4.36 m <sup>3</sup> |                  | Yes          |       |  |
| W236                         | 2B+2B     | 77.4 m <sup>2</sup>     | 28.9 m <sup>2</sup> | North  | No        | Yes                    | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W237                         | 2B+2B     | 76.7 m <sup>2</sup>     | 21.7 m <sup>2</sup> | North  | No        |                        | 4.10 m <sup>3</sup> | Yes              | Yes          |       |  |
| W238                         | 2B+2B     | 72.5 m <sup>2</sup>     | 18.1 m <sup>2</sup> | East   | No        |                        | 5.00 m <sup>3</sup> | Yes              | Yes          |       |  |
| Grand total: 172             |           | 13,572.7 m <sup>2</sup> |                     |        |           | 3,423.7 m <sup>3</sup> |                     |                  |              |       |  |
|                              |           |                         |                     | 10     |           | 48                     |                     | 124              |              | 158   |  |
| PERCENTAGE                   |           |                         |                     | 5.2%   |           | 27.9%                  |                     | 72.1%            |              | 91.8% |  |

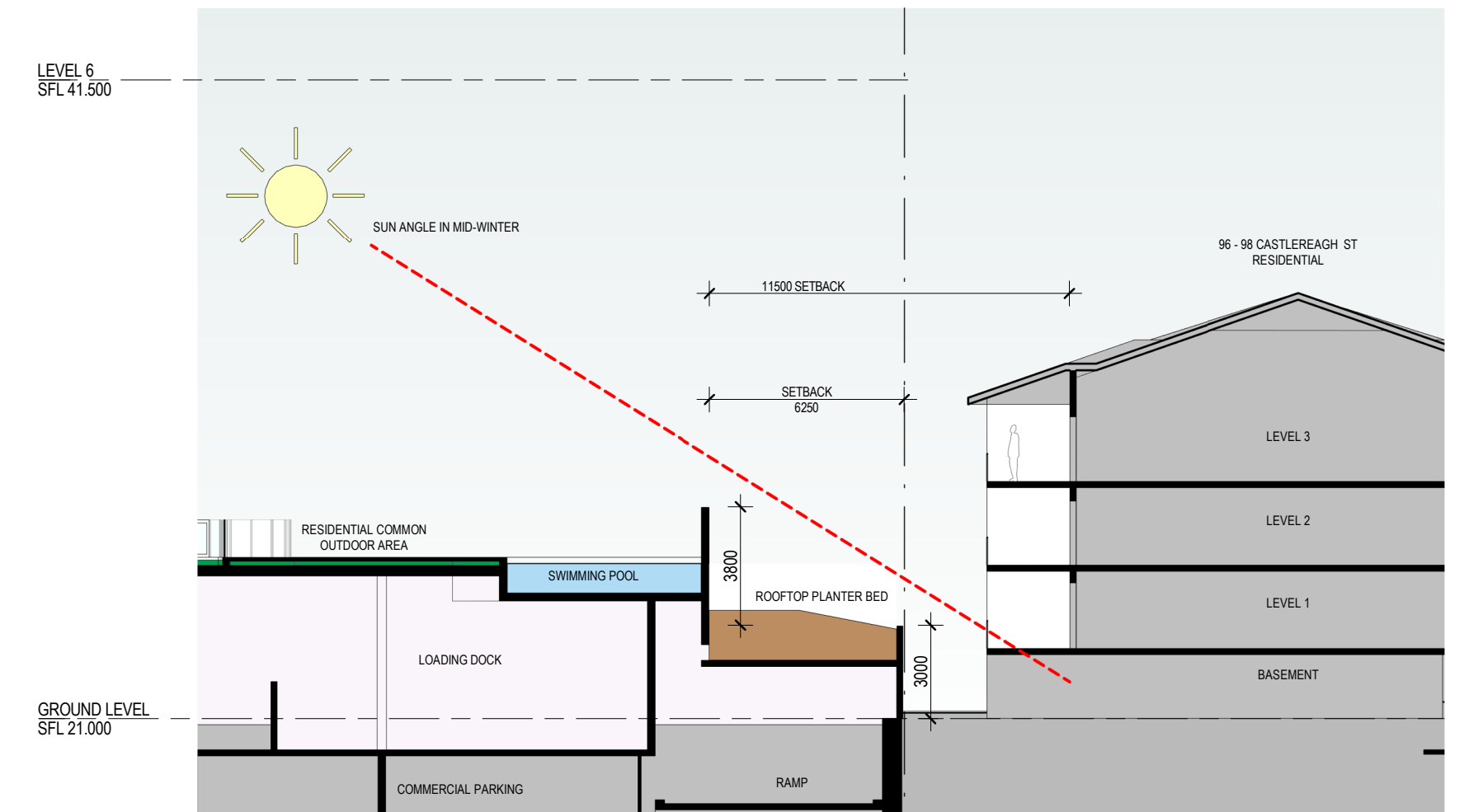




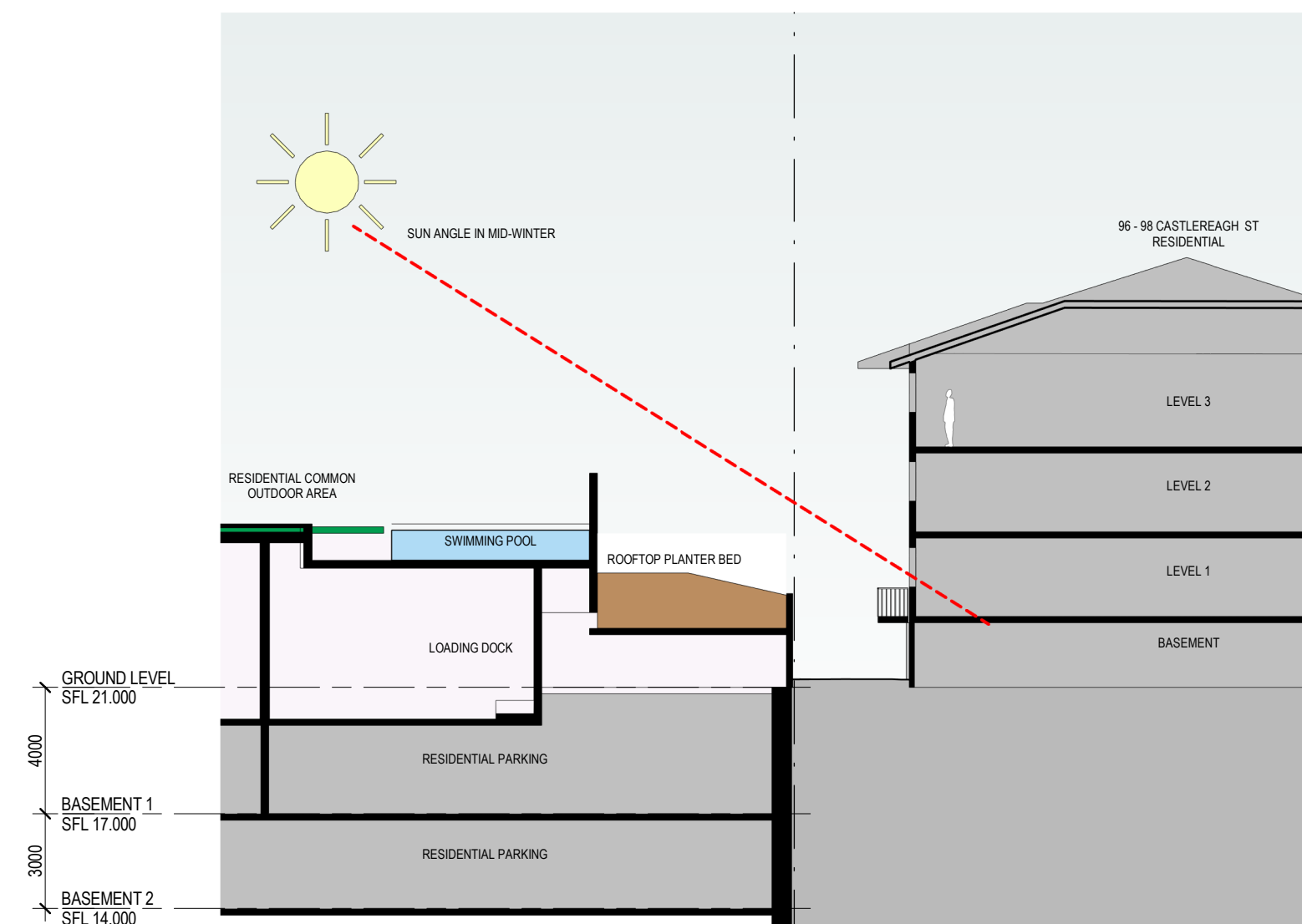
1 CROSS SECTION WEST TOWER 1  
SHOWING 96-98 CASTLEREAGH ST &  
DRIVEWAY 1:200



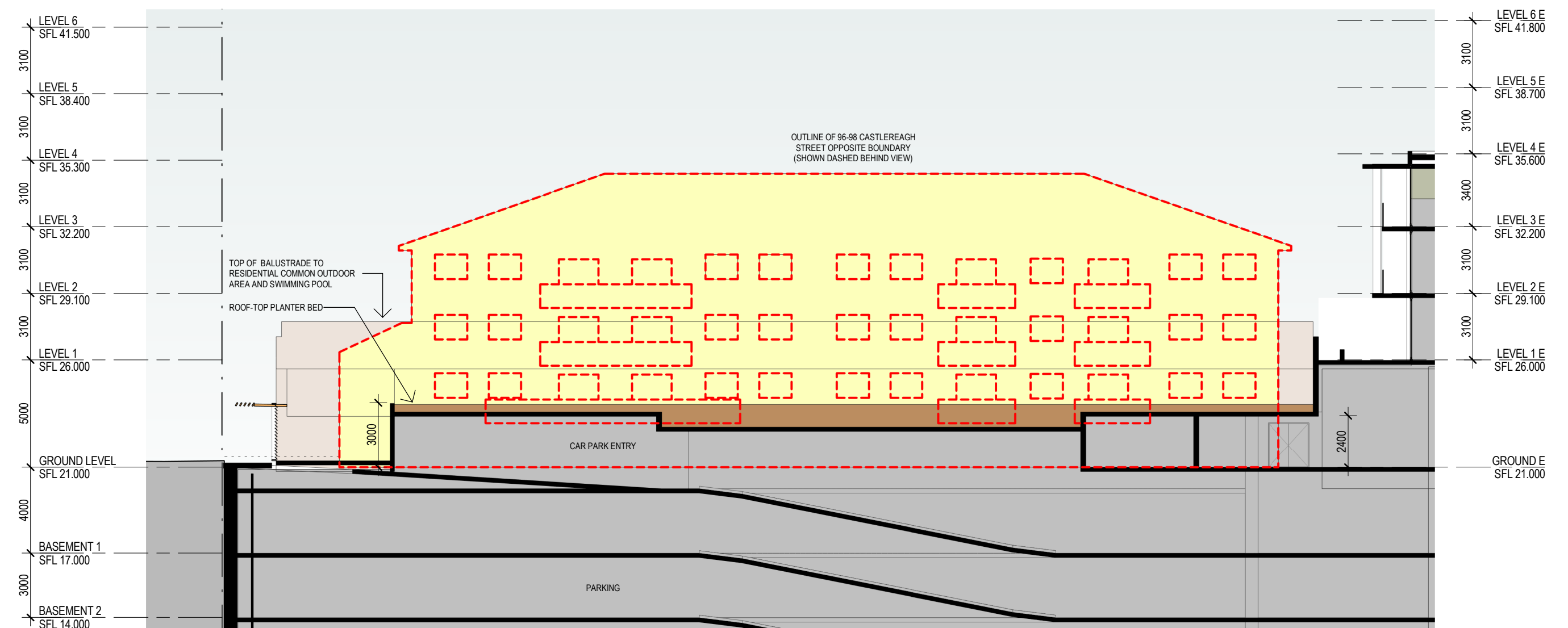
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SHOWING 96-98 CASTLEREAGH ST &  
LOADING DOCK 1:200



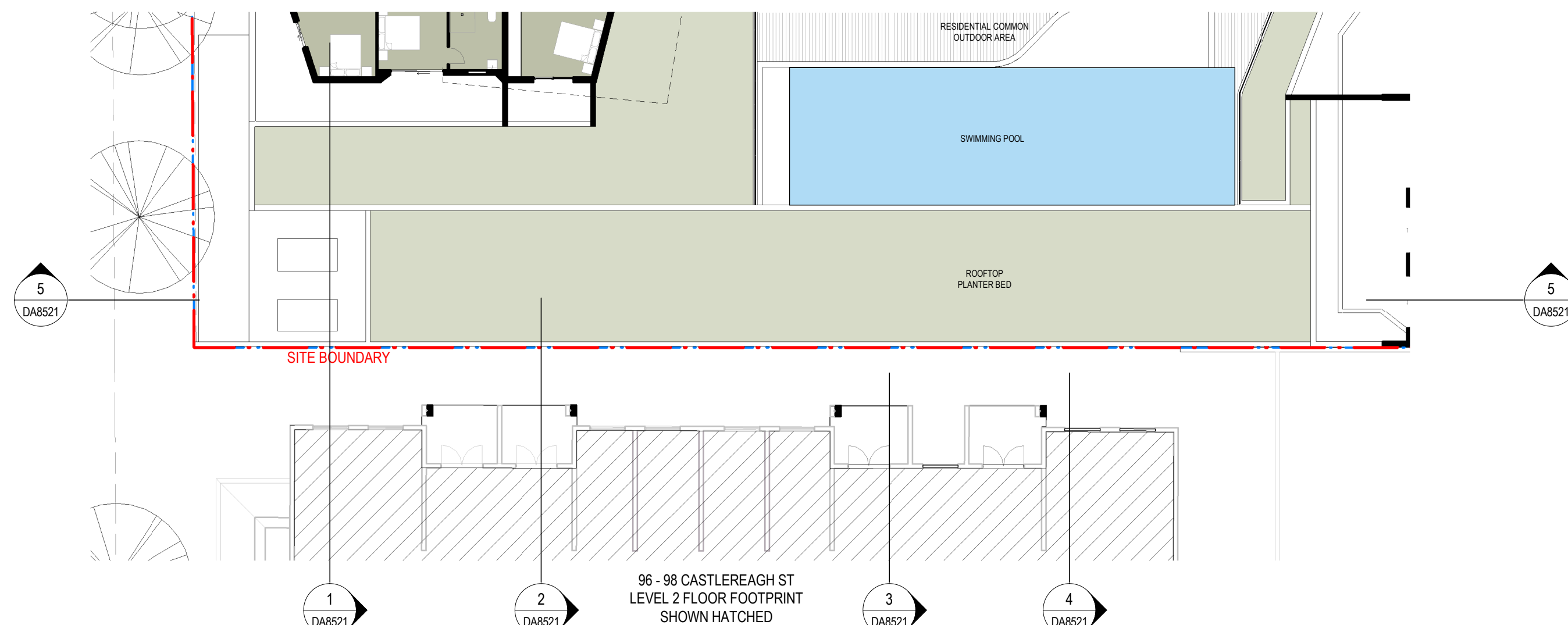
3 CROSS SECTION WEST TOWER 3  
SHOWING 96-98 CASTLEREAGH ST &  
RESIDENT COMMON OUTDOOR AREA 1:200



