

Central Station Eastern Entrance Preferred Option OSD Report

Prepared for Transport for NSW

24 October 2017

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1.0 Introduction

1.1 Purpose of the Study

Sydney Metro is one of Australia's biggest public transport projects. The new single deck railway will provide 31 metro stations and more than 65km of new metro rail connecting Sydney's northwest suburbs with the CBD and the southwest Bankstown corridor. The services are expected to commence operations in the first half of 2019 on the North West segment and in 2024 on the balance of the line using fully-automated metro trains.

The CBD and South East Light Rail will run from Circular Quay to Randwick and Kingsford opening up a modern rapid transport connection between these areas for the first time. The lines are expected to be running by 2019 with turn up and go services operating up to every 4 minutes in peak service.

The introduction of Sydney Metro and Sydney Light Rail to Central Station unlocks development potential, changes movement patterns and provides an opportunity to reorganise the concourse experience for customers. This provides a catalyst for reorganising Central Station for the whole of TfNSW. This report describes the preferred Over Station Development (OSD) proposal for the Central Walk Eastern Entrance as an improvement for Light Rail, Sydney Trains and Metro connectivity.

This study is intended to complement Metro's ongoing design work at Central Station including design and construction tenders.

1.2 Proposal

1.2.1 The Site

The project site consists of the 20-28 Chalmers Street and sits within a precinct between Chalmers Street, Elizabeth Street and Randle Street just to the east of Central Station. This location is on the southern fringe of the Sydney CBD and at the western edge of Surry Hills. Refer to figure 1. Study Area

The site has some degree of heritage significance. Information about this is provided further in this report.

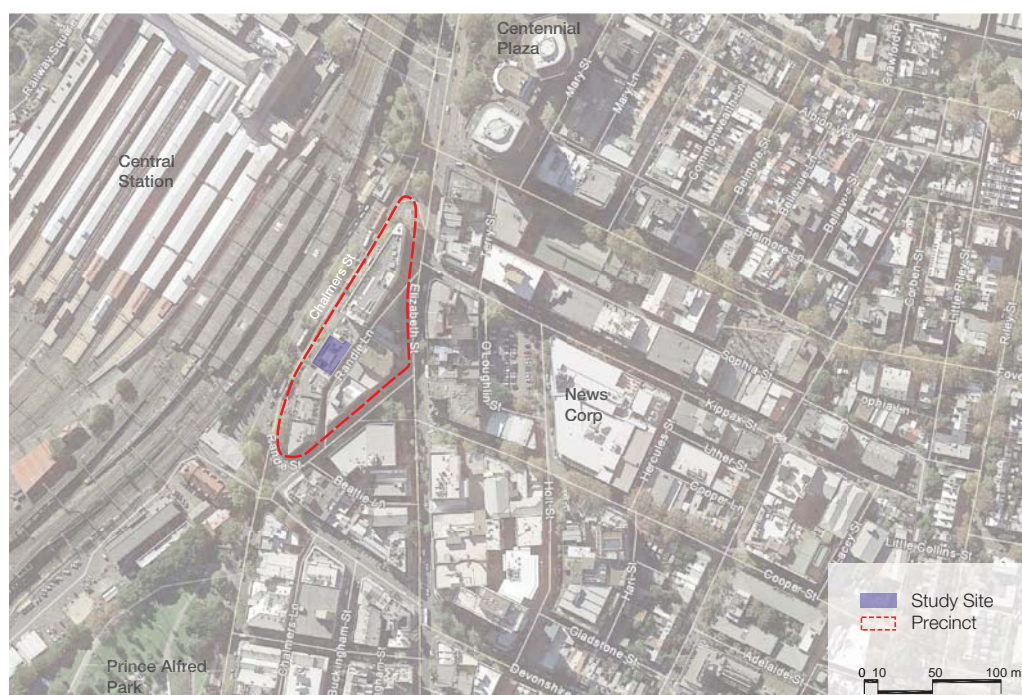


Figure 1: Study Area

This site has frontage on Chalmers Street and Randle Lane. Randle Lane sits within the precinct and provides service access and a more fine grained scale to the built form. The precinct is located between Devonshire Street and Foveaux Street which form key east-west links through Surry Hills. Kippax Street and Cooper Street form minor links but provide access to businesses including News Corp Australia Offices and a series of fashion trade studios. Just to the north of the site Centennial Plaza provides a significant business centre of gravity. Rydges Sydney Central Hotel is located about 300m to the north of the precinct. Prince Alfred Park is located just to the south of the precinct.

1.2.2 LEP Controls

The precinct is designated as a B4 Mixed Use Zone along with much of this part of Surry Hills. A variety of business uses are permitted. The Floor Space Ratio for the site is 6.0:1. The Height of Buildings Control for the site is 27m which conflicts with the DCP limit of 8 storeys when considering commercial development. The proposal assumes that 8 storeys will be permitted, regardless of the LEP height limit.

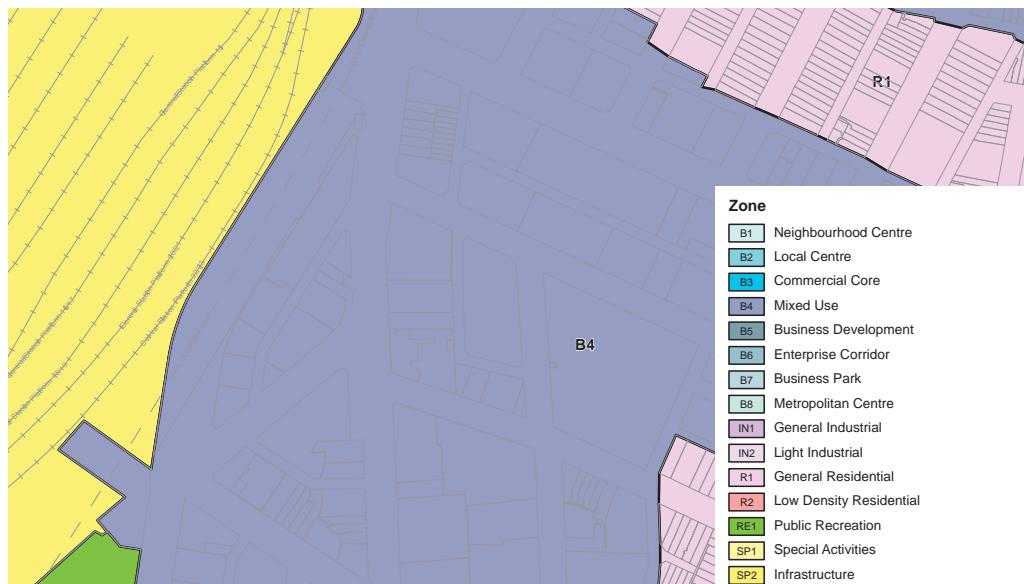


Figure 2: Land Zoning, LEP Source: SLEP, 2012



Figure 3: Floor Space Ratio, LEP Source: SLEP, 2012



Figure 4: Height of Buildings, LEP

Source: SLEP, 2012

1.2.3 Methodology

TfNSW undertook a study to determine the best scenario for delivering the Eastern Entrance within an appropriate time frame while protecting the OSD potential of the site.

The study included consideration of options for permanent and temporary facilities on the project site as well as the potential for expanding the project to include the Sydney Dental Hospital Site just to the north of the site at 2 Chalmers Street.

A series of options were explored that included:

- 1.1 Bounce Site: No OSD (Metro Only)
- 1.2 Bounce Site: With OSD (Separated)
- 1.3 Bounce Site: With OSD (Transport office and integrated services)
- 1.4 Bounce site: contract delivery option i.e. with structure to support OSD (8-10 storeys) and fire stair.
- 2.1 Bounce Site and Dental Hospital: Service bay of Dental Hospital only.
- 2.2 Bounce Site and Dental Hospital: Fully amalgamated site.
- 2.3 Bounce Site and Dental Hospital: Scheme with temporary station entrance with site stairs and lift without escalators and OSD above. Temporary Solution.
- 2.4 Bounce Site and Dental Hospital: Scheme with permanent entry in Bounce footprint with no OSD above until a future date determined by market conditions.

A study of market considerations for the site and its immediate surroundings was also undertaken. This study addressed:

- Market use demand profile and dynamics
- Trends in the vicinity of the site
- General relationship of the area to the city as a whole



A series of workshops were held with TfNSW to determine a preferred way forward for the development of the transport facility and OSD.

It was determined that Option 1.2, a permanent transport facility and integrated OSD, provided the best outcome to TfNSW considering delivery timing, risk management, and return on investment. This report describes this option and the parameters for implementation.

1.2.4 Planning Process (TfNSW)

1.2.5 Tenure (AEC+TfNSW)

1.2.6 Construction and Delivery (TfNSW)

1.2.7 EOI (TfNSW)



2.0 Design Vision and Key Principles

2.1 Design Vision

The Central Station Eastern Concourse Entrance will be the key interface point for Sydney's three rail systems: Sydney Trains, Sydney Metro and CBD and South East Light Rail. This element will serve as both a transport facility and a symbol for Sydney. It will also provide a strategically located development opportunity that capitalises on this connectivity.

2.2 Key Principles

Key principles driving the design include:

- Delivery of Eastern Concourse Entrance by 2024
- Support the integration of Sydney Trains, Sydney Metro and CBD and South East Light Rail
- Provide for safe access and operations at all times in normal and emergency modes
- Provide for intuitive way finding allowing ease of navigation for customers
- Allow natural light to reach as far into the entrance as possible
- Minimise disruption to existing railway operations
- Provide for legibility and distinction between the transport entrance and OSD entrance
- Facilitate a revenue return to TfNSW through an appropriate OSD development
- Provide for independent operations for transport elements and OSD elements
- Structural elements will be fully integrated so that the transport elements and OSD elements are constructed as a single development



3.0 Market Overview

3.1 Market Overview

Commercial investment in the Sydney CBD is experiencing exceptional levels of activity. Institutions have dominated the purchaser profile in Sydney CBD having accounted for the majority of sales every year since 2007. On average overseas buyers were responsible for 54% of all office investment by value since 2007. Their share of the market has grown every year since 2013. A number of overseas investors have sought to capitalise on strong gains made after acquiring assets in 2010 and 2011 by disposing of them given the strength of current demand. A distinct compression of yields is observed across all grades of commercial office space as a result.

Sydney CBD has experienced strong annual effective rental growth averaging double digits for several years now, with nearly 30% growth in the 12 months to September 2017 (Savills, 2017), driven by falling incentives and tightening office vacancy. Tenant demand fundamentals have remained sound and office withdrawals for non-office uses are removing stock from the market creating scarcity.

Leasing in Sydney CBD gained momentum during 2015 and this has not only endured but accelerated through 2016 and 2017, even with a high volume of office supply completing at Barangaroo. As a result of competition between occupiers for a finite supply of good quality contiguous space, vacancy rates have fallen across the prime and secondary markets resulting in strong net effective rental growth.

A number of prominent sales occurred through 2016/2017 wherein a new benchmark of property prices was set, particularly for properties with development potential. Examples of these are: 210-220 George Street, 28 O'Connell Street, 71 Macquarie Street, 77 Market Street, 333 Kent Street, 458-472 George Street and 33 Alfred Street.

