

ESD ASSESSMENT REPORT

Ecologically Sustainable Design

Site Address

35-39 Darley Street, MONA VALE

Client

The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust

Proposed Development

Residential Development

Date

10/04/2026

Reference

26040312

Document and Project Details

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Synopsis:	This document presents a ESD Assessment Report for a proposed Residential development at 35-39 Darley Street, MONA VALE NSW

Client Details

Client:	The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust
Primary Contact:	--

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EXECUTIVE SUMMARY

This Energy Efficiency and Ecologically Sustainable Design report has been prepared on behalf of The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust to support the State Significant Development Application (SSDA) (SSD-113872990) for the redevelopment of 35-39 Darley Street, Mona Vale.

This report has been prepared for the Applicant, The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust, to inform design decisions at the development stage.

This report outlines the sustainability approach for the commercial development and demonstrates potential compliance with the relevant sections of the following policies and development approval documents:

- Pittwater Local Environmental Plan 2014;
- Pittwater Development Control Plan 2021;
- State Environmental Planning Policy (Sustainable Buildings) 2022; and
- NCC Section J 2022.

The proposed development will incorporate passive and active energy saving measures to maximise energy efficiency and ecologically sustainable development where appropriate.

A thermal comfort assessment of the proposed development is to be carried out on the finalised plans to be lodged with the NSW Department of Planning, Housing and Infrastructure for the State Significant Development Application. It is considered that the proposed development should be able to achieve the required benchmarks outlined in the BASIX protocol. This assessment will demonstrate compliance with the NSW Sustainable Buildings SEPP and the National Construction Code's energy efficiency provisions to provide a quantitative estimate of the development's ESD performance.

The proposed development will comprise:

- Demolition of existing residential dwellings and associated light infrastructure;
- Clearing of the site and tree removal;
- Excavation of the site and construction of a new multi-storey residential flat development with associated landscaping and civil works.

The proposed development is located near mass transit (rail and strategic bus corridors). There is a bus stop within 400 metres of the subject site, with other stops within walking distance of the proposed development.

The proposed development will encourage future tenants, employees and users of the development to use public transportation and minimise automobile use.

Overall, positive Ecologically Sustainable Design (ESD) elements, as well as energy efficient features are proposed in a number of design areas. These include, but are not limited to, the following:

- The proposed development will implement a 20.0 kW solar PV systems.
- The proposed development will incorporate passive and active energy saving measures such as operable windows to enhance natural ventilation through the proposed building.
- Incorporation of thermal mass in construction materials. Concrete slab construction is proposed for all floors throughout the development - concrete has amongst the highest thermal mass capacity of a range of common building products.
- All facades to have windows to internal rooms. This allows for solar and daylighting exposure to internal living areas throughout the day.
- The primary type of artificial lighting for the proposed development is energy efficient fluorescent lighting or light emitting diode (LED) lighting.
- Central gas hot water for the commercial development.
- Efficient individual reverse cycle 1-phase air-conditioning system of 5 star energy rating will be used for all conditioned areas .
- Water efficient bathroom and kitchen fittings;

- All shower heads are 3 Star with flow rate > 4.5 but ≤ 6 Litres per minute
- All toilet flushing systems are 4 stars
- All Kitchen taps are 5 stars
- All bathroom's taps are 5 stars
- Dishwashers to be installed in the kitchen. Dishwashers to have a minimum 4 star water efficiency rating
- All building fabric for the commercial components will comply with the thermal comfort specification and NCC Section J requirements to the commercial components.

The following recommendations have been made to improve upon the existing key sustainability elements of the proposed development:

- Water efficient bathroom and kitchen fittings;
 - All common area taps are at least 5 stars
- Light efficiency measures in the carparks using motion sensors;
- Electricity sub-metering for significant end uses that will consume more than 10,000 kWh/a;
- Water sub-metering for major uses;
- Low levels of volatile organic compounds (VOC) paints and floor coverings and low formaldehyde wood products where possible; and

Recommendations regarding the mechanical ventilation system, other appliances, operational waste, etc, have also been made within the body of the report.

The energy efficiency of the residential area will be consistent with the requirements of the BASIX certification.

These features will help to achieve significant reductions in the energy and water required by the development both in building and operation, as well as ensuring that the existing streetscape is a more pleasant area to reside.

Whilst it is recommended that ESD initiatives continue to be developed and implemented throughout the course of the project, it is considered that the proposed development is consistent with the objectives of the ESD Legislation and Council policies.

1 INTRODUCTION

This ESD report prepared by Senica Consultancy Group on behalf of Scion is submitted to the Department of Planning, Housing and Infrastructure (DPHI) in support of a concurrent Rezoning Proposal and State Significant Development Application (Rezoning and SSDA) for a shop top housing development located at 35-39 Darley Street, Mona Vale.

This concurrent Rezoning and SSDA seeks approval for:

- Site preparation works including demolition of existing improvements and structures on site, bulk excavation and tree removal.
- Construction of an eight (8) storey residential flat building containing 53 apartments (mix of 2, 3 and 4 bedroom units)
- Construction of over three (3) levels of basement parking containing 131 parking spaces (including 19 visitor spaces).
- Inclusion of landscaped elements.
- Extension and augmentation of services and infrastructure as required.

For a further detailed project description, please refer to the Environmental Impact Statement prepared by Planning Ingenuity.

This report should be read in conjunction with the Environmental Impact Statement prepared by Planning Ingenuity, the Architectural Drawings prepared by Plus Studio, and the other accompanying technical documents that form part of the State Significant Development Application.

This report has been prepared on behalf of The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit Trust, seeking to construct a multi-storey Residential building with attached carpark on land known as 35-39 Darley Street, MONA VALE.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the project (SSD-113872990). The sustainability requirements of the Pittwater LEP and DCP have been considered as part of the overall assessment.

This report addresses the Secretary's Environmental Assessment Requirements (SEARs) issued for the project, notably:

15. Ecologically Sustainable Development (ESD)

SEARs Item	Comment	Section
Identify how ESD principles (as defined in section 193 of the EP&A Regulation) are incorporated in the design and ongoing operation of the development.	The proposed development incorporates ESD principles in accordance with Section 193 of the EP&A Regulation through an integrated approach to design, construction, and operation. Key strategies include passive solar design, thermal insulation, natural ventilation, renewable energy (20kW solar PV system), high-efficiency HVAC and lighting systems, water-sensitive urban design, low-VOC materials, construction waste minimisation, and provision for active and sustainable transport. Operational initiatives include building tuning, environmental management plans, and ongoing energy/water performance monitoring. These measures aim to reduce greenhouse gas emissions, enhance occupant wellbeing, and promote environmental stewardship. The sustainability targets for the development will be achieved in an integrated and staged approach through first minimising the need for energy consumption (via passive measures) and then consumption optimisation (energy efficiency) and use of renewable resources where required. Section 5 of this report provides specific reference to how the development is targeting these requirements.	4.1, 4.2, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, and 5.8

Where relevant, provide an assessment of the development against the standards for non-residential development set out in Chapter 3 of State Environmental Planning Policy (Sustainable Buildings) 2022.

The commercial component is less than \$5 million in value and therefore the provisions of Chapter 3 do not apply.

4.1.4

The majority of this energy efficiency performance report covers the design response relative to the residential aspects of the development.

The objective of this Energy Efficiency and Sustainability Report is to outline the proposed design characteristics and methodologies to comply with the relevant Northern Beaches Council development planning requirements, BASIX certification and NCC Section J Energy Efficiency requirements.

The overall objective is to identify potential strategies in the project design that will reduce consumption of energy and other valuable natural resources throughout the construction and operation of the site to ensure the long term sustainable performance of the site and impacts on the community and environment.

1.1 DESIGN DOCUMENTATION

The following relevant design documents have assisted in the preparation of this report.

- Architectural Documentation .
- Stormwater Management Report
- Landscaping report
- Site Operational Waste Management Report
- BASIX certificate

2 SITE CHARACTERISTICS

2.1 SITE DESCRIPTION

The site is identified legally as:

- Lot 16 in Deposited Plan 18919.

It is commonly known as No. 35-39 Darley Street, Mona Vale. The subject site has an area of 2,679.00 m².

Please refer to the below mapping image.

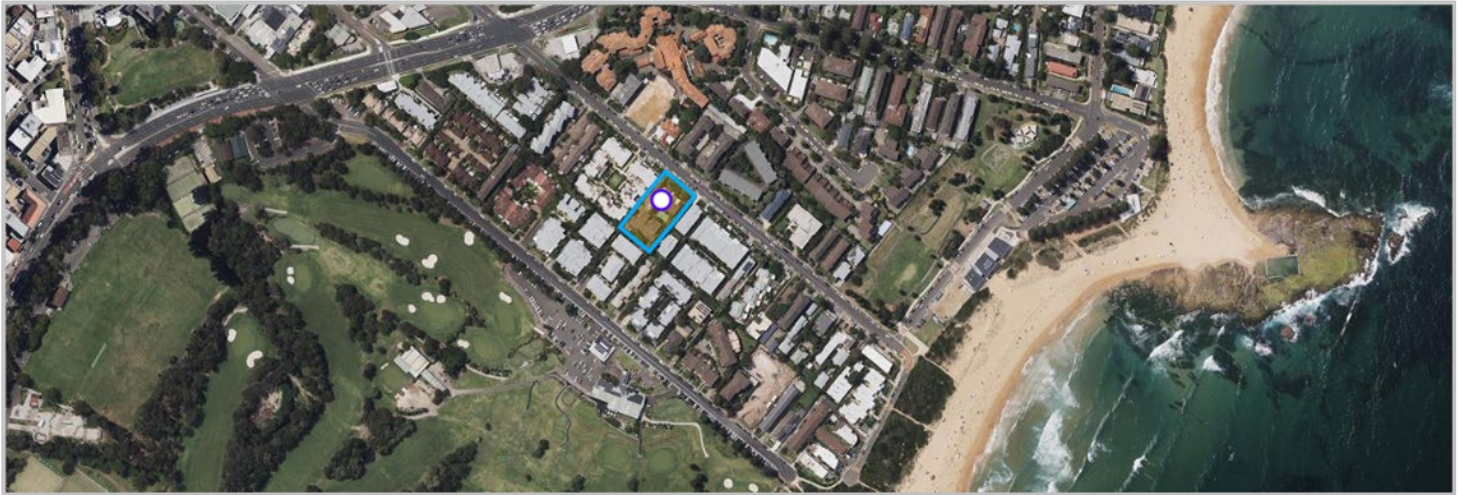


Figure 1 - Aerial Image

2.2 SITE ANALYSIS

Residing within an established residential / commercial area, the development site is located on the southern side of Darley Street. The site is adjoined on the remaining boundaries by residential buildings.

The development site can be best described as an irregular shaped east-west oriented mid-block land parcel with a frontage of 7.315 m to Darley Street, an average site depth of 38.125 m and a site area of 2,679.00m².

At present, older style residential buildings with associated structures and light infrastructure are located within the development site.

The development site is within close proximity to train stations and commercial centre, schools, and parks. The locality is also well serviced by public transportation with a bus stop located on the Barrenjoey Road which runs largely perpendicular to the Darley Street frontage.

2.2.1 SITE AND DRAWING DESCRIPTION

The plans submitted as part of the State Significant Development Application clearly indicate the location of site boundaries, navigational bearings which include a north point, dimensions of the subject site, scale and date of the relevant drawings, noting any amendments and their dates.

2.2.2 SITE DETAILS

Sheet 1 of the submitted plans, shown in Figure 2 and which forms part of this development application, clearly identifies topographical elements with contours and levels identified at 250mm intervals.

The location of essential services such as reticulated water, Council sewer lines, electrical and telecommunication infrastructure are clearly identified on the aforementioned sheet.

The overland flow of stormwater is anticipated to follow the contours of the site under gravity. Sufficient stormwater control infrastructure will be installed on site consistent with the expectations for a residential dwelling with a similar slope of the subject site.

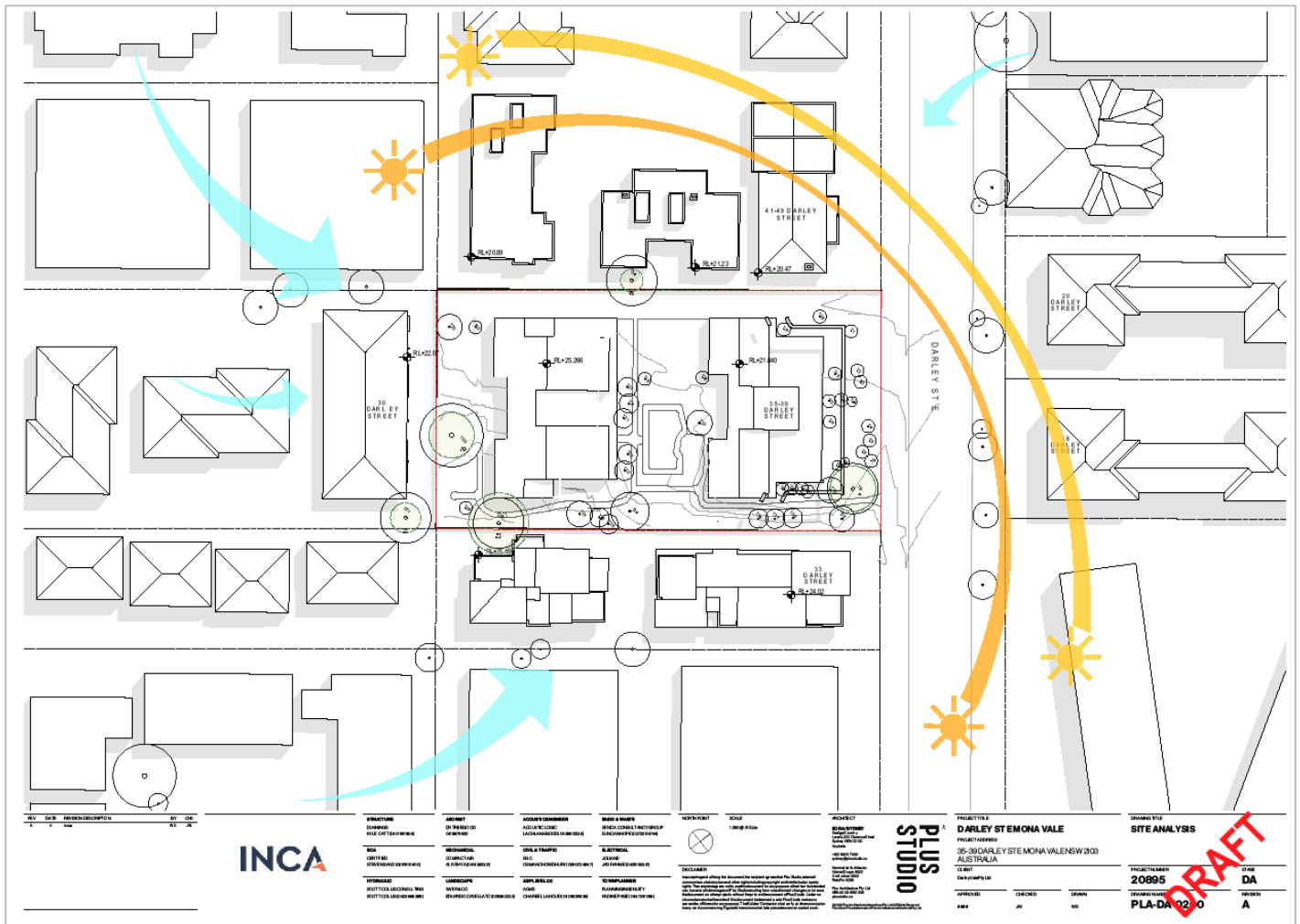


Figure 2 - Site analysis plan

Stormwater will be contained within the site with no flows directed onto adjoining properties. Where possible stormwater will be collected on site or directed to the landscaped area to be absorbed on site.

Council's Acid Sulphate Planning Map does not identify the subject site as being potentially affected by Acid sulphate soils.

2.2.3 SITE CLIMATIC DETAILS

As per the provisions of the National Construction Code, the subject site is located within Climate Zone 5 - warm temperate conditions, which is associated with:

- Four distinct seasons: summer and winter can exceed human comfort range; spring and autumn are ideal for human comfort
- Hot to very hot summers with low to moderate humidity
- Mild winters with low humidity
- Moderate day-night (diurnal) temperature range near coast to high diurnal range inland

Passive design features take into account the climate associated with the greater surrounding area as well as the operational requirements for the development.

The orientation of the site including solar paths for summer and winter and the prevailing wind directions has been included in the submitted plans.

Heating and cooling loads and the influence of shading of the thermal comfort of the dwelling have been accurately modelled by an accredited Assessor and the resultant BASIX certificate forms part of this report. .

3 DESCRIPTION OF PROPOSAL

3.1 PROPOSED DEVELOPMENT

This concurrent Rezoning and SSDA seeks approval for:

- Site preparation works including demolition of existing improvements and structures on site, bulk excavation and tree removal.
- Construction of an eight (8) storey residential flat building containing 53 apartments (mix of 2, 3 and 4 bedroom units)
- Construction of over three (3) levels of basement parking containing 131 parking spaces (including 19 visitor spaces).
- Inclusion of landscaped elements.
- Extension and augmentation of services and infrastructure as required.

For a further detailed project description, please refer to the Environmental Impact Statement prepared by Planning Ingenuity.

3.2 SITE ACCESS AND TRAFFIC GENERATION

Vehicular access to the site is via a proposed driveway from Darley Street. The subject land allows for vehicular parking for sufficient cars within the proposed attached garage.

The vehicle circulation and car parking areas within the at-grade parking area have been designed to allow the safe movement and parking of staff, residents and visitors.

The proposed design has taken into account nearby traffic generations, street design and the existing environment for pedestrians and cyclists. A Traffic & Parking Impact Assessment Report should be prepared and will form part of the Development Application.

3.3 SITE SERVICES

The site has access to all necessary essential services including water, sewer, electricity and telecommunications. Applications under the relevant legislation will be lodged with Council or another regulator for connections to these services.

4 SUSTAINABILITY MANAGEMENT GUIDELINES

4.1 LEGISLATIVE DRIVERS

There are several relevant policy documents that address Sustainability and/or Ecologically Sustainable Design (ESD). Those considered of material to the development application process are:

- Pittwater Local Environmental Plan 2014;
- Pittwater Development Control Plan 2021;
- NCC Section J 2022;
- NSW Sustainable Buildings State Environmental Planning Policy (SEPP) 2022;
- Building Sustainability Index (BASIX).

4.1.1 NORTHERN BEACHES LOCAL ENVIRONMENTAL PLAN 2014

The Pittwater Local Environmental Plan 2014 has a specific focus on providing ecologically sustainable development through the LGA.

The proposed development has been designed to be consistent with the Pittwater LEP with a particular focus on environmentally sustainability.

The building has been designed to incorporate passive cooling in to building materials, layout, landscaping and orientation.

Brick veneer or similarly thermally dense construction has been selected for the external walls of the development because of their thermal mass and to aid in passive heating and cooling of the building. These mixed external walls will have insulation to the internal side to limit heat loss in winter and minimise excessive heat gain in summer.

Light, cooler colours have been selected for the buildings roof and wherever else is feasible to further assist in the passive cooling effect by minimising the materials that are likely to absorb and store passive heat to release back as Urban Heat.

The proposed building design has been assessed under the BASIX protocols and has demonstrated effective passive cooling and heating of the individual room areas.

As such, it is considered that it is consistent with current requirements and is anticipated to ensure the thermal comfort of their occupants year round. This will in turn lead to a significant reduction in the mechanical heating and cooling required to maintain the building at a comfortable temperature range throughout the year.

The building finishes schedule identify that the roof will be light in colour. This will assist in ensuring that excessive heat is not gained in summer for the identified units, as the light colour will encourage less absorption and more reflectance.

The roof slab above the carpark is to be constructed of concrete with a landscaped elevated planting container and provides for passive heat gains. The vegetation in the landscaping will aid in reducing heat islanding effect.

Furthermore, 20.0 kW of photovoltaic panels will be installed on the proposed building. This will have a two fold effect, firstly providing a sustainable, renewable energy source for the building and its occupants. Secondly, the photovoltaic panels will provide shading for the proposed buildings roof in line with the provisions of Council's Development Control Plan.

It is contended that the positive, sustainable energy being generated on site, coupled with the passive cooling effect of shading the building's roof, will ensure that the building minimises any potential urban heat islanding from the building roof.

Shading, screening and improved glazing will ensure that the potential heat gain during summer is minimised to acceptable levels.

Additional sustainability measures are identified in this report to ensure that the project is consistent with the design requirements.

There is significant green infrastructure proposed as part of the proposed development with numerous large/medium trees, shrubs and other vegetation identified in the landscaping plans.

Adequate deep soils zones have been provided to maximise the amount of water retained in the landscape.

Landscaping materials are to be lighter in colour wherever possible to reduce heat gain. Additionally, the use of semi-permeable materials will help to increase the amount of water stored on the site.

Landscaping has been significantly increased from previous designs. The current landscaping plan demonstrates a significant canopy tree coverage, which will greatly improve the overall passive cooling effect created by the building design, whilst also greatly increasing the volume of water able to be retained within the site soils.

The proposed trees are anticipated to create substantial shading for the proposed development and adjoining properties, minimising any potential urban heat islanding.

The proposed landscaping is consistent with the provisions of the Pittwater DCP, in regard to landscaping. It is anticipated that the landscaping will provide a positive aesthetic impact for the existing streetscape, whilst also helping to improve the overall water sustainability of the proposed development.

It is considered that the proposed development is consistent with the requirements of the Pittwater LEP.

4.1.3 NATIONAL CONSTRUCTION CODE 2022 – SECTION J

Introduced into the National Construction Code series in 2004, Section J establishes minimum energy efficiency provisions for all classes of building. The provisions are designed to achieve the functional objective of Section J which is to reduce greenhouse gas emissions.

There are eight (8) Deemed-to-Satisfy subsections, J1 to J8, focusing on different aspects of energy efficiency as follows:

- J1 Building Fabric (i.e. the ability of the roof, walls, floor and glazing to resist heat transfer)
- J2 Not Used (glazing is now incorporated in to Part J1)
- J3 Building Sealing (i.e. how well parts of a building are sealed to ensure comfortable indoor environments are efficiently maintained)
- J4 Not Used
- J5 Air Conditioning and Ventilation Systems (i.e. the efficiency and energy saving features of heating, ventilation and air-conditioning systems)
- J6 Artificial Lighting and Power (i.e. power allowances for lighting and electric power saving features)
- J7 Hot Water Supply and Swimming Pool and Spa Pool Plant (i.e. the efficiency and energy saving features of hot water supply)
- J8 Facilities for Energy Monitoring (i.e. access to certain energy efficiency equipment for maintenance purposes)

A report is to be prepared at Construction Certificate stage, for the proposed development to demonstrate compliance with the above provisions of the NCC.

4.1.4 STATE ENVIRONMENTAL PLANNING POLICY – SUSTAINABLE BUILDINGS

The Sustainable Buildings SEPP is aligned with National Construction Code & NSW Net Zero Policy which will help in delivering buildings that are more energy efficient, produce less GHG emissions and inform future benchmarks. The development is required to:

- Address general sustainability requirements for residential components; and
- Disclose embodied emissions for commercial components as required.

CHAPTER 2 – STANDARDS FOR RESIDENTIAL DEVELOPMENT - BASIX

Schedules 1 and 2 of the SEPP sets out standards that apply to various BASIX development referred to in the SEPP. A valid BASIX certificate has been prepared and will form part of the development application. It satisfactorily addresses the provisions of Chapter two.

The BASIX provisions identify performance benchmarks to allow sustainability to be considered in site planning, building design and in the construction and operational phases of the development to achieve best practice sustainability outcomes. BASIX controls are prescribed under a State Environmental Planning Policy (SEPP), which in turn is implemented under the Environmental Planning and Assessment Act 1979.

It is a statutory requirement for all residential developments including new constructions and renovations worth \$50,000 or more in NSW.

BASIX is one of the most stringent energy and water planning tools within in Australia for residential development. BASIX is a sustainability planning instrument that sets energy and water design standards for all residential dwelling types in NSW energy and water efficient through specific design strategies for lighting, heating, cooling and ventilation.

BASIX mandates sustainability standards in residential developments by assessing the consumption of mains supplied water, energy and thermal performance. BASIX Targets were revised in June 2017.

BASIX Energy and Water targets will influence overall electrical demand at the subject site, with an increase in BASIX targets implying decreased demand and more thermally efficient building envelopes and services required at later stages of development. This will ensure an extent of future-proofing from climate change and related temperature increases.

Overall, BASIX Energy and Water targets will influence overall electrical demand on the subject site, with an increase in BASIX targets implying decreased demand and more thermally efficient building envelopes and services required at later stages of development. This will ensure an extent of future-proofing from climate change and related temperature increases.

CHAPTER 3 – STANDARDS FOR NON-RESIDENTIAL DEVELOPMENT

This chapter applies to development, other than residential development, that involves the erection of a new building with an estimated development cost of \$5 Million or more, or alteration and additions to an existing building with a capital value of greater than \$10 million.

The proposed development is a new building, however there is no commercial aspect and therefore is not affected by Chapter 3 of the SEPP.

Chapter 3 also includes requirements in regard to **Large Commercial Development**. Large Commercial Development is defined within the SEPP as being:

large commercial development means non-residential development that involves—

- (a) *the erection of new prescribed office premises, prescribed hotel or motel accommodation or prescribed serviced apartments, or*
- (b) *alterations, enlargement or extension of prescribed office premises, prescribed hotel or motel accommodation or prescribed serviced apartments, if the development has a capital investment value of \$10 million or more.*

Furthermore the SEPP provides the following definitions:

prescribed hotel or motel accommodation means hotel or motel accommodation with at least 100 rooms.

prescribed office premises means office premises with a net lettable area of at least 1,000m².

prescribed serviced apartments means a building with at least 100 serviced apartments.

The proposed development does not fit within any of these definitions and is therefore not affected by these provisions.

Chapter 3 allows for additional controls for State Significant Development. Section 3.2.2 states “*In deciding whether to grant development consent to development to which this section applies, the consent authority must consider whether the development will minimise the use of on-site fossil fuels, as part of the goal of achieving net zero emissions in New South Wales by 2050.*”

The proposed development is not identified as a relevant development based on Schedule 1, section 13-15 of the State Environmental Planning Policy (Planning System) 2021 and is therefore not affected by the provisions of Chapter 3.

4.2 EPA PRINCIPLES

The proposed development will follow the golden standard in sustainability principles throughout the development. This includes the design, construction, and operational elements of the project.

The key overarching principles are aligned with Ecologically Sustainable Development as defined in Section 193 of the Environmental Planning and Assessment Regulation 2021.

These include:

The Precautionary Principle	
Philosophy	Comment
The precautionary principle is that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In applying the precautionary principle, public and private decisions should be guided by— a) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and b) an assessment of the risk-weighted consequences of various options.	The project is committed to incorporating elements to minimise impacts on the environment, as outlined below in the report. A commitment to improvement on minimum benchmarks demonstrates the development's commitment to sustainability with additional commitments to third party certification schemes to capture strategies that will prevent environmental degradation and serious or irreversible damage.
The Principle of Inter-generational Equity	
Philosophy	Comment

The principle of inter-generational equity is that the present generation should ensure the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.

The project is committed to incorporating careful selections into the project design. The design team will address key elements such as energy, potable water, and material consumption to do what is within the project's control to allow each following generation to have an opportunity for ecological equality.

The Principle of the conservation of biological diversity and ecological integrity

Philosophy

Comment

The principle of the conservation of biological diversity and ecological integrity is that the conservation of biological diversity and ecological integrity should be a fundamental consideration.

The project is committed to planting native vegetation and using integrated landscaping to enhance the overall ecological and biodiversity of the site. Rainwater and stormwater will be carefully managed and controlled to minimise impacts on surroundings. Additionally, through third party certifications the project will be able to utilise the strategies to improve biological and ecological standards.

Principles relating to improved valuation, pricing, and incentive mechanisms

Philosophy

Comment

The principle of improved valuation, pricing and incentive mechanisms is that environmental factors should be included in the valuation of assets and services, such as—

- a) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement, and
- b) the users of goods and services should pay prices based on the full life cycle of the costs of providing the goods and services, including the use of natural resources and assets and the ultimate disposal of waste, and
- c) established environmental goals should be pursued in the most cost effective way by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

The project will target a construction waste diversion target of 90%, as well as develop specific project waste management strategies. These combine to ensure the project pays for the waste and damage it creates. Further, it is designed to be low-energy and low-water consumption, which provides an incentive for residents through lower utility bills.

5 ESD STRATEGY AND CHARACTERISTICS

5.1 PASSIVE ENERGY EFFICIENCY

‘Passive design’ is a building design that works with the local climate to maintain a comfortable temperature in the building. Good passive design should reduce or eliminate the need for additional heating or cooling depending on your location.

With passive design, building features such as orientation, thermal mass, insulation and glazing work together to take advantage of natural sources of heating and cooling, such as sun and breezes, and to minimise unwanted heat gain and loss.

5.1.1 SITE ANALYSIS AND LAYOUT

It is an ESD objective to optimise site conditions and minimise energy consumed for cooling and heating loads through proper selection of building orientation and internal layout.

The proposed development achieves this objective through the following methods:

- The proposed development has been orientated to the North, as best possible given the inherent site aspect, to make best use of passive solar gains;
- The proposed development provides a large floor area with access to daylighting to reduce the requirement for artificial lighting;
- The proposed development provides good design and includes design elements to promote natural ventilation;
- The proposed development provides a large landscaped area and open space, with an additional smaller landscaped spaces also integrated into the overall building design.
- The proposed development design promotes the minimising of heating requirements across cooler periods.

5.1.2 SOLAR ACCESS

Sunlight should preferably be able to penetrate the building in winter and be excluded from the building in summer. The form dictated by the site has been designed to maximise the passive solar gains of the proposed building by:

- Maximising solar exposure of the proposed conditioned areas. The height and building layout will allow excellent solar exposure from north, east and west directions to most of the conditioned floor areas throughout the day, year round.
- Incorporating deep balconies to the west and deep eaves to the eastern façade to reduce summer thermal loads on the conditioned areas.
- The proposed building design provides adequate daylight for the utilisation of the indoor spaces, during the day, without the need for artificial lighting.

5.1.3 NATURAL VENTILATION

Wind-induced natural ventilation works on the principle of differential pressure, where air will naturally flow from an area of high pressure to an adjoining area of lower pressure.

If a building envelope has multiple openings and there exists a pressure difference between those openings, e.g. the wind pressure at one opening is greater than the pressure at the other openings; airflow will be pushed through the building in the direction positive to negative.

The resulting amount of airflow through the building envelope will be a function of the magnitude of the pressure differential, size of the various building openings and degree of “blockage” in between.

The most important role of natural ventilation in the context of commercial buildings of this nature is to remove accumulated heat gain during periods of overheating.

A further important function of natural ventilation, during the summer months is the role of ventilation in directly improving the perception of thermal comfort by occupants of a space. This is achieved when moving air aids the evaporation of perspiration by passing over the skin. As long as there is some air movement, most people will tolerate somewhat higher temperatures

Heat build-up within conditioned areas through daytime summer temperatures can be quickly purged with the availability of suitable breezes at the site.

Building design should enable ventilation to be controlled, where comfort levels are maintained for the occupants during the summer and winter extremes.