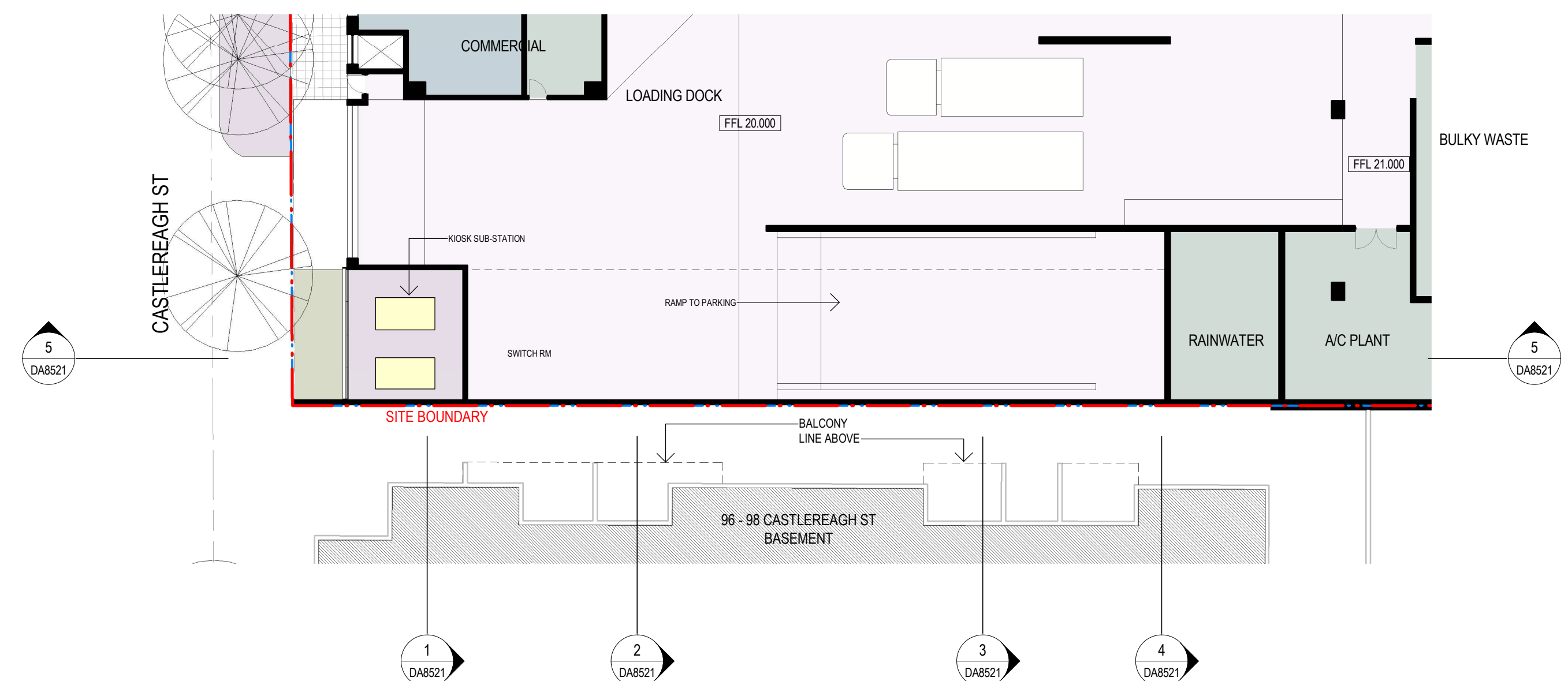
4 CROSS SECTION WEST TOWER 4  
SHOWING 96-98 CASTLEREAGH ST &  
RESIDENT COMMON OUTDOOR AREA 1:200