The desirability of commercial space along George Street has increased in profile following the commencement of light rail works. Even though pedestrian traffic is hindered by construction works and ostensibly impacting retail trade on George Street, prices and rents have experienced a notable uptick in levels as the market anticipates improved retail opportunity on completion of the light rail. Retail opportunities along Chalmers Street will conceivably be equally sought after as completion of light rail and Central Walk works are imminent.

City Fringe Location at Surry Hills

The City Fringe markets (Surry Hills, Pyrmont, Eveleigh) are generally dominated by creative occupiers as well as businesses in IT, media and telecommunications.

The heritage character of office stock in Surry Hills, quality amenity and a compelling lifestyle offer has been appealing to creative occupiers. Tenant demand for Surry Hills is strong, especially for smaller offices of under 1,000sqm. A lack of development opportunities for new office stock has meant that despite the high level of demand, the supply pipeline has been unable to respond. The office supply pipeline is very limited. As a result there is an acute shortage of quality stock in Surry Hills, with contiguous office space severely lacking.

In March 2017 office vacancy in the City Fringe (an area that includes Surry Hills, Pyrmont and Eveleigh) was recorded as 3.3% (JLL, 2017a), representing a significant fall from over 9% in 2013. This was the lowest vacancy rate of any office market in Sydney at Q1 2017. A modest number of new commercial development projects are proceeding in the City Fringe markets, suggesting the supply shortage will endure at least until development in the Central to Eveleigh Corridor is delivered.

Public transport accessibility and walkability is a major determinant of demand for office space from creative occupiers, together with rental cost, fit-out quality and location. The location of the Site on top of a major public transport interchange and within Surry Hills, a popular office market with an acute office supply shortage makes it a highly desirable office location also with the potential for a well-positioned and targeted retail offer.

3.2 Development Opportunity

The floorspace requirements of tenants who favour a City Fringe office location (in particular Surry Hills) are generally different to those who locate in the Sydney CBD. These tenants tend to favour smaller floorplate offices, non-traditional fitout and access to more quirky retail and leisure facilities. Vacancies are low with few opportunities to increase office supply. This has led to rising rents, decreasing yields and fierce competition from occupiers for any office stock which does become available.

Central Walk will be a highly desirable location for all occupiers (and in particularly creative occupiers) on account of its accessibility, its amenity and its proximity to Surry Hills and Sydney CBD. The shortage of office floorspace in the area means that this development has a unique opportunity to cater for the high level of occupier demand.

Existing retail provision in the area is localised and small-scale, creating opportunities for similar provision at Central Walk aligned to the demand profile of likely customers. Any retail that is embedded within the concourse have an important role to play in catering for demand from a range of users: residents, workers and recreational users. The retail mix should be well balanced to cater for the different needs of users and to ensure activation throughout station operating hours, not just at peak periods.

A preferred concept option (by CM+) accommodates an 8 storey B-grade commercial building, directly benefitting from a new station entry on the section of Chalmers Street that is to be pedestrianised for the CBD and South East Light Rail. The station entry will form a direct link between Central Station and new light rail system. The Site will therefore have excellent access to public transport and benefit from easy access to adjacent areas of Surry Hills, Redfern, Central Park (Broadway) and Chippendale.

The concept option indicates the following development yields:

- Total GFA of 3,049sqm, equivalent to FSR 5.9:1 on a site of 519sqm.
- Commercial lettable area of 2,583sqm.

In order to evaluate the development opportunity of the concept scheme, AEC carried out Residual Land Value (RLV) modelling to identify the price a developer could afford to pay for the development opportunity based on specified development parameters and assumptions.

A key metric for development feasibility is land value, which is a 'residual' after all costs and revenues are taken into account. The figure represents the maximum amount a potential developer/investor could be prepared to pay for the opportunity to develop the preferred concept scheme according to assumed parameters.

The analysis results in an RLV of \$10.7 million. This indicates the price a potential purchaser/developer could be prepared to pay for the opportunity to develop into the preferred concept scheme based on the foregoing suite of assumptions.

A number of observations may be made:

- Relatively small floorplate sizes (<500sqm) and inclusion of two fire stair cores and three lift cores result in an absence of retail space inclusion and relatively high cost to construct (cost per square metre).
- Relatively small floorplates and B-grade quality building are consistent with tenant requirements in City Fringe markets (in particular Surry Hills).
- Likely to achieve premium rental rates given prime location on Chalmers Street directly above Central Walk.
- Dearth of new commercial office development in the short term will likely continue to exert upward pressure on rents and prices in City Fringe markets.

The preferred concept scheme is notably absent any on-site car parking. In its location in the context of transport infrastructure, on balance, it is not considered to be an issue for development on the Site.

4.4 Development Type

The development is envisioned as commercial office space with small floor plates that can attract tenants wanting or needing the high visibility and accessibility that the site provides. Floorplates will maximise opportunity to capture natural light and exposure to the thousands of customers moving through the transport system each day. Given the time frames anticipated for the development it is likely that the OSD will be undertaken as a speculative venture prior to all leasing commitments being secured.

4.5 Heritage

Three sites in study precinct are listed as general heritage items. They all identified as Local Heritage Significance.

- 2 Chalmers Street – Sydney Dental Hospital
- 20-28 Chalmers Street – Bounce Hotel
- 7-15 Randle Street – Former Hat Factory

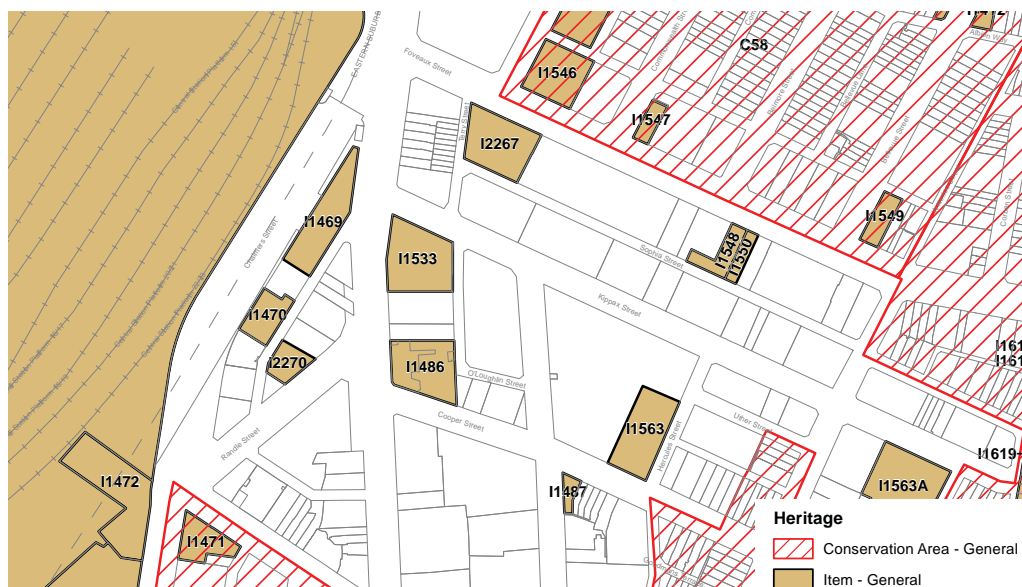


Figure 5: Heritage LEP

Source: SLEP, 2012

5.0 Locality Statement

5.1 Urban Typology

The urban typology for the OSD is envisioned as an infill building that capitalises on its location and visibility.

Key considerations include:

- Enhancing the current activity mix in and around the precinct
- Providing definition on the façade that provides a distinct identity for both the transport entry and the OSD entry while maintaining street walls
- Providing an identity that identifies the building at a larger scale as a key interface point in the city's transport system

5.1.1 Current Active Edges

Active edges include:

- Devonshire street business and food entities
- Elizabeth Street business and food entities
- Chalmers Street food entities
- No significant activity currently occurs along Randle Lane or Randle Street



Figure 6: Current Active Edges

5.1.2 DCP Active Frontages

- Active frontages have been identified along the Chalmers Street side of the precinct and partially up Randle Street
- Devonshire, Elizabeth, Kippax and Foveaux Streets provide active frontage connectivity to surrounding areas

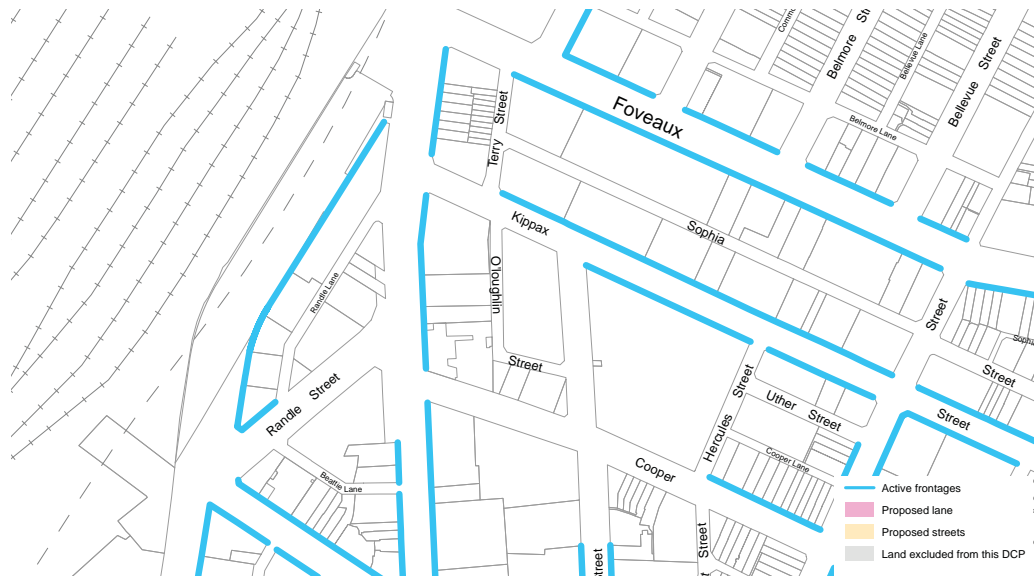


Figure 8: Active Frontages, DCP

5.1.3 Views

The precinct is highly visible due to its location along busy roads and adjacent to the open space in and around Central station. Key views include:

- View from south along Chalmers Street to southern edge of the precinct
- View from south along Elizabeth Street to edge of the Sydney Dental Hospital
- Iconic view from north along Elizabeth Street of the Sydney Dental Hospital
- View down Kippax Street from east
- Views to Central Station Clock Tower