Locations of windows and openings within each conditioned area are to be generally in line, where possible, with each other on opposite sides of the room. It is recommended that building openings be designed such that cross-ventilation is maximised, to minimise heat gain in summer.

Ventilation of buildings is achieved by permanent openings, windows, doors or other devices which have an aggregate opening or openable size of not less than 5% of the floor area of the ventilated room. The provision of ceiling fans for use in summer months is also encouraged.

In winter it is important to close off heated areas that need warming. The ability to open and close balcony doors will allow adequate control to moderate the impact of any higher than comfortable winds.

It is recommended that the following initiatives also be incorporated to minimise heat leakage from the building:

- Design detailing of the glazing interface to the window framing system and the provision of adequate sealing in accordance with the NCC.
- Doors leading to hallways, stairwells and non-common use areas provided with draught excluders to limit heat losses during winter months.
- Doors located throughout the development in general-use areas, such as access ways to/from the building, fitted with door closers where it is deemed that their opening will have an adverse effect on heat loss during winter.

5.1.4 LANDSCAPING

The following points are noted with respect to the landscaping of the proposed development:

The proposed landscape plan shows trees around perimeters as well as throughout the centre common open space on the podium. The use of trees and perimeter planting for shading is very effective in reducing the reflection of heat and light onto the building from surrounding paved areas. Planting also provides added cooling during the summer months through the leaf transpiration process.

- The majority of the trees provided to the perimeter of the site will be evergreen trees, providing year round wind, heat and solar mitigation.
- there is a combined 250.00 m² of vegetation and garden, with a minimum of 30 % of the plant species to be provided deemed indigenous.

5.1.5 BUILDING CONSTRUCTION

5.1.5.1 BUILDING MATERIALS

Building Walls

The proposed building will be constructed of concrete, Hebel veneer or similar dense materials allowing for significant thermal mass. The internal side of the external walls shall be insulated, as per the requirements of the Part J / BASIX assessment, to improve heat retention and maximise thermal comfort.

Intra-tenancy walls are to be lightweight plasterboard on stud construction with acoustic insulation where required. Inter-tenancy walls are to be Concrete Panel plus insulation.

Roof

It is proposed to use concrete construction for the carpark area and upper level. It's anticipated that the BASIX and Part J assessment will require insulation between the roof and the ceiling to reduce the heat gain/loss through the roofs.

Glazing

The glazing of the proposed development has been included as part of the overall Part J and BASIX assessments. Performance glazing has been included in the design to reduce the solar heat gain and ensure greater thermal comfort.

It is likely that double glazing may be required to some extent to achieve the NCC 2022 and 7 star ABSIX requirements.

Framing of the windows, will assist in reducing the heat loss through the glazing units in winter.

Flooring

Concrete slab construction is to be used for the floors of the proposed building. This will be an advantageous method for increasing the thermal mass of the building.

Generally, more dense materials have a higher mass, which has the ability to store heat energy and then release it slowly to the room. This storage effectively smoothes out daily temperature variations within conditioned spaces, with corresponding reductions in both heating and cooling loads.

Building Sealing

A seal to restrict air infiltration must be fitted to each edge of an external door, operable external window or the like when serving a conditioned space in the proposed development. The seal may be a foam or rubber compressible strip, fibrous seal or the like.

The bathroom/toilet and laundry exhaust fans in the proposed development must be fitted with a sealing device such as a self-closing damper or the like

5.2 ACTIVE ENERGY EFFICIENCY

Active energy efficiency refers to the energy efficient electrical items in use throughout the proposed building. These electrical items include such aspects as air-conditioning systems, artificial lighting to reduce the energy usage of the building and mechanical ventilation.

5.2.1 RATING SYSTEM

5.2.1.1 COMMERCIAL COMPONENT

In NSW, all new commercial developments are required to achieve compliance with requirements of the NCC Part J provisions. The overall development is able to achieve heating and cooling load savings when compared with a reference building.

5.2.1.2 MECHANICAL VENTILATION AND AIR CONDITIONING

Where mechanical ventilation is required, the use of energy efficiency measures will be fully explored during detailed design. These measures include linking mechanical ventilation to manual switching where allowable under the NCC and using individual fans rather than a common ducted ventilation system with constant operation. These initiatives will provide significant savings in energy use and associated operational energy costs of the development.

5.2.1.3 DOMESTIC HOT WATER

A central instantaneous gas hot water systems is proposed for water heating within the proposed development. This is consistent with the current energy efficiency requirements.

5.2.1.4 ELECTRIC SUB-METERING

Successful management of energy consumption of large uses within a building allows building managers to fine-tune operational procedures to minimise consumption and compare historical use.

Sub-metering is recommended for all substantive (greater than 100kVa) energy uses within the future development. These uses may include chillers, air handling fans, lifts, car parks and common areas (lighting and power).

5.2.1.5 GREEN POWER INITIATIVE

It is recommended that a certain percentage (approximately 10%) of “Greenpower” should be made available, providing the opportunity to contribute to a reduction in total greenhouse gas emissions produced by the proposed Development. Greenpower is produced from environmentally friendly renewable energy sources such as solar, wind, water and biomass.

When a Greenpower product is selected by the owner, the energy supplier commits to buying a certain amount of electricity from approved new renewable energy sources. The financial accounts of Greenpower suppliers are audited independently. This makes a clear distinction between the services provided by standard energy suppliers and the more sustainable service offered through Greenpower options.

The National Greenpower website states that “Australian households generate almost one-fifth of Australia's greenhouse pollution through everyday activities such as transport and household energy use”.

The average household in Australia emits over seven to eight tonnes of greenhouse pollution each year through energy use alone. This is because most households source their electricity from burning coal and other fossil fuels. By choosing accredited Greenpower, up to 100% of a household's energy usage can be generated from renewable sources.

5.2.1.6 LIGHTING

Natural Lighting

The proposed development maximises the north, east and west facing walls and will be implementing glazing areas to the proposed building to allow plenty of natural daylight access and therefore minimising the use of artificial lighting.

Artificial Lighting

Commercial lighting energy use in Australia is increasing. It is estimated that most commercial tenancies could readily reduce the amount of energy they use for lighting by 50% or more.

Lighting installations require a design that properly considers the conservation of scarce energy resources. Sustainable lighting design ensures that illuminance is not excessive, that the switching arrangements are such that unnecessary illumination may be turned off and that the illumination is provided in an efficient manner.

There are additional energy losses associated with inefficient lamps and lighting losses associated with luminaries. Consequently, a lighting design which uses the more efficient lamp types and the least number of luminaries for a given design illuminance will be more efficient and usually have a lower capital cost.

It is proposed that the lighting to be used within the development will incorporate led lamps and compact fluorescents.

It is recommended that the following lighting features be incorporated into the development to minimise energy consumption due to lighting:

- Maximise use of compact fluorescents or LED and minimise or where possible eliminate the use of halogen down lights, as compact fluorescents are much more efficient than halogen lighting.
- Artificial lighting to the carpark and common hallways will be controlled by daylight sensors and time clocks, to minimise unnecessary use of artificial lighting.

5.2.1.7 APPLIANCES

Measures for the minimum energy performance in appliances, include:

- 4-star energy efficient clothes dryers.
- 4-star energy efficient dishwashers

5.3 WATER

Australians use more than one million litres of freshwater per person each year (source: Green Building Council of Australia 2006).

In addition to increased water use efficiency, new developments can reduce potable water demand by residents, tenants and visitors through the provision of an on-site alternative water supply. There are three principle forms of alternative water supply:

- Reticulation of reclaimed water to the site.
- Rainwater/storm water storage and reuse.
- Grey water storage and reuse.

The above water supply systems can be used for toilet flushing, landscape irrigation and fire services, reducing the demand on potable water supply.

5.3.1 WATER EFFICIENCY

The minimum sustainable standard for water efficient water fixtures and fittings is 3A. To achieve greater than the standard level, outlined installation of water efficient fixtures and fittings such as is recommended for the proposed site:

- All shower heads are 4 Star with flow rate >6.0 but ≤ 7.5 Litres per minute
- All toilet flushing systems are 4 stars
- All Kitchen taps are 5 stars
- All bathroom's taps are 5 stars

A Dishwasher is to be installed in the proposed building. Dishwashers to have a minimum 4 star water efficiency rating

The above measures reflect commitments made by the development and are highly recommended for the rating of commercial spaces. Implementation of the above recommendations will assist in reducing the water consumption.

Water sub-metering is recommended for major usage.

5.3.2 LANDSCAPE IRRIGATION

Under best practice guidelines, it is generally recommended that either 90% of the water requirement for landscape irrigation is sourced from on-site rainwater collection or recycled water. Alternatively, best practice would also be achieved with the installation of a water efficient irrigation system comprising subsoil drip systems and automatic timers with rainwater or soil moisture sensor control override.

The landscape design should focus on using native coastal and other drought resistant species that rely primarily on rainwater for their water needs. The following features will be incorporated into the development to minimise water consumption for landscape irrigation.

- Native and other drought resistant species that rely primarily on rainwater for their water needs where appropriate and possible.

5.4 TRANSPORT

When designing a sustainable development, it is important to minimise the use of individual motorised transport where possible and thus enhance energy savings and environmental impact through reduced fossil fuel consumption and improved regional air quality.

This can be achieved by encouraging the use of energy efficient public transport that is immediately at hand, reducing car parking facilities, and providing adequate bike storage facilities to minimise the requirement for individual motorised transport.

5.4.1 PROVISION OF CAR PARKING

Transport emissions are one of the largest contributors of greenhouse gas emissions in Australia. The Green Building Council of Australia (GBCA) encourages the utilisation of alternative and mass transit forms of transport by limiting the availability of private vehicle spaces. Provision of car spaces for low emission or alternative fuel vehicles such as electrical cars is to be recommended.

5.4.2 FACILITATION OF PEDESTRIAN AND NON-MOTORISED TRANSPORT

When designing a sustainable development it is important to minimise the use of individual motorised transport where possible and thus enhance energy savings and reduce environmental impact through reduced fossil fuel consumption and improved regional air quality. This can be achieved by encouraging all users of the development to make use of the energy efficient public transport that is immediately at hand.

Bike storage facilities should be installed in the proposed development, which will also help to minimise the requirement for individual motorised transport.

This would be a positive feature of the development with regards to sustainability as this clearly avoids greenhouse gas emissions that would otherwise have been produced if residents had to travel long distances.

5.5 MANAGEMENT

Building management helps to reduce greenhouse gas emissions and energy consumption through adequate commissioning and user guides. It is also to reduce environmental impact during construction activities.

The Management category is discussed in the Green Building Council of Australia requirements which encourages the following practices.

Note that the green Star rating tool is not mandatory, and the following initiatives suggested have been included as opportunities for the Project Team to adopt ESD initiatives during the project:

1. Improving building services performance and energy efficiency by incorporating comprehensive pre-commissioning, commissioning, and quality monitoring into a project;
2. Building tuning period of 12 months. This ensures that the time and cost of building tuning is accounted for during the design phase. A 12 month building tuning period also incorporates quarterly reviews and a final recommissioning;
3. Appointing an independent commissioning agent from design to handover to provide advice to the client and design team and to monitor and verify the commissioning of HVAC and building control systems;
4. Providing Building User's and Resident user Guides to provide information on the design features and ensure that they are used efficiently; and
5. Providing a comprehensive Environmental Management Plan (EMP) for the works in accordance with Section 4 of the NSW Environmental Management System Guidelines (1538).

5.6 INDOOR ENVIRONMENT AIR QUALITY

Achieving enhanced Indoor Environment Quality (IEQ) ensures that the building and building services are designed and managed to benefit the health and well-being of building occupants and visitors.

5.6.1 ASBESTOS

It is recommended that Asbestos identification and removal procedures be included in the site Environmental Management Plan (EMP) where required.

5.6.2 INTERNAL NOISE LEVELS

Internal noise levels are a significant factor in determining occupant and customer satisfaction and well-being. The aim of controlling internal noise levels is to encourage and recognise buildings that are designed to maintain internal noise levels at an appropriate level.

All future development in the proposed site are to meet the recommended criteria and measures provided in accordance with the relevant NCC requirements.

5.6.3 CARBON DIOXIDE MONITORING AND CONTROL

Elevated carbon dioxide (CO₂) levels are indicative of inadequate ventilation, affecting the quality of air within an enclosed occupied space, and the health of the occupants. CO₂ monitoring systems can detect elevated concentrations of CO₂ and automatically adjust ventilation supply rates before indoor air quality becomes problematic.

It is recommended that incorporating a CO₂ monitoring system be incorporated in the to the proposed development where appropriate to satisfy NCC requirements.

5.6.4 PAINTS AND FLOOR COVERINGS

To ensure long term comfort of occupants, all due care will be taken to minimise the use of Volatile Organic Compounds (VOC) and formaldehydes used within the building.

Maintaining VOC limits below the recommended levels will assist in reducing any potential detrimental impacts on occupant health arising from products which may emit volatile pollutants.

VOC's are commonly found in carpets, paints, adhesives and sealants used in construction and extensive exposure to VOC's can cause Sick Building Syndrome effects (eye, nose and skin irritation, headaches lethargy etc.).

Formaldehydes are found within composite wood products and extensive exposure can cause irritation to eyes, nose and throat, lead to skin ailments and respiratory system ailments such as asthma.

Where possible, contamination of indoor air by common indoor pollutants will be minimised in this development by careful material selection, including:

- Use of low-VOC and water-based paints rather than oil-based paints, stains or sealants, reducing indoor air contamination and consequent side-effects including sick-building syndrome and respiratory problems;
- Selection of low-VOC carpets and adhesives;
- Selection of low formaldehyde composite wood products, avoiding the carcinogenic effects of formaldehyde off-gassing.

5.7 OPERATIONAL WASTE MANAGEMENT

An Operational Waste Management Plan has been prepared and will form part of the Development Application.

An Operational Waste Management Plan is a minimum requirement to meet sustainable building design best practice. As a guideline, the Waste and Recycling Management Plan should include:

- Separate waste and recycling streams.
- Transfer of material to common storage area.
- Communal storage areas.
- Frequency of collection.
- Signage and educational initiatives for occupants.

The proposed development will implement a waste management system that complies with the Northern Beaches Development Control Plan.

5.8 RENEWABLE ENERGY OPTIONS FOR THE PROPOSED DEVELOPMENT

Alternative renewable energy sources are becoming more attractive options because of increased global demand for fuels, environmental responsibility, affordability and new local, state and federal government legislations.

The following renewable energy options are available for the Site:

- Solar Energy – A Photovoltaic / Solar Power System is proposed to form part of the proposed development.

6 CONCLUSION

This assessment is submitted to the Department of Planning, Housing and Infrastructure in support of a State Significant Development Application (SSDA-113872990) for a redevelopment and concurrent rezoning of 35-39 Darley Street, Mona Vale.

The ESD has been prepared in accordance with the following State Significant Development – Secretary’s Environmental Assessment Requirements (SEARs) *“Identify how ESD principles (as defined in section 193 of the EP&A Regulation) are incorporated in the design and ongoing operation of the development.”*

The proposed development is located near mass transit (rail and strategic bus corridors). The proposed development will encourage occupants and users of the development to use public transportation and minimise automobile use.

Overall, positive Ecologically Sustainable Design (ESD) and energy efficiency features are currently in place in several design areas, incorporating the following:

- The proposed development will incorporate passive and active energy saving measures such as operable windows to enhance natural ventilation through serviced apartments, where appropriate;
- The form dictated by the site has been designed to maximise the solar access of residential units;
- Incorporation of thermal mass. Concrete slab construction is proposed for all floors throughout the development - concrete has amongst the highest thermal mass capacity of a range of common building products. External walls, structural internal walls and slabs of the proposed development should be predominantly high thermal mass materials.

The following recommendations have been made to improve upon the existing key sustainability elements of the proposed development:

- Water efficient bathroom and kitchen fittings;
 - All common area toilet flushing systems are at least 4-star
 - All common area taps are at least 5-star
- Light efficiency measures in the carpark using motion sensors;
- Low levels of volatile organic compounds (VOC) paints and floor coverings and low formaldehyde wood products where possible; and
- Car spaces for small or low emission cars.
- The provision of bicycle storage spaces within the development.
- Landscaped areas are within the residential development throughout the designated communal areas.
- Plant species within the development would be predominantly indigenous species that can tolerate low water to reduce maintenance requirements;

Recommendations regarding the mechanical ventilation system, domestic hot water, other appliances, operational waste, etc, have also been made within the body of the report.

These features will help to achieve significant reductions in the energy and water required by the development both in building and operation, as well as ensuring that the residential units are more pleasant spaces to reside.

It is recommended that ESD initiatives continue to be developed and implemented throughout the course of the project.

This report demonstrates that the proposal is consistent the performance requirements and objectives of the identified legislation and is anticipated to reduce water and energy usage.

APPENDIX A

Architectural Plans



Senica
consultancy group

DEVELOPMENT APPLICATION

35-39 DARLEY ST E MONA VALE NSW 2103 AUSTRALIA

DRAWING SCHEDULE

DRAWING SHEDULE	
DRAWING NO	DRAWING NAME
PLA-DA-0000	COVER SHEET
PLA-DA-0001	SITE SURVEY (EXISTING SITE PLAN)
PLA-DA-0002	SITE ANALYSIS
PLA-DA-0003	DEMOLITION PLAN
PLA-DA-0004	PROPOSED SITE PLAN
PLA-DA-10B1	GENERAL FLOOR PLAN - BASEMENT 01
PLA-DA-10B2	GENERAL FLOOR PLAN - BASEMENT 02
PLA-DA-10B3	GENERAL FLOOR PLAN - BASEMENT 03
PLA-DA-1000	GENERAL FLOOR PLAN - GROUND 00
PLA-DA-1001	GENERAL FLOOR PLAN - LEVEL 01-03
PLA-DA-1004	GENERAL FLOOR PLAN - LEVEL 04
PLA-DA-1005	GENERAL FLOOR PLAN - LEVEL 05-06
PLA-DA-1007	GENERAL FLOOR PLAN - LEVEL 07
PLA-DA-1008	GENERAL FLOOR PLAN - ROOF 08
PLA-DA-2000	ELEVATIONS - SHEET 01
PLA-DA-2001	ELEVATIONS - SHEET 02
PLA-DA-3000	SECTIONS - SHEET 01
PLA-DA-4000	SUN EYE VIEW - SHEET 01
PLA-DA-4001	SUN EYE VIEW - SHEET 02
PLA-DA-4100	SHADOW DIAGRAMS - SHEET 01
PLA-DA-4101	SHADOW DIAGRAMS - SHEET 02
PLA-DA-4200	SOLAR AMENITY & CROSS VENTILATION DIAGRAMS
PLA-DA-4201	HEIGHT PLANE DIAGRAM
PLA-DA-5000	AREA & AMENITIES DIAGRAMS
PLA-DA-5001	COS SOLAR AMENITY 9AM-11AM
PLA-DA-6000	ADAPTABLE APARTMENT TYPOLOGIES - SHEET 01
PLA-DA-6001	ADAPTABLE APARTMENT TYPOLOGIES - SHEET 02
PLA-DA-7000	MATERIAL SCHEDULE - SHEET 01
PLA-DA-8000	PERSPECTIVE - SHEET 01
PLA-DA-8001	PERSPECTIVE - SHEET 02



SUMMARY

SITE AREA: 2679.4m²
TOTAL GFA: 7660.4m²
FSR: 2.86:1
NUMBER OF STOREYS: 8

CAR PARKING: 124
BICYCLES: 28

REV	DATE	REVISION DESCRIPTION	BY	CHK
A	A	Issue	WS	JW

Inca

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NORTH POINT

SCALE

NTS

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PLUS
STUDIO

PROJECT TITLE

DARLEY ST E MONA VALE

PROJECT ADDRESS

35-39 DARLEY ST E MONA VALE NSW 2103
AUSTRALIA

CLIENT
Darley Vale Pty Ltd

APPROVED

AJ

CHECKED

JW

DRAWN

WS

DRAWING TITLE

COVER SHEET

PROJECT NUMBER
20895

DRAWING NUMBER

PLA-DA-0000

STAGE
DA

REVISION

A

SP82003

PIT S.L 14.85
PIT I.L 12.54
Ø300 POLY
IL 12.54
CHAMBER 600 X 900
N.T.S.
TO DETRITUS
2.25

PIT S.L 14.37
PIT I.L 11.32
Ø300 POLY
IL 11.33
CHAMBER 600 X 900
N.T.S.
ØP375
IL 11.32

SP64796
No.30
TWO STOREY BRICK
APARTMENT COMPLEX

No.41
TWO STOREY BRICK
APARTMENT COMPLEX
(FLAT ROOF)

SP 57659
No.41
TWO STOREY BRICK
APARTMENT COMPLEX
(FLAT ROOF)

No.41
TWO STOREY BRICK
APARTMENT COMPLEX
(TILED ROOF)

SP 18919

No.35-39
TWO STOREY BRICK
APARTMENT COMPLEX
(TILE ROOF)

No.35-39
TWO STOREY BRICK
APARTMENT COMPLEX
(TILE ROOF)

SP57603

No.33
DARLEY STREET EAST
TWO STOREY RENDERED
APARTMENT COMPLEX
(FLAT ROOF)

LOT 1
DP 1213063
No.33
DARLEY STREET EAST
TWO STOREY RENDERED
APARTMENT COMPLEX
(FLAT ROOF)

DARLEY

STREET

EAST



DENOTES EASEMENT TO DRAIN WATER 1 WIDE (AC217658)

NOTES:

- 1) BOUNDARY SURVEY HAS BEEN UNDERTAKEN
- 2) ORIGIN OF LEVELS: SSM24572 RL15.773 (A.H.D.) SCIMS
- 3) SITE COMPRISES SP 18919
- 4) SITE AREA 2679.4m² BY TITLE DIMENSIONS.
- 5) UNDERGROUND SERVICES HAVE NOT BEEN INVESTIGATED.
- 6) (G) DENOTES GUTTER LEVEL, WM DENOTES WATER METER, SIO DENOTES SEWER INSPECTION OUTLET, CJP DENOTES CONCRETE JUNCTION PIT
PP DENOTES POWER POLE, TEL DENOTES TELECOMMUNICATIONS PIT, TF DENOTES TRANSFORMER, BS DENOTES BOTTOM OF STEP
P DENOTES PVC PIPE, POLY DENOTES POLY PIPE, U.T.O. DENOTES UNABLE TO OPEN
TS DENOTES TOP OF STEP, 0.3Ø,10S,8H DENOTES INDICATIVE TREE SIZE 0.3 TRUNK DIAMETER, 10 SPREAD, 8 HIGH.
- 7) TREE NAMES SHOWN CONSTITUTE OUR OPINION ONLY. IF TREE SPECIES IDENTIFICATION IS IMPORTANT FOR DESIGN OR HERITAGE REASONS THEY SHOULD BE DETERMINED BY A QUALIFIED ARBORIST.

ISSUE	DATE	AMENDMENT
A	26.03.26	ADDITIONAL STORMWATER PIT INFORMATION ADDED

TITLE: PLAN SHOWING SELECTED DETAIL & LEVELS OVER
No. 35-39 DARLEY STREET EAST, MONA VALE

LGA: PITTWATER	REFERENCE: 53120
CLIENT : INCA GROUP	DATE: 28.08.25
SCALE (AT A2) 1:200	DATUM : AHD
SURVEYOR: RK	SHEET 1 OF 2

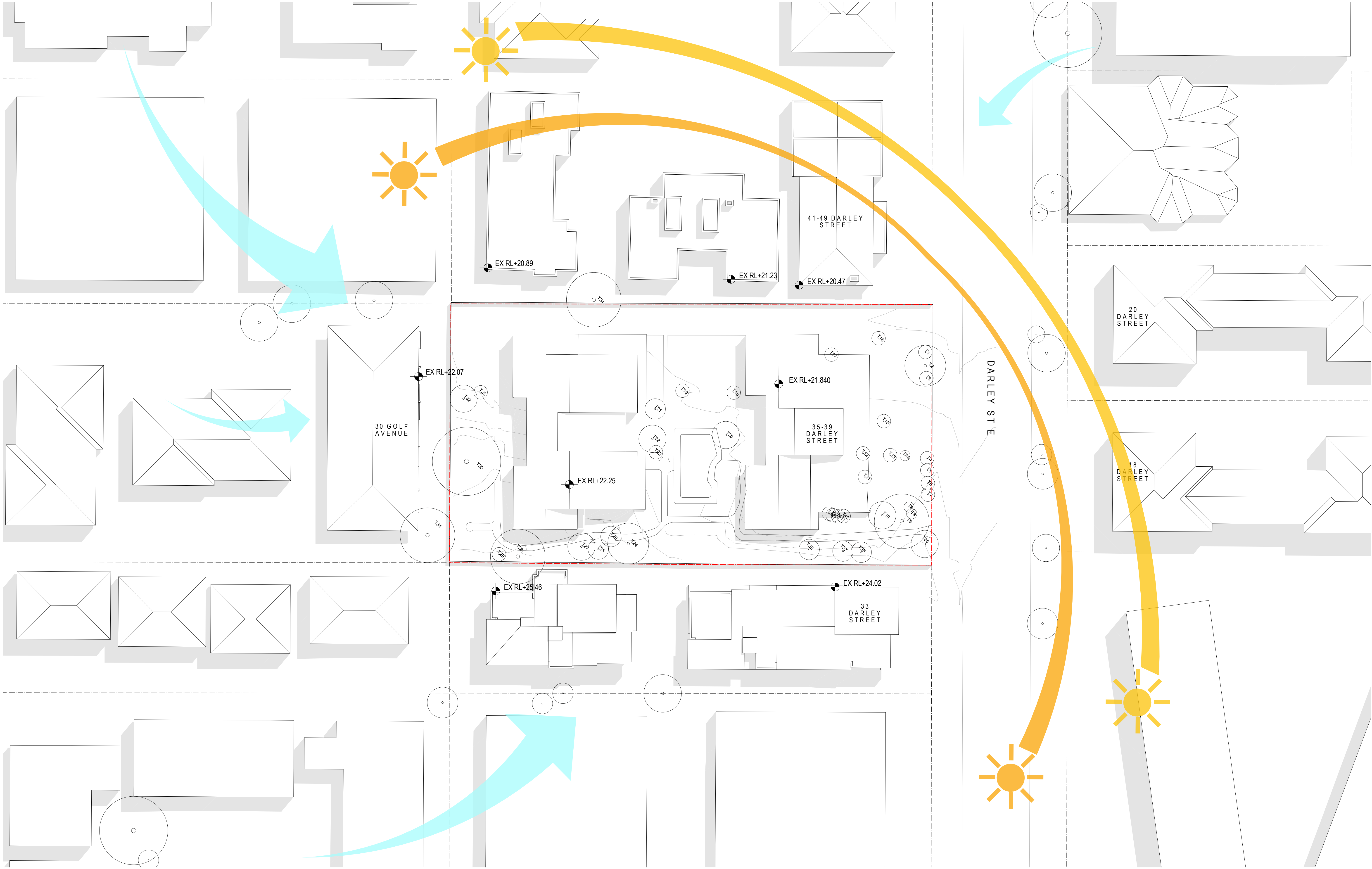
Norton Survey Partners

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A	A	Issue	WS	JW

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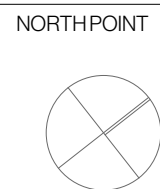
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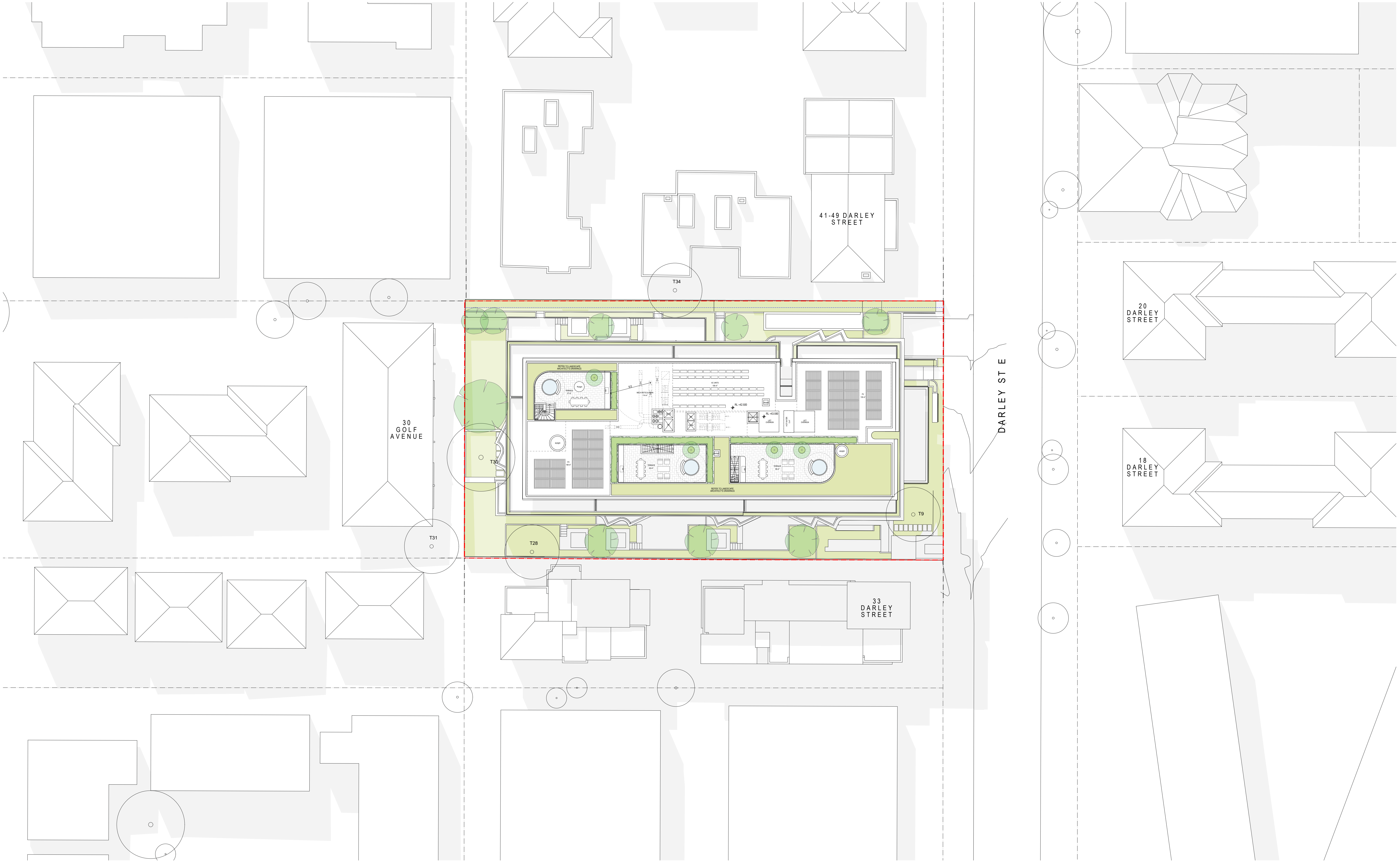
PROJECT TITLE
DARLEY ST E MONA VALE
PROJECT ADDRESS
35-39 DARLEY ST E MONA VALE NSW 2103
AUSTRALIA
CLIENT
Darley Vale Pty Ltd