5 SECTION THROUGH CAR PARK ENTRY  
SHOWING ELEVATION OF 96-98  
CASTLEREAGH ST 1:200

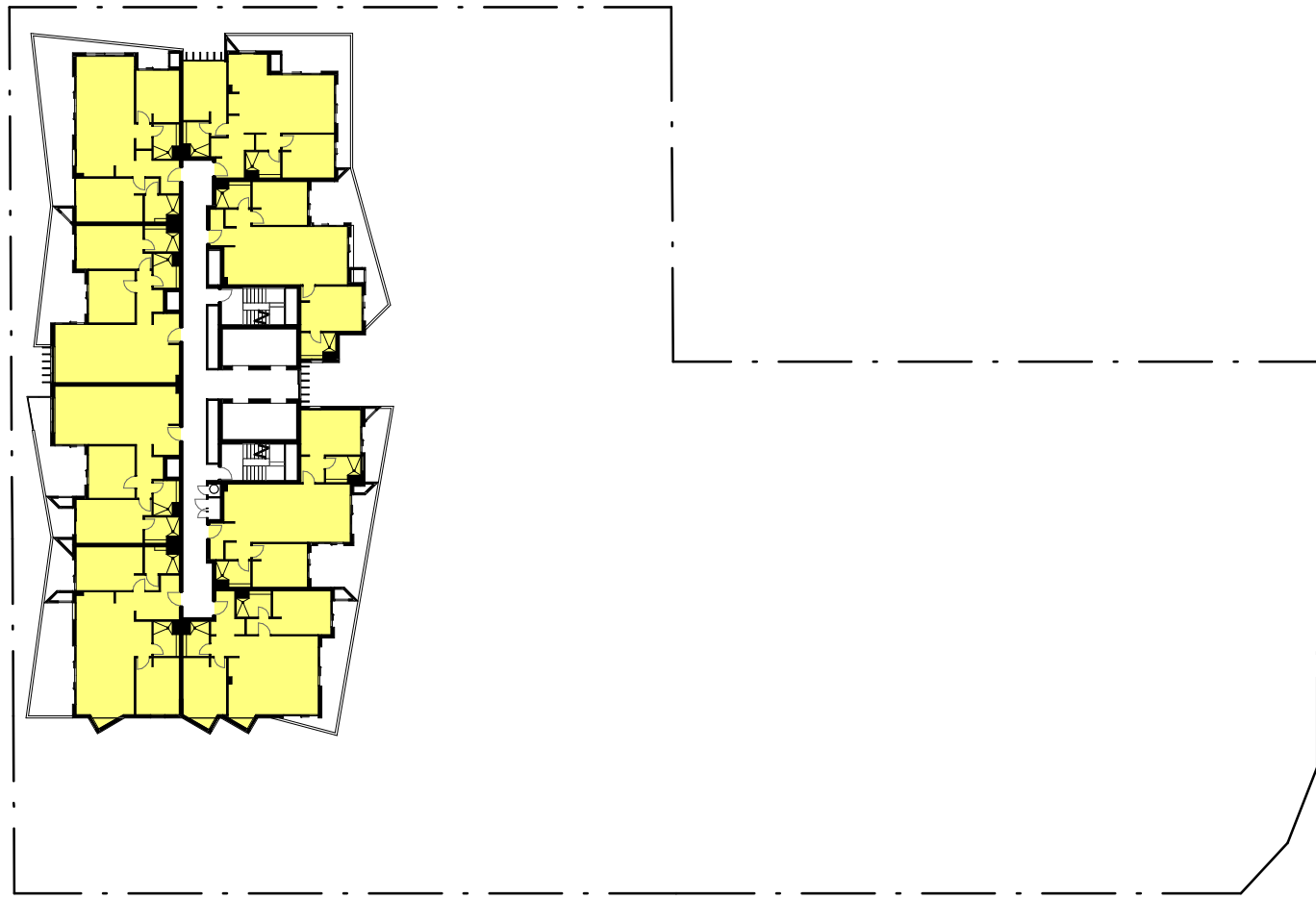


6 LEVEL 1 1-300 SITE PLAN DA 1:200

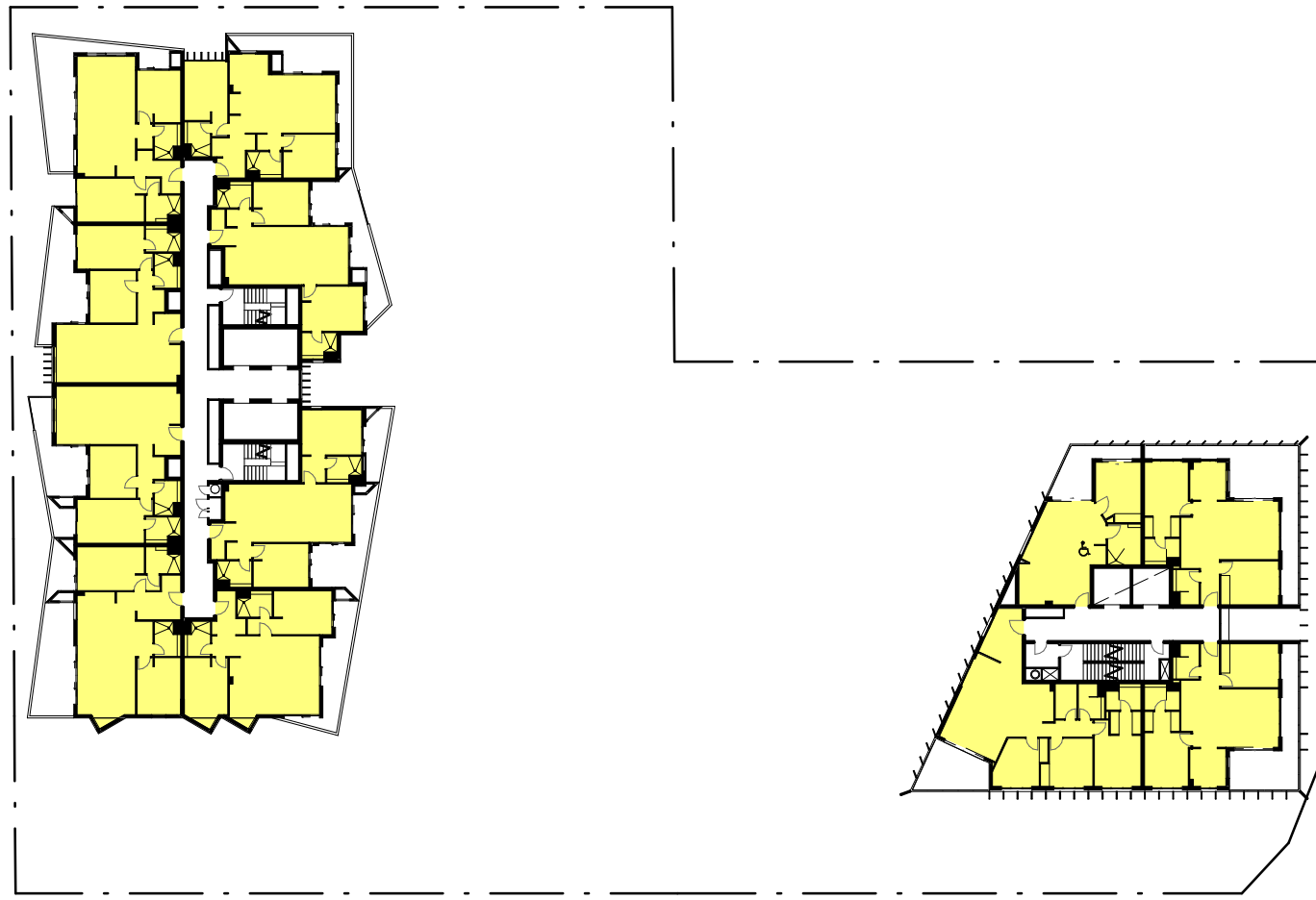


7 GROUND LEVEL 1-300 SITE PLAN DA 1:200

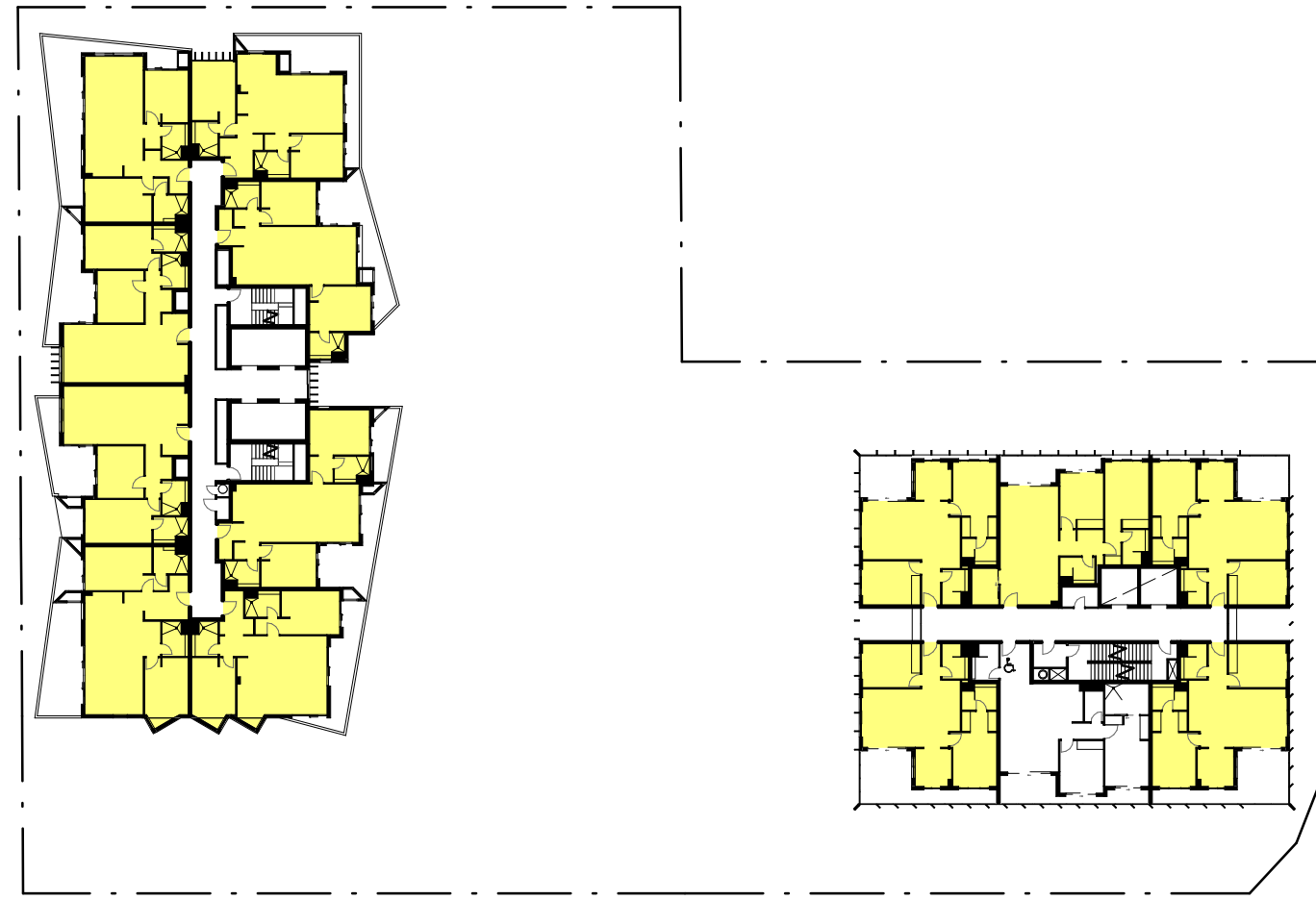




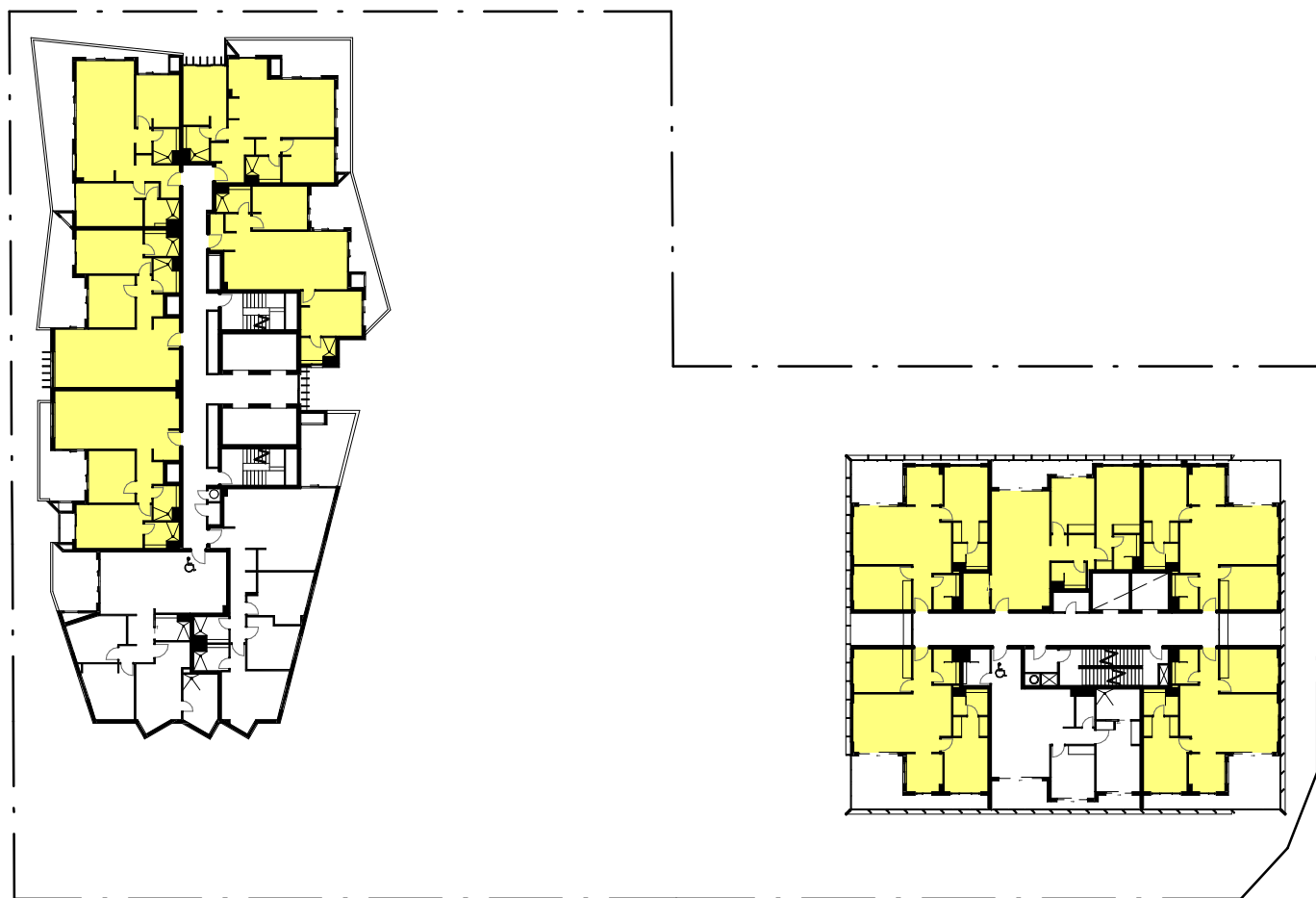
9 LEVELS 18-23 Solar 1:500



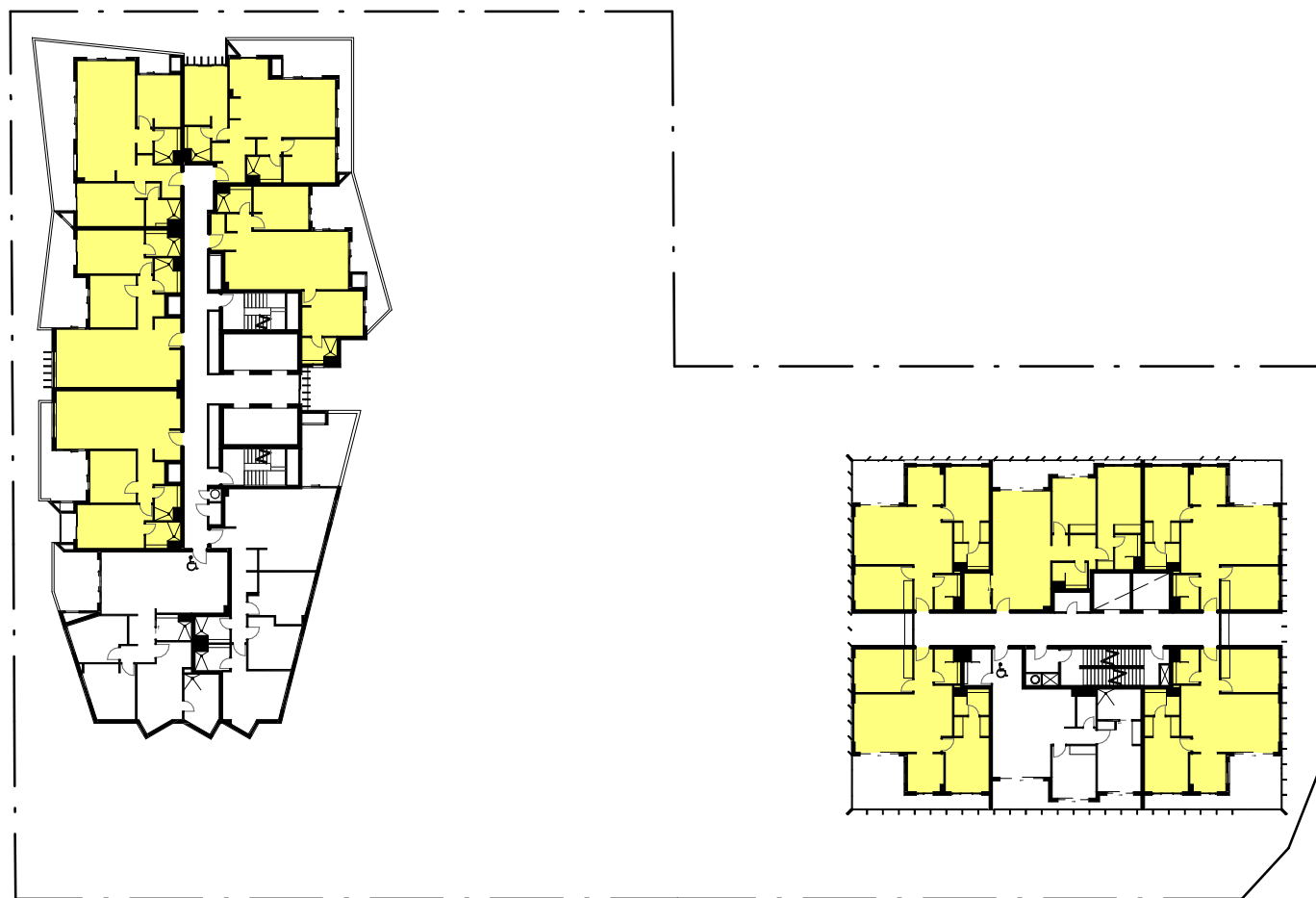
8 LEVELS 8-17 Solar 1:500



7 LEVEL 07 Solar 1:500



6 LEVEL 06 Solar 1:500



5 LEVEL 05 Solar 1:500



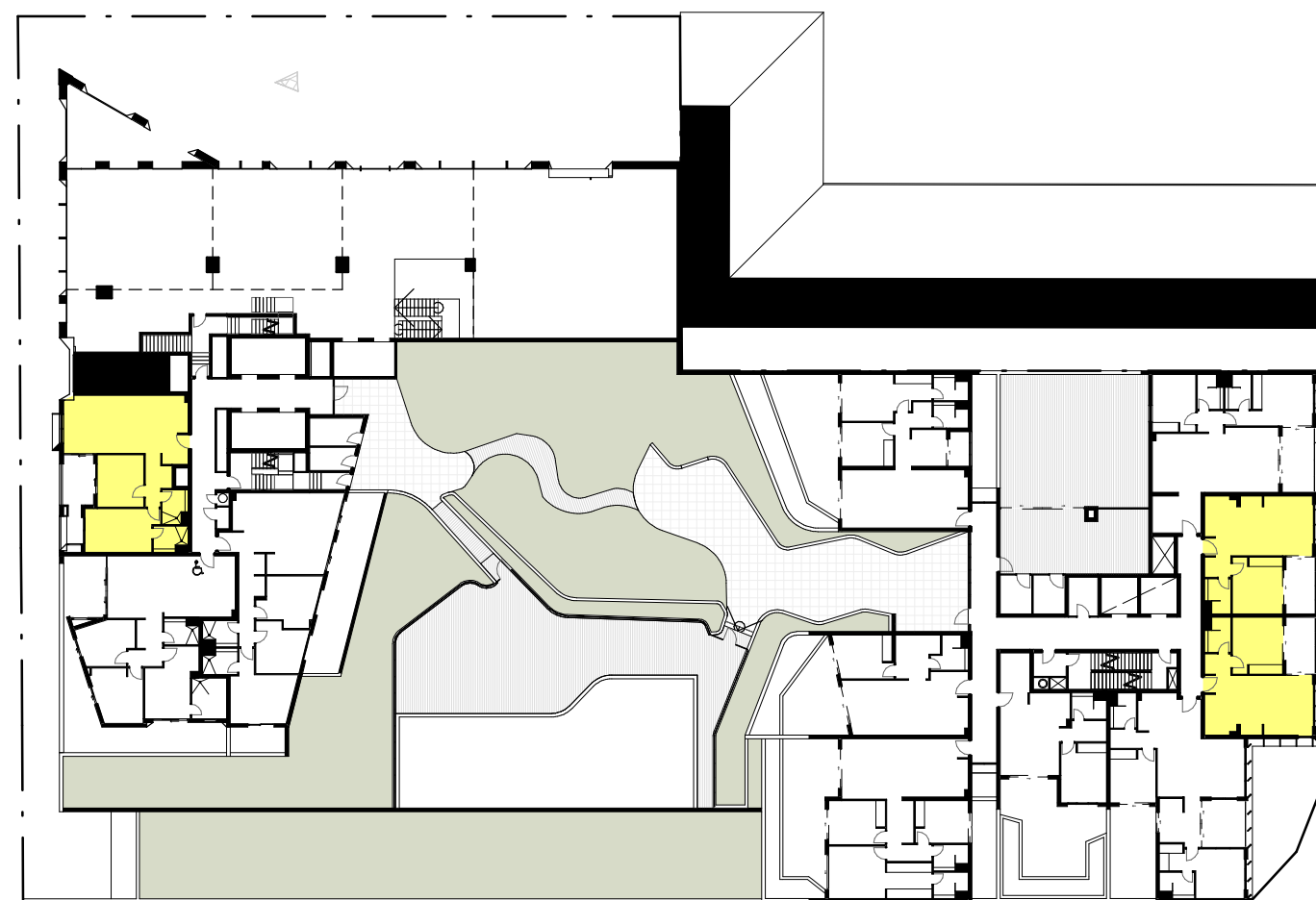
4 LEVEL 04 Solar 1:500



3 LEVEL 03 Solar 1:500



2 LEVEL 02 Solar 1:500



1 LEVEL 01 Solar 1:500

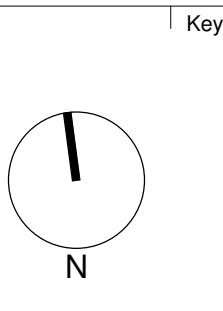
|            |     |
|------------|-----|
| WEST TOWER | 158 |
| EAST TOWER | 68  |
| TOTAL      | 226 |
| PERCENTAGE | 85% |

6.7  
NATIONS HOUSE  
NATIONAL BUILDING SURVEILLANCE

Certificate no.: 0003578100  
Assessor Name: Haralud Islam  
Accreditation no.: 100982  
Certificate date: 31 January 2019  
Dwelling Address: 86 Memorial Avenue  
Liverpool, NSW 2170  
www.nathouse.gov.au

ABS  
Australian Building Sustainability Association

| Revisions No. | Date     | Description                 | Ver | App'd |
|---------------|----------|-----------------------------|-----|-------|
| 1             | 22-02-19 | ISSUED FOR D.A. SUBMISSION. |     |       |



Client  
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ABN 53 003 782 250

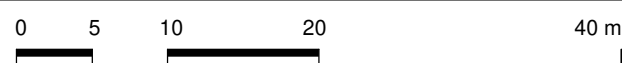
Project  
MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
86-94 Castlereagh Street  
LIVERPOOL NSW 2170