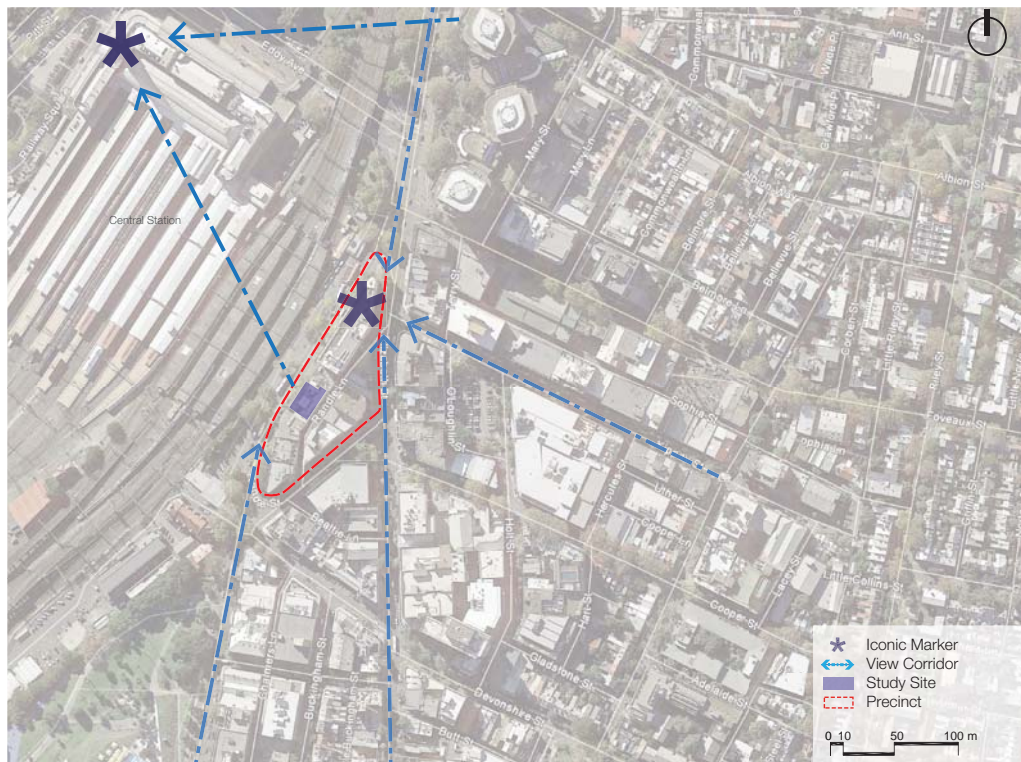


Figure 7: Views

5.1.4 Building Street Frontage Height in Storeys

- No specific height is mandated for the Chalmers Street side of the precinct or Randle Lane
- A three storey height is identified for the Randle Street and Elizabeth Street sides of the precinct

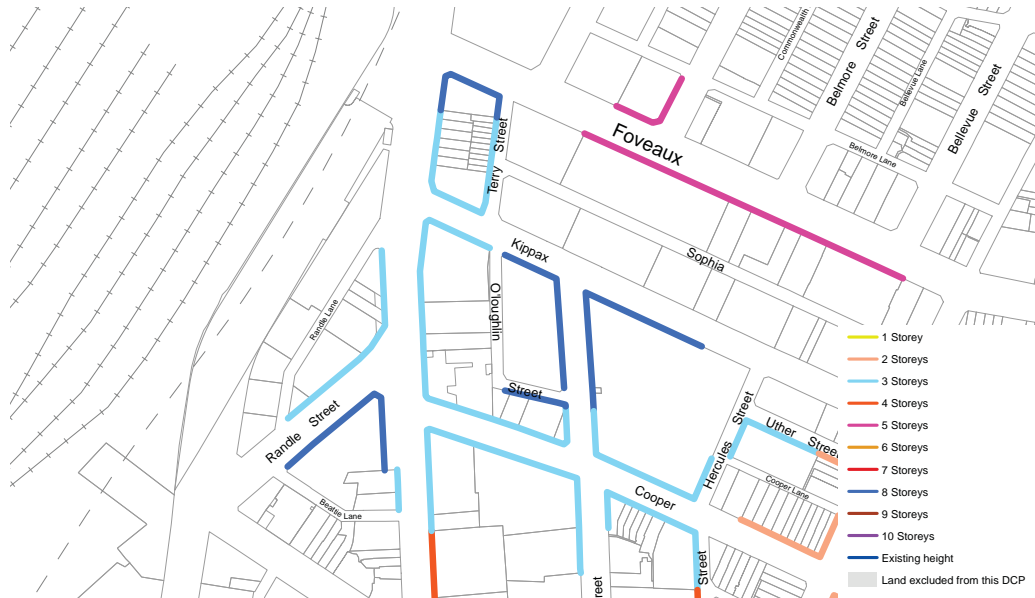


Figure 9: Building Street Frontage Height in Storeys, DCP

5.1.5 Late Night Trading Area

- The precinct is designated as a 'City Living Area' with businesses potentially operating from 7am to 5am depending on the type of business
- A late night Management Area is located to the south at Devonshire Street with businesses potentially operating up to 24 hours depending on the business



Figure 10: Late Night Trading Area, DCP

5.1.6 Height in Storeys

- The precinct is designated as having an eight storey limit
- Adjacent areas are designated as two to fifteen stories with the tallest height located at Centennial Plaza to the north
- The Sydney Dental Hospital and 7-15 Randle Street exceeds this limit
- The Bounce Hotel is lower than this limit



Figure 11: Height in Storeys, DCP

5.1.7 Signage

- The precinct is designated as a Village Main Street zone
- Signage is to respond to the role of the precincts as village main streets with mixed of local retail, commercial and residential land uses
- Signage is not to be located above a ground floor awning, or greater than 3.5m above ground level (existing) where no awning exists

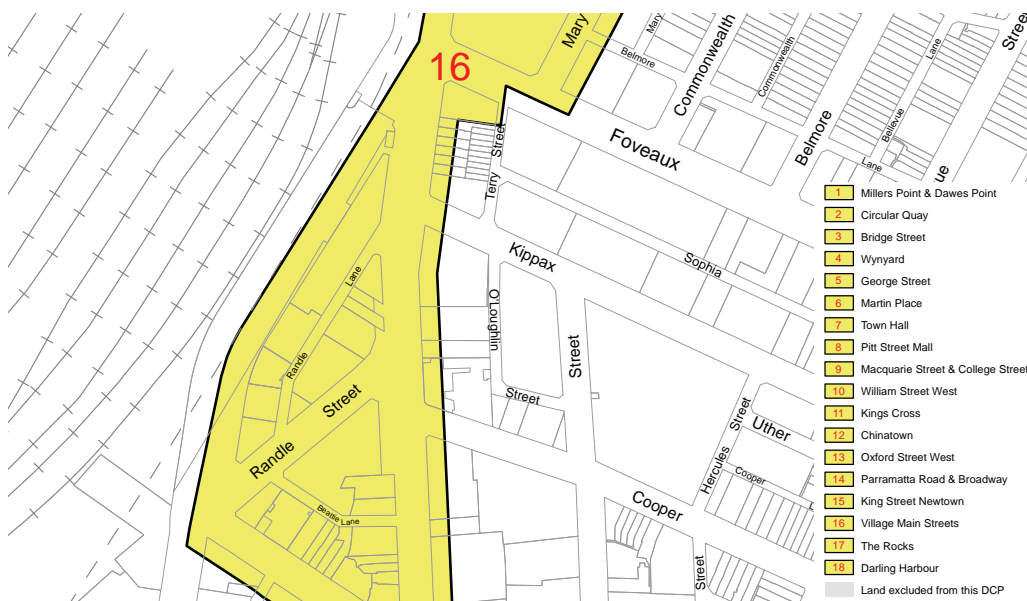


Figure 12: Signage, DCP

5.1.8 Buildings Contribution

- The precinct is not designated as a Conservation Area
- Individual heritage designations are building specific and not considered as contributing to district wide character



Figure 13: Building Contribution, DCP

5.2 Transport and Access

The development will provide for key interfaces between Sydney Trains, Sydney Metro and the CBD and Southeast Light Rail. Service access for the transport elements and the OSD need to operate independently.

Key transport and access features include:

- Pedestrian access is to be provided from both Randle Lane and Chalmers Street to the transport facility
- Pedestrian access to the OSD is to be provided from Chalmers Street
- Independent service access to the transport facility to be provided from Randle Lane with traffic moving in a southward direction
- Independent service access to the OSD to be provided from Randle Lane with traffic moving in a southward direction
- Circulation elements providing access to transport facilities are to meet all TfNSW planning and layout requirements
- Level access to the footpath is to be provided for access to transport elements.
- Service access for the Sydney Dental Hospital is to be determined by TfNSW and coordinated with CBD and Southeast Light Rail

5.2.1 Circulation - Pedestrian

Key pedestrian circulation elements in the future scenario include:

- Central Walk Eastern Entrance for Metro
- Devonshire Street and associated underground walkway crossing Surry Hills and the railway corridor
- Foveaux Street crossing Surry Hills
- Chalmers Street and Elizabeth Street to/from the city
- No significant flows currently use Randle Lane
- The Light Rail station will change movement patterns as Chalmers Street is pedestrianized
- A new dedicated two-way cycle path is proposed on the east side of Chalmers Street

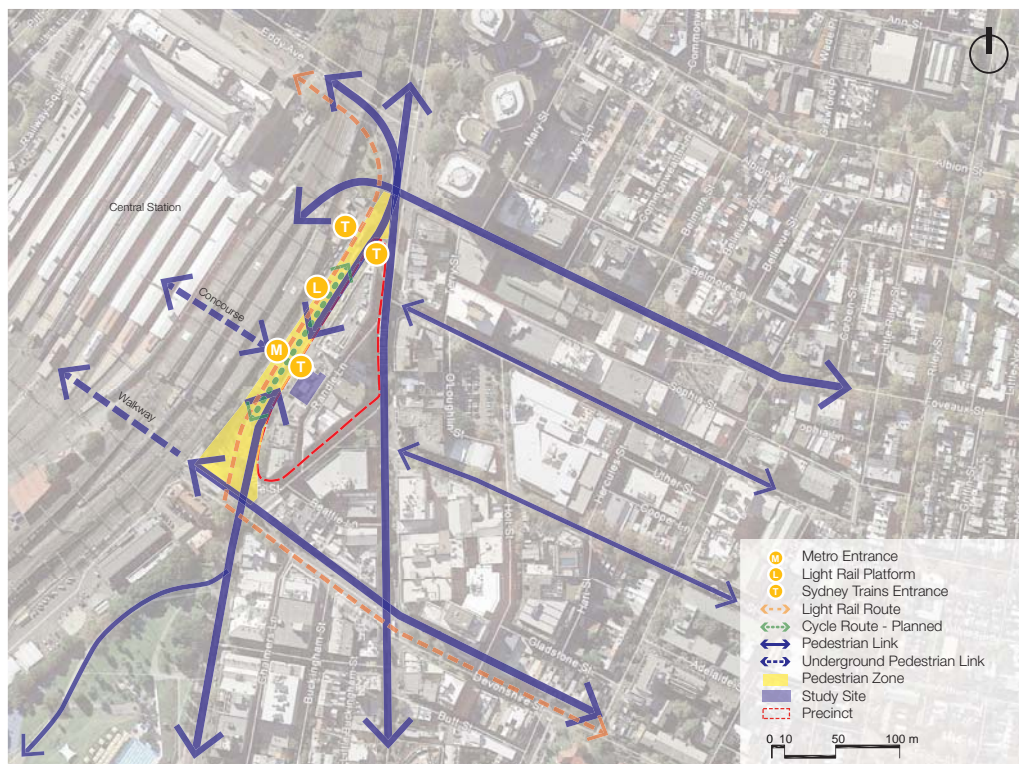


Figure 14: Pedestrian Circulation

5.2.2 Circulation - Vehicular

Key vehicular circulation elements in the future scenario include:

- Two-way traffic on Elizabeth Street
- One way traffic north bound on Chalmers Street
- One way traffic northbound on Randle Street
- One way traffic on Elizabeth Street north of Randle Street
- One way traffic on Randle Lane
- One way traffic on Devonshire Street