APPROVED	CHECKED	DRAWN
AJ	JW	WS

DRAWING TITLE
SITE ANALYSIS

PROJECT NUMBER
20895
DRAWING NUMBER
PLA-DA-0002

STAGE
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REVISION
A



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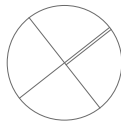
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SCALE
1250 @ A1 Size

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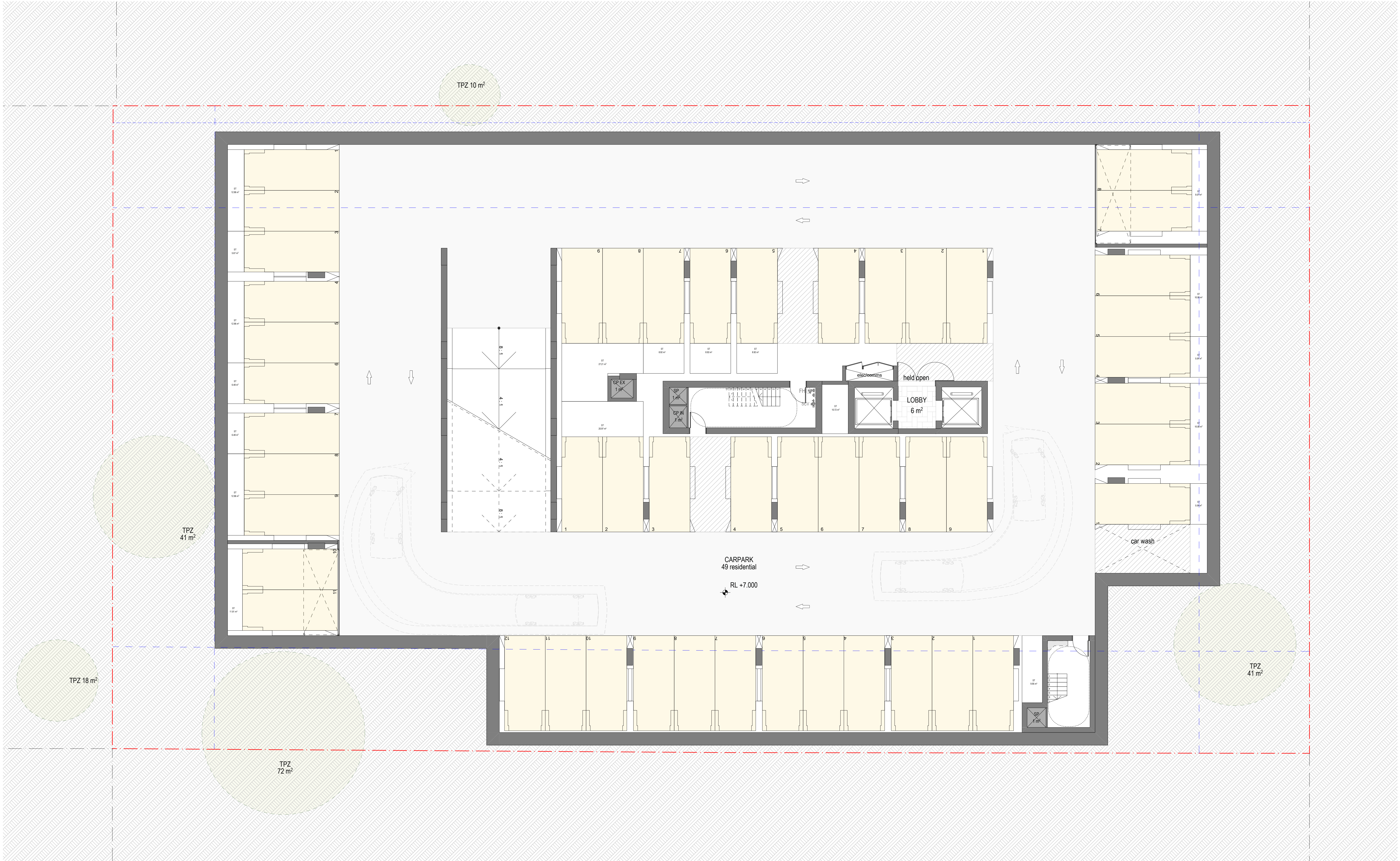
**PLUS
STUDIO**

PROJECT TITLE
DARLEY ST E MONA VALE
PROJECT ADDRESS
35-39 DARLEY ST E MONA VALE NSW 2103
AUSTRALIA
CLIENT
Darley Vale Pty Ltd
APPROVED
AJ
CHECKED
JW
DRAWN
WS

DRAWING TITLE
PROPOSED SITE PLAN

PROJECT NUMBER
20895
DRAWING NUMBER
PLA-DA-0004

STAGE
DA
REVISION
A



REV	DATE	REVISION DESCRIPTION	BY	CHK
01	01	Issue		
02	02	Issue		
03	03	Issue		
04	04	Issue	WS	JW
A	A	Issue	WS	JW

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DRAWING TITLE

GENERAL FLOOR PLAN -
BASEMENT 03

PROJECT NUMBER

20895

DRAWING NUMBER

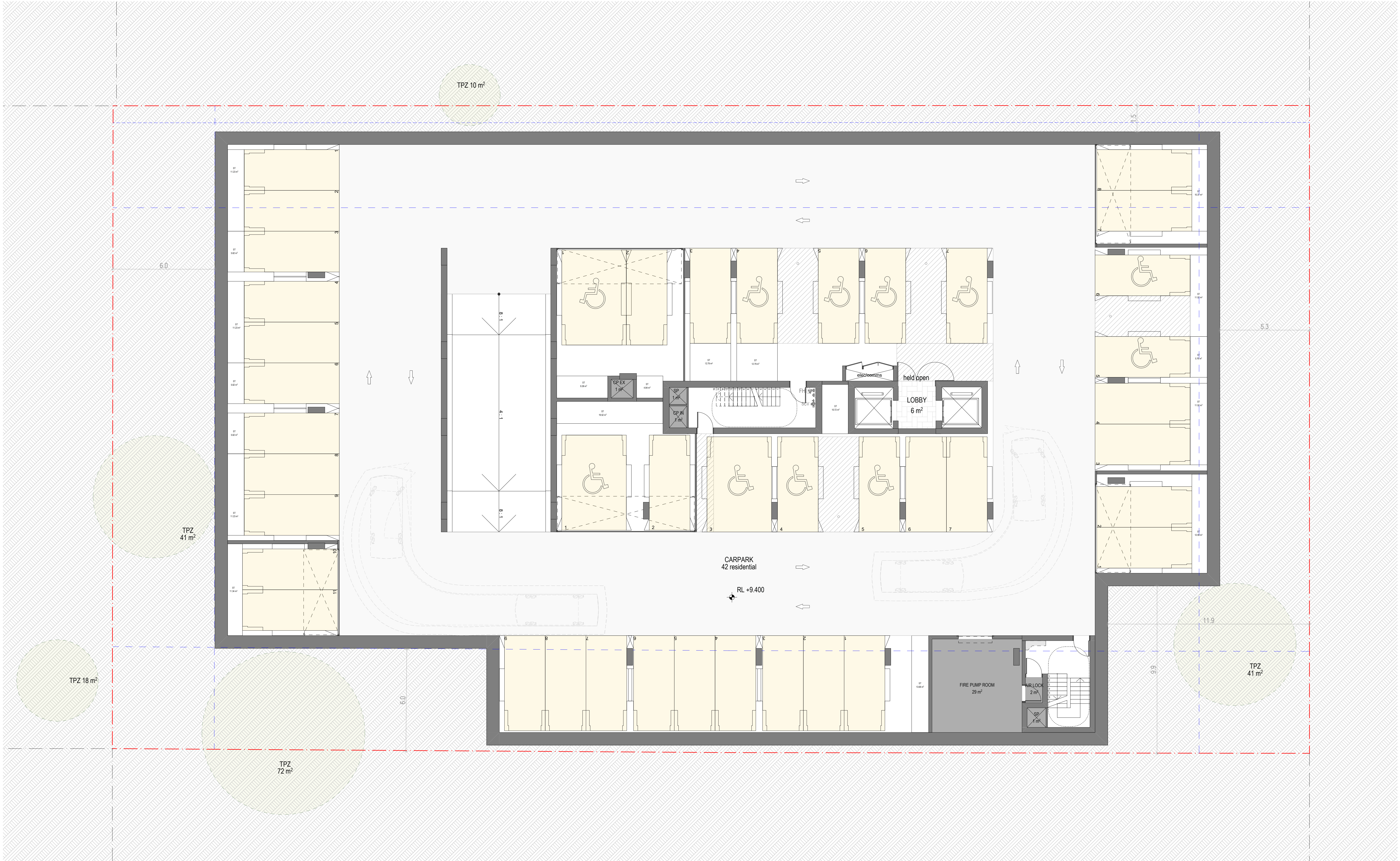
PLA-DA-10B3

STAGE

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REV	DATE	REVISION DESCRIPTION	BY	CHK
01	01	Issue		
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03	03	Issue		
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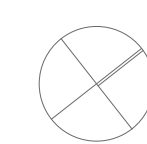
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**GENERAL FLOOR PLAN -
BASEMENT 02**

PROJECT NUMBER

20895

DRAWING NUMBER

PLA-DA-10B2

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01	01	Issue		
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**GENERAL FLOOR PLAN -
BASEMENT 01**

PROJECT NUMBER

20895

DRAWING NUMBER

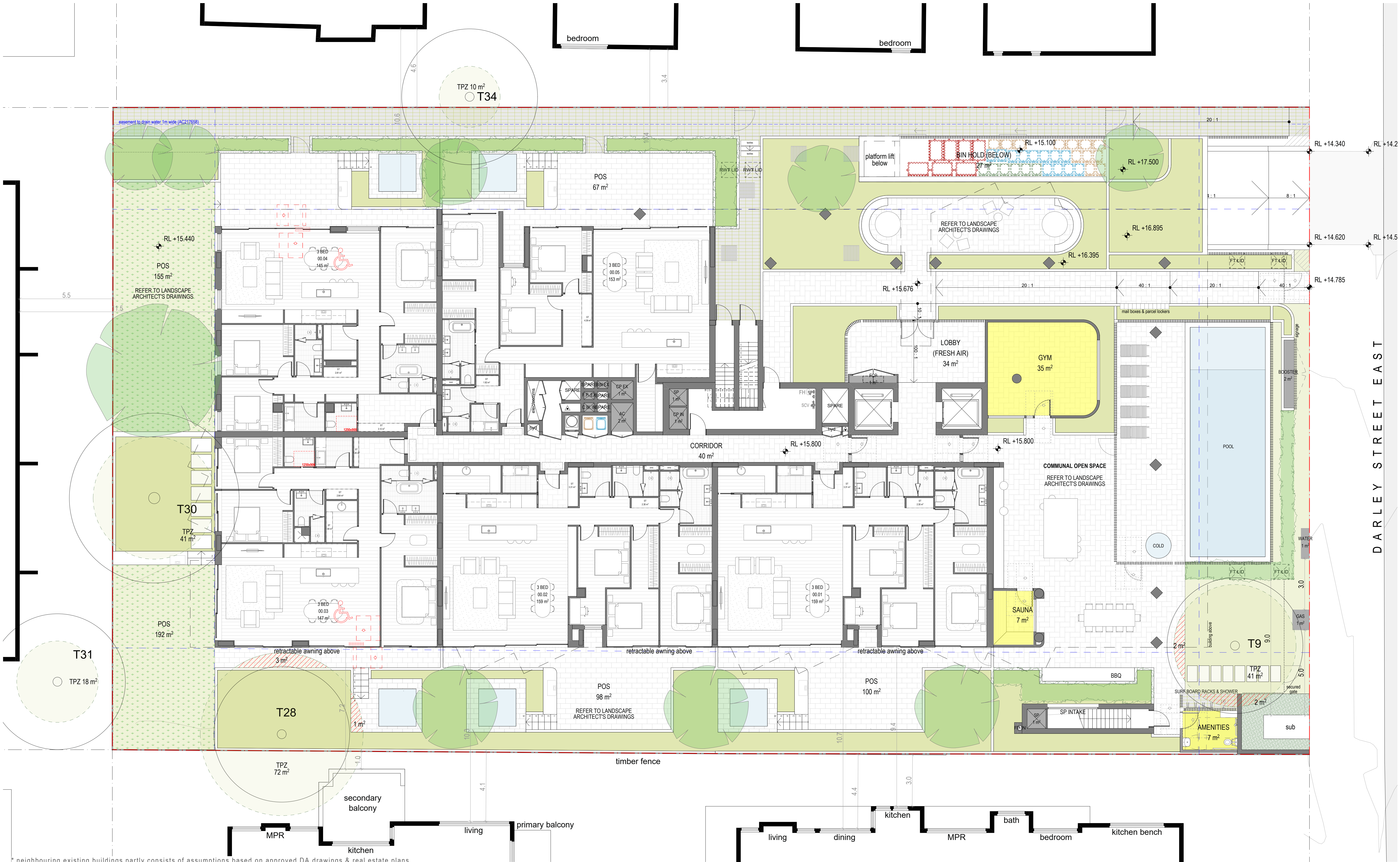
PLA-DA-10B1

STAGE

DA

REVISION

A



neighbouring existing buildings partly consists of assumptions based on approved DA drawings & real estate plans

REV	DATE	REVISION DESCRIPTION	BY	CHK
01	01	Issue		
02	02	Issue		
03	03	Issue		
04	04	Issue		
A	A	Issue	WS	JW

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GENERAL FLOOR PLAN - GROUND 00

PROJECT NUMBER	STAGE
20895	DA

DRAWING NUMBER	REVISION
PLA-DA-1000	A



* neighbouring existing buildings partly consists of assumptions based on approved DA drawings & real estate plans

REV	DATE	REVISION DESCRIPTION	BY	CHK
01	01	Issue		
02	02	Issue		
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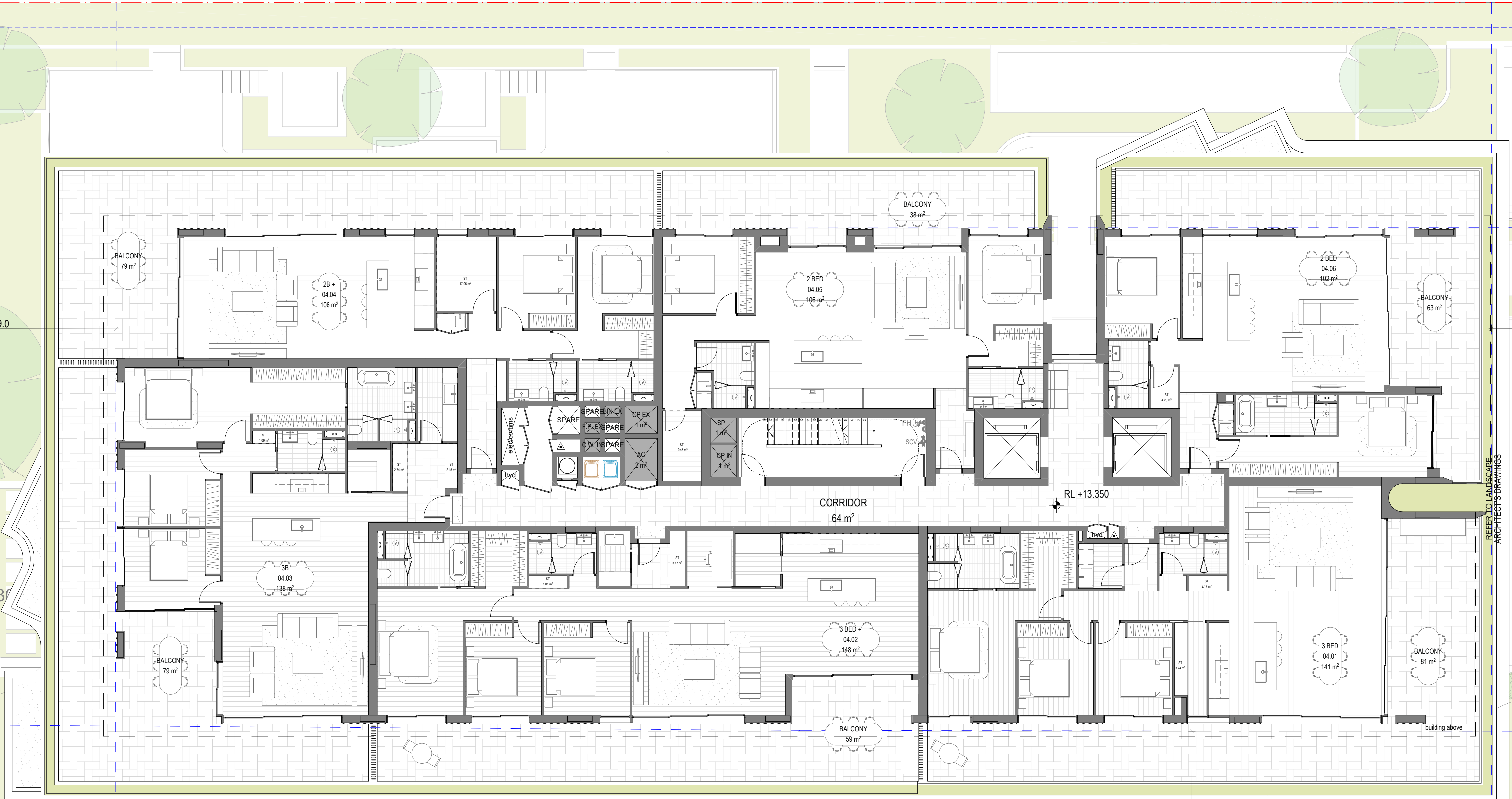
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DRAWING TITLE	GENERAL FLOOR PLAN - LEVEL 01-03
PROJECT NUMBER	20895
DRAWING NUMBER	PLA-DA-1001
STAGE	DA
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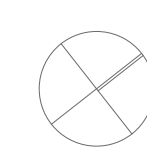
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GENERAL FLOOR PLAN - LEVEL 04

PROJECT NUMBER

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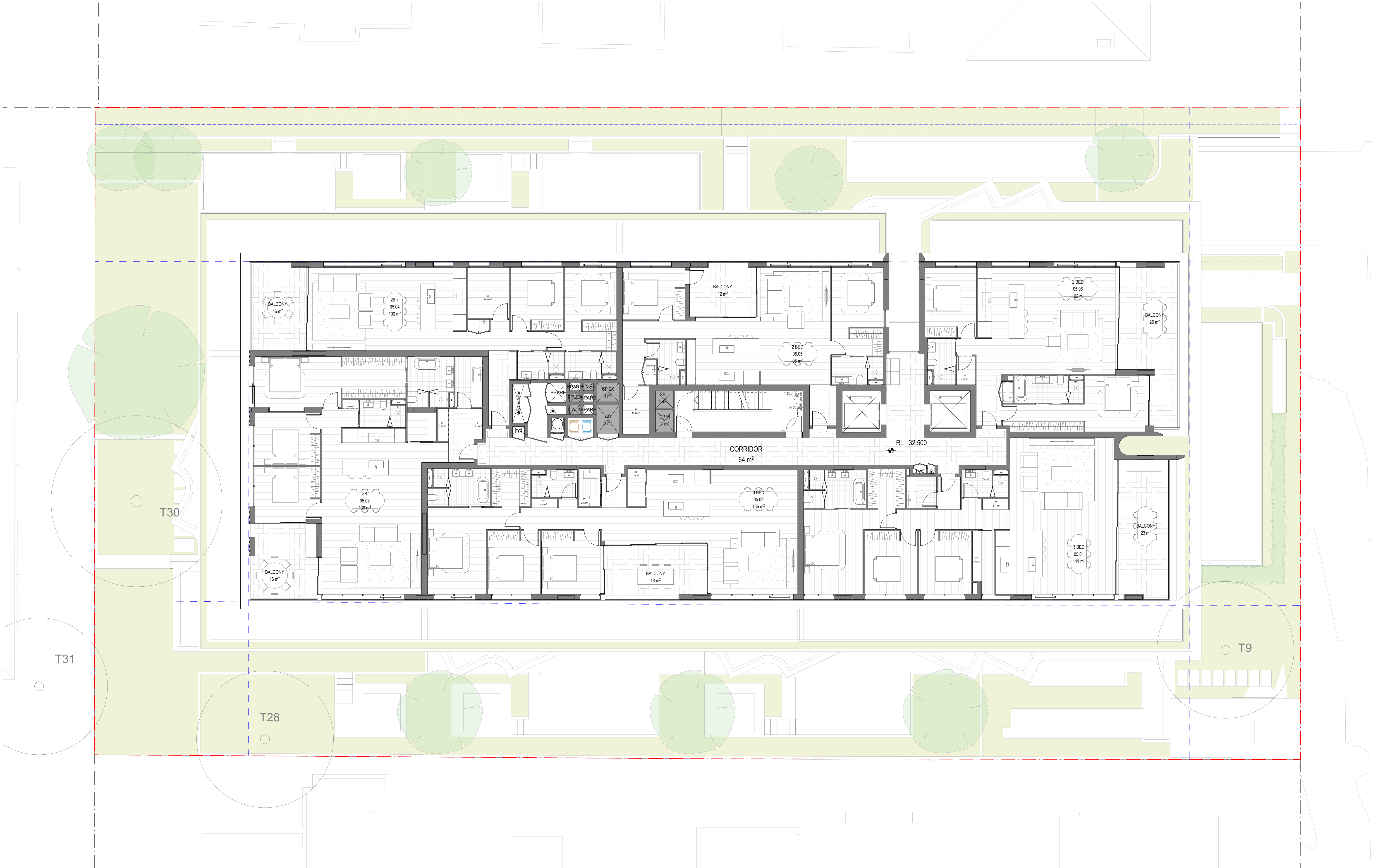
PLA-DA-1004

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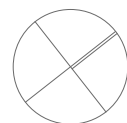
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GENERAL FLOOR PLAN - LEVEL 05-06

PROJECT NUMBER

20895

DRAWING NUMBER

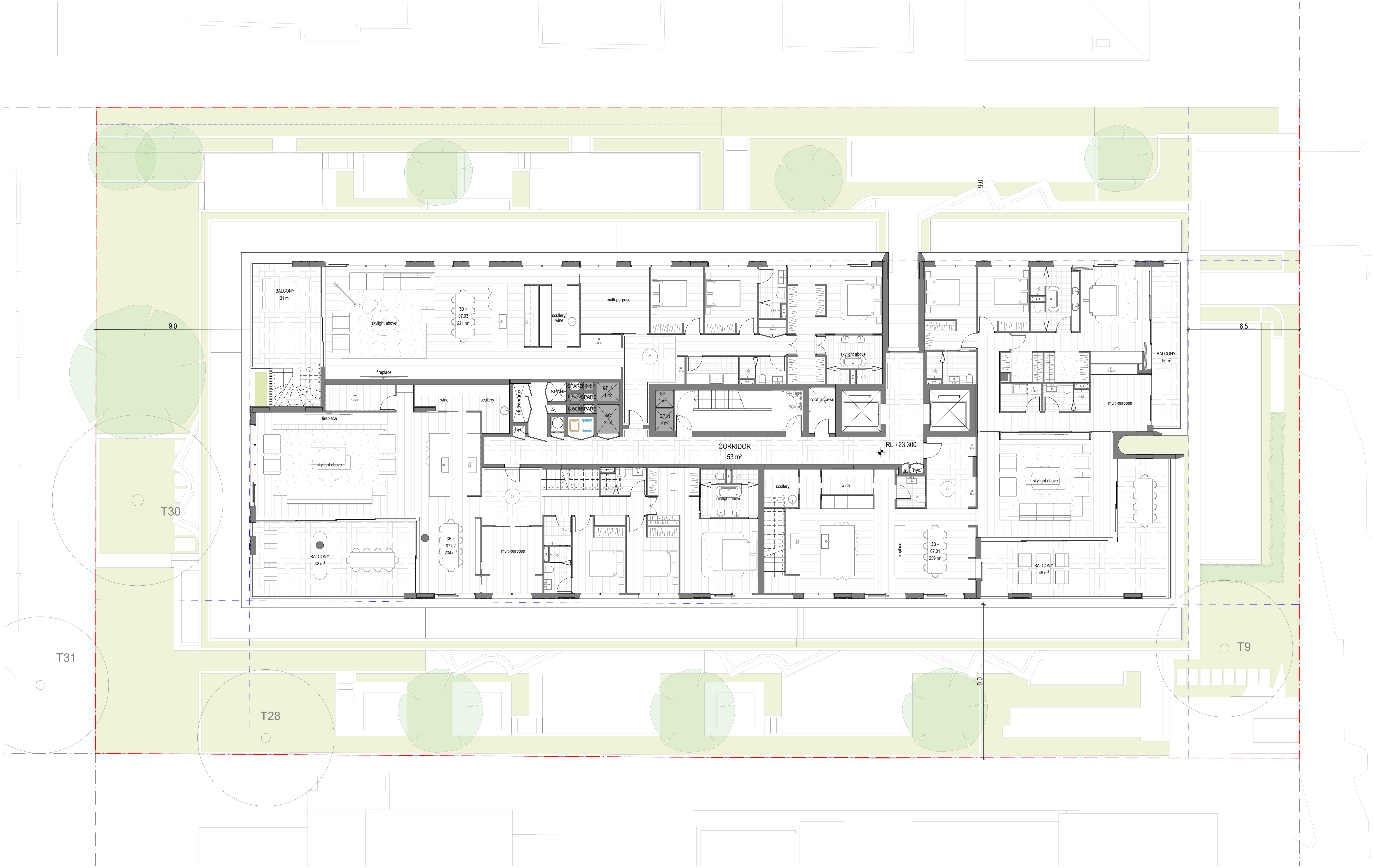
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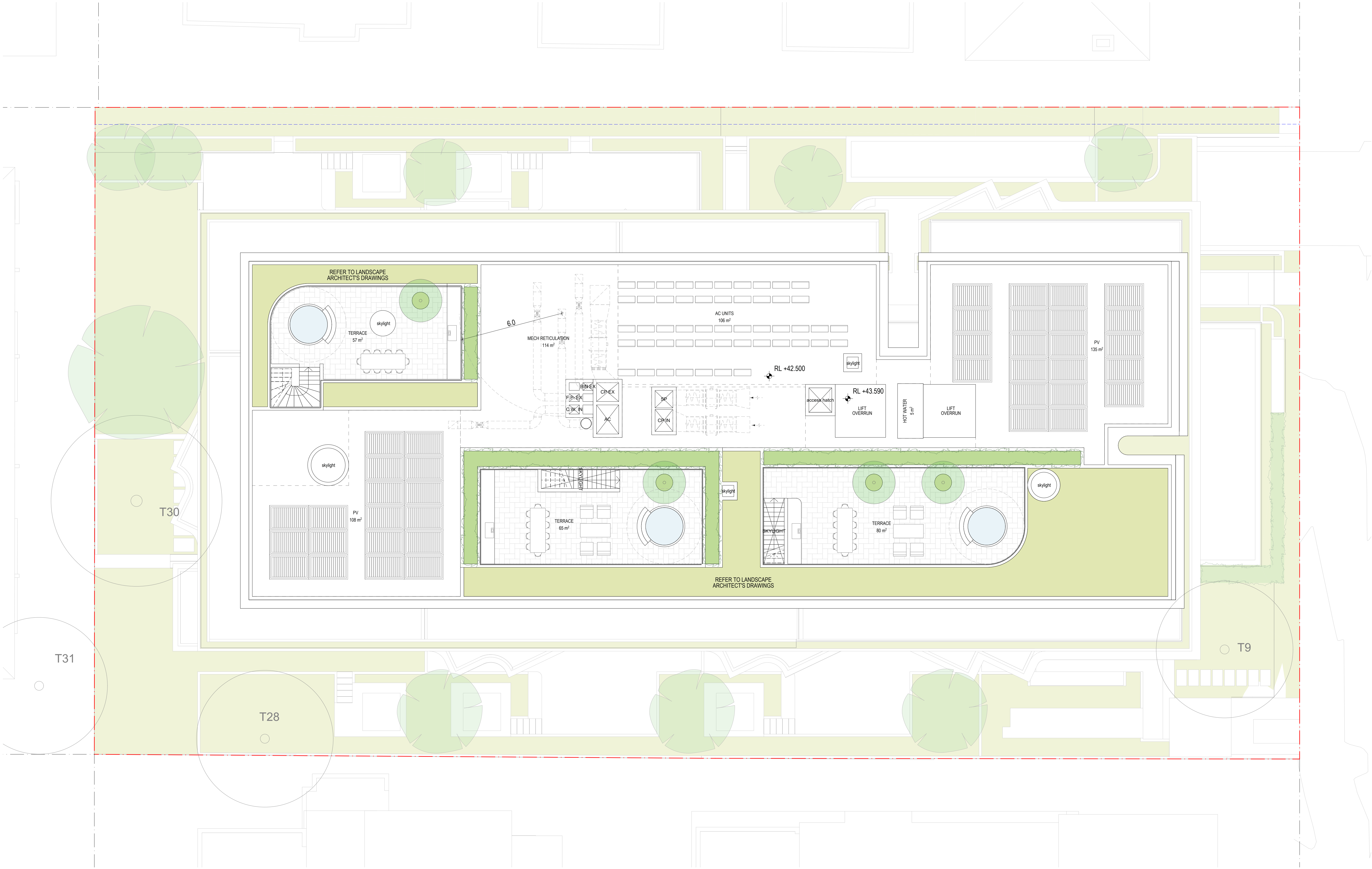
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GENERAL FLOOR PLAN - LEVEL 07

PROJECT NUMBER
20895

DRAWING NUMBER
PLA-DA-1007

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GENERAL FLOOR PLAN - ROOF 08