Proj. No. 18005

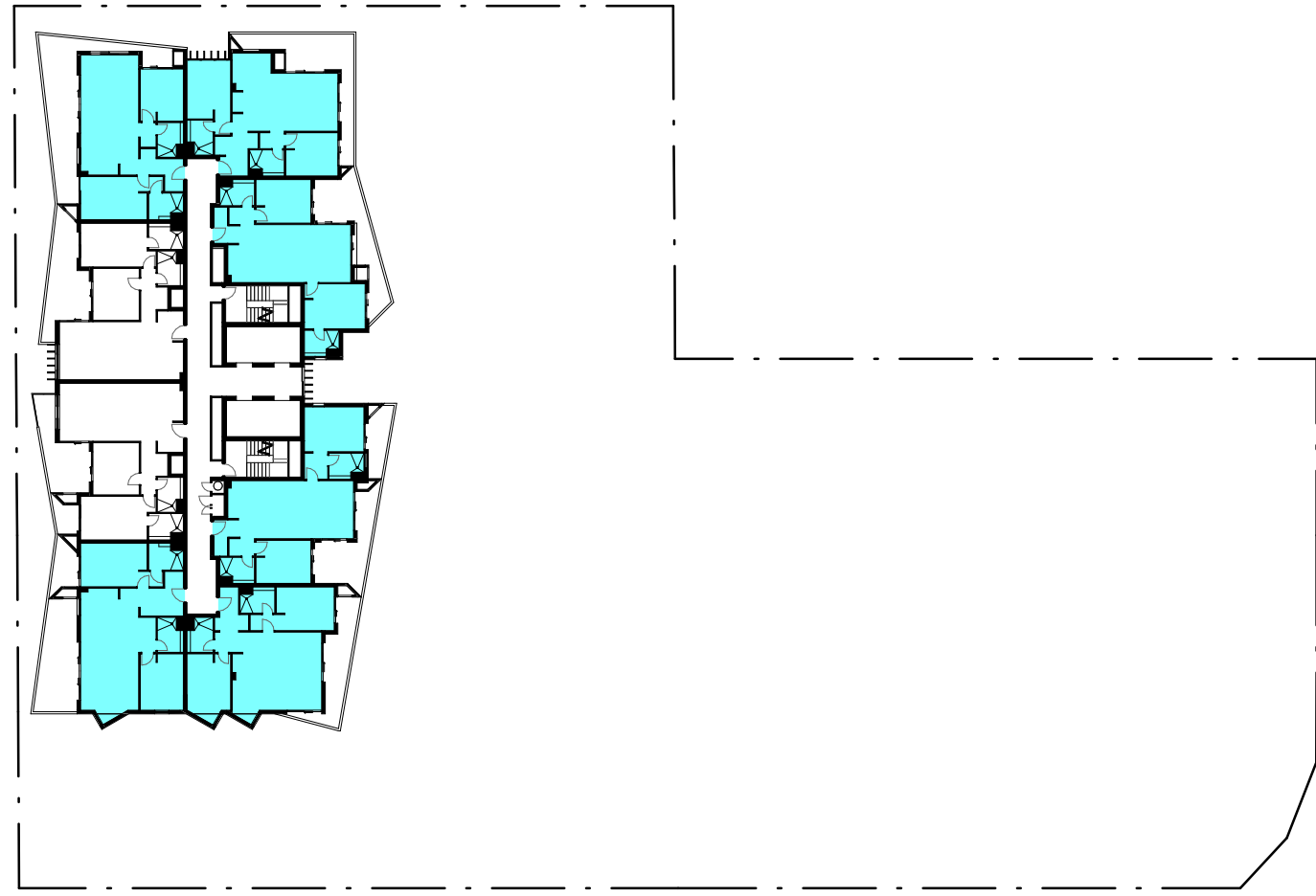
Drawing Title  
ADG SOLAR ACCESS  
ANALYSIS

Sheet Status  
NOT FOR CONSTRUCTION

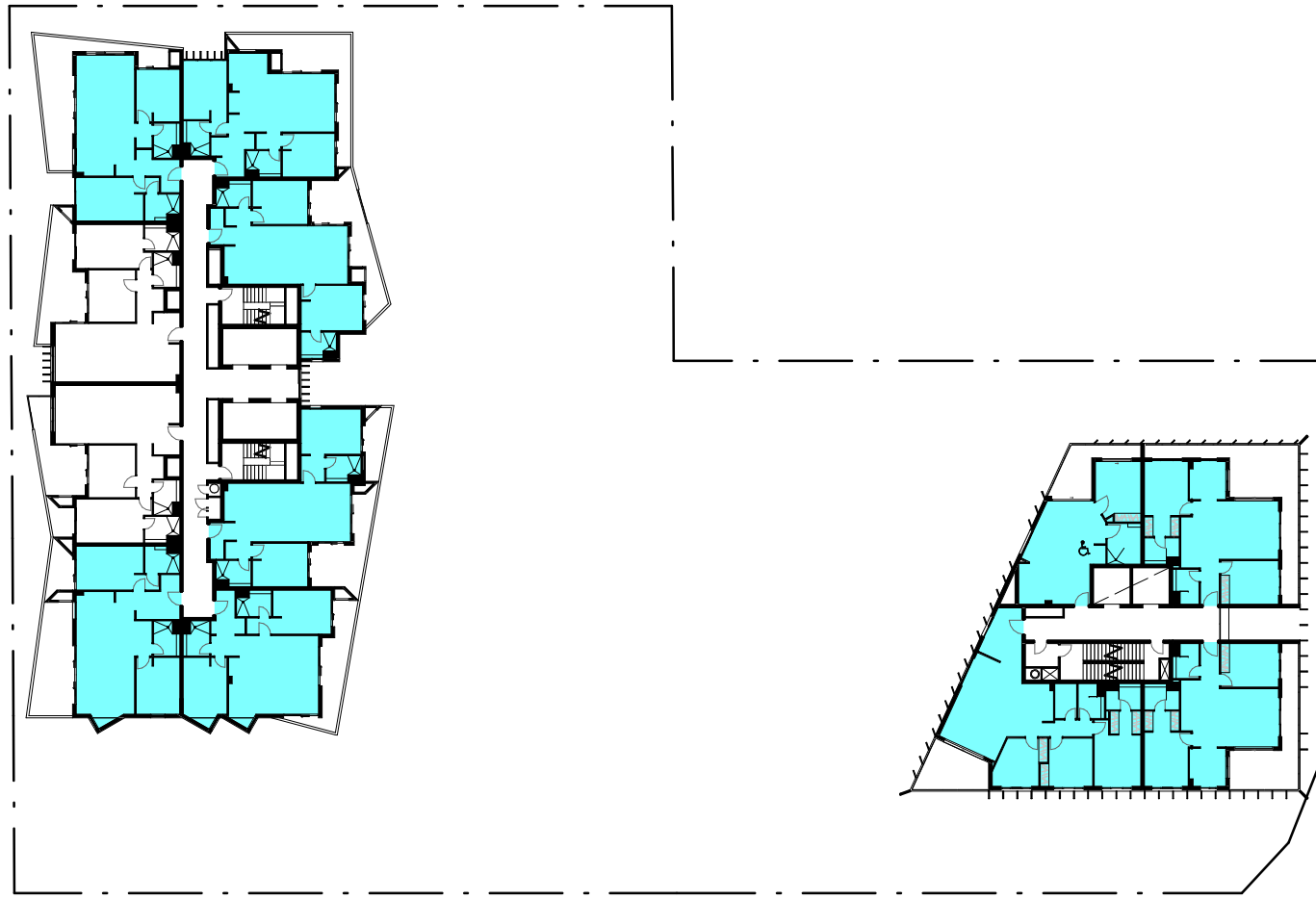
Scale  
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Drawing No.  
DA8531 1  
Issue



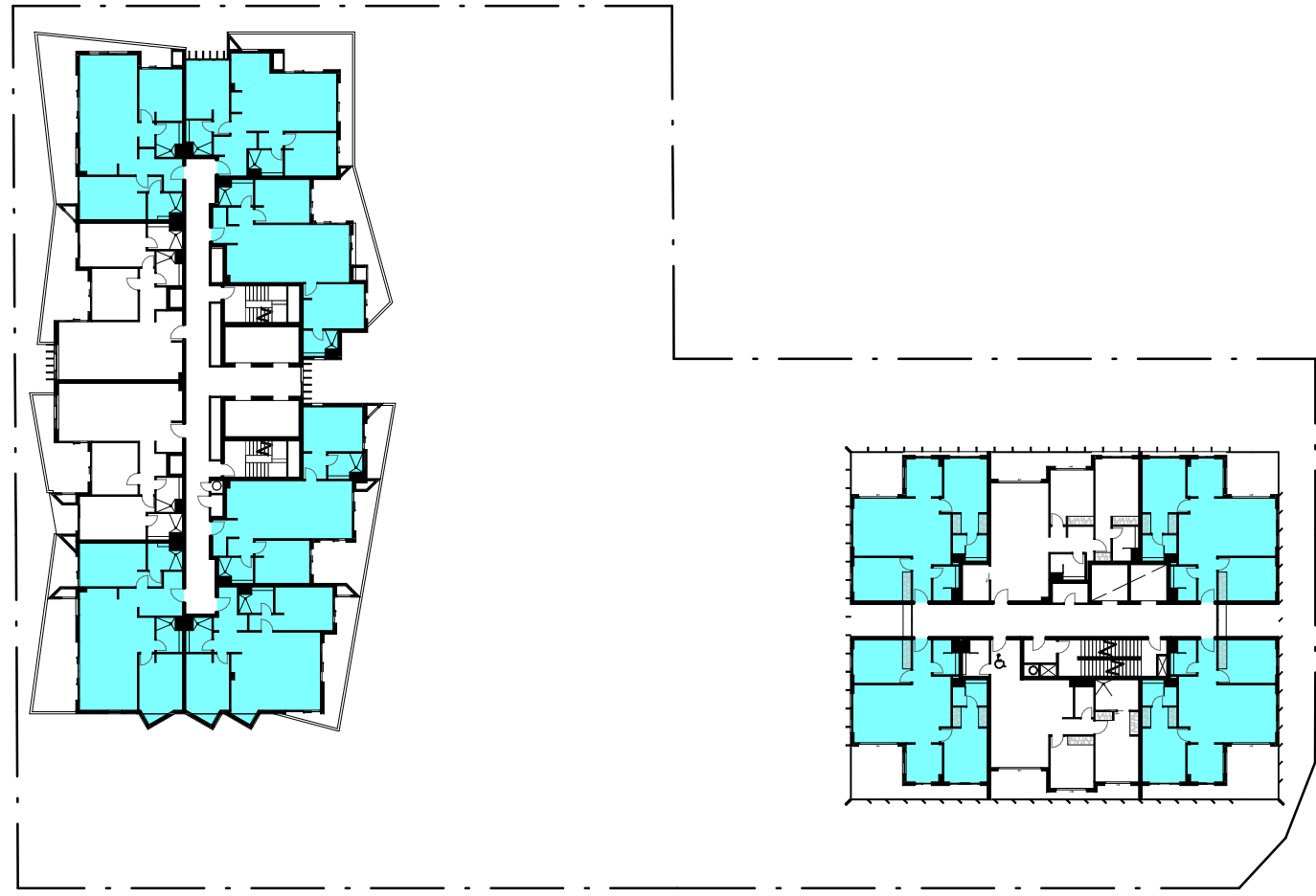




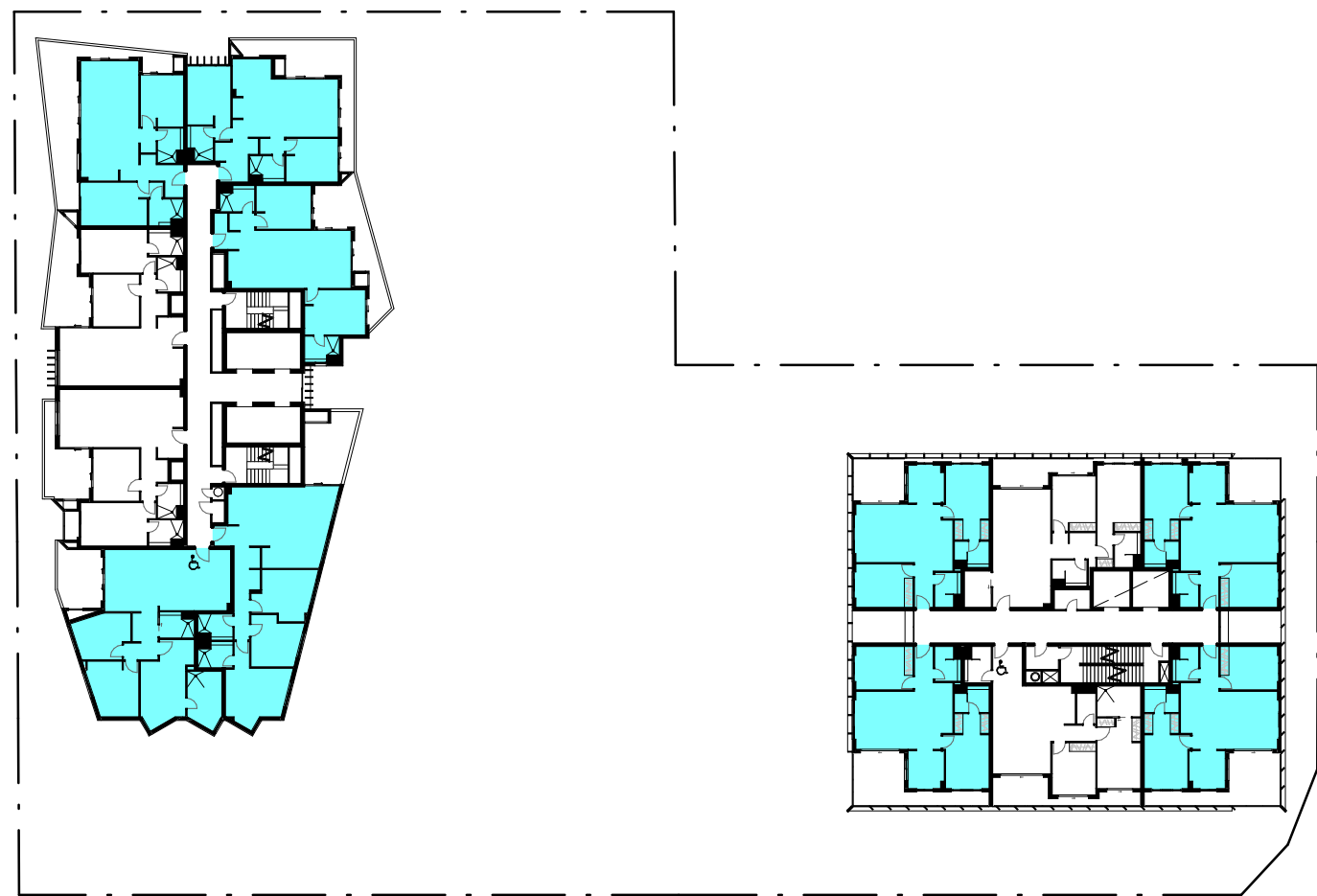
9 LEVELS 18-23 Cross-Ventilation  
1 : 500