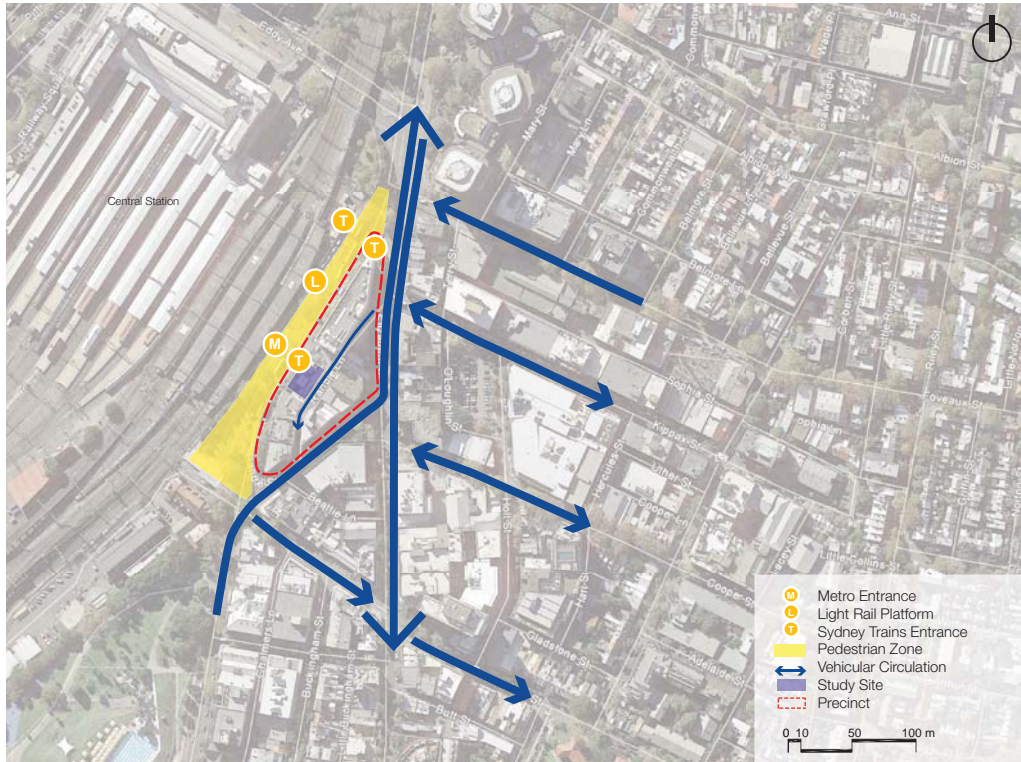


Figure 15: Vehicular Circulation

5.2.3 Light Rail Configuration

The implementation of the Light Rail will include the following key features:

- A pedestrianised Chalmers Street from Devonshire Street to Foveaux Street
- Light Rail platforms aligned with the Sydney Dental Hospital building with access from ends
- A service area near Devonshire Street
- A two way dedicated cycle path along the east side of Chalmers Street

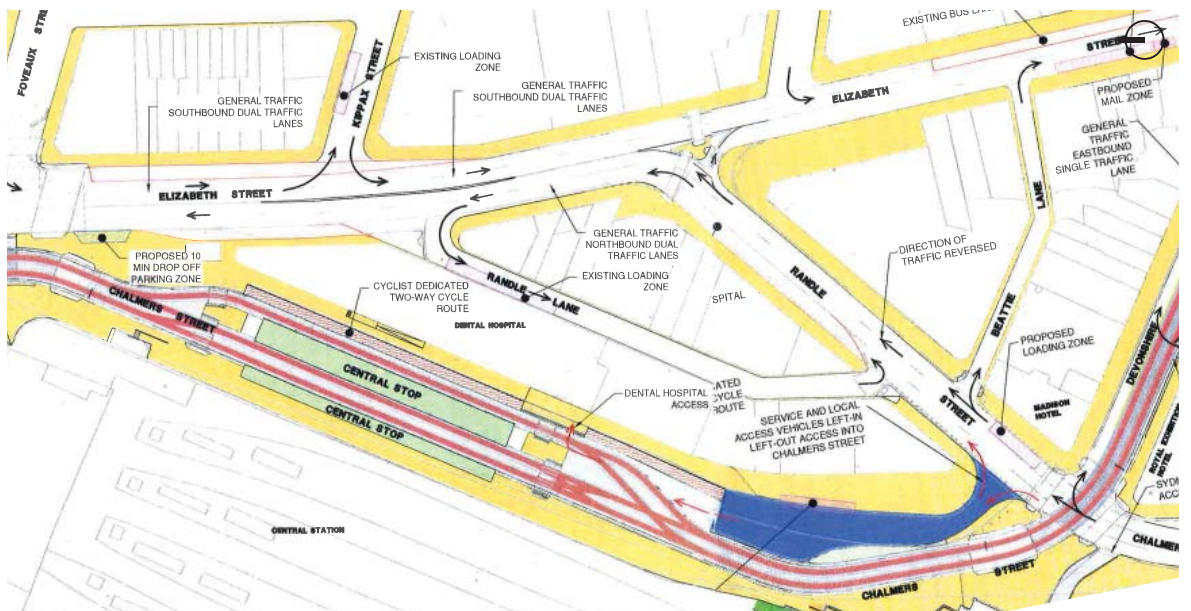


Figure 16: Light Rail Configuration

Source: TfNSW

5.3 Siting, Scale and Massing

The urban form the transport elements and OSD is envisioned as urban infill building that complements the character and form of the urban form of the precinct.

Key considerations include:

- Maintaining current street wall configurations
- Capitalising of maximum allowed heights
- Addressing the relationship between the iconic Sydney Dental Hospital and the new construction
- Addressing issues raised by the significant western facing façade of the building including solar heat gain, reflected glare, and long views out towards the city skyline



Figure 17: View from North East with HOB LEP overlay

5.4 Public Domain and Open Space

There are limited opportunities for creation of public domain or landscape on the site. These include the interface of the transport elements with the light rail pedestrian zone along Chalmers Street and the reinstated pavement along Randle Lane.

Key considerations include:

- Providing level access between the transport facility and the public footpath along Chalmers Street
- Providing appropriate transitions between the transport facility and Randle Lane
- Investigating upgrades to pavement reinstatement at Randle Lane to facilitate a transition of the lane to a future activity area

Key opportunities include:

- Develop the new entrance to reinforce its identity as a single point of entry that links Metro, Sydney Trains and Light Rail

Future opportunities in Precinct redevelopment include:

- Create multiple access points and addresses to foster activity around the precinct
- Create permeable active edges and activate Randle Lane as part of a greater precinct activation strategy

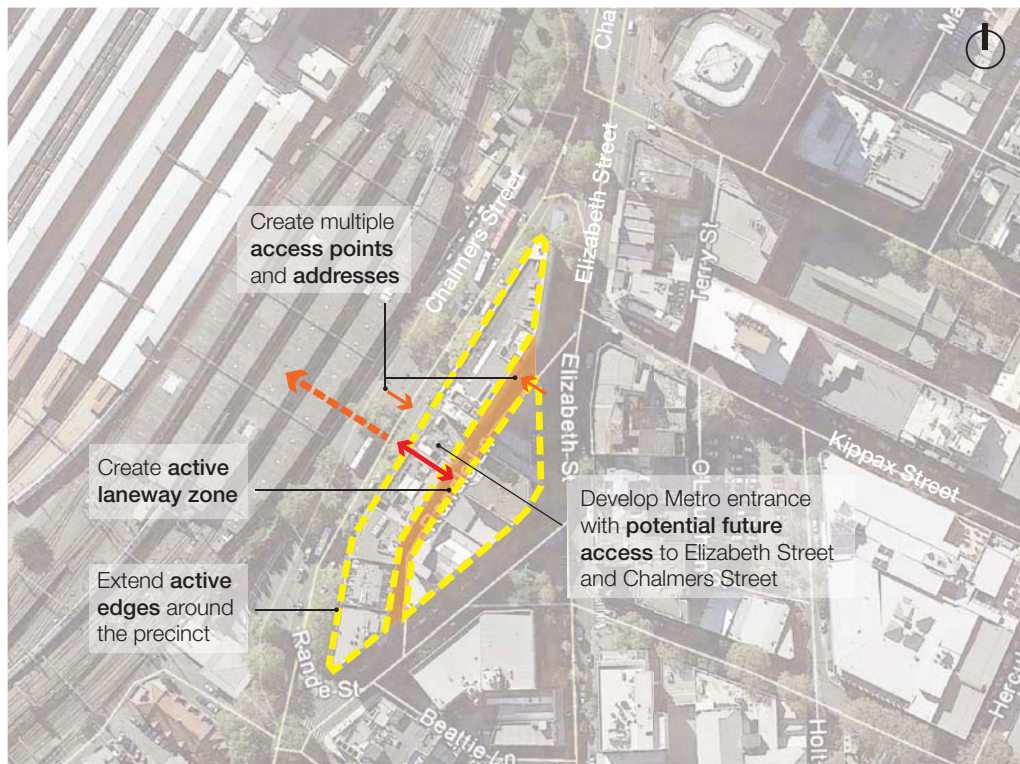


Figure 18: Opportunities

6.0 Built Form

The proposed built form of the new station entry and OSD building create a new contemporary architecture which contrasts the existing heritage architecture of central station. The building symbolises the future of transportation systems in Sydney, it is efficient, sleek, contemporary and robust. Form follows function.

At street levels the building houses the station entry and separate OSD entry in solid stone volumes, with glazed facades. The built form relates materially to the original heritage Central Station building on Eddy Avenue. The upper levels of the building containing OSD commercial space are housed within a high performance curtain wall façade with stainless steel detailing.



Figure 19: Toughend Glass Facade Glazing



6.1 Market Specification, Scope and Performance Requirements

The station entry and OSD buildings are to comply with the BCA, Australian Standards and all other relevant statutory requirements.

- The commercial OSD building is to meet PCA Grade B office standards
- The commercial OSD building is also to meet 4 Green Star requirements
- The new station entry is to comply with all TfNSW requirements, guidelines and policies, including those specific to the overall Central Station refurbishment works

6.1.1 PCA Grade B Office Standards

The proposed office building is to be designed according to the design specification outlined for new office building in PCA document 'A Guide to Office Building Quality'.

As a result of a small building footprint, the total NLA of the proposed office is 2984m², which is under the minimum requirement of a Grade A office building. Thus a PCA Grade B office standard should be achieved by complies with all criteria in different categories listed below:

Parameter	Grade B
Descriptor	Quality space with a good standard of finish and maintenance
Environmental	Environmental Rating ≥ 3 Star (Green Star Rating) Energy / Greenhouse ≥ 4 Star (ABGR)
Configuration	N/A
Mechanical	Zones (All Air Systems) $\leq 100/150$ m ² (Perimeter Centre Zone) Tenant Equipment ≥ 10 (W/sqm)
Tenant Riser	N/A
Lift	Waiting Interval = 35 (seconds) Handling Capacity $\geq 12\%$
Electrical	Power ≥ 40 VA/sqm (risers) Lighting Power Consumption ≤ 15 (W/sqm) Building Intelligence-Main Plant BMCS (Type)
Standby Power Base Building	N/A
Building Management	Type – Remote Monitoring Recycling – Yes (Capability)
Communications	Tenant Data Risers – Minimum of one Master Antenna Television – Yes Carriers – 1
Hydraulics	Fittings – AAAA (Rating) Water Demand Sub-Metering – Yes
Security	Access System – Proximity Control Room or Desk – Offsite (24-7) CCTV – Main Public Areas
Amenities	Change Rooms and Showers – Yes
Parking	Bicycle – Yes



6.1.2 Green Star Requirements

The proposed office building is to be designed to achieve a 4 Star Green Star Rating. The GBCA submission guidelines 'Design and As Built v1.2', provides the information on technical requirements for projects pursuing Green Star certification. According to the guideline, a list of credit criteria below could potentially be followed for scoring sufficient points to achieve the 4 Star Rating (refer to 'Design and As Built v1.2' for more detailed explanations).