PROJECT NUMBER
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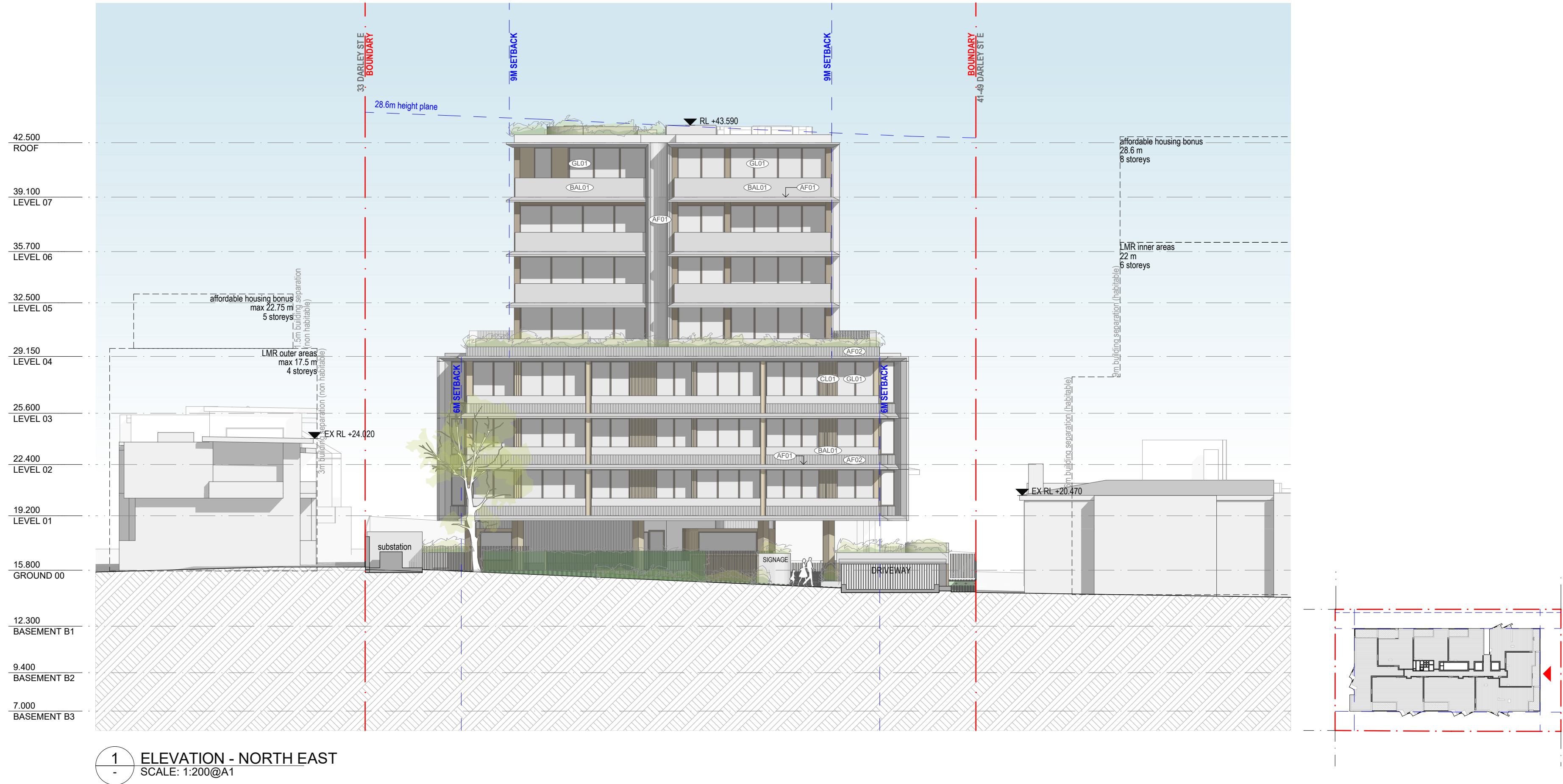
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CL02 - CLADDING TYPE 02, OFF-WHITE

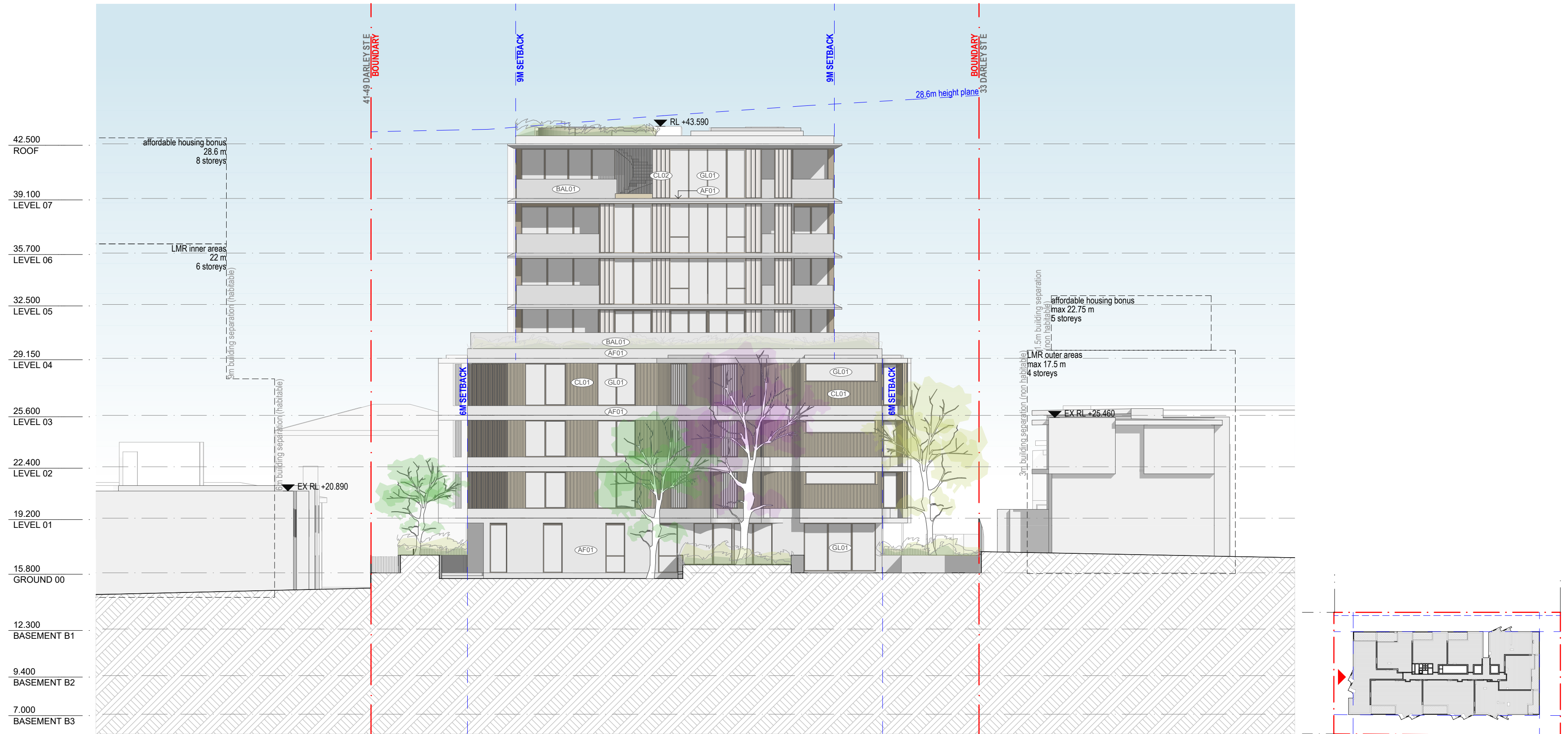
AF01 - APPLIED FINISH 01, OFF-WHITE
AF02 - APPLIED FINISH 02, OFF-WHITE
VERTICAL PROFILE

GL01 - GLAZING TYPE 01, CLEAR
GLAZING

BAL01 - BALUSTRADE TYPE 01, CLEAR
GLAZING



1 ELEVATION - NORTH EAST
SCALE: 1:200@A1



2 ELEVATION - SOUTH WEST
SCALE: 1:200@A1

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03	03	Issue	WS	JW
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LANDSCAPE WYER & CO (02) 9362333

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CIVIL & TRAFFIC SGCE (02)8883 4239
ASP LEVEL 03 ACME (02)9632 8330

BASIX & WASTE SENICA CONSULTANCY GROUP (02)8262 0900
ELECTRICAL JOELIANE (02)9832 4803
TOWNPLANNER PLANNING INGENUITY (02)9531 2555

NORTH POINT

SCALE
1200 @ A1 Size

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PLUS
STUDIO

PROJECT TITLE DARLEY ST E MONA VALE
PROJECT ADDRESS 35-39 DARLEY ST E MONA VALE NSW 2103 AUSTRALIA
CLIENT Darley Vale Pty Ltd
APPROVED AJ
CHECKED JW
DRAWN WS

DRAWING TITLE
ELEVATIONS - SHEET 01

PROJECT NUMBER
20895
DRAWING NUMBER
PLA-DA-2000

STAGE
DA
REVISION
A

MATERIALS LEGEND

CL01 - CLADDING TYPE 01, BRONZE
CL02 - CLADDING TYPE 02, OFF-WHITE

AF01 - APPLIED FINISH 01, OFF-WHITE
AF02 - APPLIED FINISH 02, OFF-WHITE
VERTICAL PROFILE

GL01 - GLAZING TYPE 01, CLEAR
GLAZING

BAL01 - BALUSTRADE TYPE 01, CLEAR
GLAZING



1 ELEVATION - NORTH WEST
SCALE: 1:200@A1



2 ELEVATION - SOUTH EAST
SCALE: 1:200@A1

REV	DATE	REVISION DESCRIPTION	BY	CHK
01	01	Issue		
02	02	Issue		
03	03	Issue	WS	JW
A	A	Issue	WS	JW

Inca

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SCALE
1200 @ A1 Size

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PROJECT TITLE

DARLEY ST E MONA VALE

PROJECT ADDRESS

35-39 DARLEY ST E MONA VALE NSW 2103
AUSTRALIA

CLIENT

Darley Vale Pty Ltd

APPROVED

AJ

CHECKED

JW

DRAWN

WS

DRAWING TITLE

ELEVATIONS - SHEET 02

PROJECT NUMBER

20895

DRAWING NUMBER

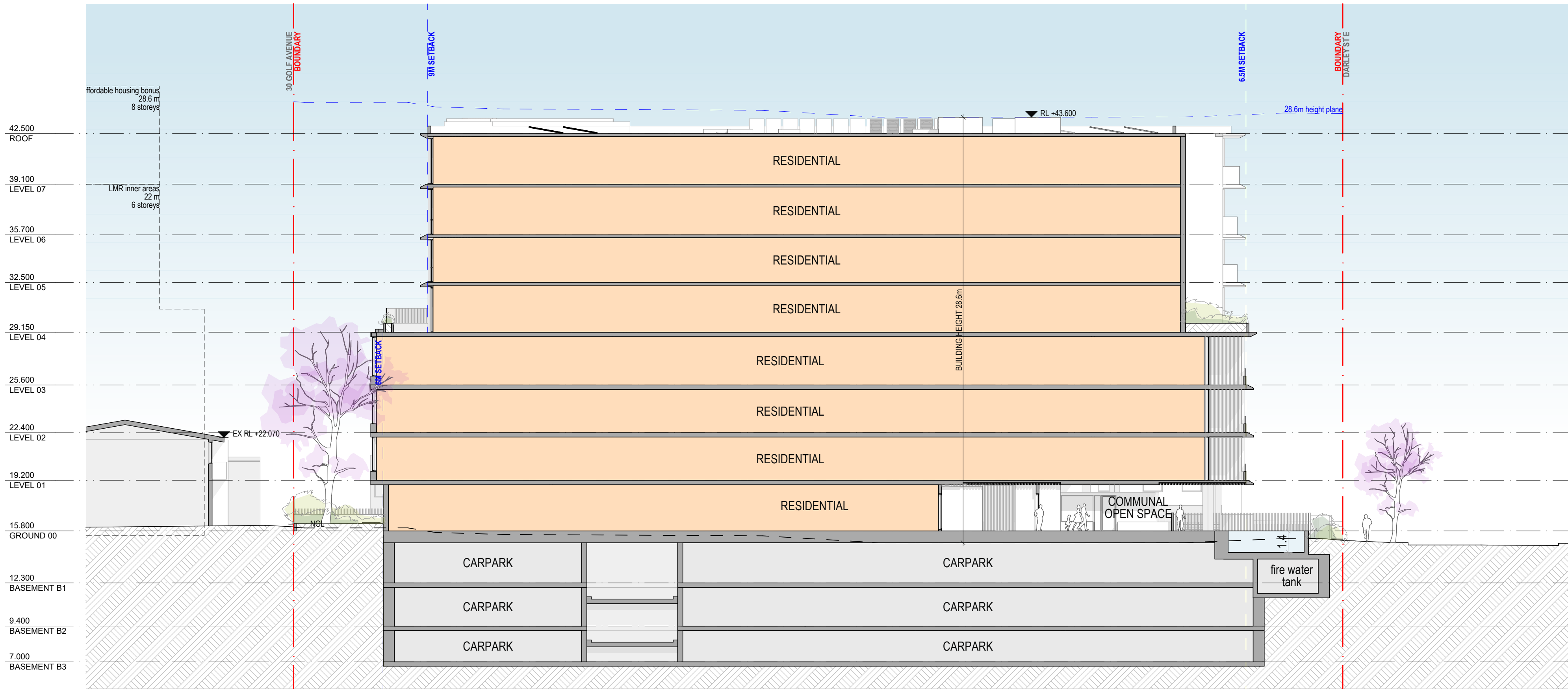
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STAGE

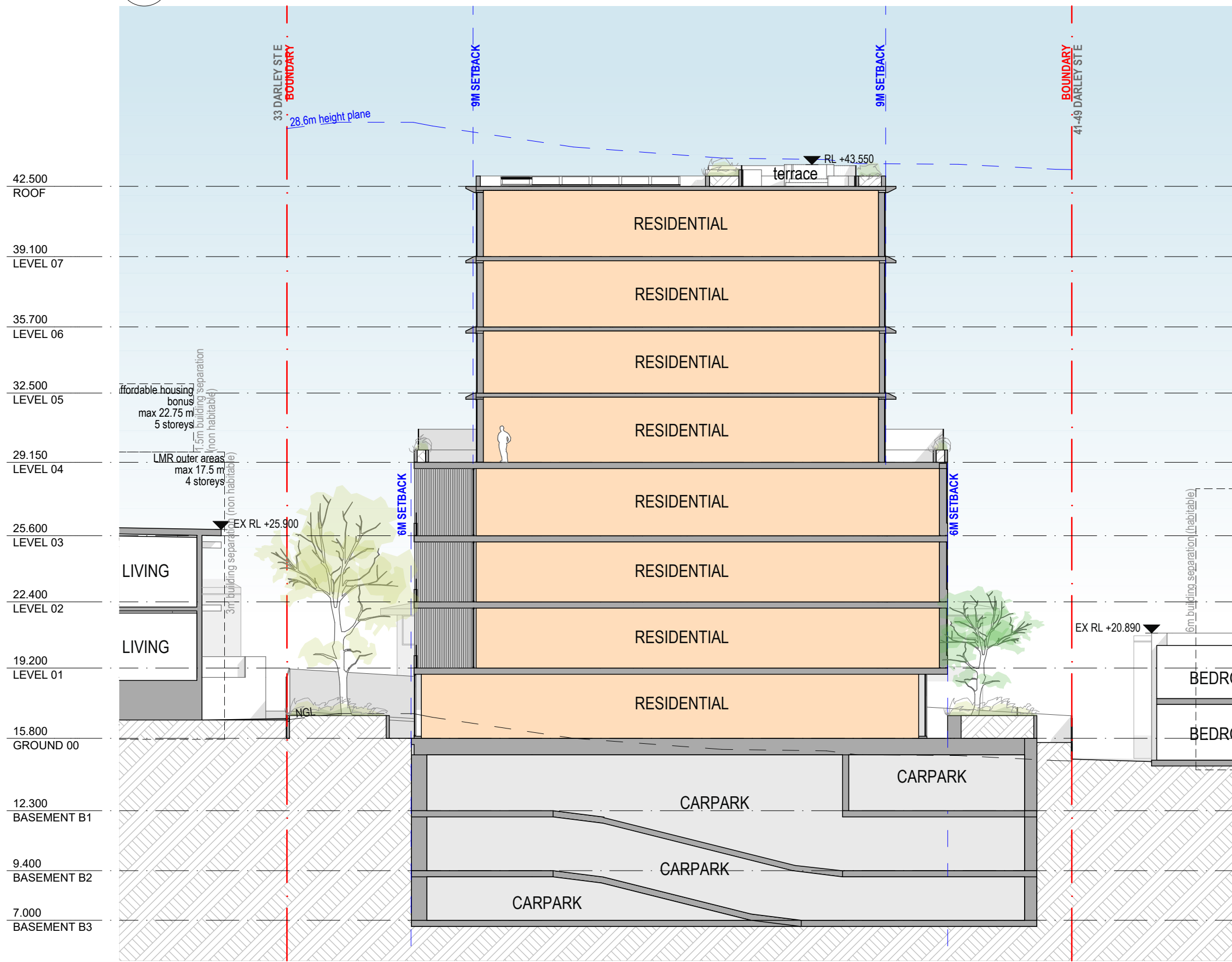
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REVISION

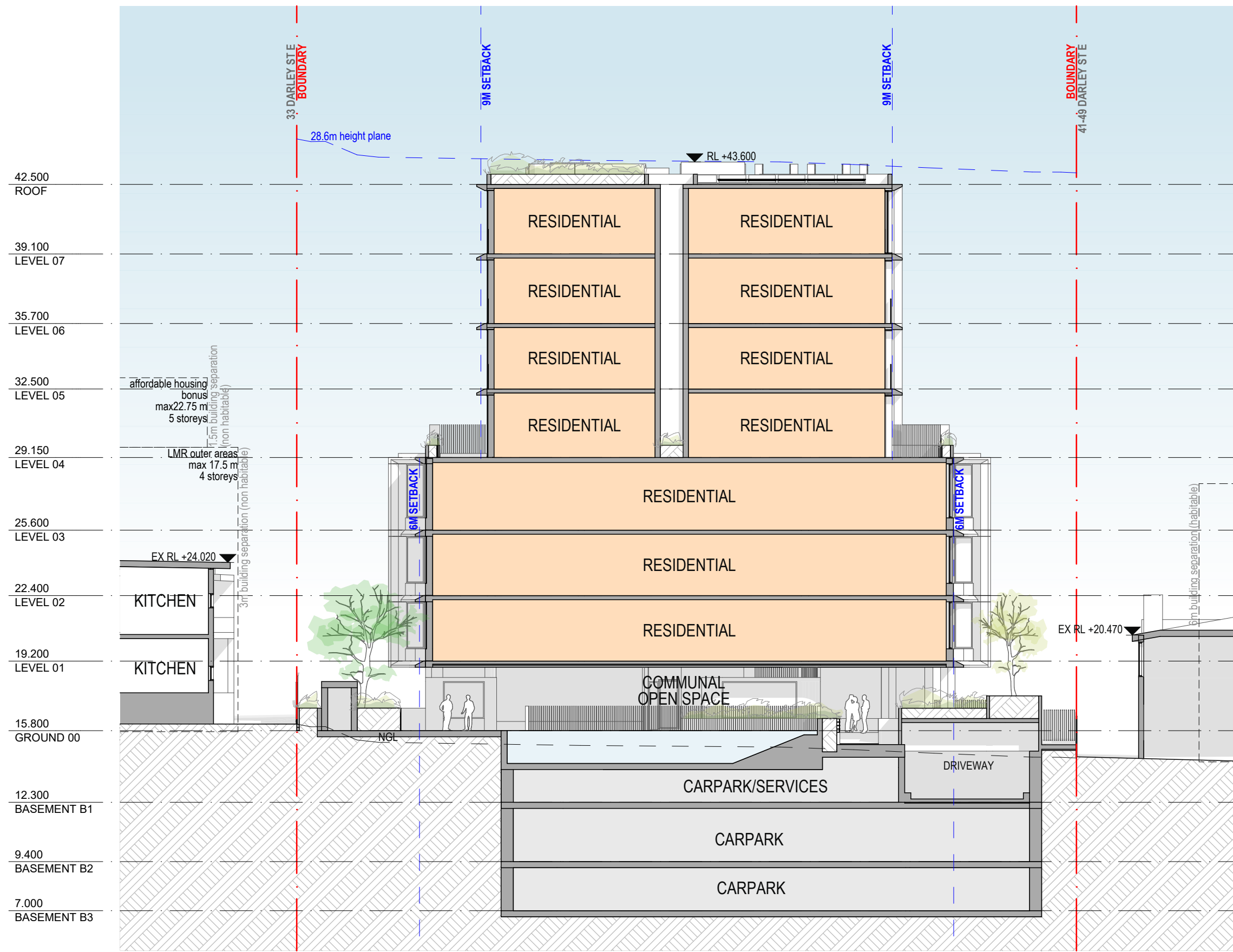
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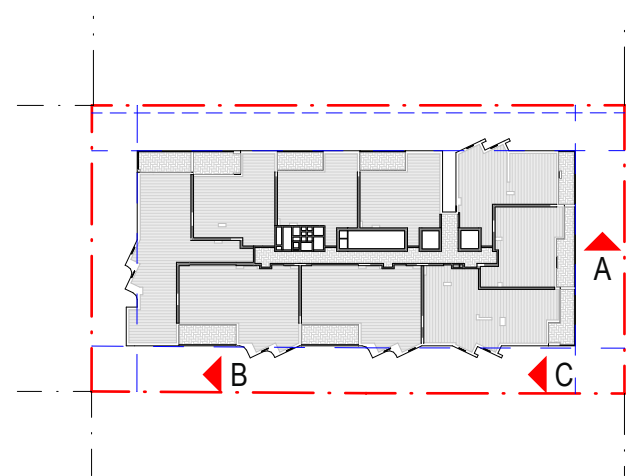
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1 SECTION B-B
SCALE: 1:200@A1



1 SECTION C-C
SCALE: 1:200@A1



REV	DATE	REVISION DESCRIPTION	BY	CHK
01	01	Issue		
02	02	Issue		
03	03	Issue		
A	A	Issue	WS	JW

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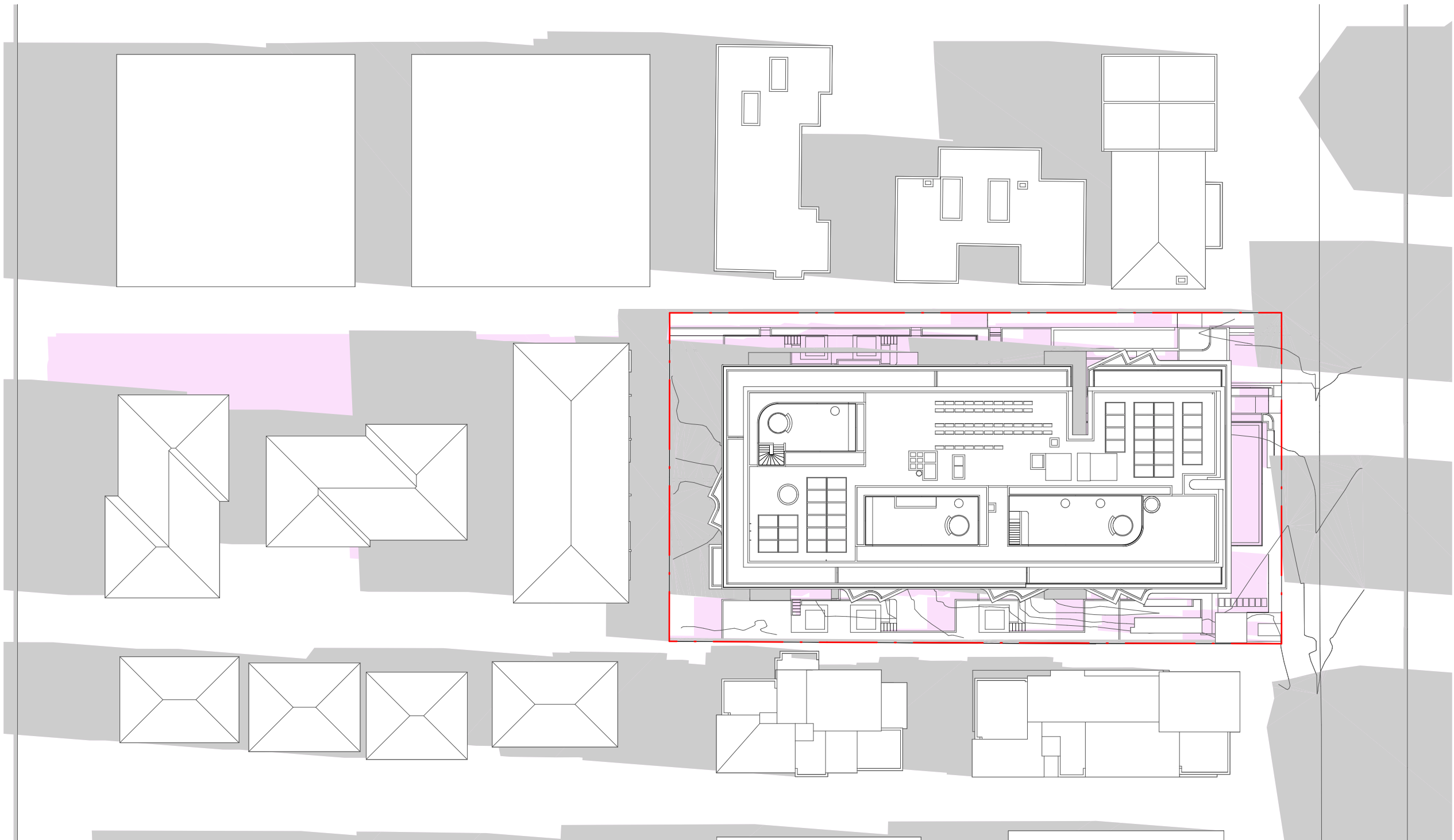
NORTH POINT
SCALE
1:200 @ A1 Size
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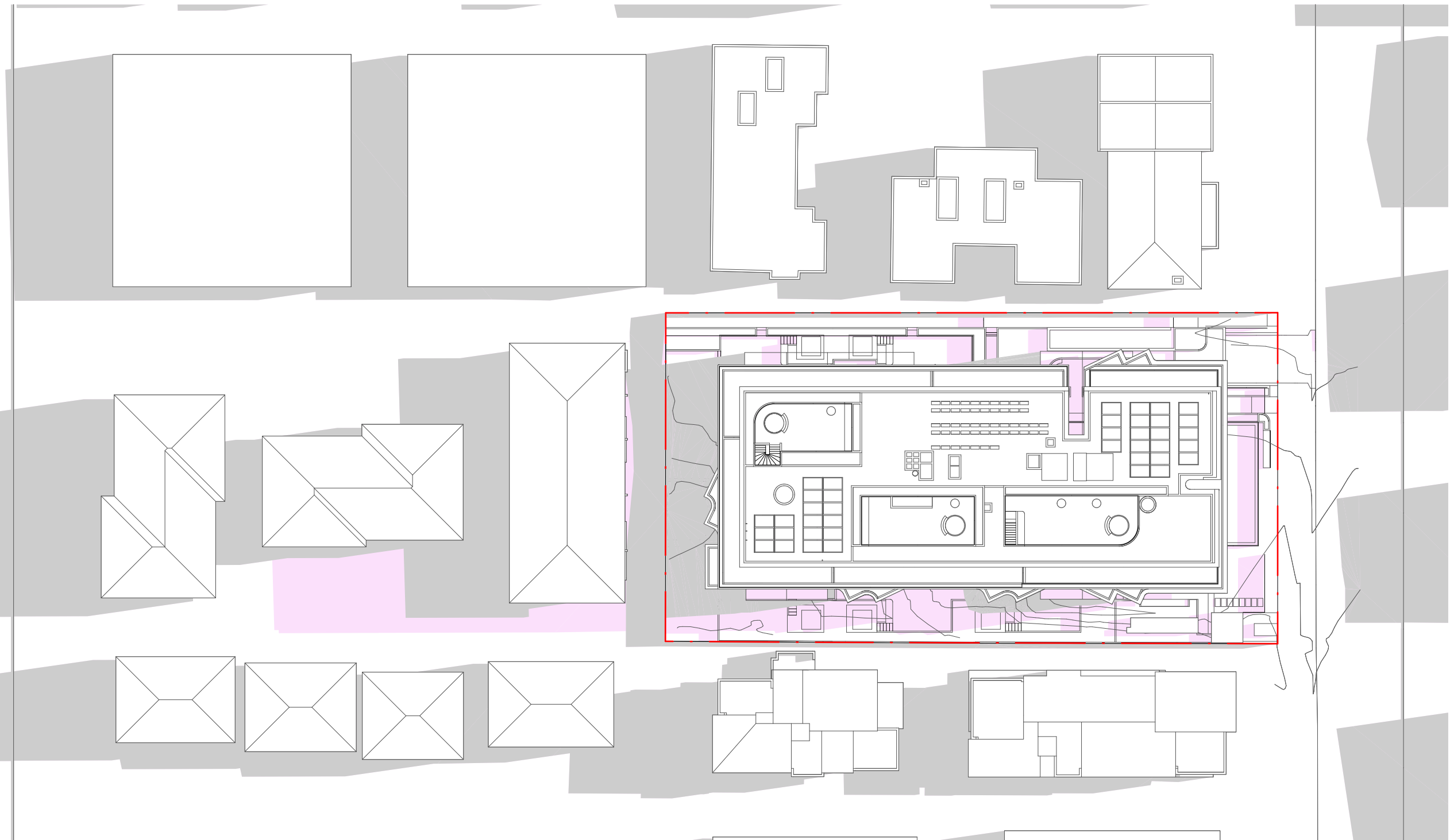
PROJECT TITLE
DARLEY ST E MONA VALE
PROJECT ADDRESS
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CLIENT
Darley Vale Pty Ltd
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DRAWN
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DRAWING TITLE
SECTIONS - SHEET 01
PROJECT NUMBER
20895
DRAWING NUMBER
PLA-DA-3000
STAGE
DA
REVISION
A