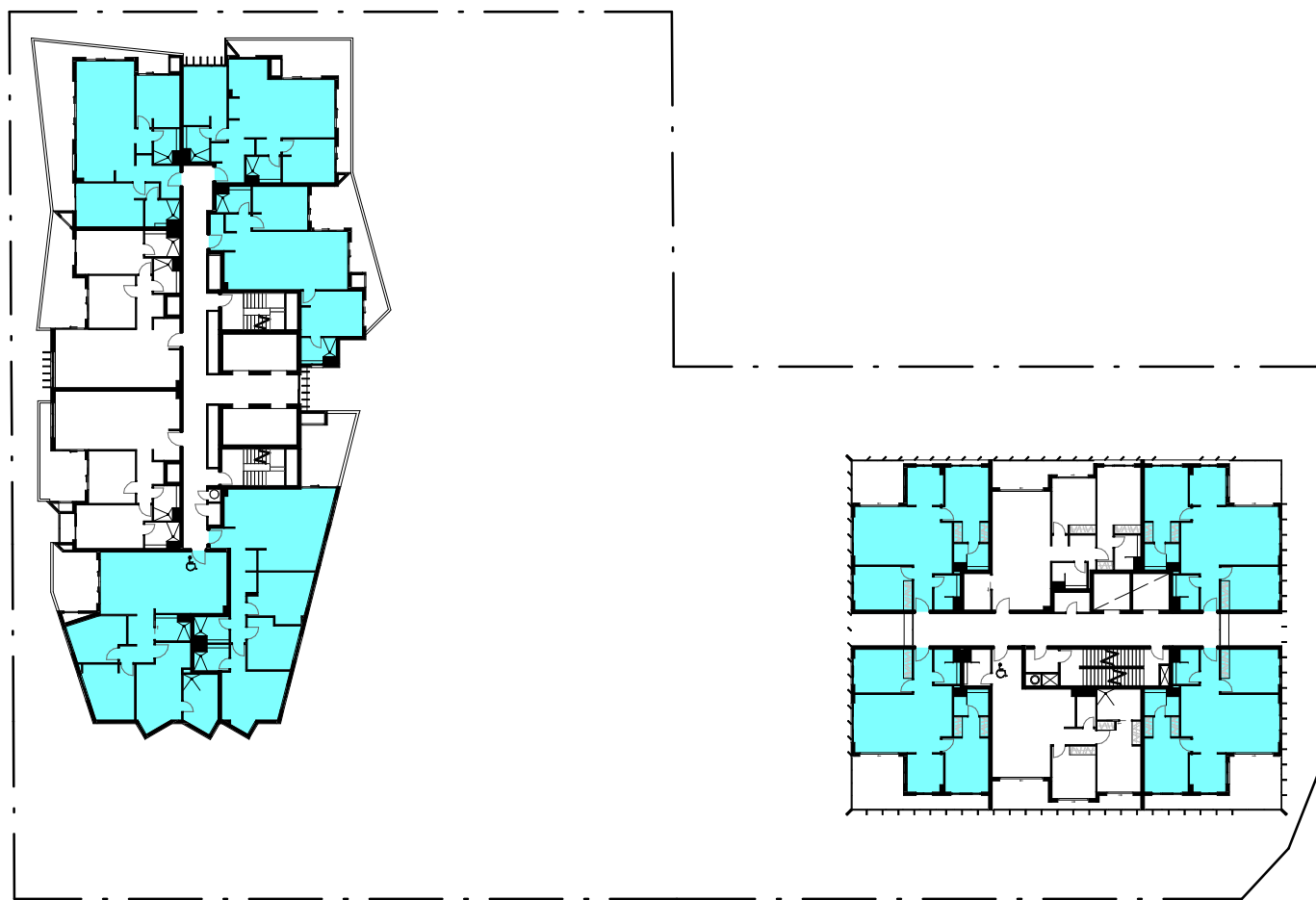
8 LEVELS 8-17 Cross-Ventilation  
1 : 500



7 LEVEL 07 Cross-Ventilation  
1 : 500



6 LEVEL 06 Cross-Ventilation  
1 : 500



5 LEVEL 05 Cross-Ventilation  
1 : 500



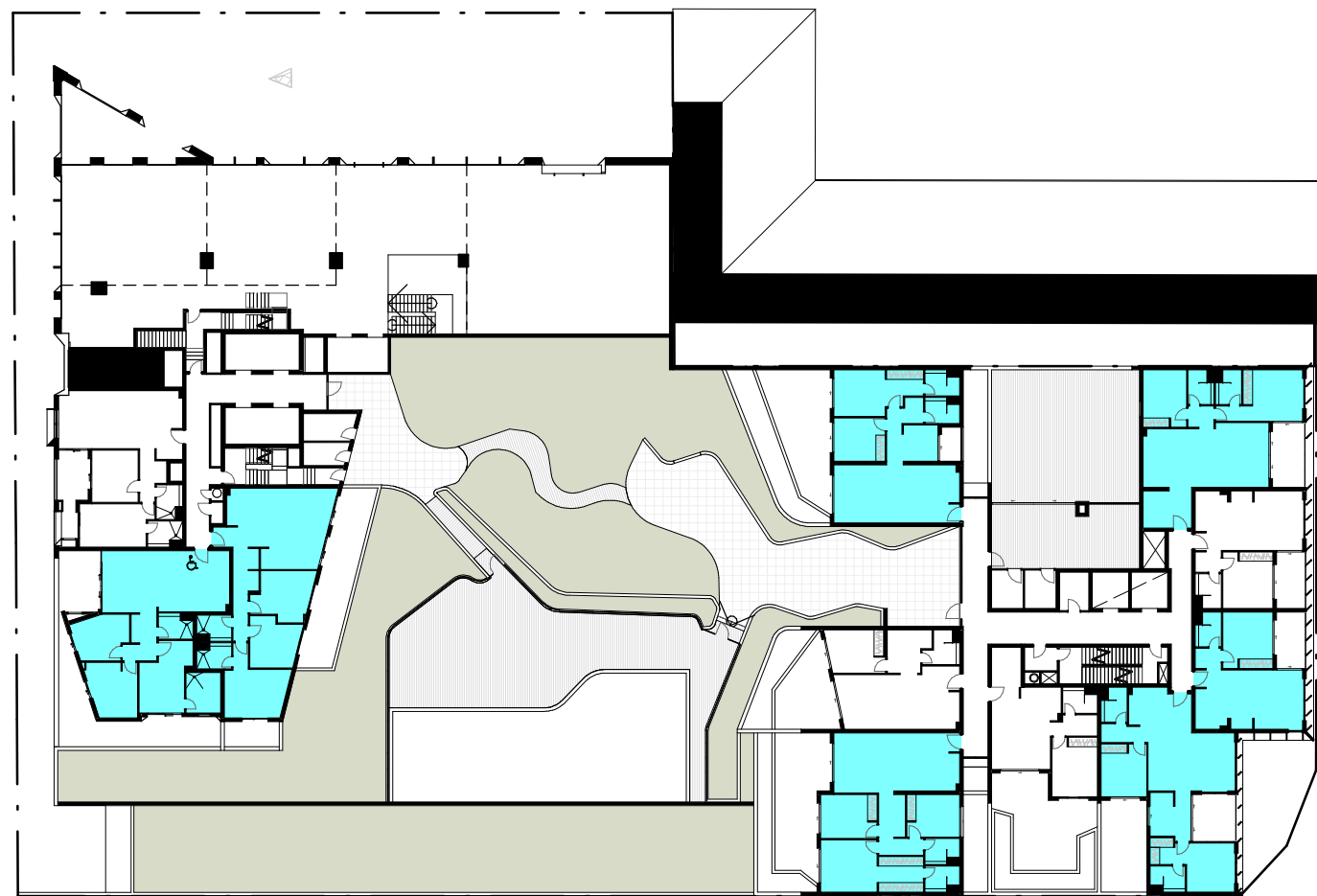
4 LEVEL 04 Cross-Ventilation  
1 : 500



3 LEVEL 03 Cross-Ventilation  
1 : 500



2 LEVEL 02 Cross-Ventilation  
1 : 500

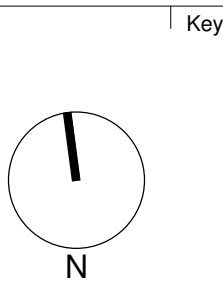


1 LEVEL 01 Cross-Ventilation  
1 : 500

|            |       |
|------------|-------|
| WEST TOWER | 124   |
| EAST TOWER | 71    |
| TOTAL      | 194   |
| PERCENTAGE | 73.5% |



| Revisions | No.      | Date                        | Description | Ver | App'd |
|-----------|----------|-----------------------------|-------------|-----|-------|
| 1         | 22-02-19 | ISSUED FOR D.A. SUBMISSION. |             |     |       |



Client  
Il Capitano Investments Pty Ltd

Architect  
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ABN 53 003 782 250

Project  
MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
88-94 Castlereagh Street  
LIVERPOOL NSW 2170

Proj. No. 18005

Drawing Title  
**ADG NATURAL VENTILATION ANALYSIS**  
Sheet Status  
NOT FOR CONSTRUCTION