Category	Provide As Per Criteria for Scoring Credit
Management	<ul style="list-style-type: none"> Accredited Professional Services and Maintainability Review Building Commissioning Building Systems Tuning Implementation of a Climate Adaptation Plan Building Information Environmental Building Performance End of Life Waste Performance Monitoring Systems Formalised Environmental Management System High Quality Staff Support Performance Pathway - Specialist Plan
Indoor Environment	<ul style="list-style-type: none"> Ventilation System Attributes Provision of Outdoor Air General Illuminance and Glare Reduction Surface Illuminance Localised Lighting Control Daylight Views Paints, Adhesives, Sealants and Carpets Engineered Wood Products Thermal Comfort
Energy	<ul style="list-style-type: none"> Building Envelope Glazing Lighting Ventilation and Air-conditioning Domestic Hot Water Systems
Transport	<ul style="list-style-type: none"> Access by Public Transport Reduced Car Parking Provision Low Emission Vehicle Infrastructure Active Transport Facilities (eg. Bicycles) Walkable Neighbourhoods
Water	<ul style="list-style-type: none"> Sanitary Fixture Efficiency Rainwater Reuse Heat Rejection Landscape Irrigation
Materials	<ul style="list-style-type: none"> Concrete Steel Structural and Reinforcing Steel Permanent Formwork, Pipes, Flooring, Blinds and Cables

	Product Transparency and Sustainability
Land Use and Ecology	Heat Island Effect Reduction
Emissions	Stormwater Peak Discharge
	Stormwater Pollution Targets
	Light Pollution to Night Sky
	Legionella Impacts from Cooling Systems

6.2 Integration with Central Walk East Entrance and CBD Light Rail

The new station entry is located on a section of Chalmers Street recently pedestrianised as part of the CBD Light Rail project. This station entry will form the most direct link between Central Station and the light rail system. The new station entry therefore creates an important new connection within the Sydney CBD transportation network.

In terms of transportation connectivity the new OSD office building is uniquely located. Building occupants will have excellent access to public transport, as well as benefiting from easy access to residential areas such as Surry Hills, Redfern Central Park and Chippendale.

6.3 Building Design

The proposed station entry and OSD building are located on a relatively small site. The layout is necessarily pragmatic. At street level the building accommodates the station entry and essential station services, OSD entry lobby and essential OSD services, as well as allowing for vehicular servicing and rubbish collection from Randle Lane. The brief requires that the station entry and OSD development are physically and operationally separate.

6.3.1 Entrances and Lobbies

The proposed building is to have two separate entrance lobbies. The station entry lobby allows a large volume of commuters to enter and exit Central Station, via a link under Chalmers Street that connects to the ESR and Eastern Concourses. At concourse level the entry includes station services, retail and ticketing areas. There will be provision for a future pedestrian link to the eastern side of Elizabeth Street, which would further enhance Central Station's connection to Surry Hills.

The OSD entry lobby is located to the south of the station entry. It provides easy access to commercial offices and amenities on levels above. Due to the small footprint of the site the lobby is modest in size and efficient movement of people is therefore to be enhanced with the provision of a destination control system.

Both lobbies are to feature high end, robust materials. Please refer to Section 6.3.4 for details.

6.3.2 Typical OSD Levels

The proposed building footprint allows for 100% site coverage. A typical OSD office level will include a fire egress stair and lift core to the south and a fire egress stair and services core to the north. Amenities are to include Female bathroom, Male bathroom and a unisex accessible bathroom. No shower facilities are proposed on office floor plates. A kitchenette is to be provided to the western side of the amenities area. East and west elevations are largely glazed. The proposed scope of work includes provision of the 'base building'. Tenant fitout is to be completed by individual building tenants.

6.3.3 External Building Envelope

Podium Level

- Glazing System – Flush glaze (internally framed) high performance glazing system, aluminium components to have silver anodised finish
- External walls – Light Neutral lait sawn travertine, honed finish
- Glass – High performance, Low-E, low iron, toughened, clear float glass

OSD Façade

- Glazing System – Flush glaze (internally framed) high performance glazing system, aluminium components to have silver anodised finish
- Glass – High performance, Low-E, low iron, toughened, clear float glass

Roof Terrace:

- External walls – Light Neutral lait sawn travertine, honed finish
- Roof terrace paving – Nero Assoluto granite, flamed and brushed finish
- Glazed roof – Translucent toughened glass
- Louvered sunshade – Powder coated aluminium blades

Entry Canopies

- Glazed roof – Translucent toughened glass
- Supporting structure – Satin stainless steel
- Rainwater elements – Satin stainless steel



Figure 20: Travertine Cladding

6.3.4 Roof and Roof Scape

The roof level is to include lift lobby, external roof terrace, unisex accessible bathroom, plant rooms and corridors to fire egress stairs. The roof terrace is to be partly covered with a clear glazed roof, fully covered by a horizontal aluminium louvered sun shade, paved with stone and requires planters to the western edge of the building. The lobby should allow for use as a servery, but no kitchen facilities are required. The area is intended for use by building occupants, as an external breakout area, for internal meetings and social activities. It is not intended to be a bar or other commercial space.

6.3.5 Internal Materials

Building materials are proposed as follows:

Station Entry Finishes

- Floors in public areas – Nero Assoluto granite, flamed and brushed finish
- Walls in public areas – Light Neutral lait sawn travertine, honed finish

- Ceilings in public areas – Bespoke powder coated perforated aluminium panels, back-lit translucent ceiling panels, satin stainless steel edge trims
- All hardware, fixtures and fittings to be satin stainless steel
- Includes all spaces from street level down the concourse level
- Concourse finishes specified by others

OSD Entry Lobby Finishes

- Floors in public areas – Nero Assoluto granite, flamed and brushed finish
- Walls in public areas – Light Neutral lait sawn travertine, honed finish
- Ceilings in public areas – Bespoke powder coated perforated aluminium panels, back-lit translucent ceiling panels, satin stainless steel edge trims
- All hardware, fixtures and fittings to be satin stainless steel



Figure 21: Travertine Cladding and Aluminum Ceiling

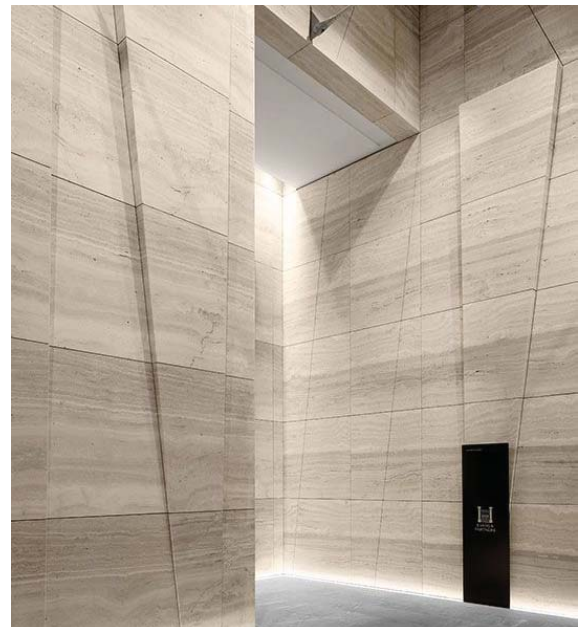


Figure 22: Travertine Cladding With Granite Tiling

Office Levels

- Office floors – Textured loop pile wool mix carpet on rubber underlay
- Lift / stair core wall – Light Neutral lait sawn travertine, honed finish
- All other internal walls – Plaster board, paint finish
- Office ceilings – Powder coated perforated aluminium suspended ceiling system

Lift Finishes

- Lift floors – Granite to match lobby floors
- Lift walls – Satin stainless steel, grey tint mirror glass
- Lift ceilings – Powder coated perforated aluminium suspended ceiling system
- External reveal panels – Black powder coated metal
- All hardware, fixtures and fittings to be satin stainless steel

Escalator Finishes

- Stainless steel plate treads
- Polished stainless steel side and underside cladding panels
- All other finishes as per standard high spec proprietary system

Back of House (BOH) Area Finishes

- BOH Floors – Sealed concrete or rubber flooring, as appropriate for room use
- BOH Walls – Painted concrete, masonry or plasterboard, as appropriate for room use
- BOH Ceilings – Painted plasterboard and powder coated aluminium suspended ceiling system
- Ceilings may be omitted in plant rooms if not required for compliance
- All hardware, fixtures and fittings to be satin stainless steel



Figure 23: Office Interior - Light Travertine Cladding and Powder Coating Aluminum



Figure 24: Tufted, Textured Loop Nylon Ash Grey Carpet

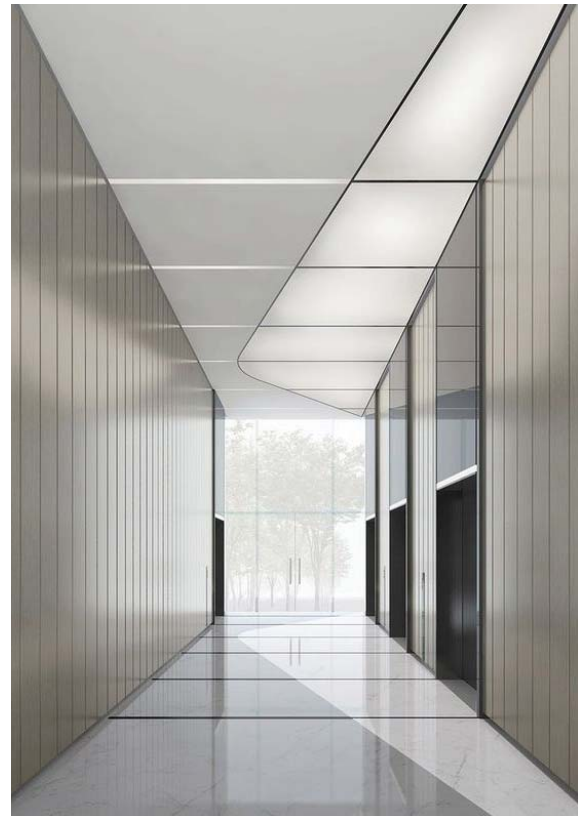


Figure 25: Powder Coating Aluminum Ceiling System

6.3.6 Services

The brief requires that the station entry and OSD development are physically and operationally separate. Therefore all services are to be separate and on their own utilities connections.

Station air is ducted through the height of the building, the duct is to be separated from OSD space by fire rated construction

Firefighting and protection systems are to be separate. Station entry fire systems are to be linked to master systems and are to operate as an integral part of the Central Station systems.