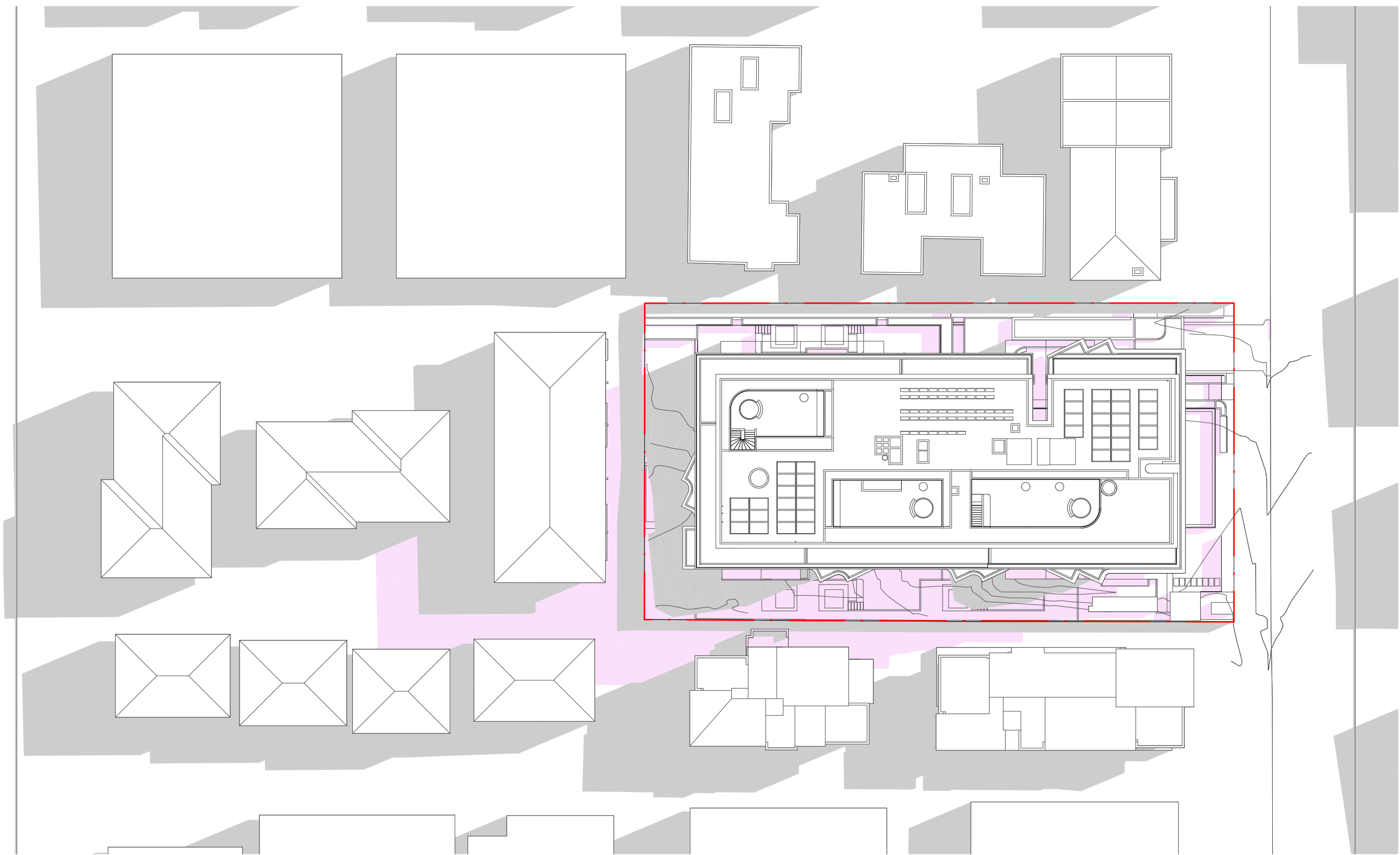
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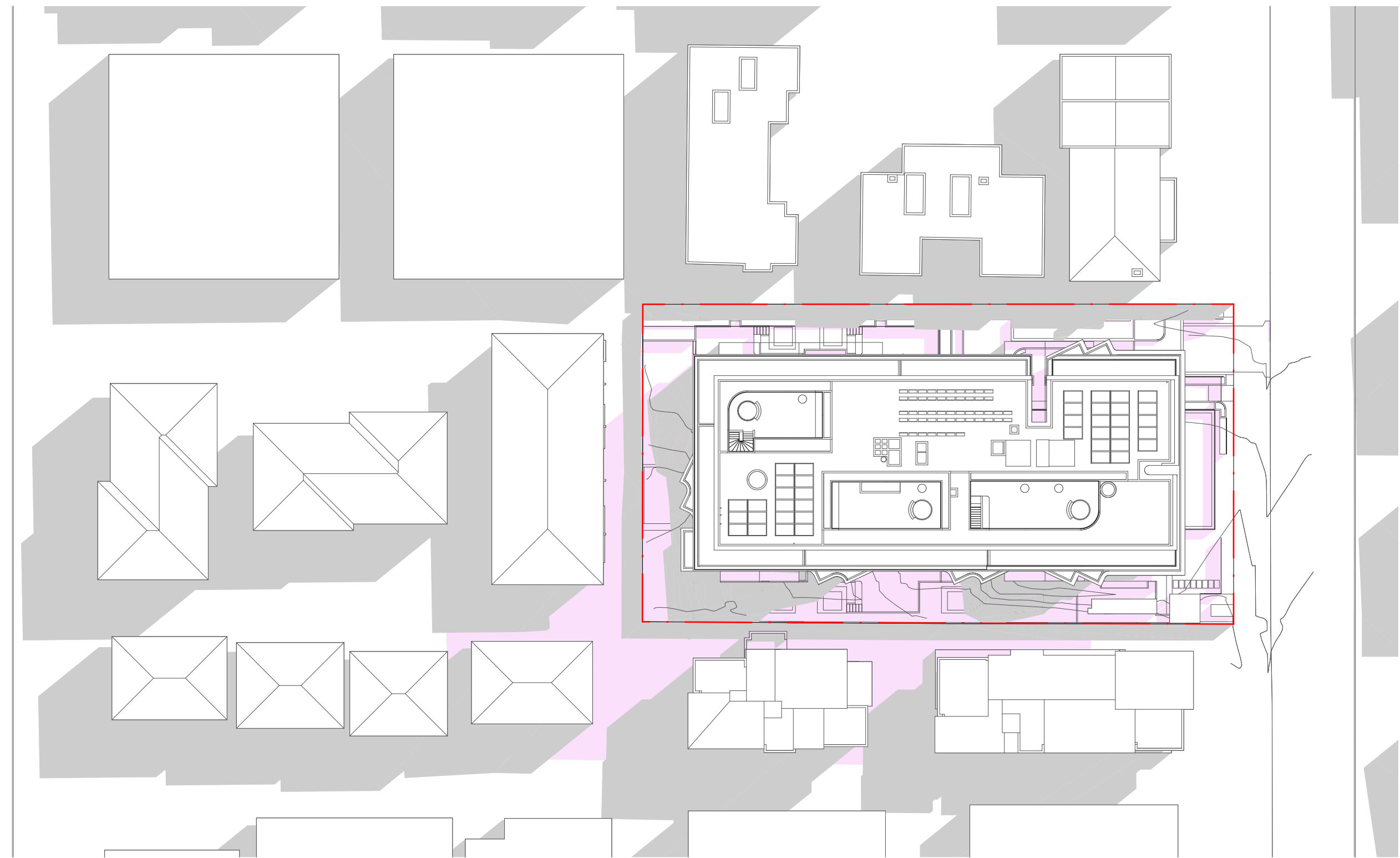
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SCALE: 1:500@A3



2 10AM
SCALE: 1:500@A3



3 11AM
SCALE: 1:500@A3



4 12PM
SCALE: 1:500@A3

REV	DATE	REVISION DESCRIPTION	BY	CHK
A	A	Issue	WS	JW

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1500 @ A1 Size

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DARLEY ST E MONA VALE

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AUSTRALIA

CLIENT

Darley Vale Pty Ltd

APPROVED

AJ

CHECKED

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WS

DRAWING TITLE

SHADOW DIAGRAMS - SHEET 01

PROJECT NUMBER

20895

DRAWING NUMBER

PLA-DA-4100

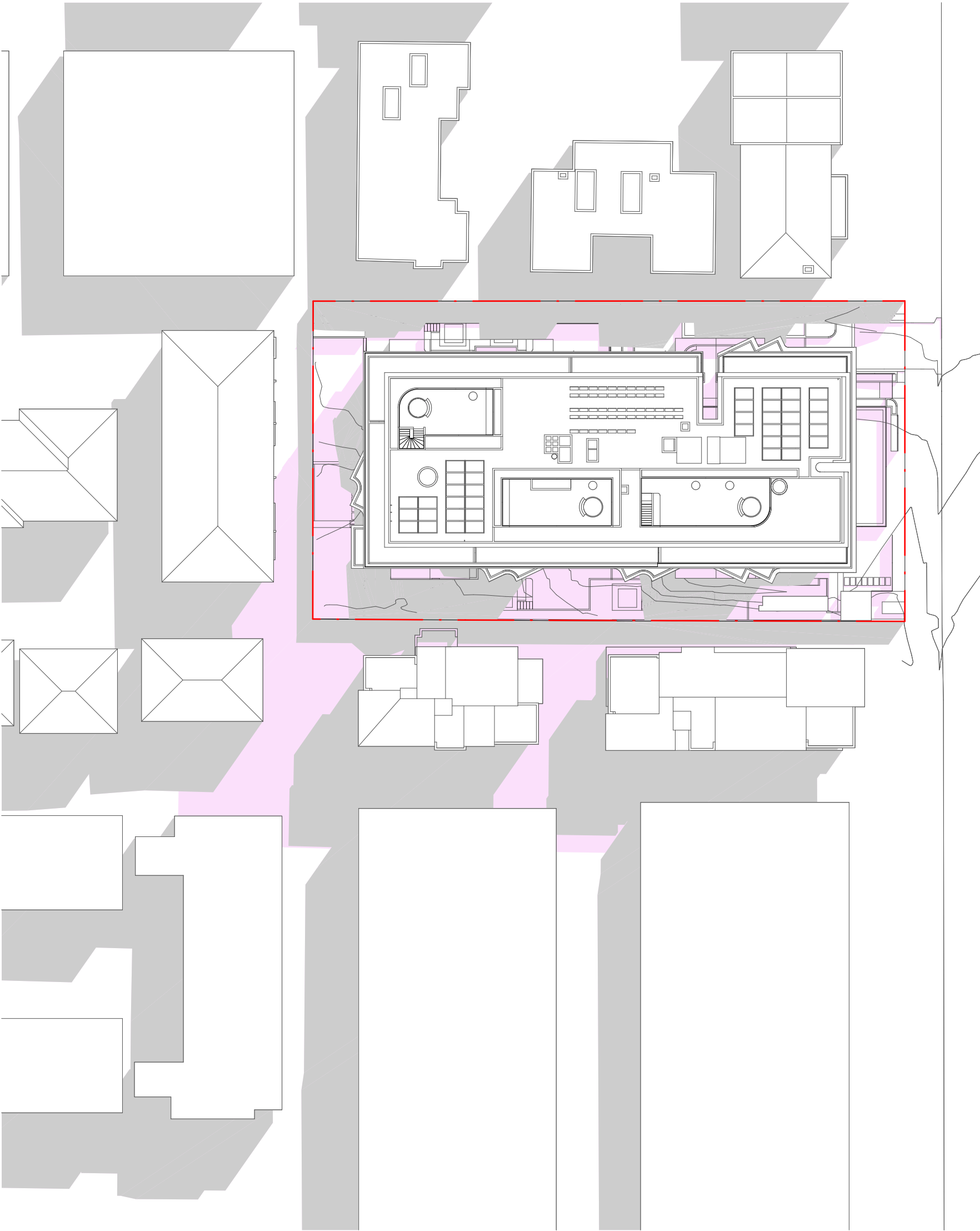
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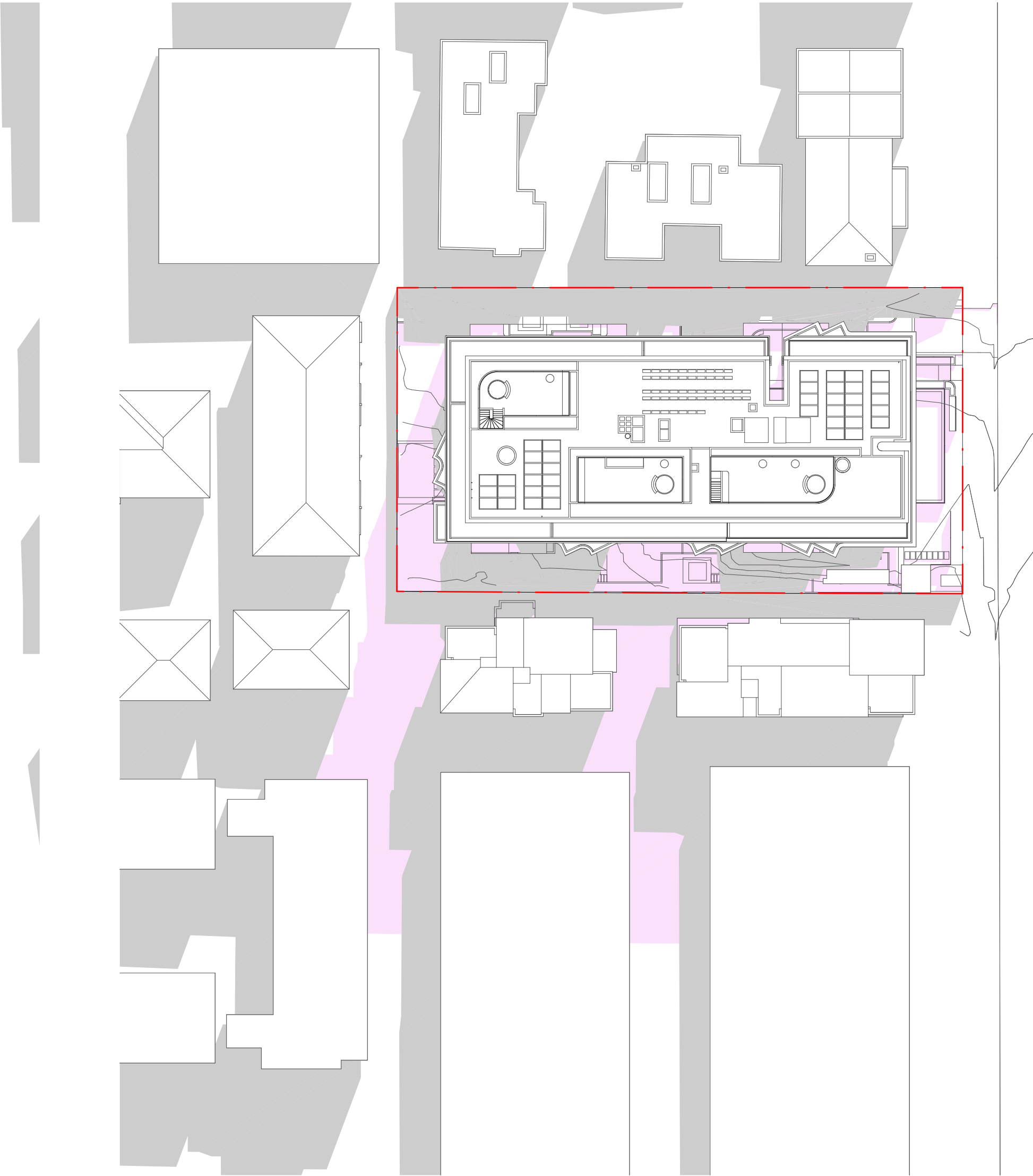
REVISION

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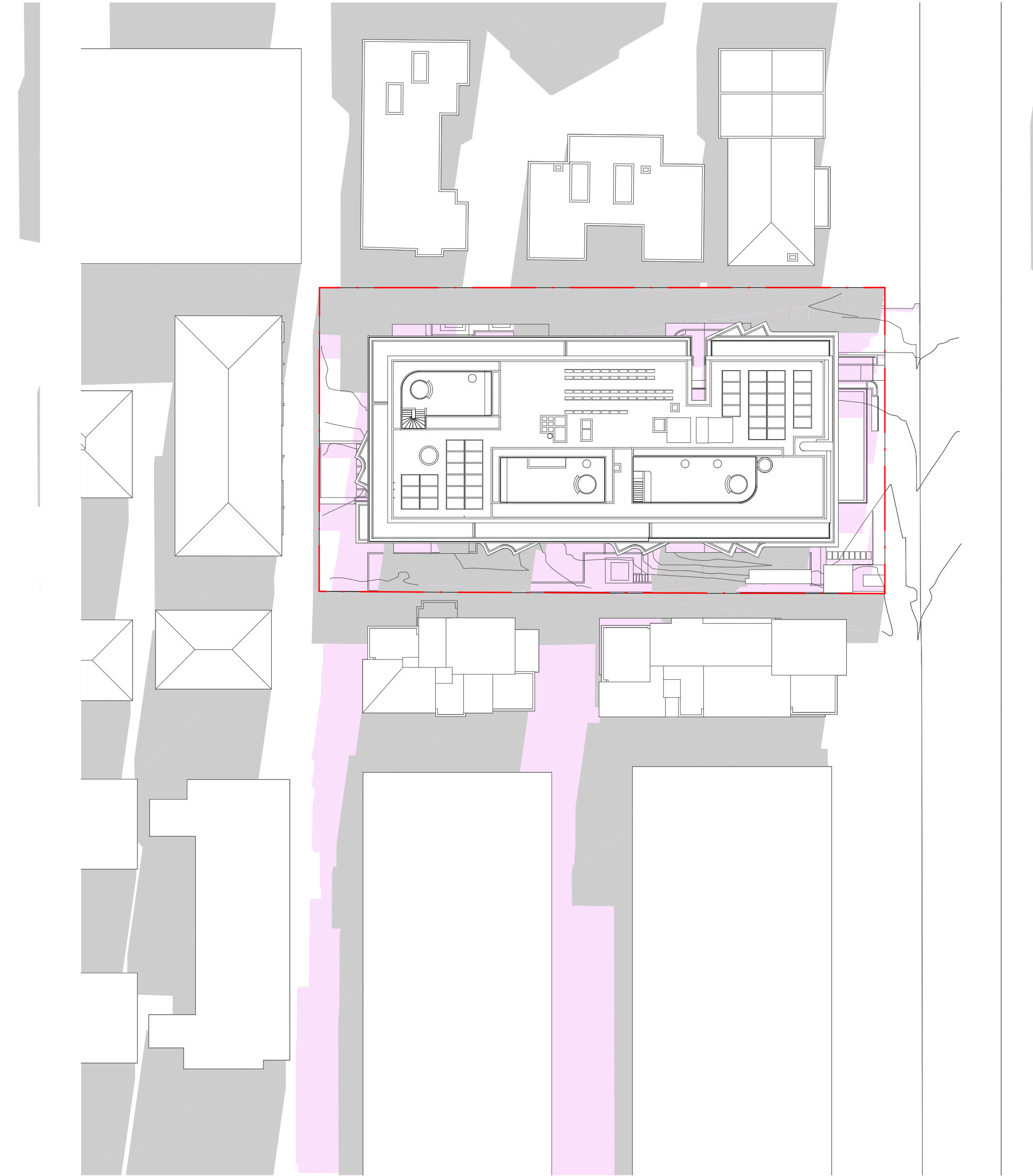
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1
- 1PM
SCALE: 1:500@A3



2
- 2PM
SCALE: 1:500@A3



3
- 3PM
SCALE: 1:500@A3

REV	DATE	REVISION DESCRIPTION	BY	CHK
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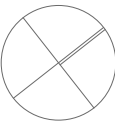
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PROJECT TITLE

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DRAWING TITLE

SHADOW DIAGRAMS - SHEET 02

PROJECT NUMBER

20895

DRAWING NUMBER

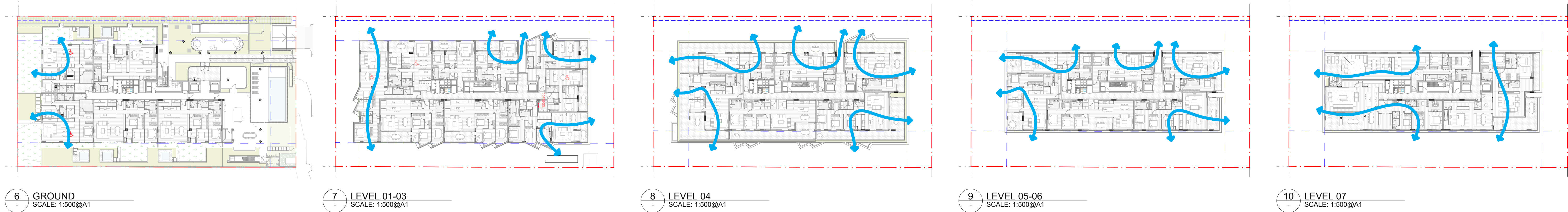
PLA-DA-4101

STAGE

DA

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1500 @ A1 Size

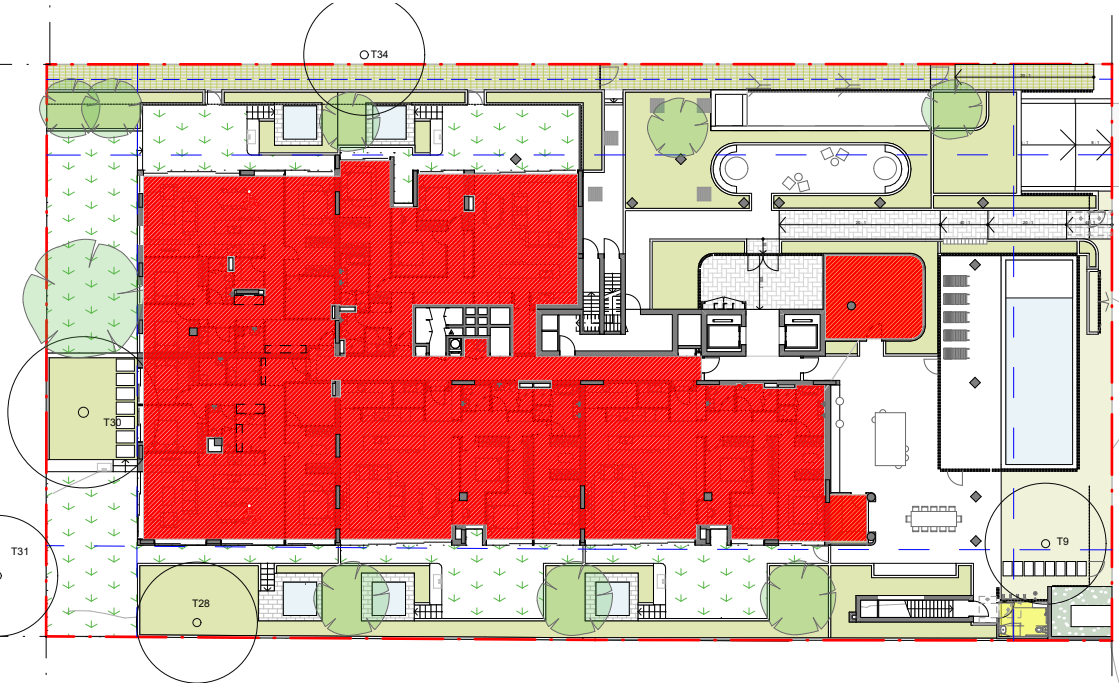
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Darley Vale Pty Ltd
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CHECKED
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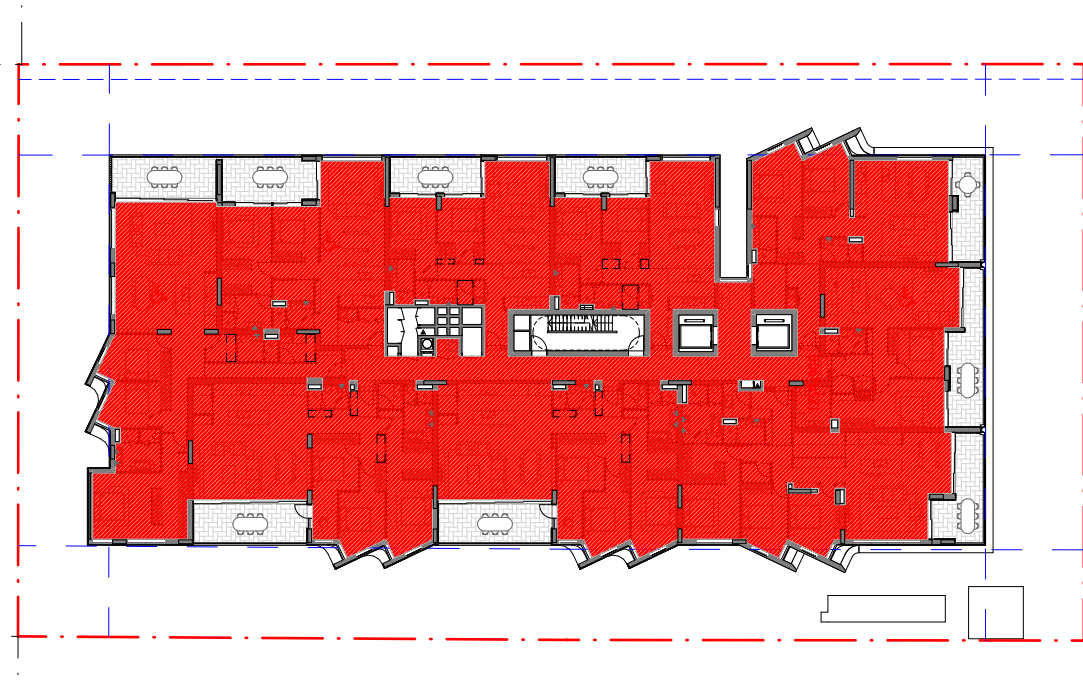
DRAWING TITLE
SOLAR AMENITY & CROSS VENTILATION DIAGRAMS
PROJECT NUMBER
20895
DRAWING NUMBER
PLA-DA-4200
STAGE
DA
REVISION
A

SITE AREA	2679.4
ALLOWED FSR	2.86
ALLOWED GFA	7663
MIN. COS	669.9
MIN. DEEP SOIL	187.6

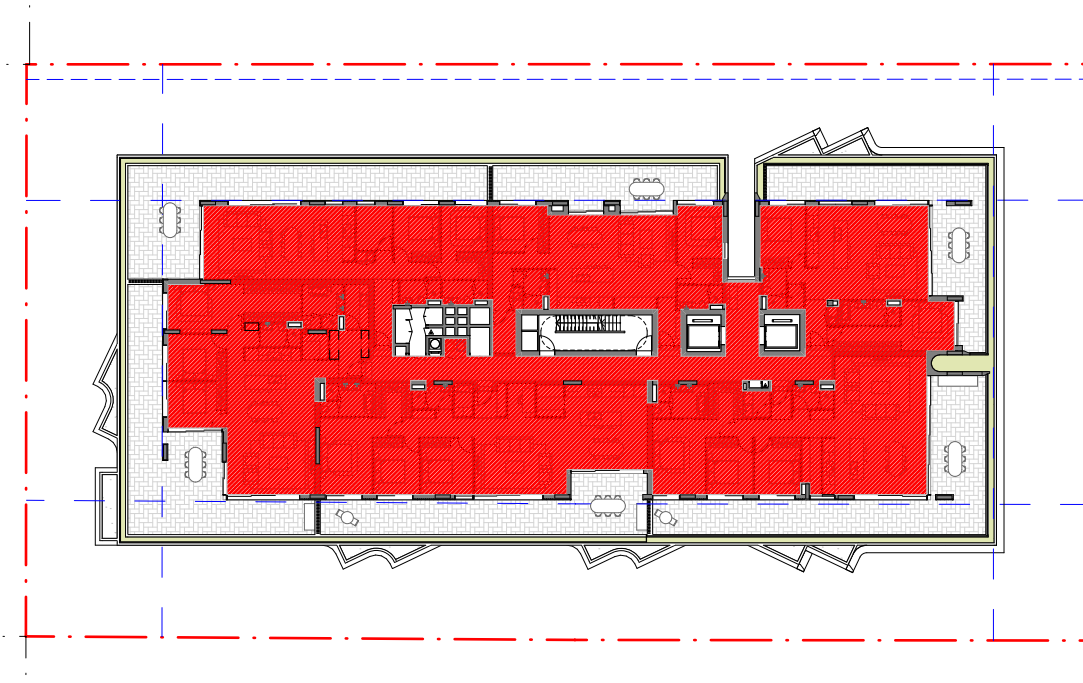
GFA CALCULATIONS										
STOREY	GROUND 00	LEVEL 01	LEVEL 02	LEVEL 03	LEVEL 04	LEVEL 05	LEVEL 06	LEVEL 07	TOTAL GFA	FSR
Area	875.1	1,185.8	1,185.8	1,185.8	831.3	807.3	807.3	782.0	7,660.4 m ²	2.86:1



1 GROUND
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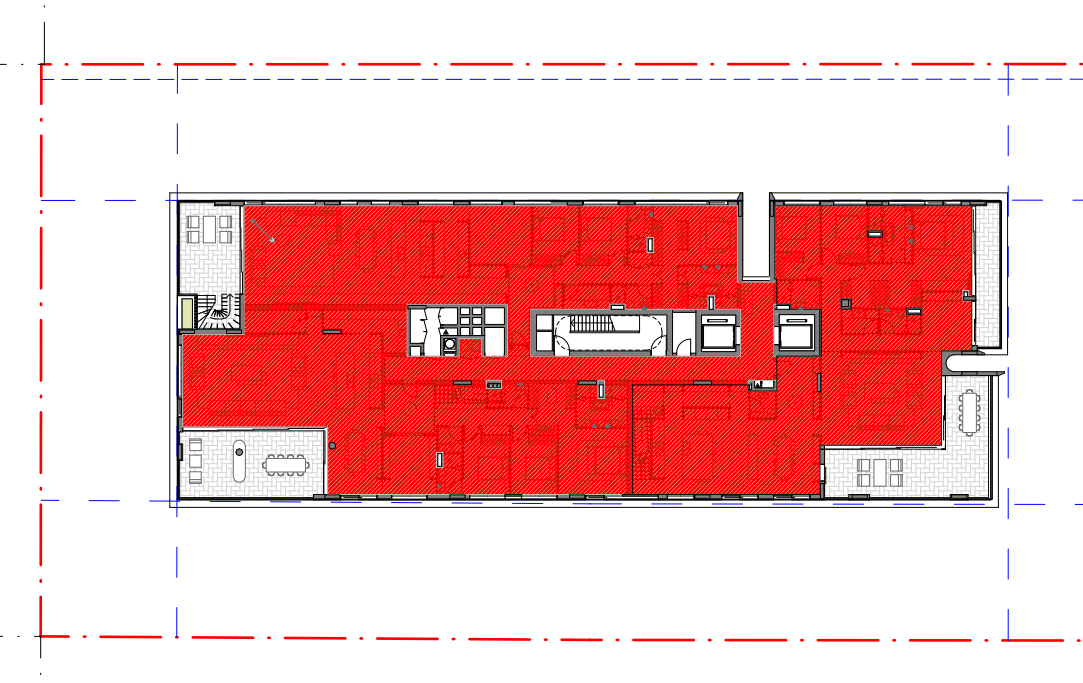
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3 LEVEL 04
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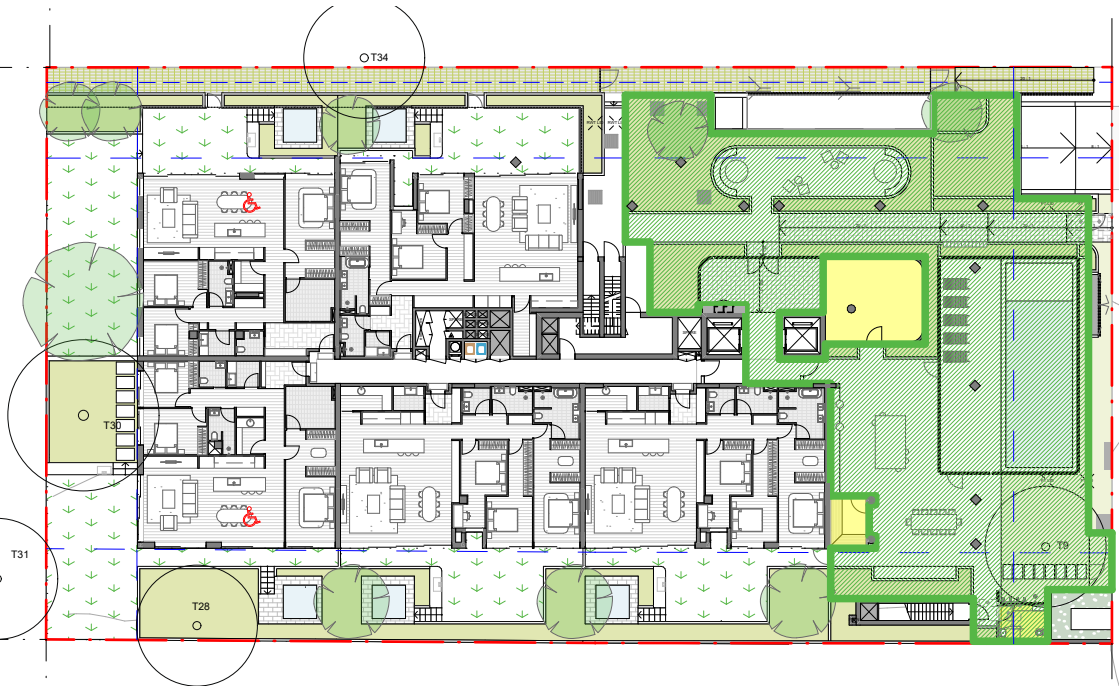