Scale  
1 : 500 @A1  
Drawing No.  
**DA8532 1**  
Issue

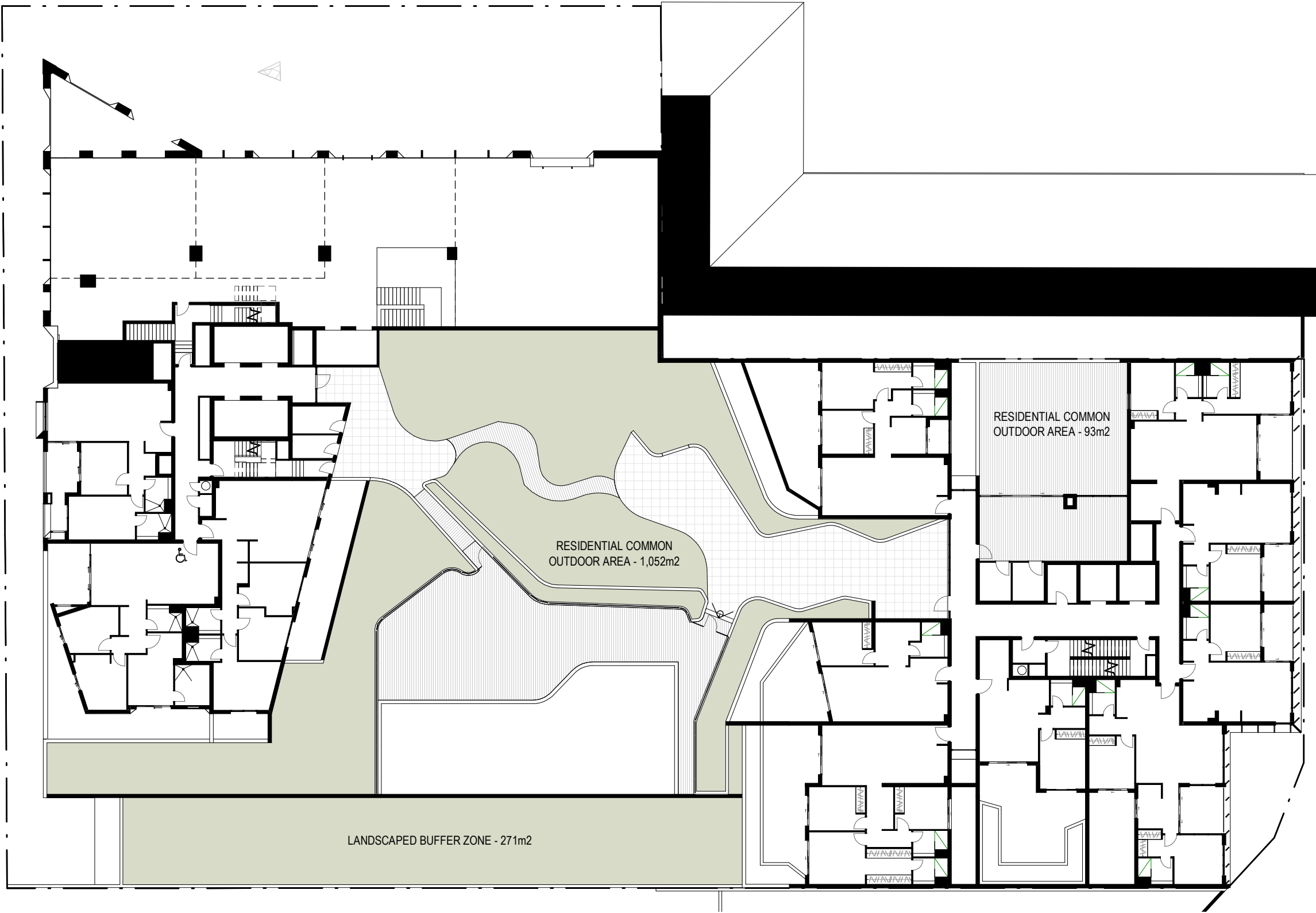




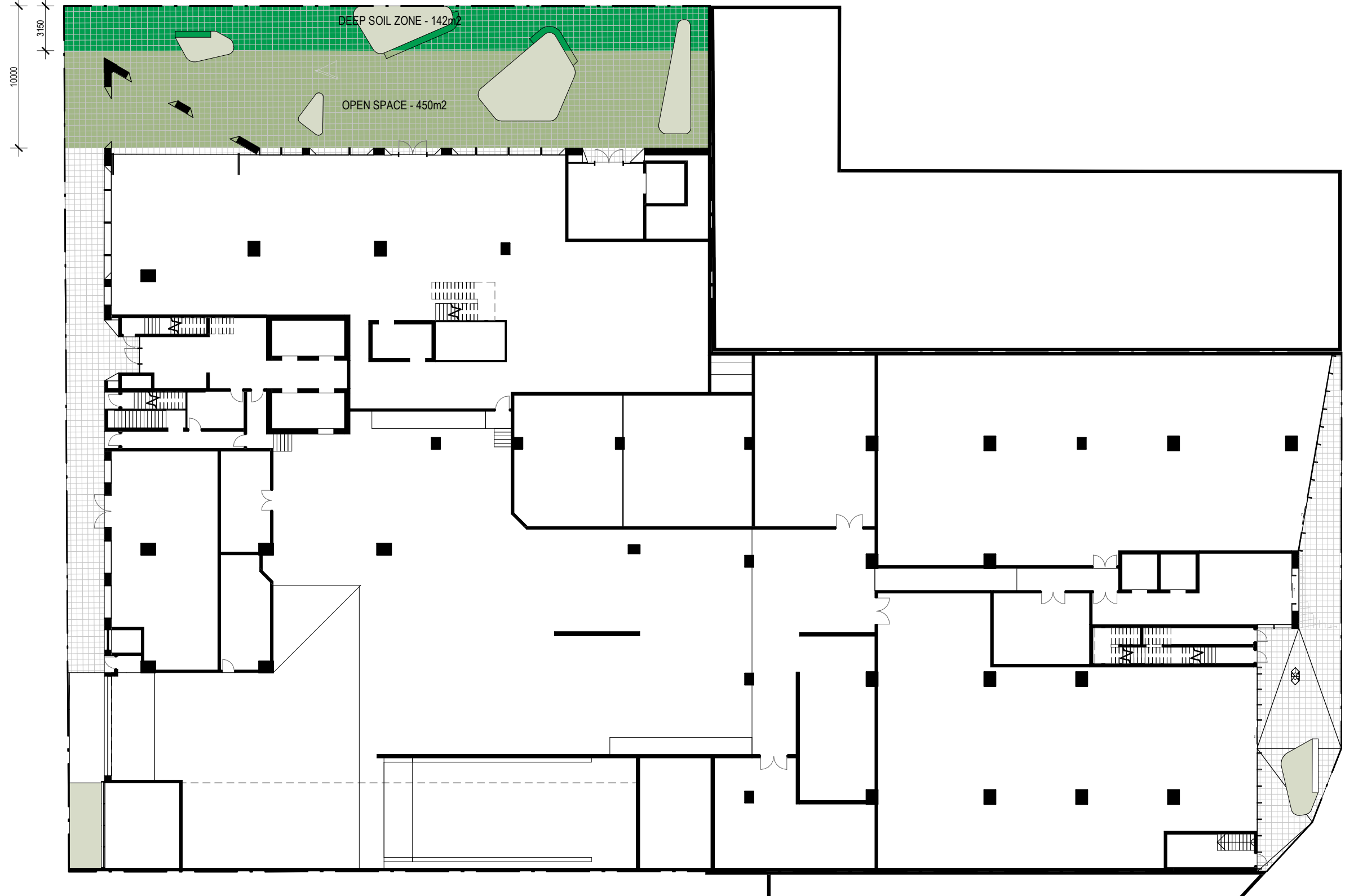


3 LEVEL 04 OPEN SPACE/DEEP SOIL  
1:300

|                     |                     |       |
|---------------------|---------------------|-------|
| SITE AREA           | 4,333m <sup>2</sup> |       |
| DEEP SOIL PLANTING  | 142m <sup>2</sup>   | 3.2%  |
| PUBLIC OPEN SPACE   | 450m <sup>2</sup>   | 10.3% |
| COMMUNAL OPEN SPACE | 1,355m <sup>2</sup> | 31.3% |
| LANDSCAPE BUFFER    | 271m <sup>2</sup>   | 6.2%  |



2 LEVEL 01 OPEN SPACE/DEEP SOIL  
1:300

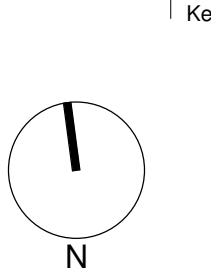


1 GROUND LEVEL OPEN SPACE/DEEP SOIL  
1:300

6.7

Certificate no.: 0003578100  
Assessor Name: Hamidul Islam  
Accreditation no.: 100952  
Certificate date: 31 January 2019  
Dwelling Address: 86 Memorial Avenue  
Liverpool, NSW 2170  
www.nathans.gov.au

| Revisions | No.      | Date | Description                 | Ver | App'd |
|-----------|----------|------|-----------------------------|-----|-------|
| 1         | 22-02-19 |      | ISSUED FOR D.A. SUBMISSION. |     |       |



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ABN 53 003 782 250

Project  
MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
88-94 Castlereagh Street  
LIVERPOOL NSW 2170  
Proj. No. 18005

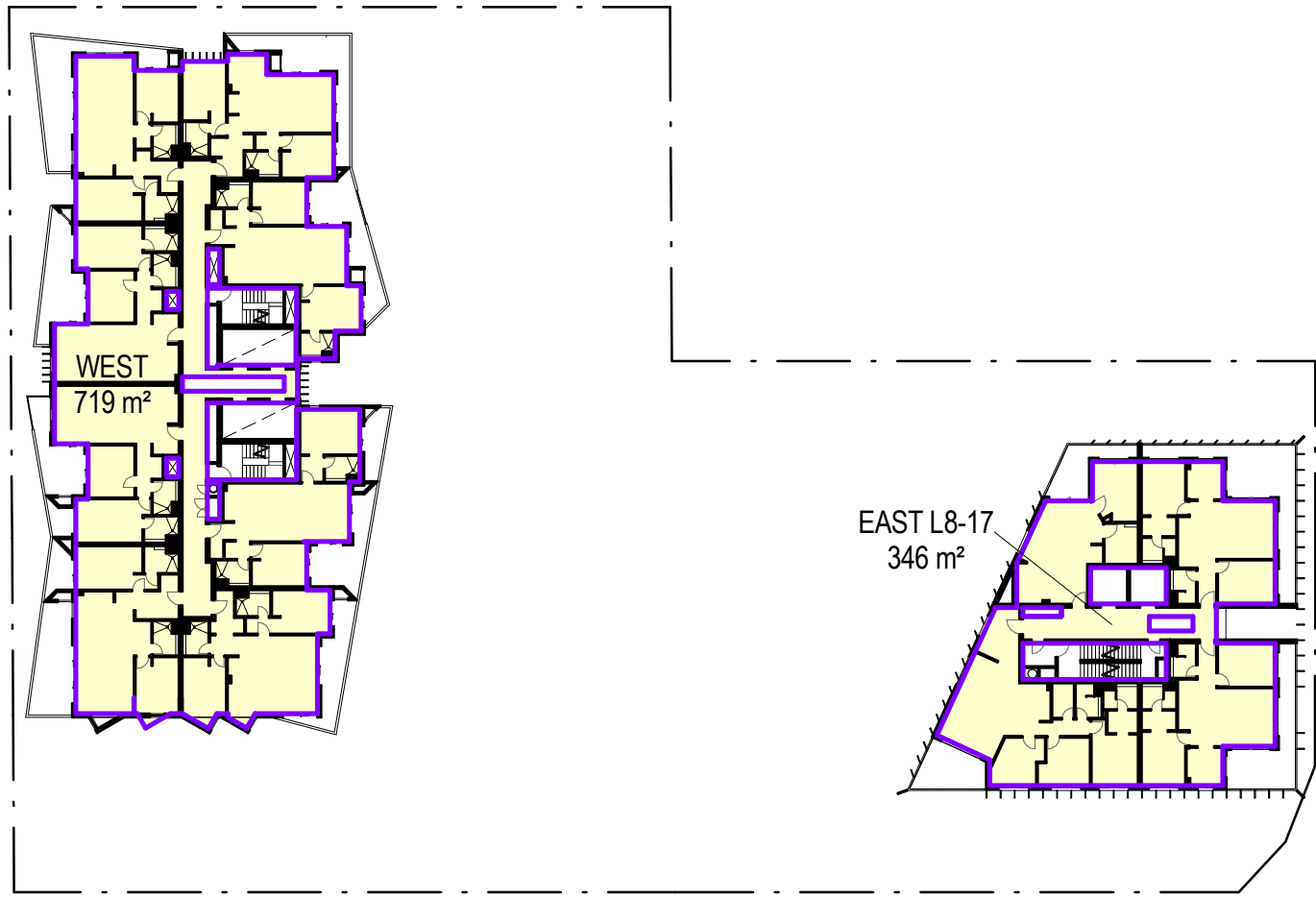
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ADG OPEN SPACE/DEEP SOIL  
Sheet Status  
NOT FOR CONSTRUCTION

Scale  
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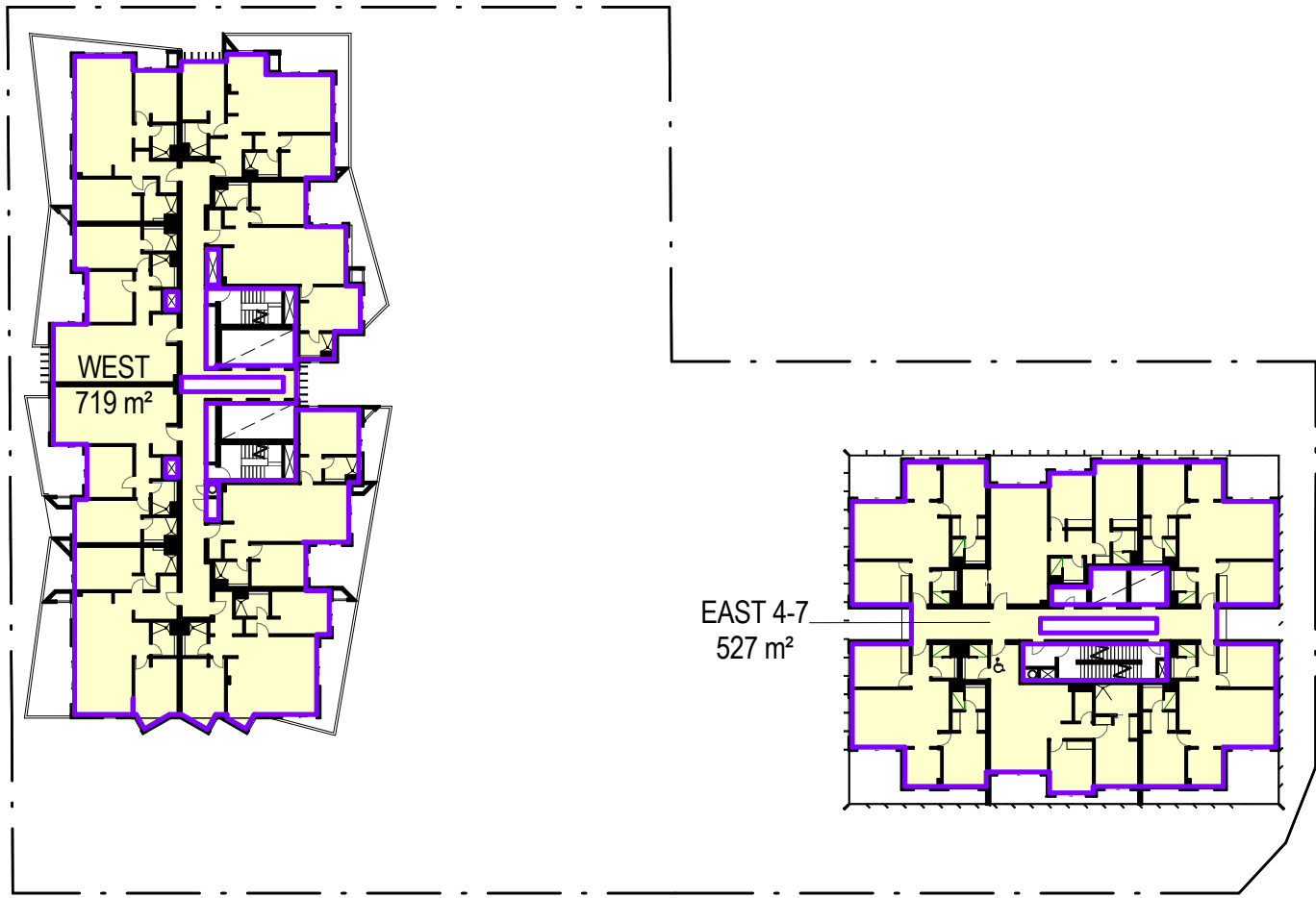
Drawing No.  
DA8533 1

Issue  
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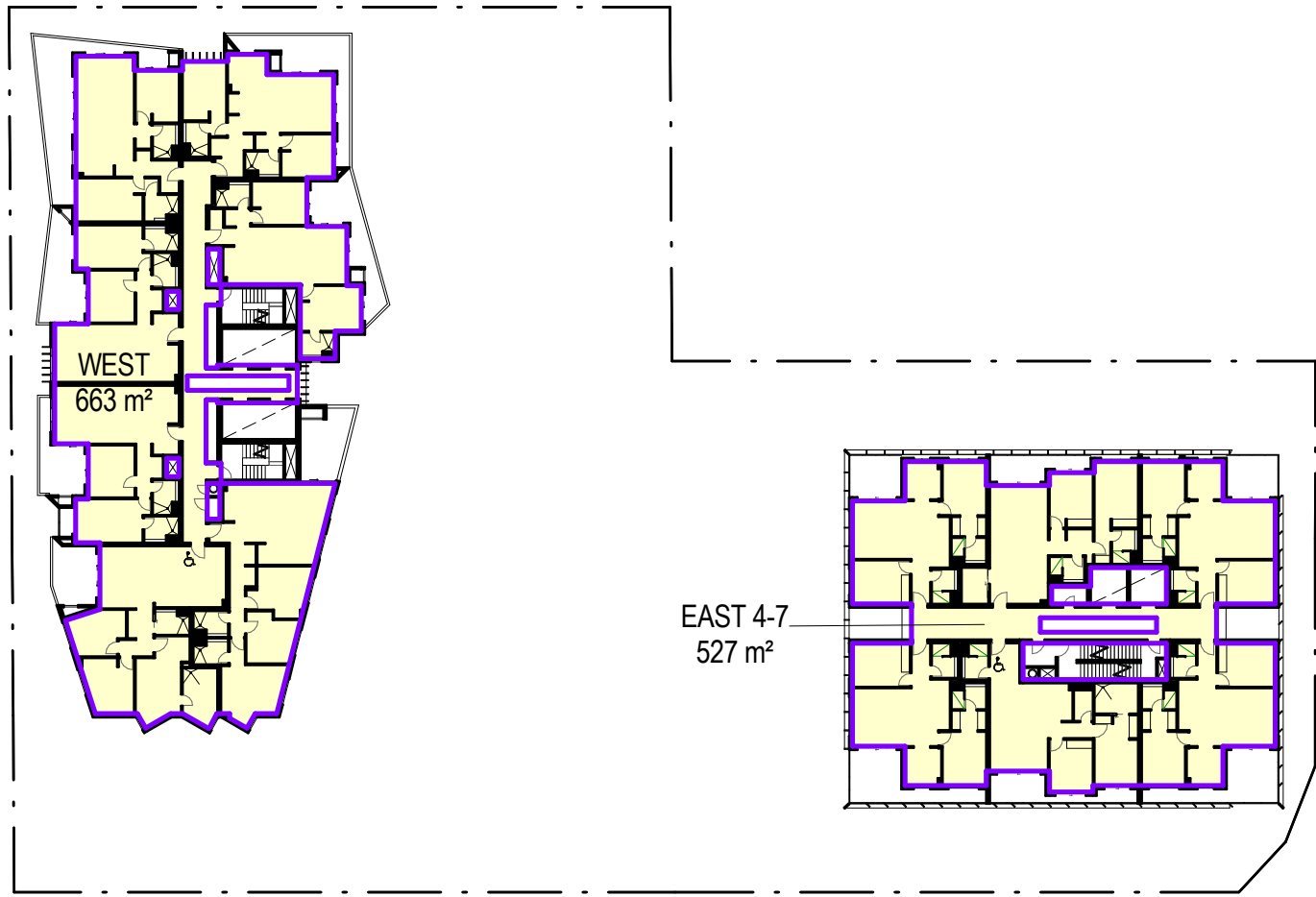