6.3.7 Vertical Transportation Systems

Station entry and exit is primarily to be via escalator banks. Please refer to Appendix 1 for typical escalator guidelines. It is assumed that in the event of a fire escalators will shut down and will then be suitable for use as a fire egress path. Escalators are to meet all TfNSW requirements for transport installations. Escalators are to meet all energy efficiency specifications defined by Green Star requirements.

Access to the station is also possible via two (2) lifts, also required to meet TfNSW standards. These lifts are also to meet all TfNSW requirements for transport installations.

The OSD building is primarily accessed via lifts on a destination control system. The design assumes three (3) lifts rising from the street lobby to roof level. One (1) goods lift services the building by moving supplies and rubbish between the Randle Lane levels and the Chalmers Street level. Please refer to Appendix 2 for typical lift guidelines. Lifts are to meet all energy efficiency specifications defined by Green Star requirements.

A suitable qualified vertical transportation consultant is required to specify all lifts, escalators and associated control systems.

6.3.8 Fixtures and Fittings

All office levels will be provided with suitable sanitary facilities based on BCA's requirements.

Sanitary facilities provisions have been allowed for this concept design analysis as follow (units / level):

- Male: WC= 2, urinals= 2, washbasins= 2
- Female: WC= 3, washbasins= 3
- Wheelchair accessible sanitary facilities: 1

Sanitary facilities finishes:

- Floor: ceramic tiles
- Walls: floor to ceiling ceramic tiles
- Cubicle partitioning: self-supporting high pressure laminate, reinforced with cellulose fibres, decorated both sides with a melamine surface. Doors to include concealed gravity hinges, indicator bolt, buffer and rubber tipped coat hook. Anodised aluminium headrails and foot assemblies.
- Ceiling: aluminium suspended ceiling system.

Sanitary facilities FF&E provision:

- Floor wastes: chrome on brass tile grate
- Washbasins: vitreous china shelf wall basin, chrome waste outlet, stainless steel bottle trap
- Basin mixers: chrome finish, electronic contact-free function with infrared sensor
- Soap dispensers: chrome finish, electronic contact-free function with infrared sensor
- Paper towel dispensers: stainless steel, surface mounted
- Wall mounted mirror: stainless steel, satin finish

CM⁺

- Toilet pans: 4.5/3 litre dual flush toilet suite with wall faced vitreous china pan, inwall cistern, stainless steel access plate and buttons, and soft close toilet seat
- Toilet roll dispenser: surface mounted jumbo roll dispenser, stainless steel finish with lock and key
- Grab rails: stainless steel finish



Figure 26: Fitting and Fixtures Precedent Images



Figure 27: Fitting and Fixtures Precedent Images

All office levels will be provided with a food preparation area comprising the following elements:

- Kitchen joinery: 19mm moisture resistant MDF board for joinery carcass, internal/external surfaces, shelves, drawers and kickboard
- Benchtop and splashback: natural stone composite
- Door and drawer handles: stainless steel finish
- Kitchen sink: surface mounted, stainless steel sink
- Mixer: pin lever sink mixer, chrome finish
- Hot water zip tap
- Panelled 450L fridge/freezer
- 38L microwave oven
- Panelled dishwasher



Figure 28: Fitting and Fixtures Precedent Images

6.4 Pedestrian and Cycle Movements and Integration

People may arrive at the proposed development on foot, bicycle, private motor vehicle, bus, rail, light rail or Metro.

- Station users enter and exit the station via Chalmers Street. A Bank of three (3) escalators moves people between street and concourse levels. Additional access is provided by two (2) passenger lifts.
- Members of the public cycling to the station will be required to secure bikes in the public domain, which is outside the scope of proposed work.
- Occupants and users of the commercial OSD will also enter and exit the building via Chalmers Street. Three (3) high speed lifts will move people to upper floors.
- OSD occupants arriving at the building by bicycle may arrive at the rear of the building on Randal Lane. Bike will be moved to the lower level via a good lift, where bike storage and end of trip facilities will be provided. These amenities are required to the PCA definition of Grade B office space.

These amenities are required to PCA definition of Grade B office space.

In order to achieve 4 Star Green Star Rating, under '*Design and As Built v1.1*' guideline, Item 17B.4, 'Active Transport Facilities' is to be followed by providing 20 bicycle parking racks (7.5% of total regular occupants), with 6 showers and 24 lockers (1.2 per bicycle rack) which are the associated end-of-trip facilities.

6.5 Serving Movements, Vehicle Parking and Integration

The new station entry is to be fully serviced from other areas of Central Station. No vehicular access, deliveries or collections are required from this part of the building.

PCA Grade B office space requirements do not require a loading bay within the building. However, a delivery area is to be provided on Randle Lane. It is assumed that no vehicles will enter the building.

Deliveries are to be moved from the Randle Lane loading dock to the Chalmers Street BOH area via a good lift. Supplies and deliveries are then to be distributed throughout the building via the main lift core.

Waste rooms are to be provided at the Randle Lane level, to be designed in accordance with the City of Sydney waste management policy and guidelines. Waste facilities are also to meet Green Star requirements. Rubbish collection will be from the street. Waste bins from office levels will be transferred via lifts to the Chalmers Street BOH area, from where they are to be moved to the waste rooms at Randle Lane level via the goods lift.

No on site vehicle parking is to be provided.

6.6 Utilities and Services Integration

Utilities and services including power, water and communications will be distributed throughout the building via easily accessible risers.

Station Entry and OSD fire services are to be separate. Station entry fire systems are to be integrated into main Central Station systems. OSD fire services are to be located on Randal Lane.

Station electrical supply and communications systems are to be integrated into main Central Station systems.

A substation is to be provided for the OSD development, access from Chalmers Street.

6.7 Building Signage

External Naming Signage

- Station Signage: The Development Application is to include key areas of external station signage, including size and location to be approved by City of Sydney. One station naming sign is anticipated to the entry canopy, on the western elevation.
- Tenant Signage: The Development Application is to include key areas of external tenant signage, including size and location to be approved by City of Sydney. One large tenant naming sign is anticipated at roof level, on the western elevation. One tenant naming sign is anticipated to the entry canopy, on the western elevation.
- Detailed signage designs to be completed by TfNSW and tenant respectively
- Final City of Sydney approval of signage to be obtained by TfNSW and tenant respectively

External Building Signage

- All signage to be etched and paint filled, black text and symbols on satin stainless steel plates
- Stainless steel cut out lettering may also be used.
- Allow for all statutory building signage
- Building numbering '28' should be provided to the Chalmers Street façade. Allow for 500mm high black powder coated stainless steel cut out numbers.

Internal Building Signage

- All signage to be etched and paint filled, black text and symbols on satin stainless steel plates
- BOH room and riser signage may be black vinyl letters on doors
- Allow for all statutory building signage

6.8 Public Art

Public art may be incorporated into the building lobbies and/or facades as required by the City of Sydney document 'The City Art Public Art Strategy', which is the implementation plan for the City of Sydney 'Public Art Policy'.

All art works and work related to their installations and ongoing operation are excluded from the base building scope of works. If required the art work is to be commissioned and installed as a variation to the contract.

Related work may include structural support, supply of electricity and/or water.

6.9 Sustainability and Environmental Design Criteria

The proposed building aim to achieve 4 Star Green Star Rating and a minimum of 4 stars NABERS Energy. The energy efficiency standard and criteria from the 'Design and As Built v1.2' guideline of GBCA and Section J of the National Construction Code should be followed during the design process. (refer to '6.1.2 Green Star Requirements' for details on areas potentially achievable).

6.10 General and Special Provisions

It should be noted that part of the new Station Entry box is to be constructed under Randle Lane. This portion of the works will be outside the legal boundary of the subject site.

TfNSW are to obtain all agreements and consents required to construct the new Station Entry and OSD building, whether within the legal boundary of 28 Chalmers Street, or not.



7.0 Construction, Delivery and Programme

Construction is to be completed by a head contractor to be appointed by TfNSW. A competitive tender process is to be completed and a traditional lump sum contract is to be awarded.

The demolition and construction programme is to be agreed with TfNSW and must provide for the delivery of key elements as required by TfNSW key Central Station project delivery milestones.

Completion of OSD works must not interfere with the completion and operation of the new station entry on Chalmers Street.

All construction work is to be coordinated with other works being completed on the station concourses below.

All construction work is to be coordinated with the construction and ongoing operation of the light rail under construction on Chalmers Street.

Constructions deliveries and waste collection must also be coordinated with adjacent works, including the light rail.

Crane strategy should be to provide a crane within the site boundaries; mobile cranes may not have suitable access from Chalmers street due to ongoing light rail works.

7.1 Special Requirements (TfNSW)



SCHEDULE i: Lot Plan (TfNSW)



SCHEDULE ii: SSI Amendment Extract (TfNSW)



SCHEDULE iii: Yield Schedule

OPTION 1.2 | BOUNCE SITE: WITH OSD (Separated)

Site Area	519 m ²				
	GFA		TOTAL GFA	FSR	NLA (COMMERCIAL)
LEVEL	Station	Commercial			
ROOF					
Level 8		56 m ²	56 m ²		
Level 7		412 m ²	412 m ²		369 m ²
Level 6		412 m ²	412 m ²		369 m ²
Level 5		412 m ²	412 m ²		369 m ²
Level 4		412 m ²	412 m ²		369 m ²
Level 3		412 m ²	412 m ²		369 m ²
Level 2		412 m ²	412 m ²		369 m ²
Level 1		412 m ²	412 m ²		369 m ²
Upper GF					
Ground Floor	69 m ²	40 m ²	109 m ²		
	69 m ²	2,980 m ²	3,049 m²	5.87	2,583 m ²

1. Area & unit numbers are indicative only, Design Development will be required to confirm yield
2. BE (Building Envelope): building footprint area. It includes balconies and façade articulation
3. GFA as per Legislation NSW definition. It excludes any area for common vertical circulation, vehicular access, loading areas, garbage and services, storage areas and plant rooms.
4. NLA: Net Lettable Area - Office Buildings
5. GLAR: Gross Lettable Area - Retail
6. All Site Areas and existing structures are indicative only and subject to confirmation by a licenced surveyor
7. Any area under Randle Lane and at concourse level have not been included in GFA, NLA & GLAR calculations