4 LEVEL 05-06
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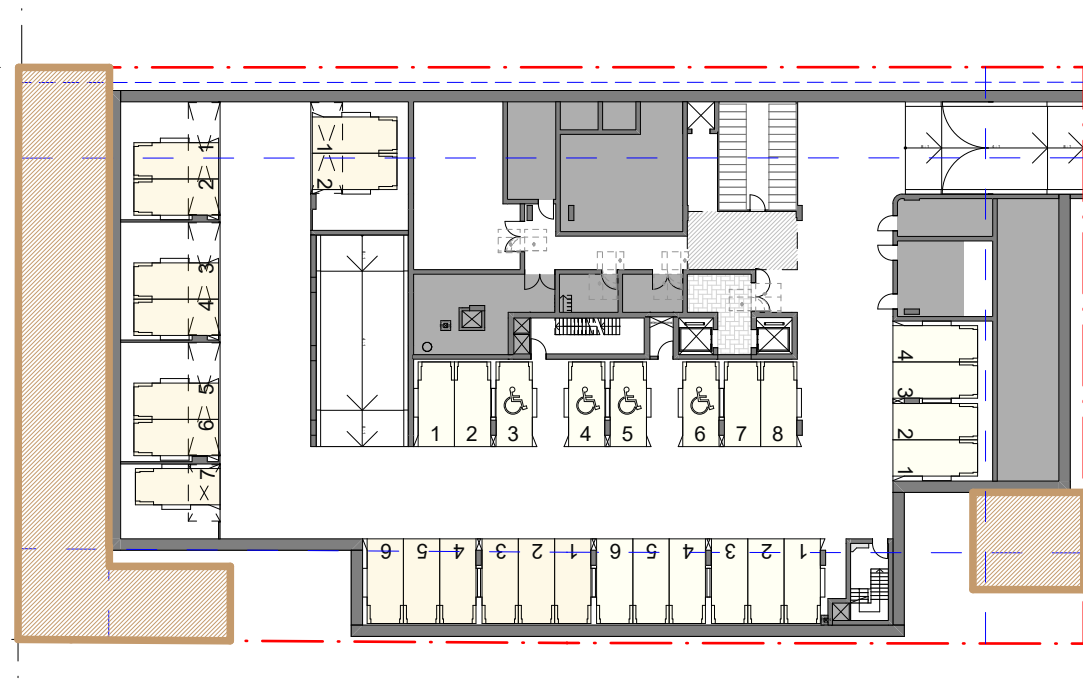


5 LEVEL 07
SCALE: 1:500@A1

COS & DEEP SOIL AREA CALCULATIONS		
	COS	DEEP SOIL
Area	670.4	313.6

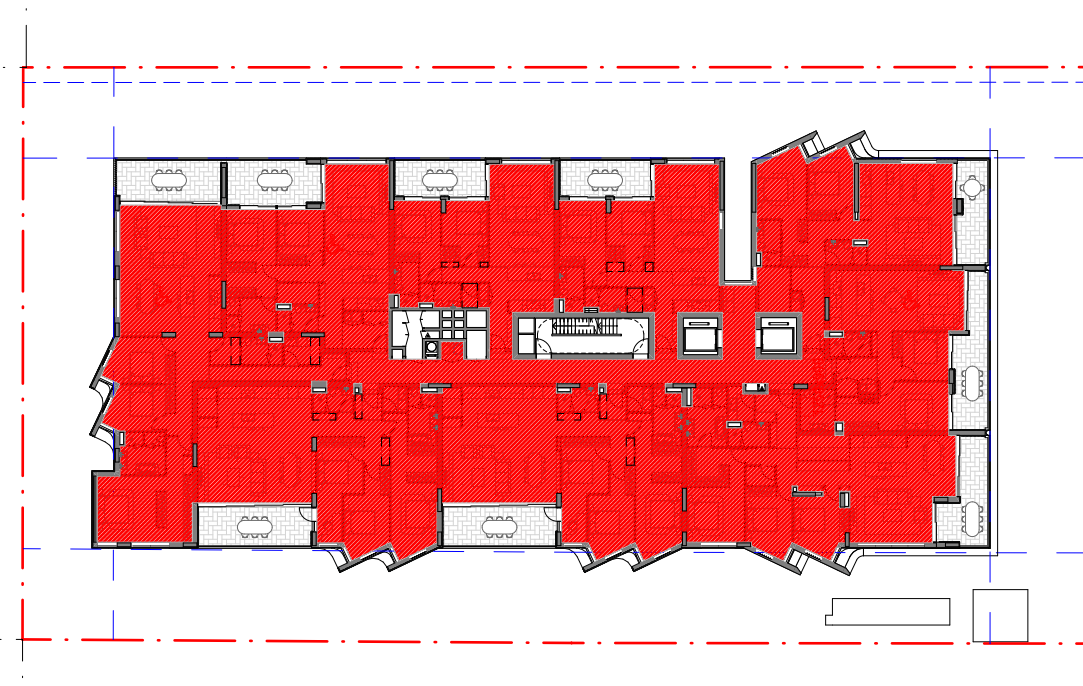


6 COMMUNAL OPEN SPACE AREA
SCALE: 1:500@A1



7 DEEP SOIL AREA
SCALE: 1:500@A1

AFFORDABLE HOUSING AREA CALCULATIONS		
	LEVEL 01	TOTAL
AREA	1,185.8	1,185.8



8 LEVEL 01
SCALE: 1:500@A1

REV	DATE	REVISION DESCRIPTION	BY	CHK
A	A	Issue	WS	JW

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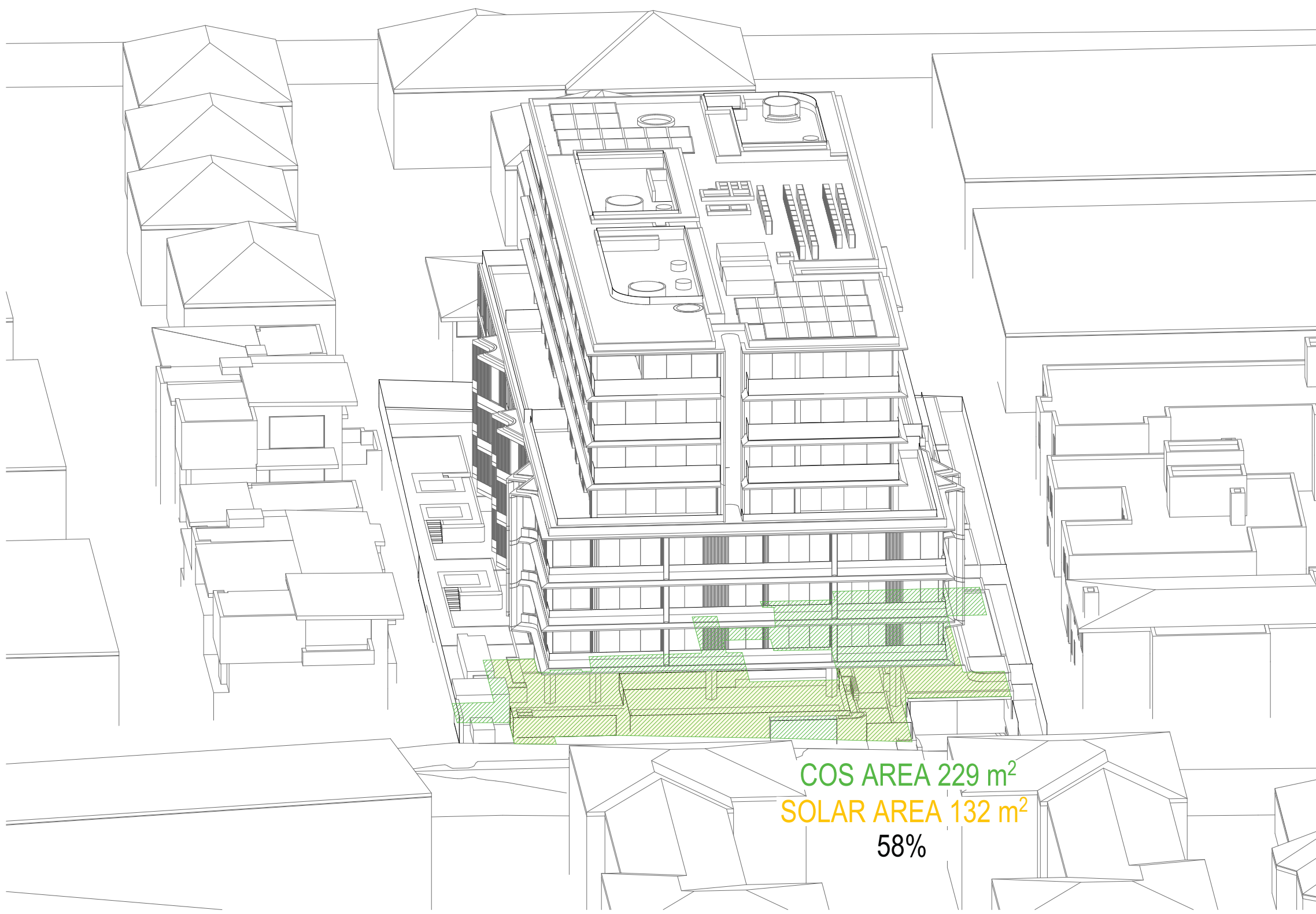
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SCALE 1500, 1:1 @ A1 Size
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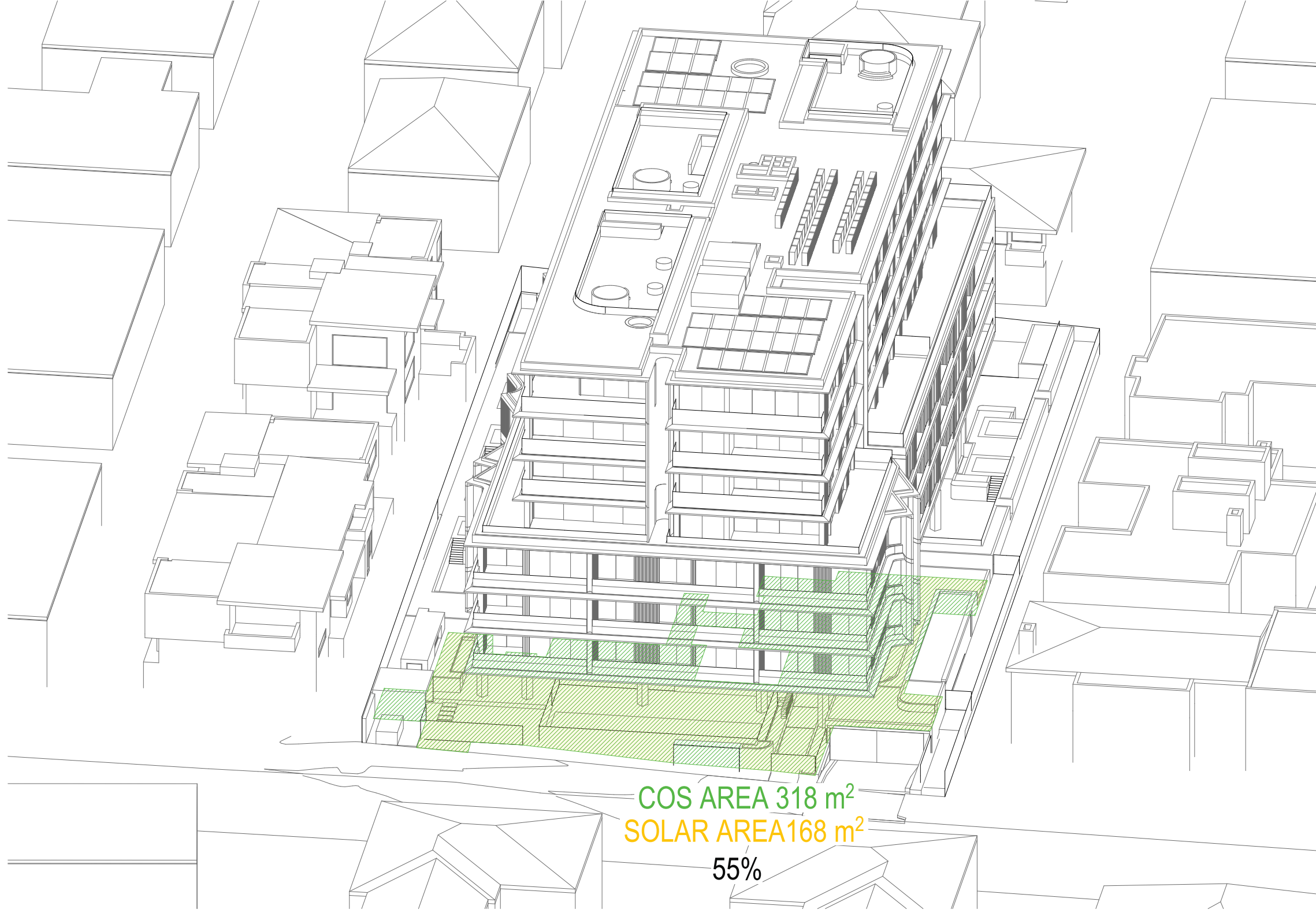
PLUS
STUDIO

PROJECT TITLE
DARLEY ST E MONA VALE
PROJECT ADDRESS
35-39 DARLEY ST E MONA VALE NSW 2103 AUSTRALIA
CLIENT
Darley Vale Pty Ltd
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CHECKED
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DRAWN
WS

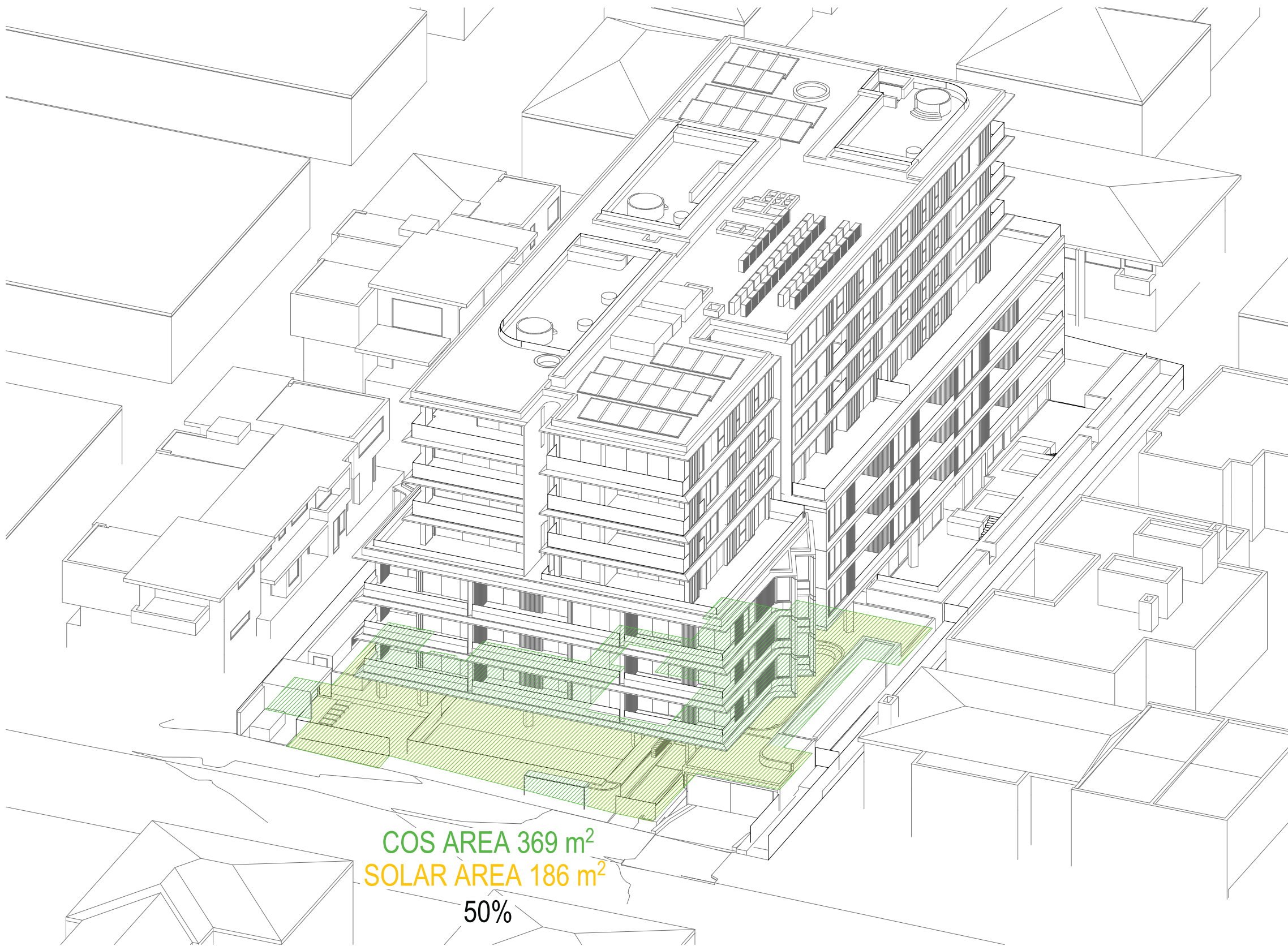
DRAWING TITLE
AREA & AMENITIES DIAGRAMS
PROJECT NUMBER
20895
DRAWING NUMBER
PLA-DA-5000
STAGE
DA
REVISION
A



1 9AM
SCALE: @A3



2 10AM
SCALE: @A3



3 11AM
SCALE: @A3

REV	DATE	REVISION DESCRIPTION	BY	CHK
A	A	Issue		

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April-July 10002
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PLUS
STUDIO

PROJECT TITLE

DARLEY ST E MONA VALE

PROJECT ADDRESS

35-39 DARLEY ST E MONA VALE NSW 2103
AUSTRALIA

CLIENT

Darley Vale Pty Ltd

APPROVED

CHECKED

DRAWN

DRAWING TITLE

COS SOLAR AMENITY 9AM-11AM

PROJECT NUMBER

20895

DRAWING NUMBER

PLA-DA-5001

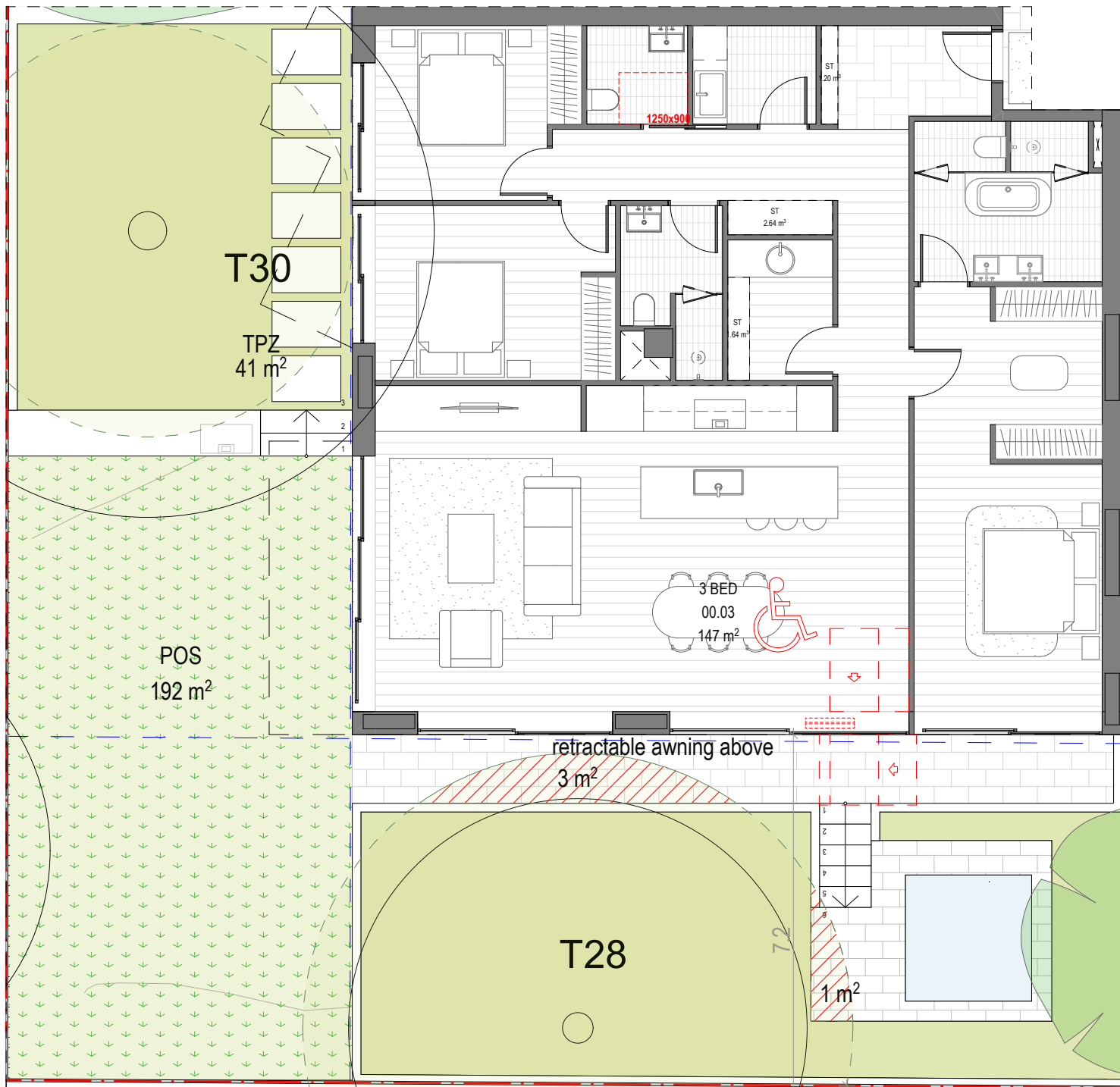
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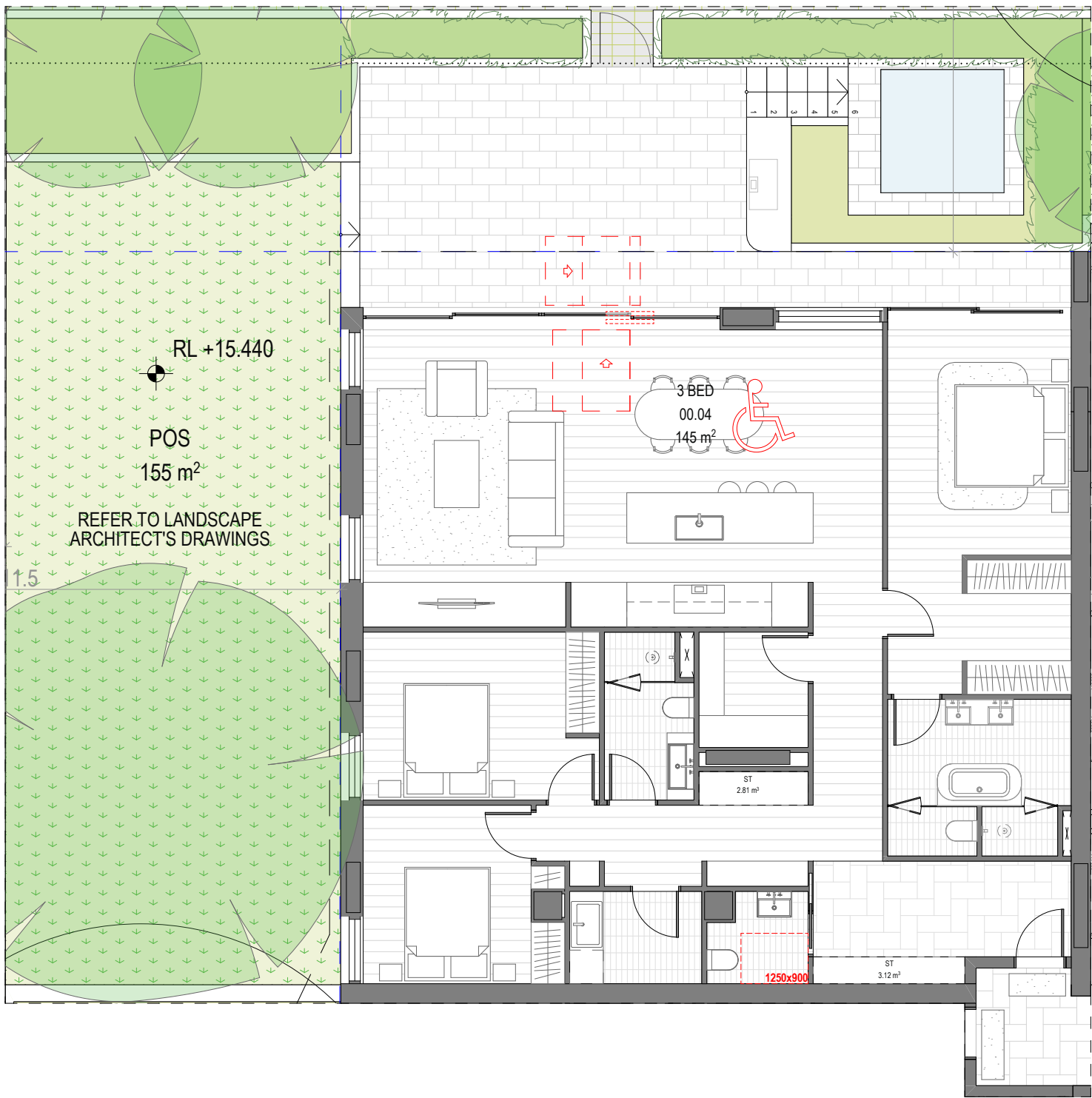
REVISION

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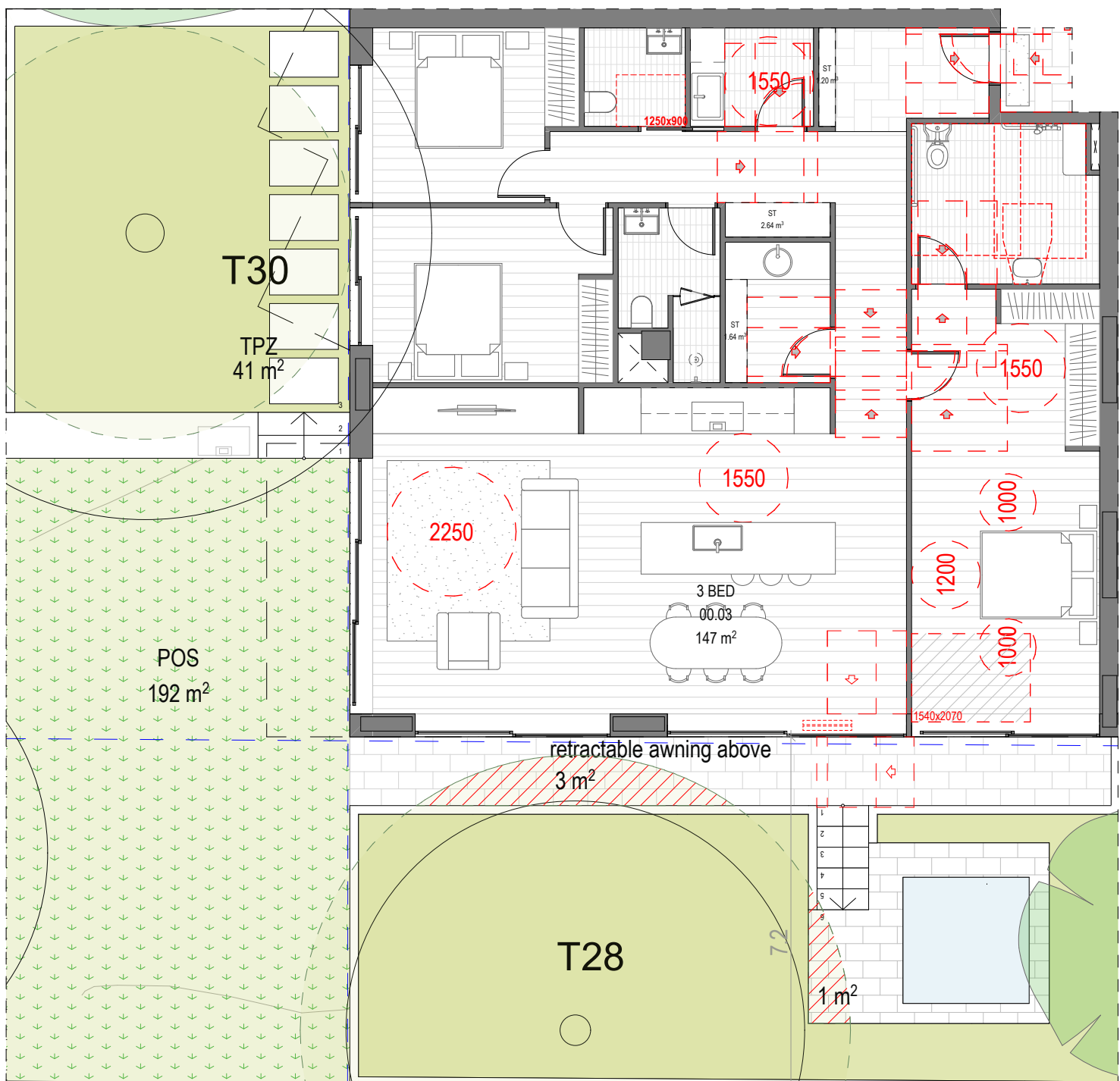
UNIT 00.03 - PRE ADAPTABLE LAYOUT