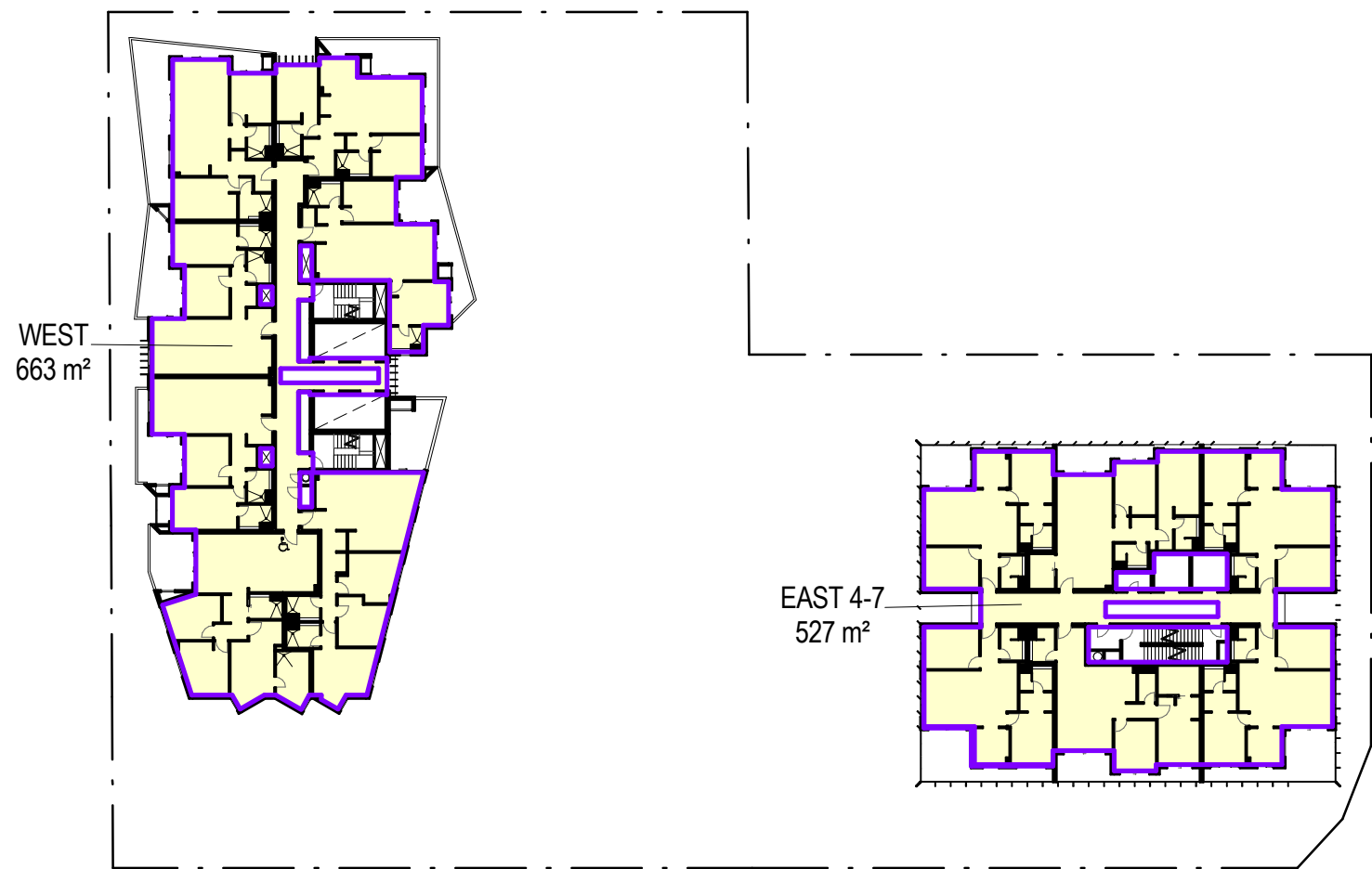
9 LEVELS 8-23 1:500



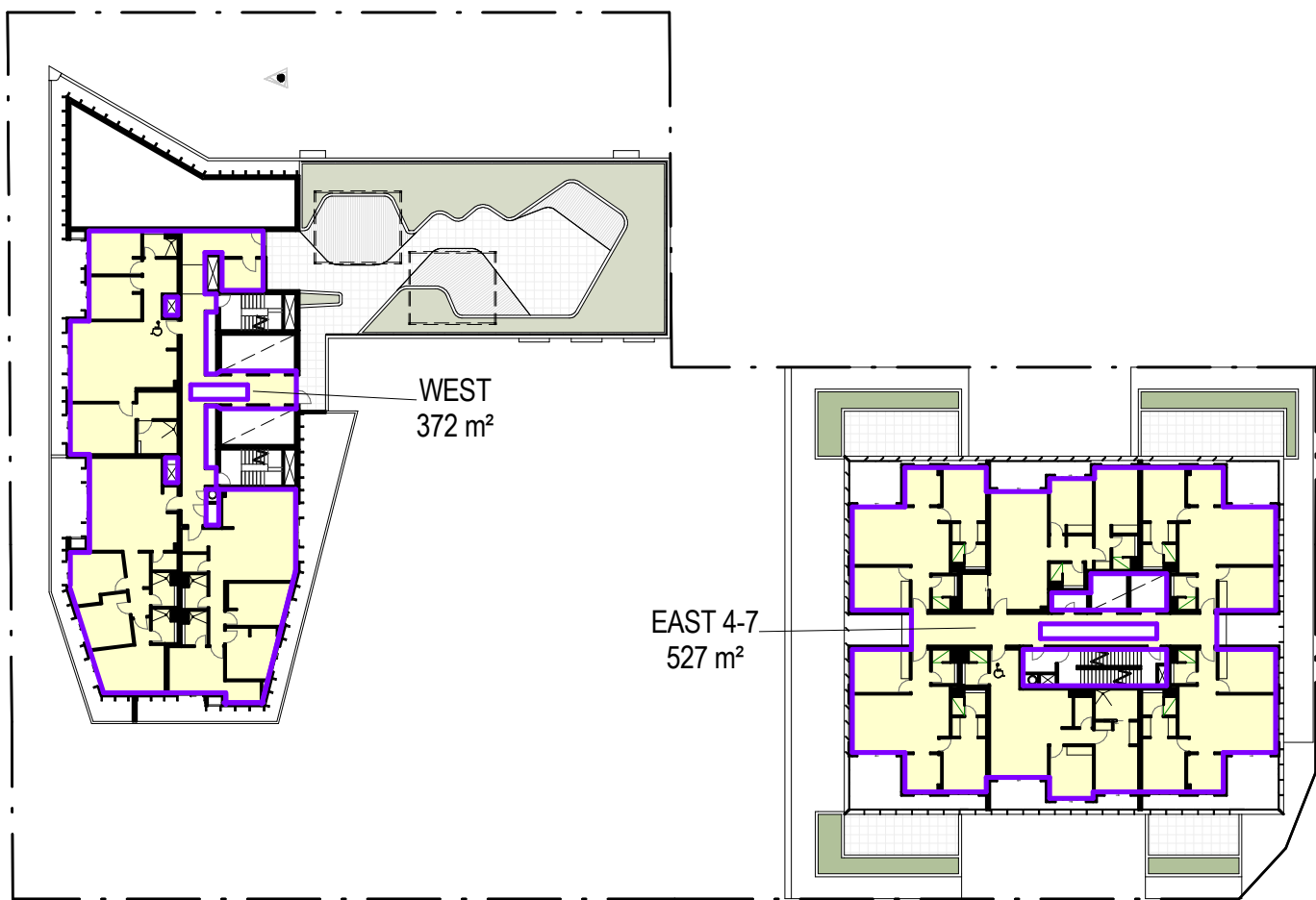
8 LEVEL 7 1:500



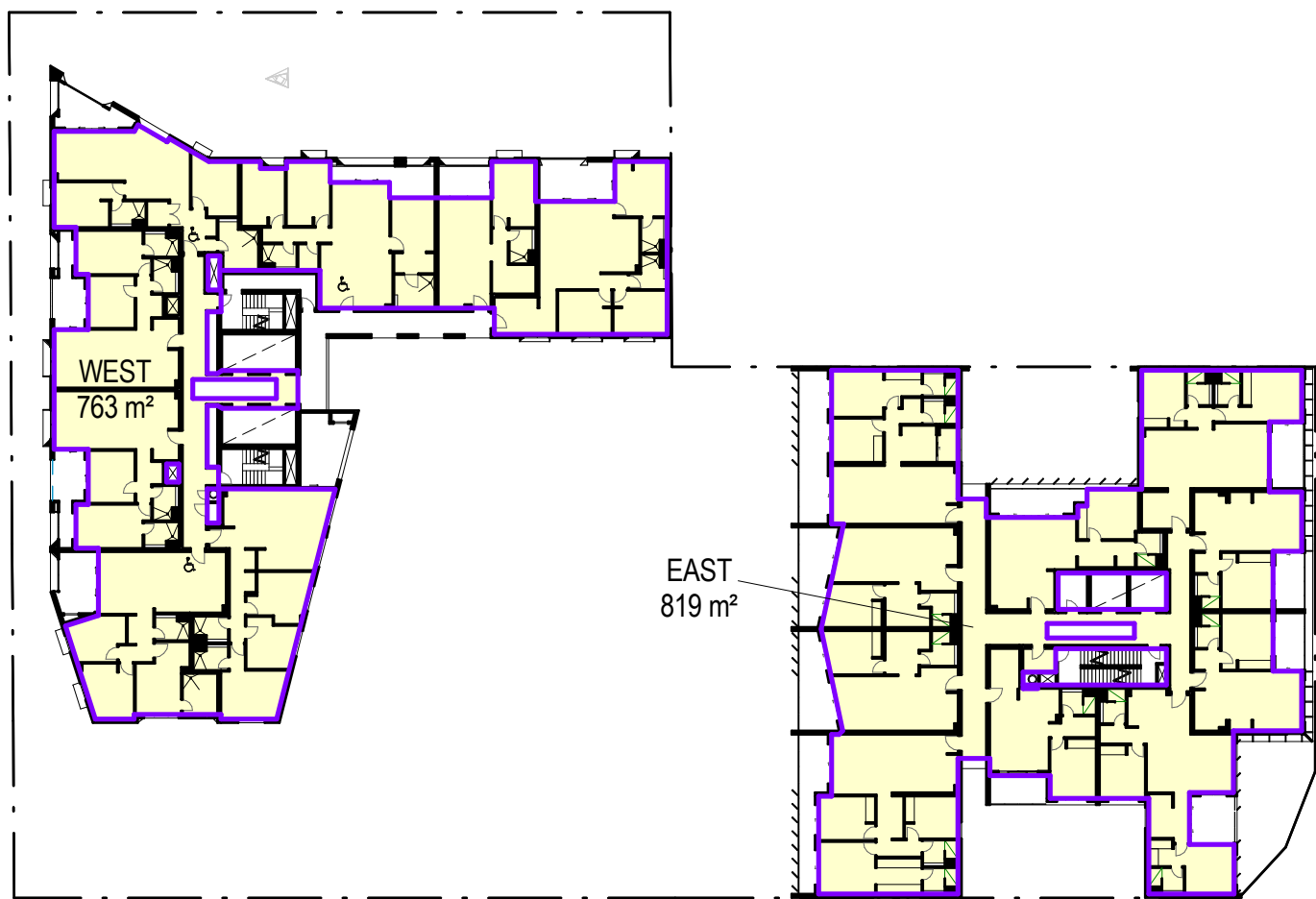
7 LEVEL 6 1:500



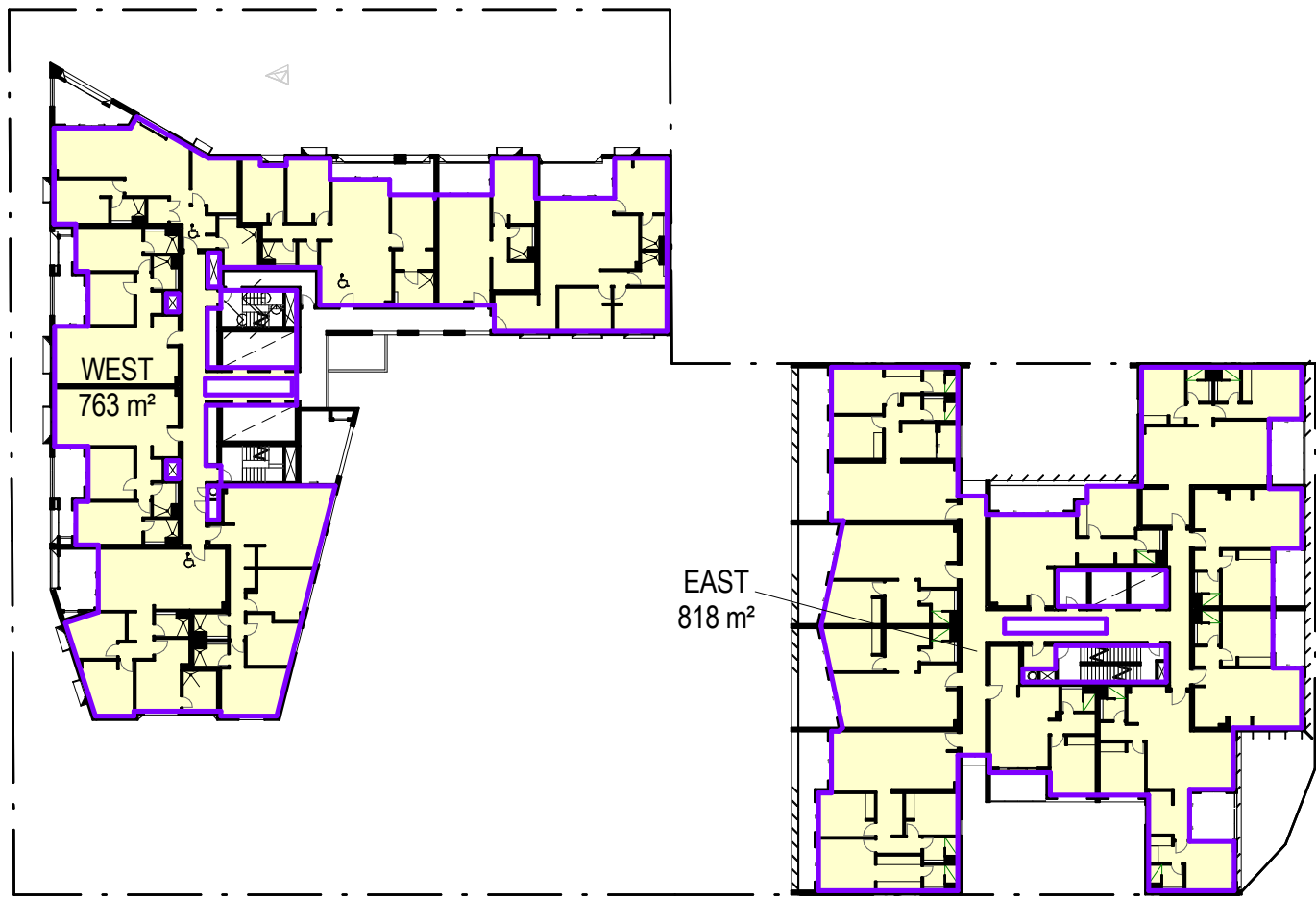
6 LEVEL 5 1:500



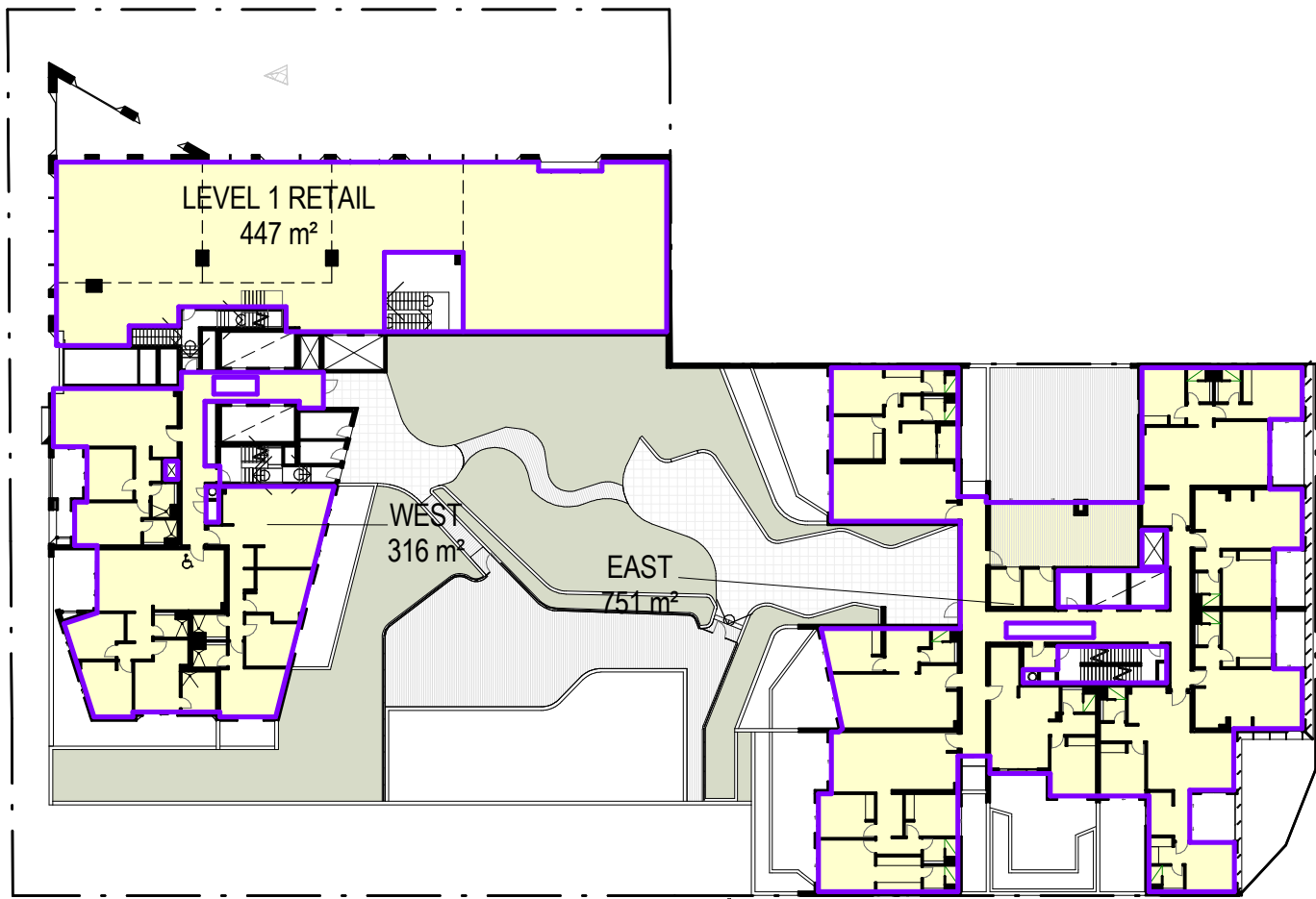
5 LEVEL 4 1:500



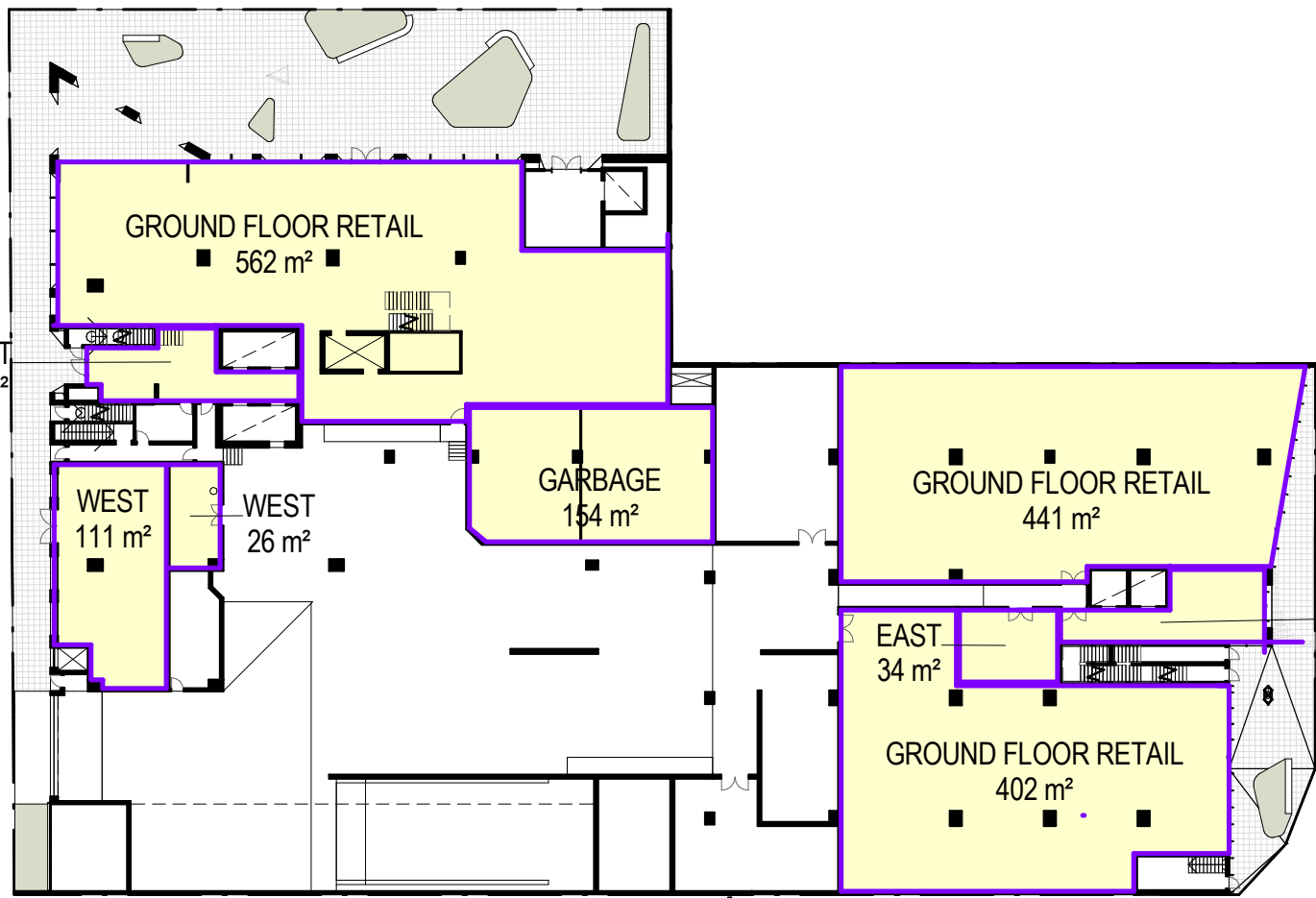
4 LEVEL 3 1:500



3 LEVEL 2 1:500



2 LEVEL 1 1:500



1 GROUND LEVEL 1:500

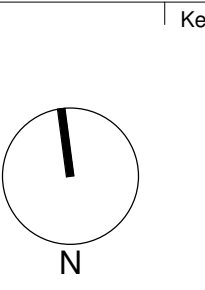
| AREA SCHEDULE - GFA |                       |
|---------------------|-----------------------|
| Level               | Area                  |
| APARTMENT - EAST    |                       |
| GROUND LEVEL        | 49 m <sup>2</sup>     |
| LEVEL 1             | 751 m <sup>2</sup>    |
| LEVEL 2             | 818 m <sup>2</sup>    |
| LEVEL 3             | 819 m <sup>2</sup>    |
| LEVEL 4             | 527 m <sup>2</sup>    |
| LEVEL 5             | 527 m <sup>2</sup>    |
| LEVEL 6             | 527 m <sup>2</sup>    |
| LEVEL 7             | 527 m <sup>2</sup>    |
| LEVEL 8             | 346 m <sup>2</sup>    |
| LEVEL 9             | 346 m <sup>2</sup>    |
| LEVEL 10            | 346 m <sup>2</sup>    |
| LEVEL 11            | 346 m <sup>2</sup>    |
| LEVEL 12            | 346 m <sup>2</sup>    |
| LEVEL 13            | 346 m <sup>2</sup>    |
| LEVEL 14            | 346 m <sup>2</sup>    |
| LEVEL 15            | 346 m <sup>2</sup>    |
| LEVEL 16            | 346 m <sup>2</sup>    |
| LEVEL 17            | 346 m <sup>2</sup>    |
| APARTMENT - EAST    | 8,001 m <sup>2</sup>  |
| APARTMENT - WEST    |                       |
| GROUND LEVEL        | 48 m <sup>2</sup>     |
| LEVEL 1             | 316 m <sup>2</sup>    |
| LEVEL 2             | 763 m <sup>2</sup>    |
| LEVEL 3             | 763 m <sup>2</sup>    |
| LEVEL 4             | 372 m <sup>2</sup>    |
| LEVEL 5             | 663 m <sup>2</sup>    |
| LEVEL 6             | 663 m <sup>2</sup>    |
| LEVEL 7             | 719 m <sup>2</sup>    |
| LEVEL 8             | 719 m <sup>2</sup>    |
| LEVEL 9             | 719 m <sup>2</sup>    |
| LEVEL 10            | 719 m <sup>2</sup>    |
| LEVEL 11            | 719 m <sup>2</sup>    |