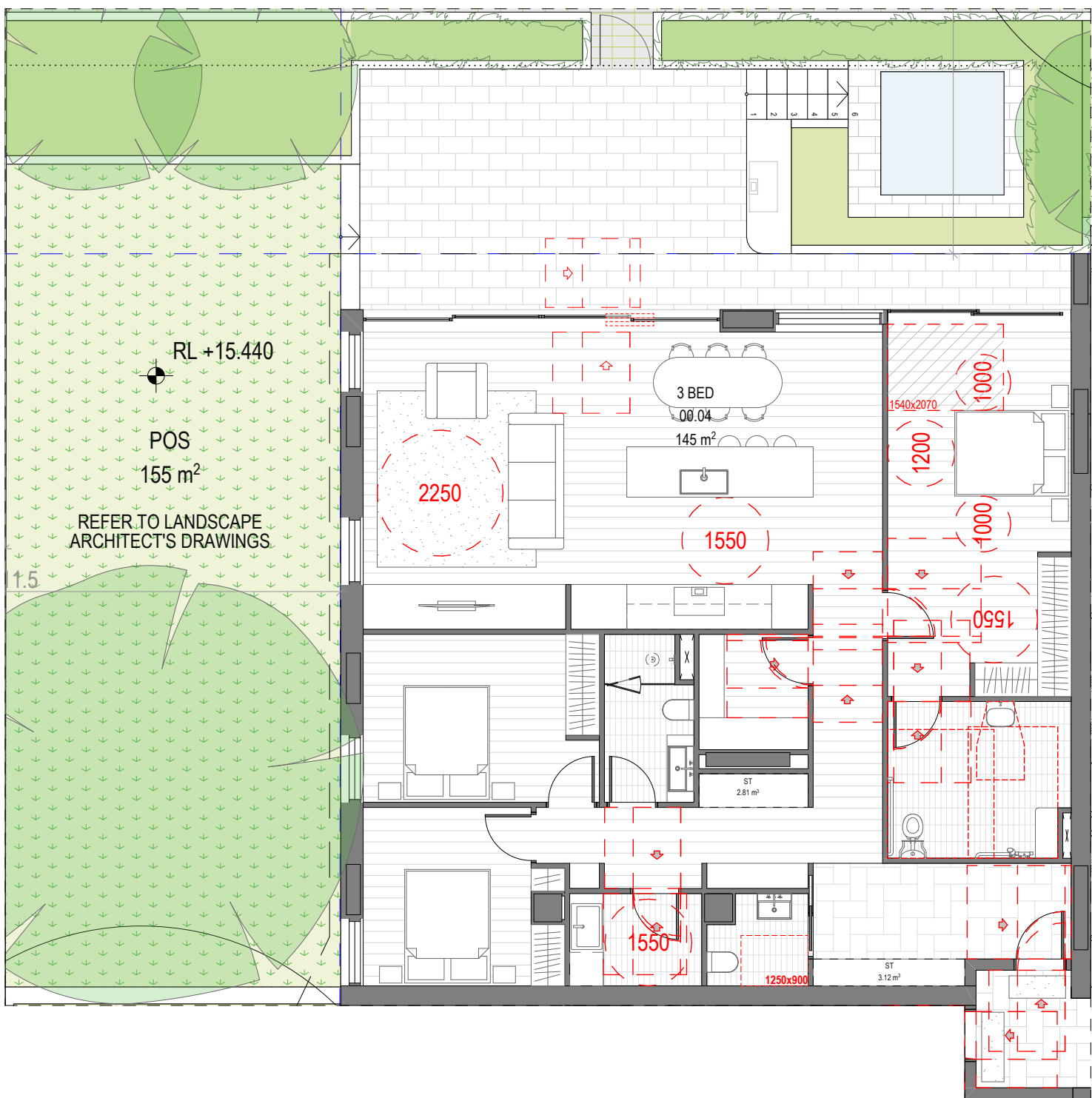
UNIT 00.04 - PRE ADAPTABLE LAYOUT



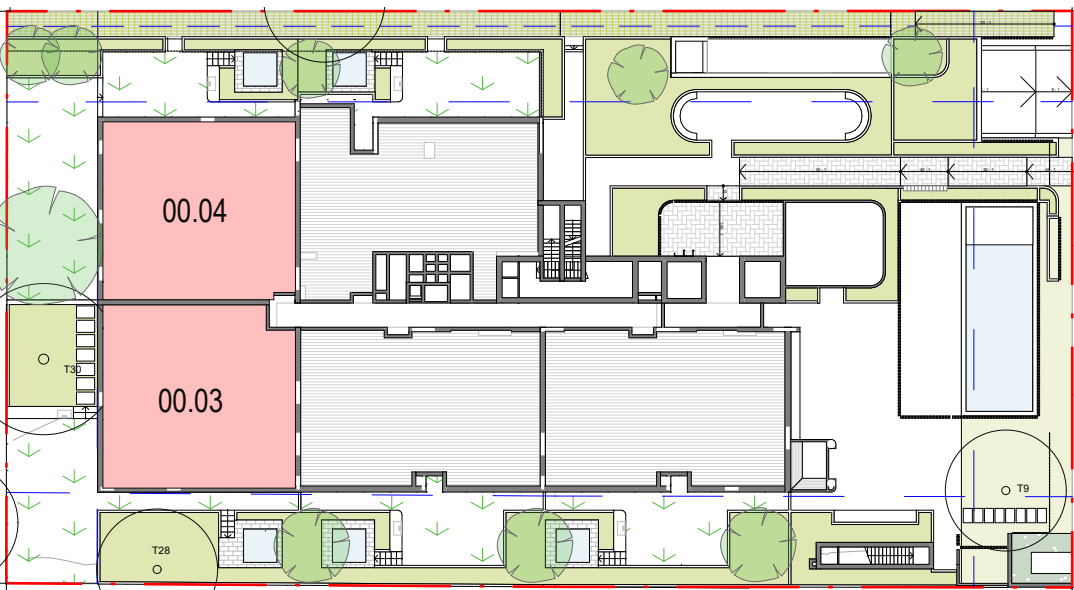
UNIT 00.03 - POST ADAPTABLE LAYOUT



UNIT 00.04 - POST ADAPTABLE LAYOUT



GROUND KEY PLAN



TOTAL CLASS C ADAPTABLE GROUND FLOOR: 2
TOTAL SILVER LEVEL GROUND FLOOR: 2

REV	DATE	REVISION DESCRIPTION	BY	CHK
01	01	Issue		
02	02	Issue	WS	JW
A	A	Issue	WS	JW

Inca

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STUDIO

PROJECT TITLE

DARLEY ST E MONA VALE

PROJECT ADDRESS

35-39 DARLEY ST E MONA VALE NSW 2103
AUSTRALIA

CLIENT

Darley Vale Pty Ltd

APPROVED
AJ

CHECKED
JW

DRAWN
WS

DRAWING TITLE

ADAPTABLE APARTMENT
TYPOLOGIES - SHEET 01

PROJECT NUMBER

20895

DRAWING NUMBER

PLA-DA-6000

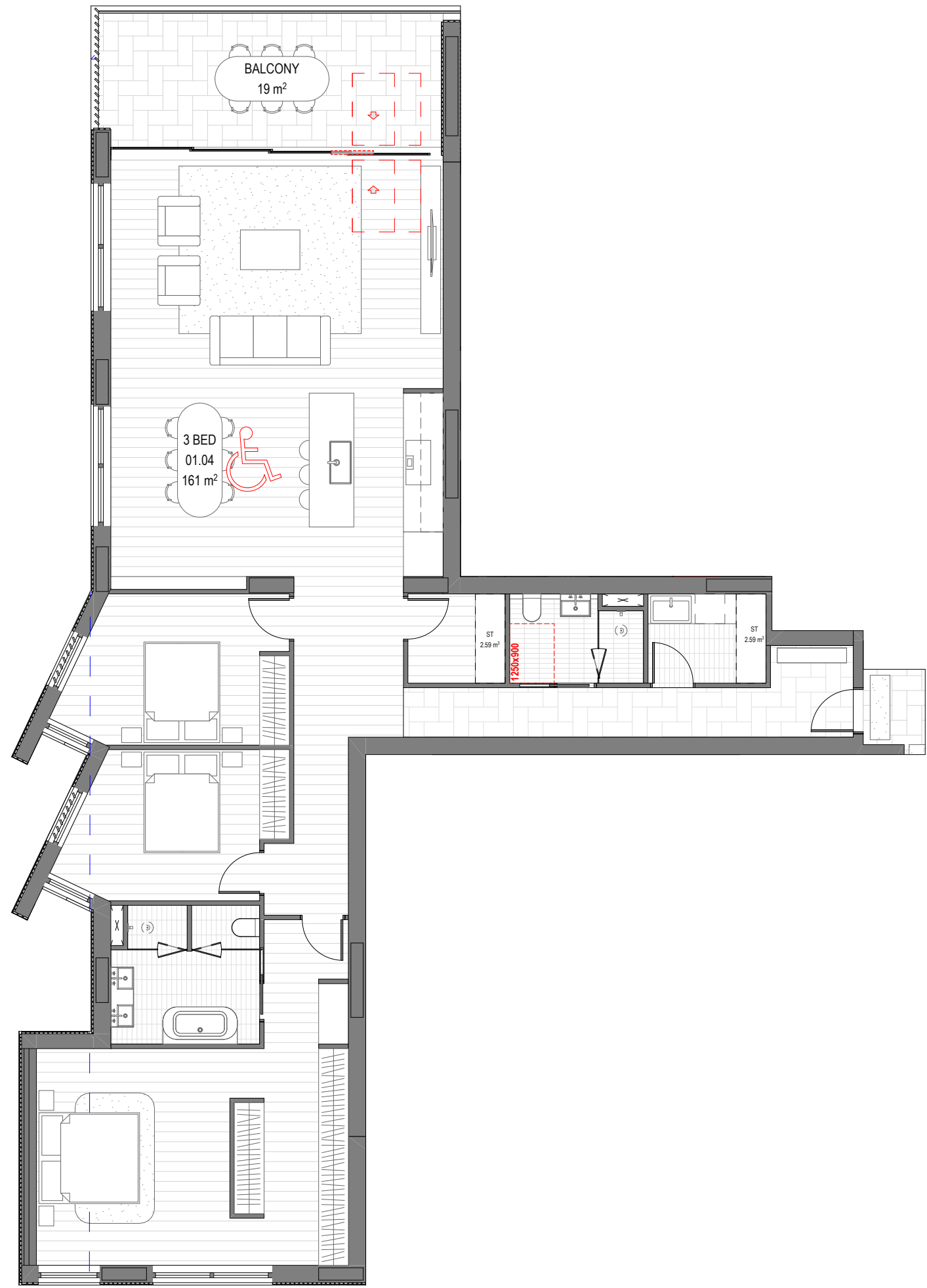
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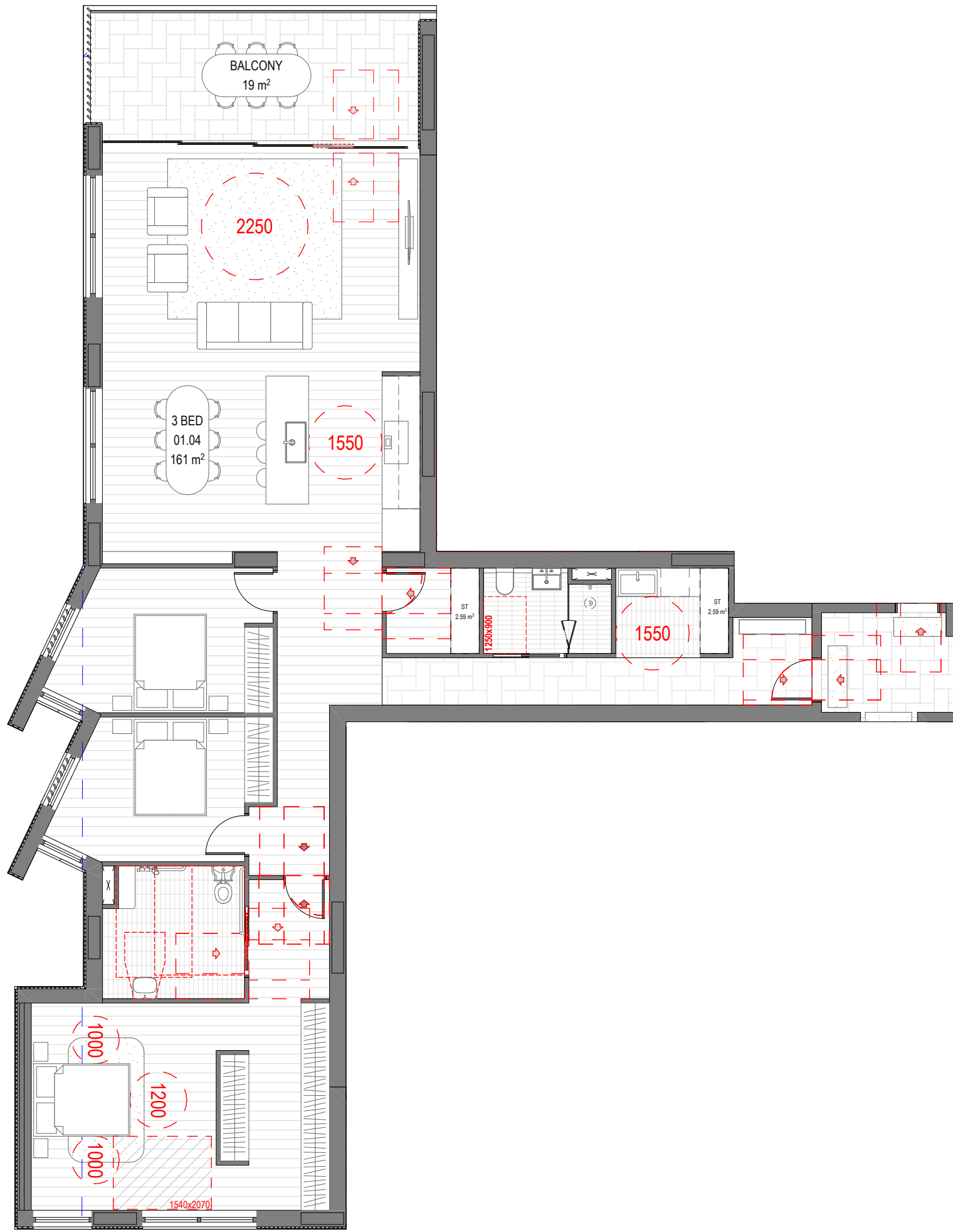
REVISION

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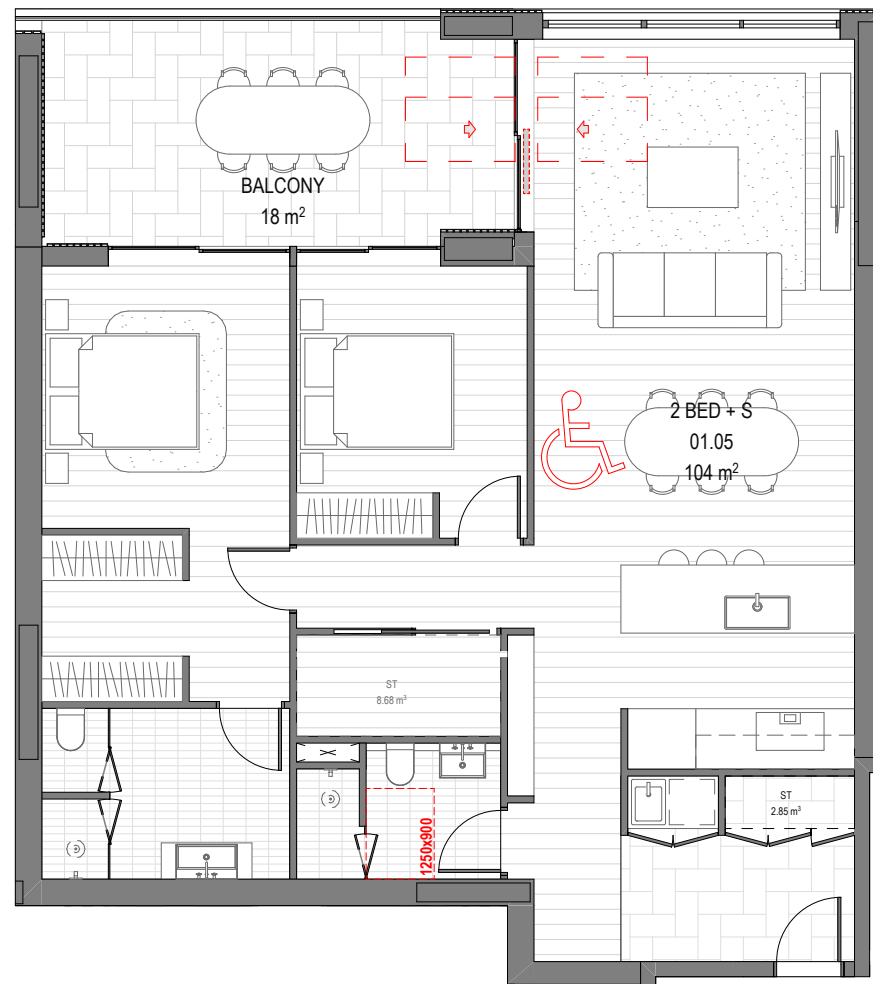
UNIT 01-03.04 - PRE ADAPTABLE LAYOUT



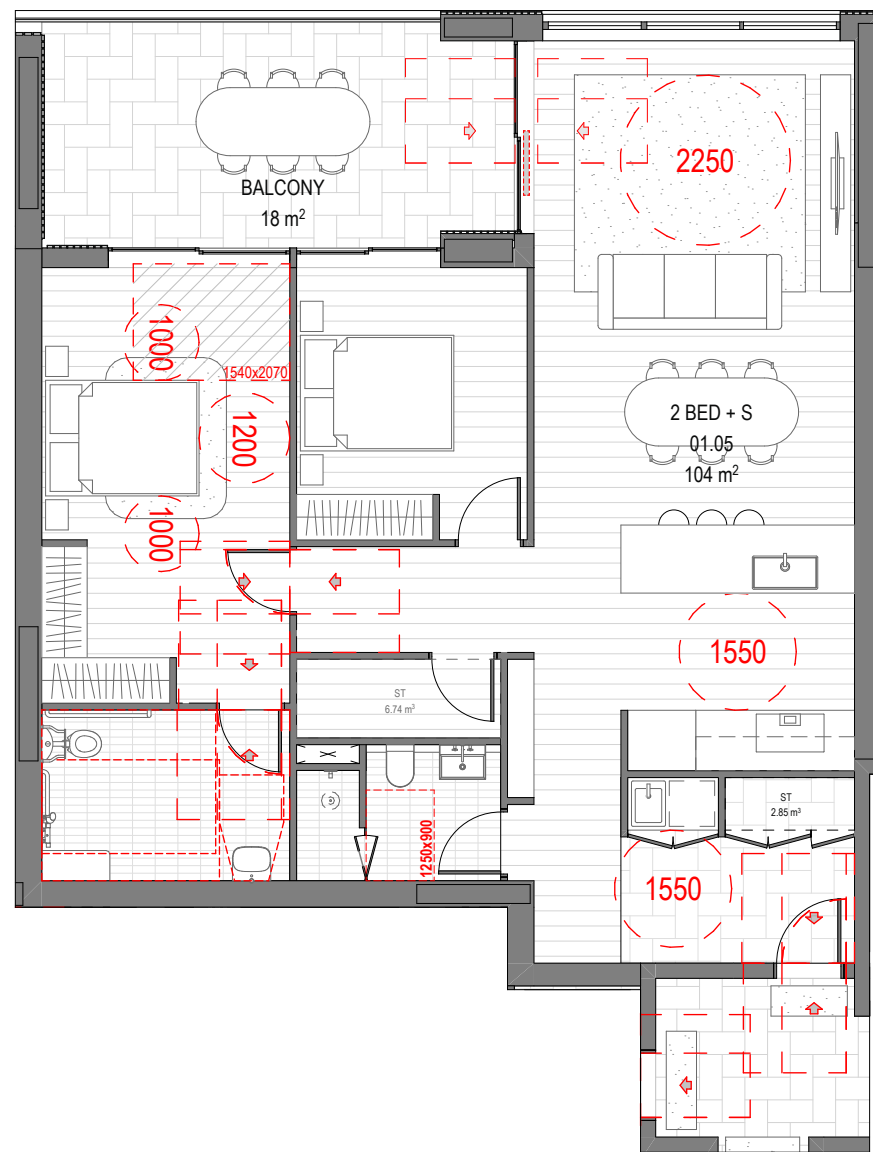
UNIT 01-03.04 - POST ADAPTABLE LAYOUT



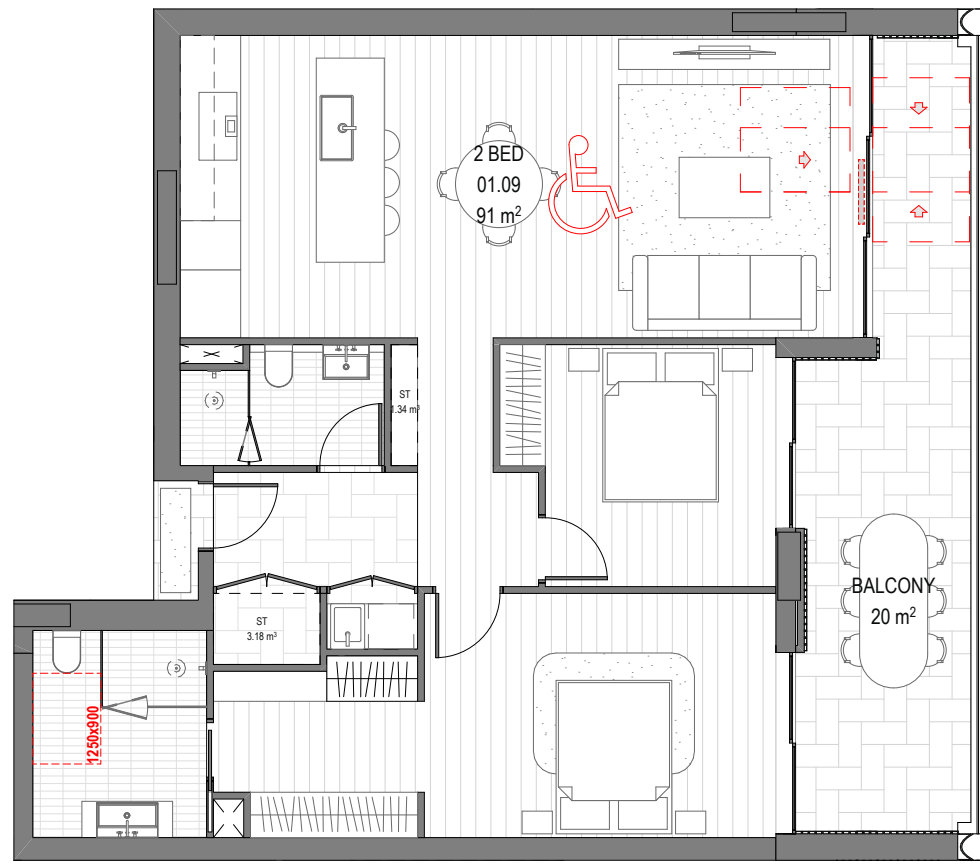
UNIT 01-03.05 - PRE ADAPTABLE LAYOUT



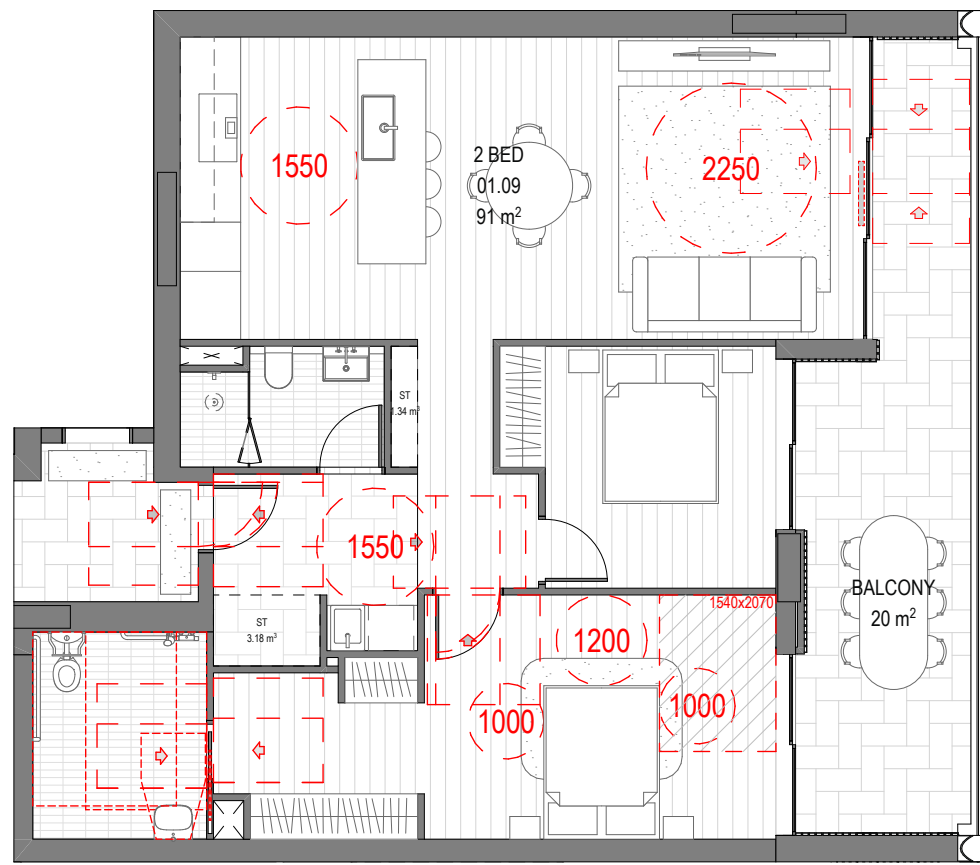
UNIT 01-03.05 - POST ADAPTABLE LAYOUT



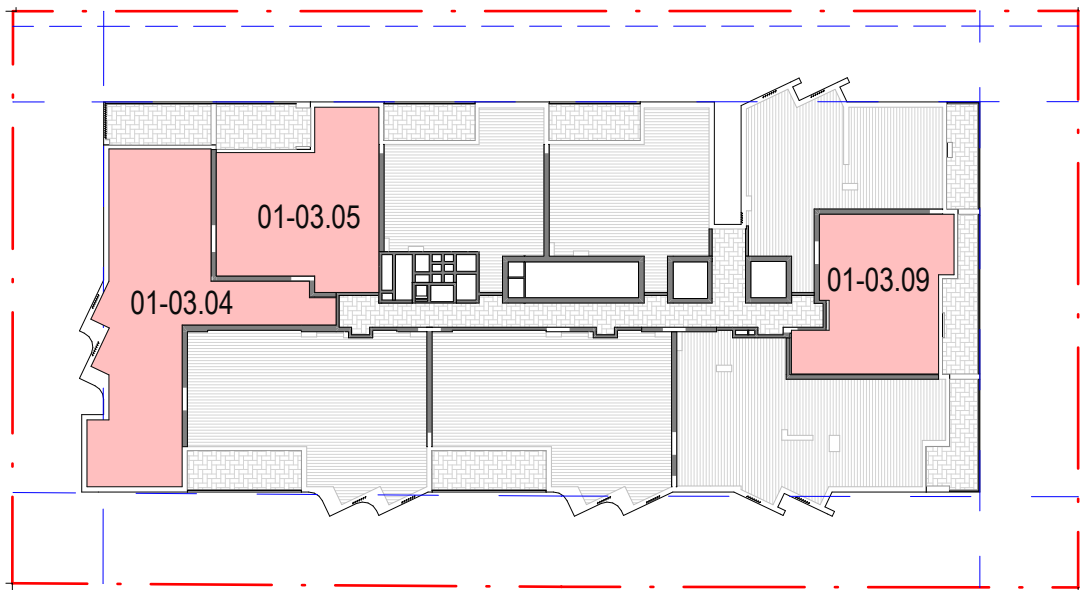
UNIT 01-03.09 - PRE ADAPTABLE LAYOUT



UNIT 01-03.09 - POST ADAPTABLE LAYOUT



LEVEL 01-03 KEY PLAN



TOTAL CLASS C ADAPTABLE LEVEL 01-03: 9
TOTAL SILVER LEVEL LEVEL 01-03: 9

REV	DATE	REVISION DESCRIPTION	BY	CHK
01	01	Issue		
02	02	Issue	WS	JW
A	A	Issue	WS	JW

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**PLUS
STUDIO**

PROJECT TITLE

DARLEY ST E MONA VALE

PROJECT ADDRESS

35-39 DARLEY ST E MONA VALE NSW 2103
AUSTRALIA

CLIENT

Darley Vale Pty Ltd

APPROVED

AJ

CHECKED

JW

DRAWN

WS

DRAWING TITLE

**ADAPTABLE APARTMENT
TYPOLOGIES - SHEET 02**

PROJECT NUMBER

20895

DRAWING NUMBER

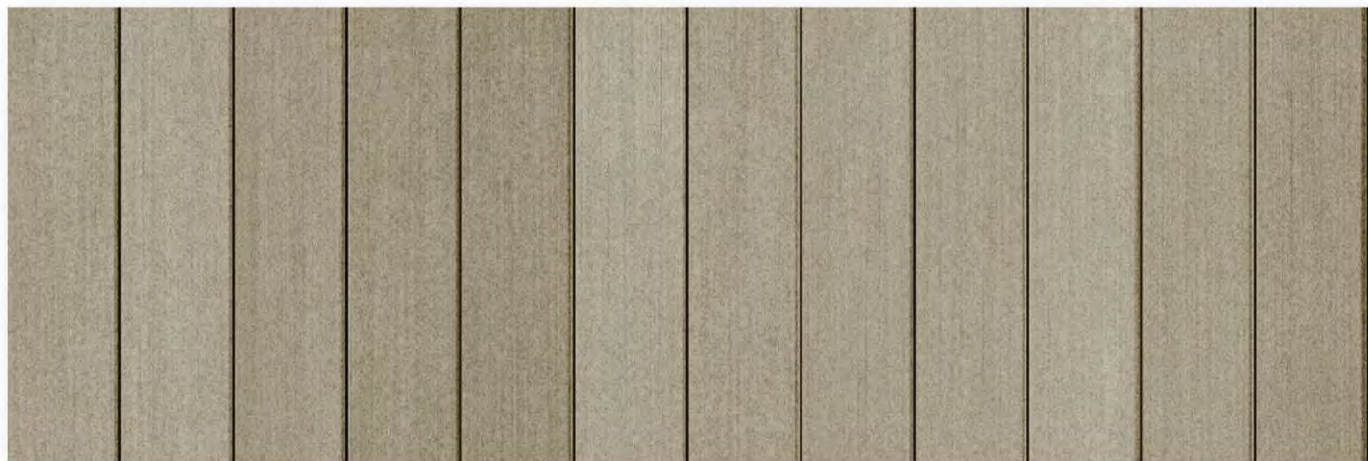
PLA-DA-6001

STAGE

DA

REVISION

A



CL01 - CLADDING TYPE 01, BRONZE



CL01 - CLADDING TYPE 02, OFF-WHITE METAL WORK



AF01 - APPLIED FINISH 01, OFF-WHITE



AF02 - APPLIED FINISH 02, OFF-WHITE VERTICAL PROFILE



GL01 - GLAZING TYPE 01, CLEAR GLAZING
BAL01 - BALUSTRADE TYPE 01, CLEAR GLAZING



REV	DATE	REVISION DESCRIPTION	BY	CHK
A	A	Issue	WS	JW

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PROJECT TITLE

DARLEY ST E MONA VALE

PROJECT ADDRESS

35-39 DARLEY ST E MONA VALE NSW 2103
AUSTRALIA

CLIENT

Darley Vale Pty Ltd

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DRAWING TITLE

MATERIAL SCHEDULE - SHEET 01

PROJECT NUMBER

20895

DRAWING NUMBER

PLA-DA-7000

STAGE

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REVISION

A

APPENDIX B

BASIX Certificate



Senica
consultancy group

BASIX™ Certificate

Building Sustainability Index

www.planningportal.nsw.gov.au/development-and-assessment/basix

Multi Dwelling

Certificate number: 1842502M_02

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled "BASIX Definitions" dated 10/09/2020 published by the Department. This document is available at www.planningportal.nsw.gov.au/definitions

Secretary

Date of issue: Thursday, 14 May 2026

To be valid, this certificate must be submitted with a development application or lodged with a complying development certificate application within 3 months of the date of issue.



When submitting this BASIX certificate with a development application or complying development certificate application, it must be accompanied by NatHERS certificate HR-EJZWLH-01.



For any required changes to this BASIX certificate

Please contact Senica Consultancy Group

P: 0280067784 E: info@senica.com.au

Project summary

Project name	35-39 Darley Street East MONA VALE 2103_02
Street address	35 DARLEY STREET EAST MONA VALE 2103
Local Government Area	NORTHERN BEACHES
Plan type and plan number	Deposited Plan 18919
Lot No.	CP
Section no.	-
No. of residential flat buildings	1
Residential flat buildings: no. of dwellings	53
Multi-dwelling housing: no. of dwellings	0
No. of single dwelling houses	0

Project score

Water	✓ 40	Target 40
Thermal Performance (Simulation method)	✓ Pass	Target Pass
Energy	✓ 66	Target 60
Materials	✓ -94	Target n/a

Certificate Prepared by

Name / Company Name: SENICA CONSULTANCY GROUP PTY LIMITED

ABN (if applicable): 48612864249

Description of project

Project address	
Project name	35-39 Darley Street East MONA VALE 2103_02
Street address	35 DARLEY STREET EAST MONA VALE 2103
Local Government Area	NORTHERN BEACHES
Plan type and plan number	Deposited Plan 18919
Lot No.	CP
Section no.	-
Project type	
No. of residential flat buildings	1
Residential flat buildings: no. of dwellings	53
Multi-dwelling housing: no. of dwellings	0
No. of single dwelling houses	0
Site details	
Site area (m²)	2679.40
Roof area (m²)	2386.5
Non-residential floor area (m²)	0
Residential car spaces	124
Non-residential car spaces	0

Common area landscape		
Common area lawn (m²)	0	
Common area garden (m²)	264.53	
Area of indigenous or low water use species (m²)	264.53	
Assessor details and thermal loads		
Assessor number	DMN/14/1658	
Certificate number	HR-EJZWLH-01	
Climate zone	56	
Project score		
Water	40	Target 40
Thermal Performance (Simulation method)	Pass	Target Pass
Energy	66	Target 60
Materials	-94	Target n/a

Description of project

The tables below describe the dwellings and common areas within the project

Residential flat buildings - Building1, 53 dwellings, 8 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
0.01	3	155.6	0	36.28	0
0.05	3	145.5	0	30.5	0
1.04	3	158.4	0	0	0
1.08	2	105.5	0	0	0
2.03	3	140.9	0	0	0
2.07	2	88.2	0	0	0
3.02	3	140.9	0	0	0
3.06	2	86.4	0	0	0
4.01	3	138.2	0	14.99	0
4.05	2	104.5	0	16.77	0
5.03	3	135	0	0	0
6.01	3	138.9	0	0	0
6.05	1	95.2	0	0	0
7.03	1	215.7	0	1.47	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
0.02	3	153.8	0	36.6	0
1.01	3	142.9	0	0	0
1.05	2	101.6	0	0	0
1.09	2	88.5	0	0	0
2.04	3	158.4	0	0	0
2.08	2	105.5	0	0	0
3.03	3	140.9	0	0	0
3.07	2	88.2	0	0	0
4.02	3	147.9	0	0	0
4.06	3	102.6	0	0	0
5.04	2	100.4	0	0	0
6.02	3	134.7	0	0	0
6.06	1	102.6	0	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
0.03	3	145.5	0	163.58	0
1.02	3	140.9	0	0	0
1.06	2	86.4	0	0	0
2.01	3	142	0	0	0
2.05	2	101.6	0	0	0
2.09	2	88.5	0	0	0
3.04	3	158.4	0	0	0
3.08	2	105.5	0	0	0
4.03	2	134.8	0	0	0
5.01	3	138.9	0	0	0
5.05	2	95.2	0	0	0
6.03	1	135.1	0	0	0
7.01	1	252	0	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
0.04	3	143.1	0	118.88	0
1.03	3	140.4	0	0	0
1.07	2	88.2	0	0	0
2.02	3	140.9	0	0	0
2.06	2	86.4	0	0	0
3.01	3	142	0	0	0
3.05	2	101.6	0	0	0
3.09	2	88.5	0	0	0
4.04	2	100.4	0	0	0
5.02	3	134.7	0	0	0
5.06	2	102.6	0	0	0
6.04	1	100.4	0	0	0
7.02	1	228.8	0	0	0

Description of project

The tables below describe the dwellings and common areas within the project

Common areas of unit building - Building1

Common area	Floor area (m²)
Gym	35
Basement 01	1411.83
Switch room (Lvl. 3)	7.7
Switch room (Lvl. 6)	7.7
Switch room MSB	22
Bulky Waste	11
Pool Plant	16
Ground floor lobby	40
Hallway/lobby type (Lvl. 3)	68
Hallway/lobby type (Lvl. 6)	64
Lift bank (No. 1)	-

Common area	Floor area (m²)
Basement 03	1687.3
Switch room (Lvl. 1)	7.7
Switch room (Lvl. 4)	7.7
Switch room (Lvl. 7)	7.7
Bin Room	47
Fire Pump Room	29
Storage	49.42
Hallway/lobby type (Lvl. 1)	68
Hallway/lobby type (Lvl. 4)	64
Hallway/lobby type (Lvl. 7)	64
Lift bank (No. 2)	-

Common area	Floor area (m²)
Basement 02	1658.3
Switch room (Lvl. 2)	7.7
Switch room (Lvl. 5)	7.7
Switch room (GF)	7.7
Fogo Bins	12
CW Pump Room	21
Amenities	8
Hallway/lobby type (Lvl. 2)	68
Hallway/lobby type (Lvl. 5)	64
Hallway/lobby type (Bas. 01)	20

Schedule of BASIX commitments

1. Commitments for Residential flat buildings - Building1

(a) Buildings

(i) Materials

(b) Dwellings

(i) Water

(ii) Energy

(iii) Thermal Performance

(c) Common areas and central systems/facilities

(i) Water

(ii) Energy

2. Commitments for multi-dwelling housing

(a) Dwellings

(i) Water

(ii) Energy

(iii) Thermal Performance and Materials

3. Commitments for single dwelling houses

(a) Dwellings

(i) Water

(ii) Energy

(iii) Thermal Performance and Materials

4. Commitments for common areas and central systems/facilities for the development (non-building specific)

(b) Common areas and central systems/facilities

(i) Water

(ii) Energy

Schedule of BASIX commitments

The commitments set out below regulate how the proposed development is to be carried out. It is a condition of any development consent granted, or complying development certificate issued, for the proposed development, that BASIX commitments be complied with.

1. Commitments for Residential flat buildings - Building1

(a) Buildings

(i) Materials	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX Certificate, including the details shown in the "Floor types", "External wall types", "Internal wall types", "Ceiling and roof types", "Frames" and "Glazing" tables below.			✓
(b) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all specifications included in the tables below.		✓	
(c) The applicant must construct the floors, walls, roof, ceiling and roof, windows, glazed doors and skylights of the development in accordance with the specifications listed in the tables below. In the case of glazing, a 5% variance from the area values listed in the "Frames" and "Glazing" tables is permitted.	✓	✓	✓
(d) The applicant must show through receipts that the materials purchased for construction are consistent with the specifications listed in the below tables.			✓

Floor types

Floor type	Area (m2)	Insulation	Low emissions option
garage floor, frame: concrete slab on ground	4637.25	-	none
suspended floor above garage, frame: suspended concrete slab	610.8	-	-
floors above habitable rooms, frame: suspended concrete slab	6656.7	-	-
suspended floor above open subfloor, frame: suspended concrete slab	424.4	-	-

External wall types

External wall type	Construction type	Area (m2)	Low emissions option	Insulation
External wall type 1	AAC veneer, frame: light steel frame	1986.6	-	fibreglass batts or roll

External wall types				
External wall type	Construction type	Area (m2)	Low emissions option	Insulation
External wall type 2	concrete panel/ plasterboard,frame:no frame	588	-	-

Internal wall types			
Internal wall type	Construction type	Area (m2)	Insulation
Internal wall type 1	200 mm AAC block, frame:light steel frame	4237.7	fibreglass batts or roll
Internal wall type 2	plasterboard, frame:light steel frame	5966.8	-

Reinforcement concrete frames/columns		
Building has reinforced concrete frame/columns?	Volume (m³)	Low emissions option
-	-	-

Ceiling and roof types			
Ceiling and roof type	Area (m²)	Roof Insulation	Ceiling Insulation
concrete - plasterboard internal, frame: light steel frame	2386.5	-	foil-foam composite board

Glazing types			Frame types				
Single glazing (m²)	Double glazing (m²)	Triple glazing (m²)	Aluminium frames (m²)	Timber frames (m²)	uPVC frames (m²)	Steel frames (m²)	Composite frames (m²)
-	2332.2	-	2332.2	-	-	-	-

(b) Dwellings

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must plant indigenous or low water use species of vegetation throughout the area of land specified for the dwelling in the "Indigenous species" column of the table below, as private landscaping for that dwelling. (This area of indigenous vegetation is to be contained within the "Area of garden and lawn" for the dwelling specified in the "Description of Project" table).	✓	✓	
(c) If a rating is specified in the table below for a fixture or appliance to be installed in the dwelling, the applicant must ensure that each such fixture and appliance meets the rating specified for it.		✓	✓
(d) The applicant must install an on demand hot water recirculation system which regulates all hot water use throughout the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below.		✓	✓
(e) The applicant must install: (aa) a hot water diversion system to all showers, kitchen sinks and all basins in the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below; and (bb) a separate diversion tank (or tanks) connected to the hot water diversion systems of at least 100 litres. The applicant must connect the hot water diversion tank to all toilets in the dwelling.		✓ ✓	✓ ✓
(e) The applicant must not install a private swimming pool or spa for the dwelling, with a volume exceeding that specified for it in the table below.	✓	✓	
(f) If specified in the table, that pool or spa (or both) must have a pool cover or shading (or both).		✓	
(g) The pool or spa must be located as specified in the table.	✓	✓	
(h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified.	✓	✓	✓

	Fixtures					Appliances		Individual pool				Individual spa		
Dwelling no.	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	4 star (> 6 but ≤ 7.5 L/min)	4 star	5 star	5 star	-	not specified	3.5 star	-	-	-	-	-	-	-

Dwelling no.	Alternative water source							
	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up
0.01, 0.02, 0.03, 0.04, 0.05	Central water tank (No. 1)	See central systems	See central systems	yes	no	no	no	no
All other dwellings	No alternative water supply	-	-	-	-	-	-	-

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must install each hot water system specified for the dwelling in the table below, so that the dwelling's hot water is supplied by that system. If the table specifies a central hot water system for the dwelling, then the applicant must connect that central system to the dwelling, so that the dwelling's hot water is supplied by that central system.	✓	✓	✓
(c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation system specified for that room in the table below. Each such ventilation system must have the operation control specified for it in the table.		✓	✓
(d) The applicant must install the cooling and heating system/s specified for the dwelling under the "Living areas" and "Bedroom areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 living/bedroom area of the dwelling. If no cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", then no systems may be installed in any such areas. If the term "zoned" is specified beside an air conditioning system, then the system must provide for day/night zoning between living areas and bedrooms.		✓	✓
(e) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Artificial lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that the "primary type of artificial lighting" for each such room in the dwelling is fluorescent lighting or light emitting diode (LED) lighting. If the term "dedicated" is specified for a particular room or area, then the light fittings in that room or area must only be capable of being used for fluorescent lighting or light emitting diode (LED) lighting.		✓	✓
(f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight.	✓	✓	✓
(g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must: (aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and (bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump.		✓ ✓	
(h) The applicant must install in the dwelling:			

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below; (bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and (cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		  	
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".			

	Hot water	Bathroom ventilation system		Kitchen ventilation system		Laundry ventilation system	
Dwelling no.	Hot water system	Each bathroom	Operation control	Each kitchen	Operation control	Each laundry	Operation control
All dwellings	gas instantaneous - 6 star	individual fan, ducted to façade	interlocked to light with timer off	individual fan, ducted to façade	manual switch on/off	individual fan, ducted to façade	manual switch on/off

	Cooling		Heating		Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bathrooms or toilets	Main kitchen
All dwellings	1-phase airconditioning - ducted / 4 star (average zone)	1-phase airconditioning - ducted / 4 star (average zone)	1-phase airconditioning - ducted / 4 star (average zone)	1-phase airconditioning - ducted / 4 star (average zone)	0	no

	Individual pool			Individual spa		Appliances other efficiency measures				
Dwelling no.	Pool heating system	Pool Pump	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Dishwasher	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	-	gas cooktop & electric oven	3 star	-	no	no

(iii) Thermal Performance	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must attach the certificate referred to under "Assessor details" on the front page of this BASIX certificate (the "Assessor Certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, to that application). The applicant must also attach the Assessor Certificate to the application for a final occupation certificate for the proposed development.			
(b) The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.			
(c) The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX Certificate, including the details shown in the "Thermal Loads" table below.			
(d) The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Thermal Comfort Protocol requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor, to certify that this is the case.	✓		
(e) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.		✓	
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✓	✓
(g) Where there is an in-slab heating or cooling system, the applicant must: (aa) Install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab; or (bb) On a suspended floor, install insulation with an R-value of not less than 1.0 underneath the slab and around the vertical edges of the perimeter of the slab.	✓	✓	✓
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	✓	✓	✓
(i) The applicant must show on The plans accompanying The development application for The proposed development, The locations of ceiling fans set out in The Assessor Certificate.	✓		
(j) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), the locations of ceiling fans set out in the Assessor Certificate.		✓	

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m ² /yr)	Area adjusted cooling load (in MJ/m ² /yr)	Area adjusted total load (in MJ/m ² /yr)
0.01	19	6.5	25.500
0.02	10.9	13.7	24.600
0.03	22.2	10.8	33.000
0.04	10	18.5	28.500

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m ² /yr)	Area adjusted cooling load (in MJ/m ² /yr)	Area adjusted total load (in MJ/m ² /yr)
0.05	4.5	19.2	23.700
1.01	7.5	8.6	16.100
1.02	9.6	7.8	17.400
1.03	10.1	8.4	18.500
1.04	6	9.3	15.300
1.05	1.8	8.1	9.900
1.06	1.7	9.1	10.800
1.07	4.2	11.8	16.000
1.08	9.1	9.6	18.700
1.09	4	8.3	12.300
2.01	4.7	9.9	14.600
2.02	10	8.3	18.300
2.03	10	8.5	18.500
2.04	6.3	9.2	15.500
2.05	1.7	7.5	9.200
2.06	1.8	10.2	12.000
2.07	2.3	13.1	15.400
2.08	4.8	10.3	15.100
2.09	1.7	8.6	10.300
3.01	7.3	7.4	14.700
3.02	14.3	7.1	21.400
3.03	14.6	7	21.600
3.04	15.1	6.9	22.000
3.05	2.9	5.3	8.200
3.06	2.5	7.1	9.600
3.07	3.5	9.4	12.900
3.08	6.5	8.3	14.800
3.09	2.1	7.7	9.800
4.01	7.4	7.9	15.300
4.02	13.3	13.3	26.600
4.03	20.3	8.8	29.100

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m ² /yr)	Area adjusted cooling load (in MJ/m ² /yr)	Area adjusted total load (in MJ/m ² /yr)
4.04	12.8	19.5	32.300
4.05	2.4	11.5	13.900
4.06	4.9	11.4	16.300
5.01	6.4	17.7	24.100
5.02	21.8	11.6	33.400
5.03	15.8	11.4	27.200
5.04	7.2	12.5	19.700
5.05	8.1	7.4	15.500
5.06	5.4	10.6	16.000
6.01	9.6	18.1	27.700
6.02	22	11.2	33.200
6.03	19.9	10.2	30.100
6.04	7.9	11.9	19.800
6.05	8.5	7.1	15.600
6.06	3.7	11.1	14.800
7.01	19.3	7.6	26.900
7.02	23.9	13.6	37.500
All other dwellings	7.2	10.6	17.800

(c) Common areas and central systems/facilities

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a showerhead, toilet, tap or clothes washer into a common area, then that item must meet the specifications listed for it in the table.		✓	✓
(b) The applicant must install (or ensure that the development is serviced by) the alternative water supply system(s) specified in the "Central systems" column of the table below. In each case, the system must be sized, be configured, and be connected, as specified in the table.	✓	✓	✓
(c) A swimming pool or spa listed in the table must not have a volume (in kLs) greater than that specified for the pool or spa in the table.	✓	✓	
(d) A pool or spa listed in the table must have a cover or shading if specified for the pool or spa in the table.		✓	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		✓	✓
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✓	✓

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	4 star (> 6 but <= 7.5 L/min)	4 star	4 star	no common laundry facility

Central systems	Size	Configuration	Connection (to allow for...)
Swimming pool (No. 1)	Volume: 100 kLs	Location: Building1 Pool shaded: no	-
Central water tank - rainwater or stormwater (No. 1)	11000	To collect run-off from at least: - 450 square metres of roof area of buildings in the development - 0 square metres of impervious area in the development - 0 square metres of garden/lawn area in the development - 0 square metres of planter box area in the development (excluding, in each case, any area which drains to, or supplies, any other alternative water supply system).	- irrigation of 264.53 square metres of common landscaped area on the site - car washing in 0 car washing bays on the site
Fire sprinkler system (No. 1)	-	So that fire sprinkler test water is contained within the fire sprinkler system for re-use, rather than disposed.	-
Fire sprinkler system (No. 2)	-	So that fire sprinkler test water is contained within the fire sprinkler system for re-use, rather than disposed.	-

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a ventilation system to service a common area specified in the table below, then that ventilation system must be of the type specified for that common area, and must meet the efficiency measure specified.		✓	✓
(b) In carrying out the development, the applicant must install, as the "primary type of artificial lighting" for each common area specified in the table below, the lighting specified for that common area. This lighting must meet the efficiency measure specified. The applicant must also install a centralised lighting control system or Building Management System (BMS) for the common area, where specified.		✓	✓
(c) The applicant must install the systems and fixtures specified in the "Central energy systems" column of the table below. In each case, the system or fixture must be of the type, and meet the specifications, listed for it in the table.	✓	✓	✓

Common area	Common area ventilation system		Common area lighting		
	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/ BMS
Gym	no mechanical ventilation	-	light-emitting diode	manual on / manual off	no
Basement 03	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	fluorescent	zoned switching with motion sensor	no
Basement 02	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	fluorescent	zoned switching with motion sensor	no
Basement 01	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	fluorescent	zoned switching with motion sensor	no
Switch room (Lvl. 1)	no mechanical ventilation	-	fluorescent	manual on / manual off	no
Switch room (Lvl. 2)	no mechanical ventilation	-	fluorescent	manual on / manual off	no
Switch room (Lvl. 3)	no mechanical ventilation	-	fluorescent	manual on / manual off	no
Switch room (Lvl. 4)	no mechanical ventilation	-	fluorescent	manual on / manual off	no
Switch room (Lvl. 5)	no mechanical ventilation	-	fluorescent	manual on / manual off	no
Switch room (Lvl. 6)	no mechanical ventilation	-	fluorescent	manual on / manual off	no
Switch room (Lvl. 7)	no mechanical ventilation	-	fluorescent	manual on / manual off	no
Switch room (GF)	no mechanical ventilation	-	fluorescent	manual on / manual off	no
Switch room MSB	no mechanical ventilation	-	fluorescent	manual on / manual off	no
Bin Room	ventilation exhaust only	-	fluorescent	motion sensors	no
Fogo Bins	ventilation exhaust only	-	fluorescent	motion sensors	no
Bulky Waste	ventilation exhaust only	-	fluorescent	motion sensors	no
Fire Pump Room	no mechanical ventilation	-	fluorescent	manual on / manual off	no

	Common area ventilation system		Common area lighting		
Common area	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/ BMS
CW Pump Room	no mechanical ventilation	-	fluorescent	manual on / manual off	no
Pool Plant	ventilation (supply + exhaust)	interlocked to light	fluorescent	manual on / manual off	no
Storage	no mechanical ventilation	-	fluorescent	manual on / timer off	no
Amenities	no mechanical ventilation	-	compact fluorescent	manual on / manual off	no
Ground floor lobby	no mechanical ventilation	-	fluorescent	motion sensors	no
Hallway/lobby type (Lvl. 1)	no mechanical ventilation	-	fluorescent	motion sensors	no
Hallway/lobby type (Lvl. 2)	no mechanical ventilation	-	fluorescent	motion sensors	no
Hallway/lobby type (Lvl. 3)	no mechanical ventilation	-	fluorescent	motion sensors	no
Hallway/lobby type (Lvl. 4)	no mechanical ventilation	-	fluorescent	motion sensors	no
Hallway/lobby type (Lvl. 5)	no mechanical ventilation	-	fluorescent	motion sensors	no
Hallway/lobby type (Lvl. 6)	no mechanical ventilation	-	fluorescent	motion sensors	no
Hallway/lobby type (Lvl. 7)	no mechanical ventilation	-	fluorescent	motion sensors	no
Hallway/lobby type (Bas. 01)	no mechanical ventilation	-	fluorescent	motion sensors	no
Lift bank (No. 1)	-	-	light-emitting diode	connected to lift call button	no
Lift bank (No. 2)	-	-	light-emitting diode	connected to lift call button	no

Central energy systems	Type	Specification
Swimming pool (No. 1)	Heating source: no heating	Pump controlled by timer: yes
Sauna (No. 1)	Heating source: electric infrared	Efficiency measure: manual on / timer off
Lift bank (No. 1)	gearless traction with V V V F motor	Number of levels with apartments served by a lift: 8 number of levels from the bottom of the lift shaft to the top of the lift shaft: 11 number of lifts: 2 lift load capacity: >= 1001 kg but <= 1500kg
Lift bank (No. 2)	gearless traction with V V V F motor	Number of levels with apartments served by a lift: 1 number of levels from the bottom of the lift shaft to the top of the lift shaft: 2 number of lifts: 1 lift load capacity: <1001 kg

2. Commitments for multi-dwelling housing

(a) Dwellings

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must plant indigenous or low water use species of vegetation throughout the area of land specified for the dwelling in the "Indigenous species" column of the table below, as private landscaping for that dwelling. (This area of indigenous vegetation is to be contained within the "Area of garden and lawn" for the dwelling specified in the "Description of Project" table).	✓	✓	
(c) If a rating is specified in the table below for a fixture or appliance to be installed in the dwelling, the applicant must ensure that each such fixture and appliance meets the rating specified for it.		✓	✓
(d) The applicant must install an on demand hot water recirculation system which regulates all hot water use throughout the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below.		✓	✓
(e) The applicant must install: (aa) a hot water diversion system to all showers, kitchen sinks and all basins in the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below; and (bb) a separate diversion tank (or tanks) connected to the hot water diversion systems of at least 100 litres. The applicant must connect the hot water diversion tank to all toilets in the dwelling.		✓ ✓	✓ ✓
(e) The applicant must not install a private swimming pool or spa for the dwelling, with a volume exceeding that specified for it in the table below.	✓	✓	
(f) If specified in the table, that pool or spa (or both) must have a pool cover or shading (or both).		✓	
(g) The pool or spa must be located as specified in the table.	✓	✓	
(h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified.	✓	✓	✓
(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must install each hot water system specified for the dwelling in the table below, so that the dwelling's hot water is supplied by that system. If the table specifies a central hot water system for the dwelling, then the applicant must connect that central system to the dwelling, so that the dwelling's hot water is supplied by that central system.	✓	✓	✓
(c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation system specified for that room in the table below. Each such ventilation system must have the operation control specified for it in the table.		✓	✓

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(d) The applicant must install the cooling and heating system/s specified for the dwelling under the "Living areas" and "Bedroom areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 living/bedroom area of the dwelling. If no cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", then no systems may be installed in any such areas. If the term "zoned" is specified beside an air conditioning system, then the system must provide for day/night zoning between living areas and bedrooms.		✓	✓
(e) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Artificial lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that the "primary type of artificial lighting" for each such room in the dwelling is fluorescent lighting or light emitting diode (LED) lighting. If the term "dedicated" is specified for a particular room or area, then the light fittings in that room or area must only be capable of being used for fluorescent lighting or light emitting diode (LED) lighting.		✓	✓
(f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight.	✓	✓	✓
(g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must: (aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and (bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump.		✓ ✓	
(h) The applicant must install in the dwelling: (aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below; (bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and (cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		✓ ✓ ✓	✓
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".		✓	
(iii) Thermal Performance and Materials	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must attach the certificate referred to under "Assessor details" on the front page of this BASIX certificate (the "Assessor Certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, to that application). The applicant must also attach the Assessor Certificate to the application for a final occupation certificate for the proposed development.			
(b) The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.			

(iii) Thermal Performance and Materials	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(c) The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX Certificate, including the details shown in the "Thermal Loads" table below.			
(d) The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Thermal Comfort Protocol requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor, to certify that this is the case.	✓		
(e) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.		✓	
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✓	✓
(g) Where there is an in-slab heating or cooling system, the applicant must: (aa) Install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab; or (bb) On a suspended floor, install insulation with an R-value of not less than 1.0 underneath the slab and around the vertical edges of the perimeter of the slab.	✓	✓	✓
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	✓	✓	✓
(i) The applicant must show on The plans accompanying The development application for The proposed development, The locations of ceiling fans set out in The Assessor Certificate.	✓		
(j) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), the locations of ceiling fans set out in the Assessor Certificate.		✓	

3. Commitments for single dwelling houses

(a) Dwellings

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must plant indigenous or low water use species of vegetation throughout the area of land specified for the dwelling in the "Indigenous species" column of the table below, as private landscaping for that dwelling. (This area of indigenous vegetation is to be contained within the "Area of garden and lawn" for the dwelling specified in the "Description of Project" table).	✓	✓	
(c) If a rating is specified in the table below for a fixture or appliance to be installed in the dwelling, the applicant must ensure that each such fixture and appliance meets the rating specified for it.		✓	✓
(d) The applicant must install an on demand hot water recirculation system which regulates all hot water use throughout the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below.		✓	✓
(e) The applicant must install: (aa) a hot water diversion system to all showers, kitchen sinks and all basins in the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below; and (bb) a separate diversion tank (or tanks) connected to the hot water diversion systems of at least 100 litres. The applicant must connect the hot water diversion tank to all toilets in the dwelling.		✓ ✓	✓ ✓
(e) The applicant must not install a private swimming pool or spa for the dwelling, with a volume exceeding that specified for it in the table below.	✓	✓	
(f) If specified in the table, that pool or spa (or both) must have a pool cover or shading (or both).		✓	
(g) The pool or spa must be located as specified in the table.	✓	✓	
(h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified.	✓	✓	✓
(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must install each hot water system specified for the dwelling in the table below, so that the dwelling's hot water is supplied by that system. If the table specifies a central hot water system for the dwelling, then the applicant must connect that central system to the dwelling, so that the dwelling's hot water is supplied by that central system.	✓	✓	✓
(c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation system specified for that room in the table below. Each such ventilation system must have the operation control specified for it in the table.		✓	✓

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(d) The applicant must install the cooling and heating system/s specified for the dwelling under the "Living areas" and "Bedroom areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 living/bedroom area of the dwelling. If no cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", then no systems may be installed in any such areas. If the term "zoned" is specified beside an air conditioning system, then the system must provide for day/night zoning between living areas and bedrooms.		✓	✓
(e) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Artificial lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that the "primary type of artificial lighting" for each such room in the dwelling is fluorescent lighting or light emitting diode (LED) lighting. If the term "dedicated" is specified for a particular room or area, then the light fittings in that room or area must only be capable of being used for fluorescent lighting or light emitting diode (LED) lighting.		✓	✓
(f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight.	✓	✓	✓
(g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must: (aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and (bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump.		✓ ✓	
(h) The applicant must install in the dwelling: (aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below; (bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and (cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		✓ ✓ ✓	✓
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".		✓	
(iii) Thermal Performance and Materials	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must attach the certificate referred to under "Assessor details" on the front page of this BASIX certificate (the "Assessor Certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, to that application). The applicant must also attach the Assessor Certificate to the application for a final occupation certificate for the proposed development.			
(b) The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.			

(iii) Thermal Performance and Materials	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(c) The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX Certificate, including the details shown in the "Thermal Loads" table below.			
(d) The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Thermal Comfort Protocol requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor, to certify that this is the case.	✓		
(e) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.		✓	
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✓	✓
(g) Where there is an in-slab heating or cooling system, the applicant must: (aa) Install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab; or (bb) On a suspended floor, install insulation with an R-value of not less than 1.0 underneath the slab and around the vertical edges of the perimeter of the slab.	✓	✓	✓
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	✓	✓	✓
(i) The applicant must show on The plans accompanying The development application for The proposed development, The locations of ceiling fans set out in The Assessor Certificate.	✓		
(j) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), the locations of ceiling fans set out in the Assessor Certificate.		✓	

4. Commitments for common areas and central systems/facilities for the development (non-building specific)

(b) Common areas and central systems/facilities

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a showerhead, toilet, tap or clothes washer into a common area, then that item must meet the specifications listed for it in the table.		✓	✓
(b) The applicant must install (or ensure that the development is serviced by) the alternative water supply system(s) specified in the "Central systems" column of the table below. In each case, the system must be sized, be configured, and be connected, as specified in the table.	✓	✓	✓
(c) A swimming pool or spa listed in the table must not have a volume (in kLs) greater than that specified for the pool or spa in the table.	✓	✓	
(d) A pool or spa listed in the table must have a cover or shading if specified for the pool or spa in the table.		✓	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		✓	✓
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✓	✓

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	4 star (> 6 but <= 7.5 L/min)	4 star	4 star	no common laundry facility

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a ventilation system to service a common area specified in the table below, then that ventilation system must be of the type specified for that common area, and must meet the efficiency measure specified.		✓	✓
(b) In carrying out the development, the applicant must install, as the "primary type of artificial lighting" for each common area specified in the table below, the lighting specified for that common area. This lighting must meet the efficiency measure specified. The applicant must also install a centralised lighting control system or Building Management System (BMS) for the common area, where specified.		✓	✓
(c) The applicant must install the systems and fixtures specified in the "Central energy systems" column of the table below. In each case, the system or fixture must be of the type, and meet the specifications, listed for it in the table.	✓	✓	✓

Central energy systems	Type	Specification
Alternative energy supply	Photovoltaic system	Rated electrical output (min): 10 peak kW
Other	-	-

Notes

1. In these commitments, "applicant" means the person carrying out the development.
2. The applicant must identify each dwelling, building and common area listed in this certificate, on the plans accompanying any development application, and on the plans and specifications accompanying the application for a construction certificate / complying development certificate, for the proposed development, using the same identifying letter or reference as is given to that dwelling, building or common area in this certificate.
3. This note applies if the proposed development involves the erection of a building for both residential and non-residential purposes (or the change of use of a building for both residential and non-residential purposes). Commitments in this certificate which are specified to apply to a "common area" of a building or the development, apply only to that part of the building or development to be used for residential purposes.
4. If this certificate lists a central system as a commitment for a dwelling or building, and that system will also service any other dwelling or building within the development, then that system need only be installed once (even if it is separately listed as a commitment for that other dwelling or building).
5. If a star or other rating is specified in a commitment, this is a minimum rating.
6. All alternative water systems to be installed under these commitments (if any), must be installed in accordance with the requirements of all applicable regulatory authorities. NOTE: NSW Health does not recommend that stormwater, recycled water or private dam water be used to irrigate edible plants which are consumed raw, or that rainwater be used for human consumption in areas with potable water supply.

Legend

1. Commitments identified with a "✔" in the "Show on DA plans" column must be shown on the plans accompanying the development application for the proposed development (if a development application is to be lodged for the proposed development).
2. Commitments identified with a "✔" in the "Show on CC/CDC plans and specs" column must be shown in the plans and specifications accompanying the application for a construction certificate / complying development certificate for the proposed development.
3. Commitments identified with a "✔" in the "Certifier check" column must be certified by a certifying authority as having been fulfilled. (Note: a certifying authority must not issue an occupation certificate (either interim or final) for a building listed in this certificate, or for any part of such a building, unless it is satisfied that each of the commitments whose fulfilment it is required to monitor in relation to the building or part, has been fulfilled).