| LEVEL 12            | 719 m <sup>2</sup>    |
| LEVEL 13            | 719 m <sup>2</sup>    |
| LEVEL 14            | 719 m <sup>2</sup>    |
| LEVEL 15            | 719 m <sup>2</sup>    |
| LEVEL 16            | 719 m <sup>2</sup>    |
| LEVEL 17            | 719 m <sup>2</sup>    |
| LEVEL 18            | 719 m <sup>2</sup>    |
| LEVEL 19            | 719 m <sup>2</sup>    |
| LEVEL 20            | 719 m <sup>2</sup>    |
| LEVEL 21            | 719 m <sup>2</sup>    |
| LEVEL 22            | 719 m <sup>2</sup>    |
| LEVEL 23            | 719 m <sup>2</sup>    |
| APARTMENT - WEST    | 15,818 m <sup>2</sup> |
| COMMERCIAL          |                       |
| GROUND LEVEL        | 111 m <sup>2</sup>    |
| COMMERCIAL          | 111 m <sup>2</sup>    |
| GARBAGE             |                       |
| GROUND LEVEL        | 34 m <sup>2</sup>     |
| GROUND LEVEL        | 154 m <sup>2</sup>    |
| GROUND LEVEL        | 26 m <sup>2</sup>     |
| GARBAGE             | 214 m <sup>2</sup>    |
| RETAIL              |                       |
| GROUND LEVEL        | 402 m <sup>2</sup>    |
| GROUND LEVEL        | 441 m <sup>2</sup>    |
| GROUND LEVEL        | 562 m <sup>2</sup>    |
| LEVEL 1             | 447 m <sup>2</sup>    |
| RETAIL              | 1,853 m <sup>2</sup>  |
|                     | 25,998 m <sup>2</sup> |

SITE AREA : 4,333m2  
TARGET GFA : 25,998m2

PROPOSED GFA : 25,998m2  
FSR: 6.0 : 1



| Revisions | No. | Date     | Description                 | Ver | App'd |
|-----------|-----|----------|-----------------------------|-----|-------|
|           | 1   | 22-02-19 | ISSUED FOR D.A. SUBMISSION. |     |       |



Client  
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ABN 53 003 782 250

Project  
MEMORIAL AVENUE, LIVERPOOL  
77-79 Bathurst Street &  
86-94 Castlereagh Street  
LIVERPOOL NSW 2170  
Proj. No. 18005

Drawing Title  
**GFA DIAGRAMS**  
Sheet Status  
NOT FOR CONSTRUCTION

Scale  
1 : 500 @A1  
Drawing No.  
**DA8534 1**  
Issue





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## Appendix C – Unexpected Finds Protocol

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## Unexpected Finds Protocol