APPENDIX 1 Indicative Floor Plans, Elevation + Section

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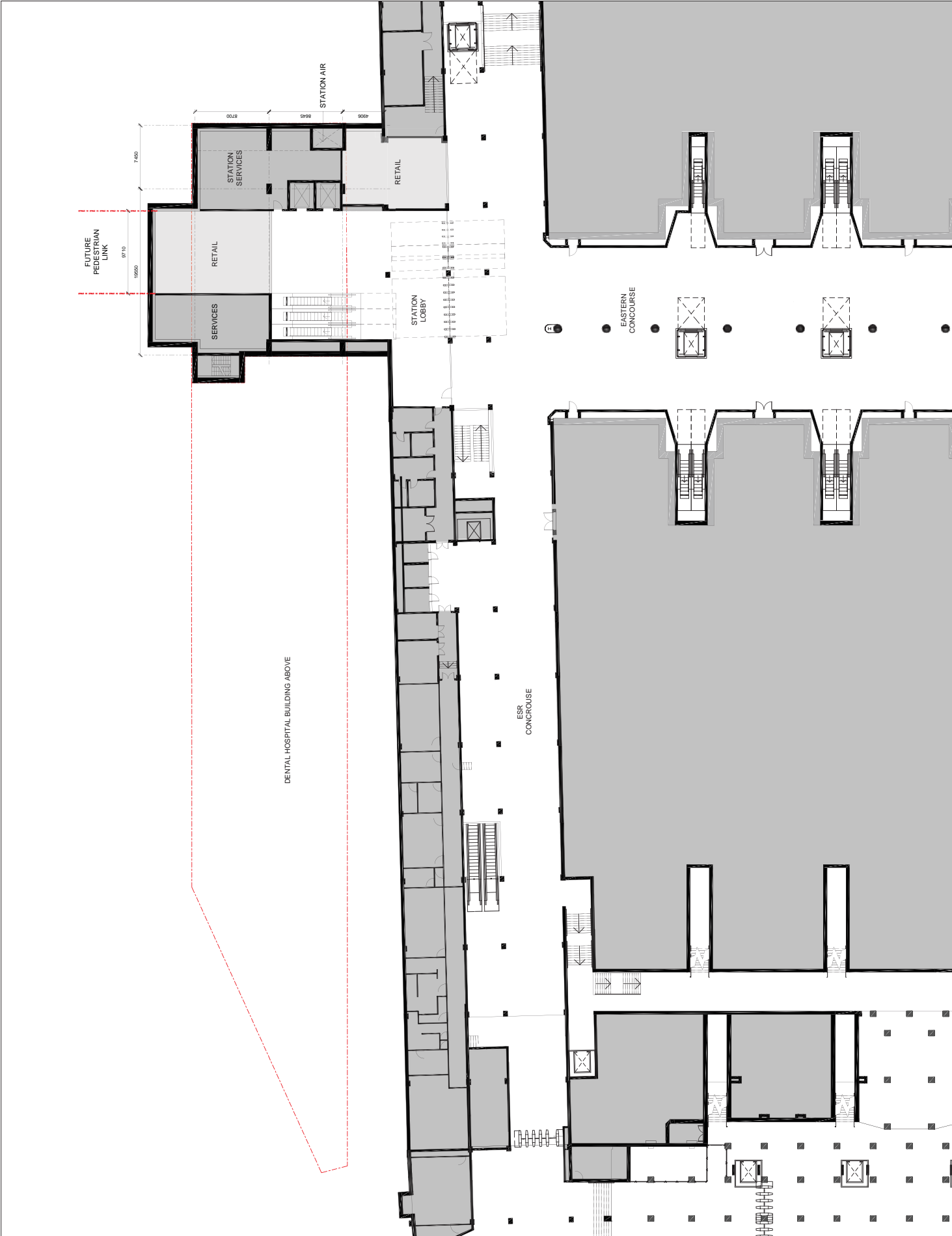
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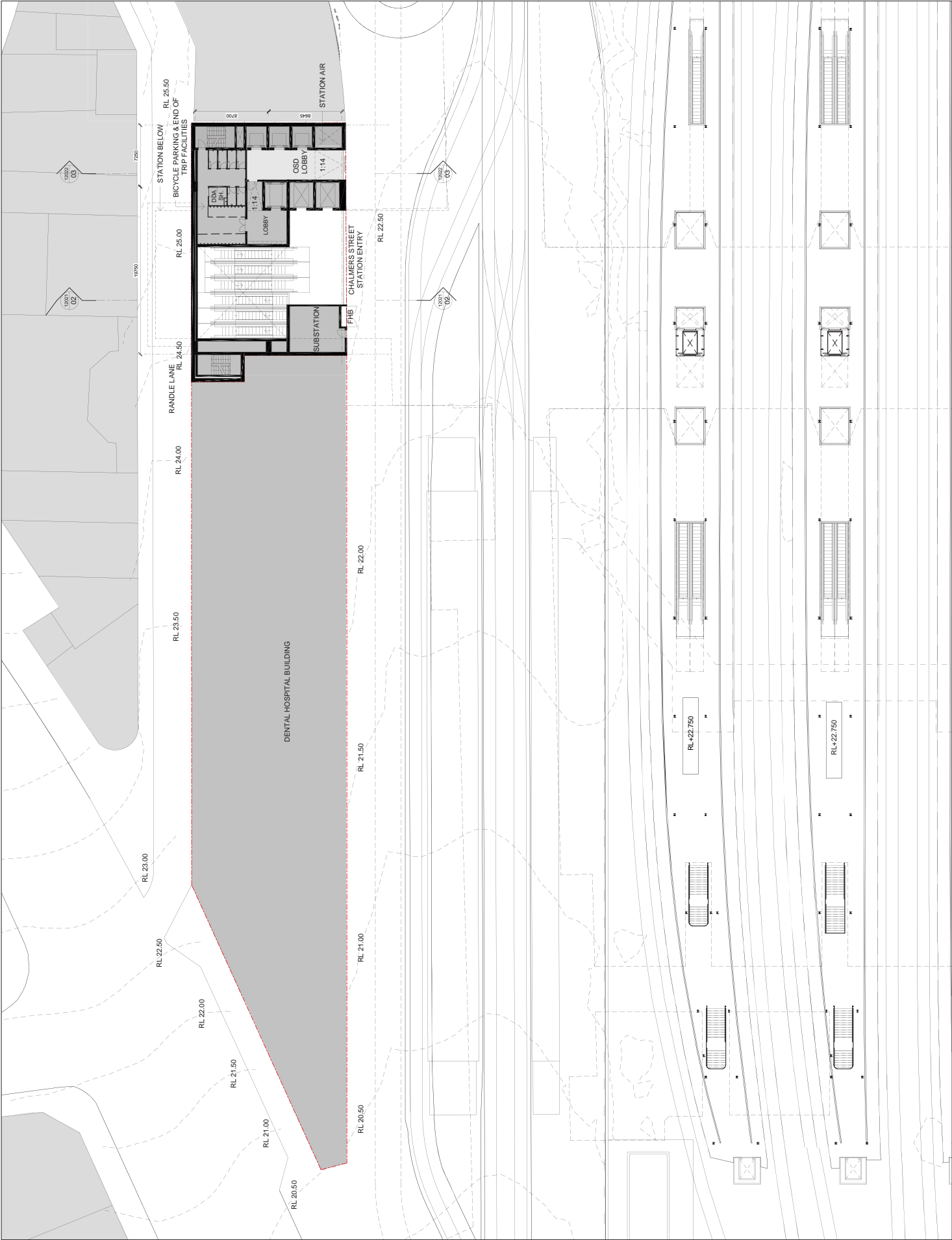
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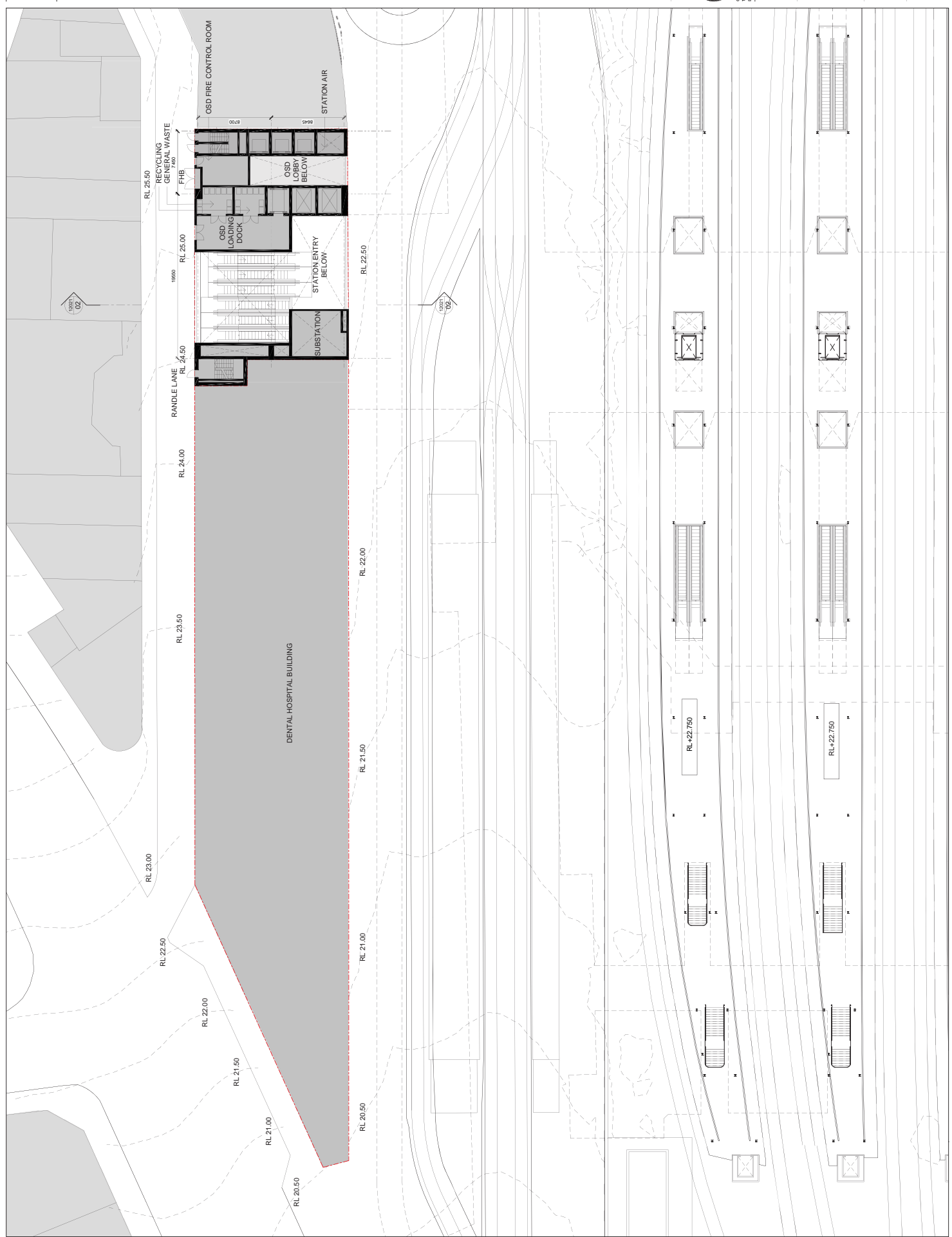
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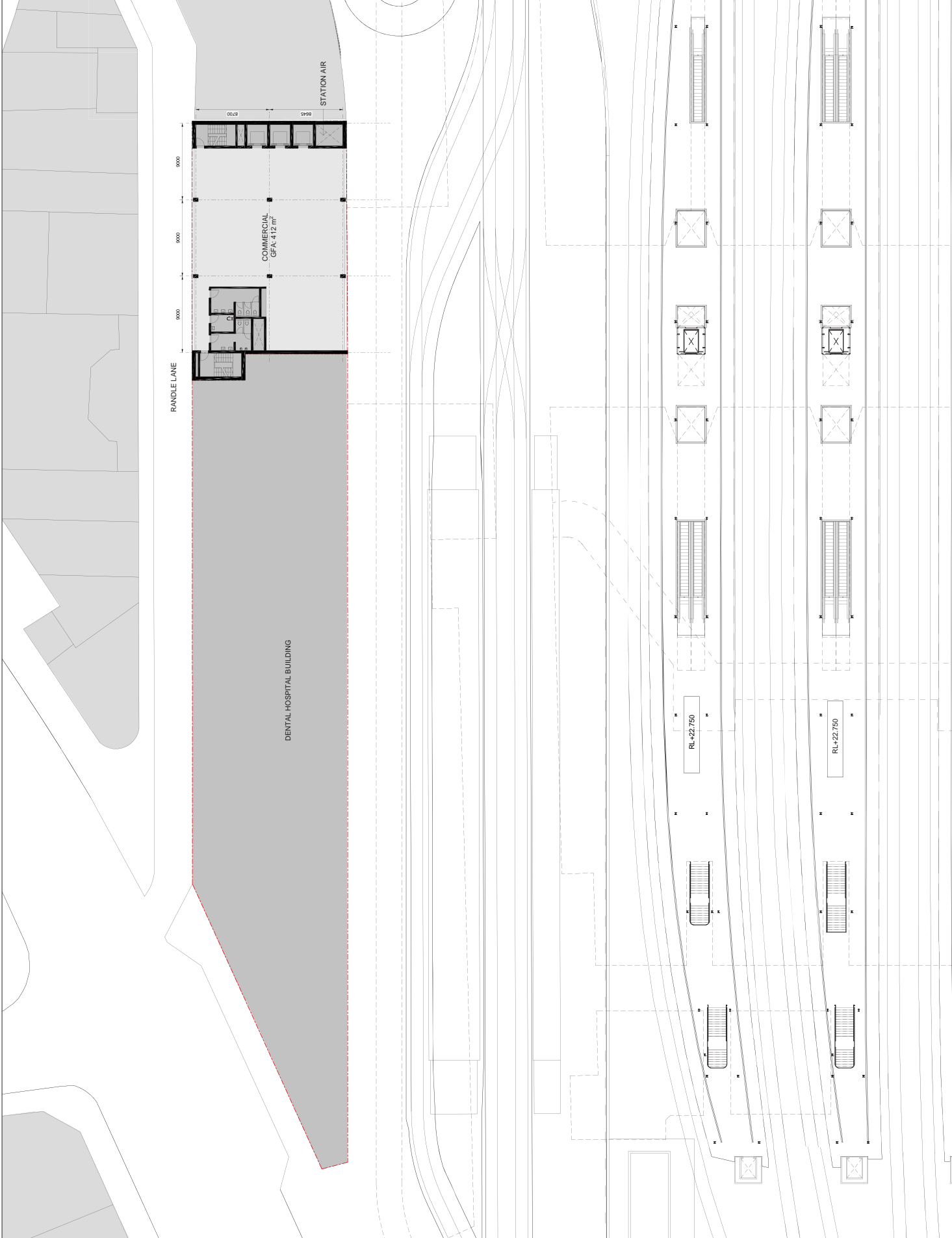
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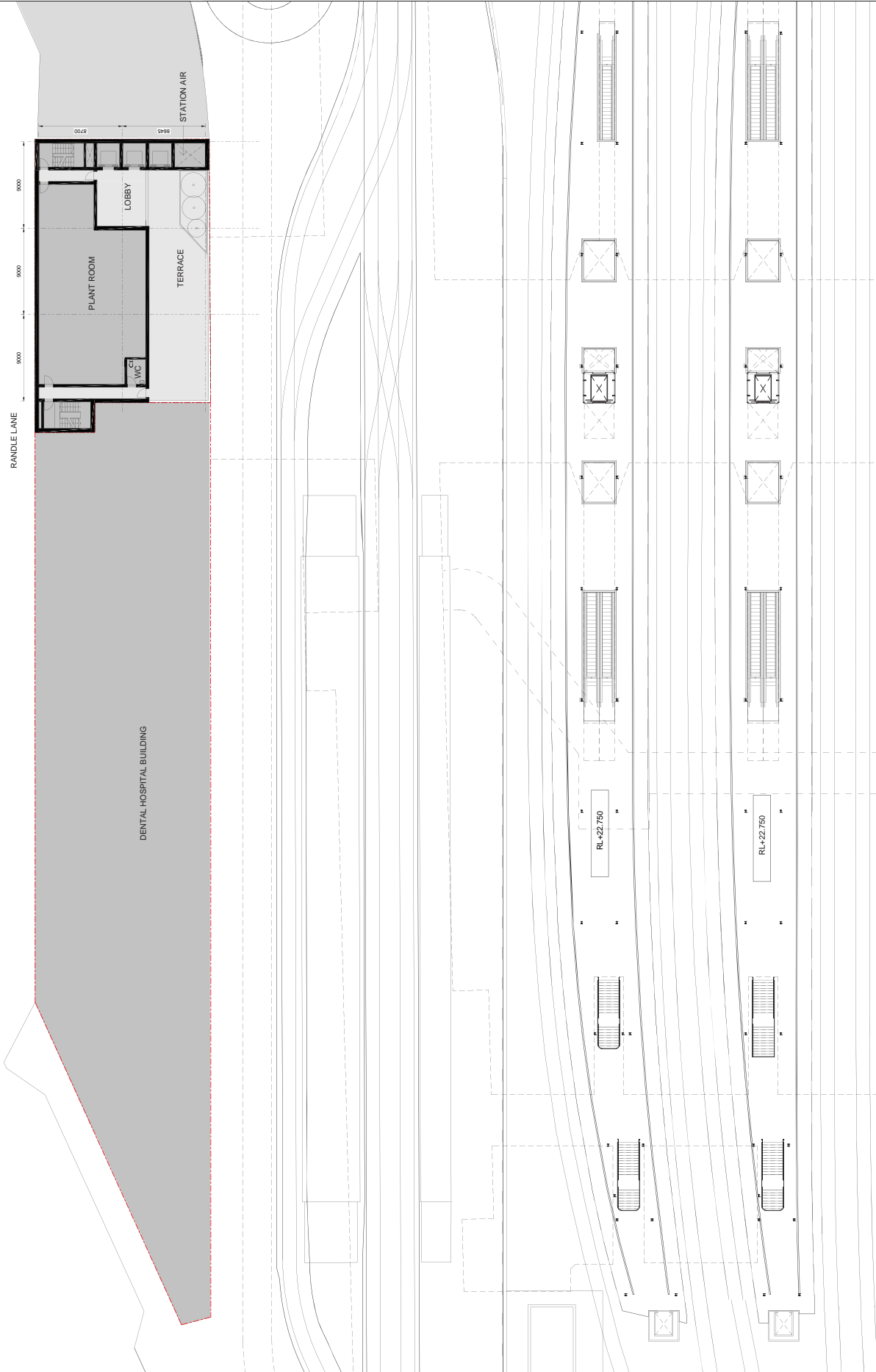
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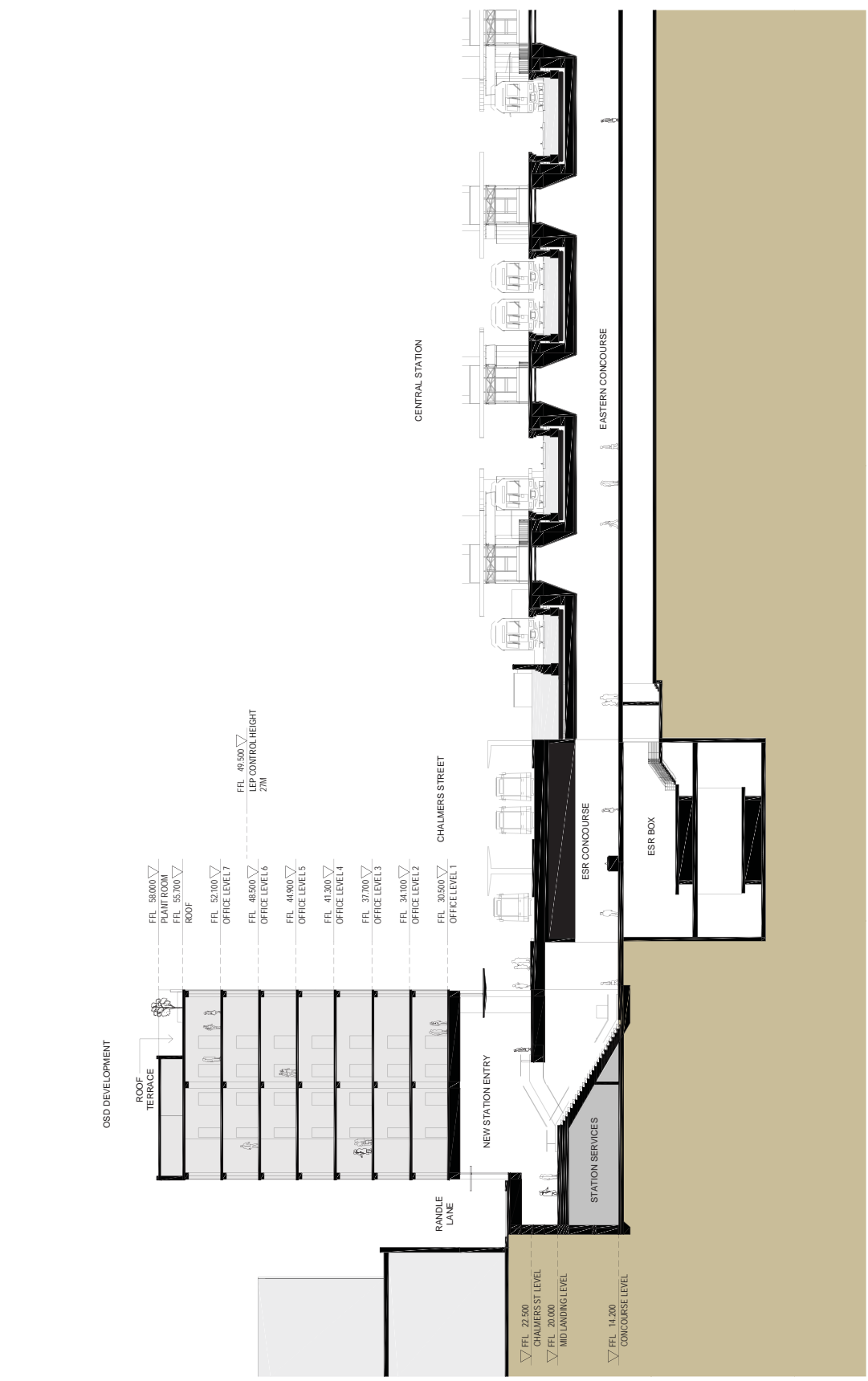
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OSD DEVELOPMENT

ROOF TERRACE

PLANT ROOM

ROOF

OFFICE LEVEL 7

OFFICE LEVEL 6

OFFICE LEVEL 5

OFFICE LEVEL 4

OFFICE LEVEL 3

OFFICE LEVEL 2

OFFICE LEVEL 1

NEW STATION ENTRY

STATION SERVICES

ESR CONCOURSE

ESR BOX

CENTRAL STATION

EASTERN CONCOURSE

RANDLE LANE

CHALMERS STREET

CHALMERS ST LEVEL

MID LANDING LEVEL

CONCOURSE LEVEL

LEP CONTROL HEIGHT 27M

FFL 58,000

FFL 55,700

FFL 52,100

FFL 48,500

FFL 44,900

FFL 41,300

FFL 37,700

FFL 34,100

FFL 30,500

FFL 27,500

FFL 20,000


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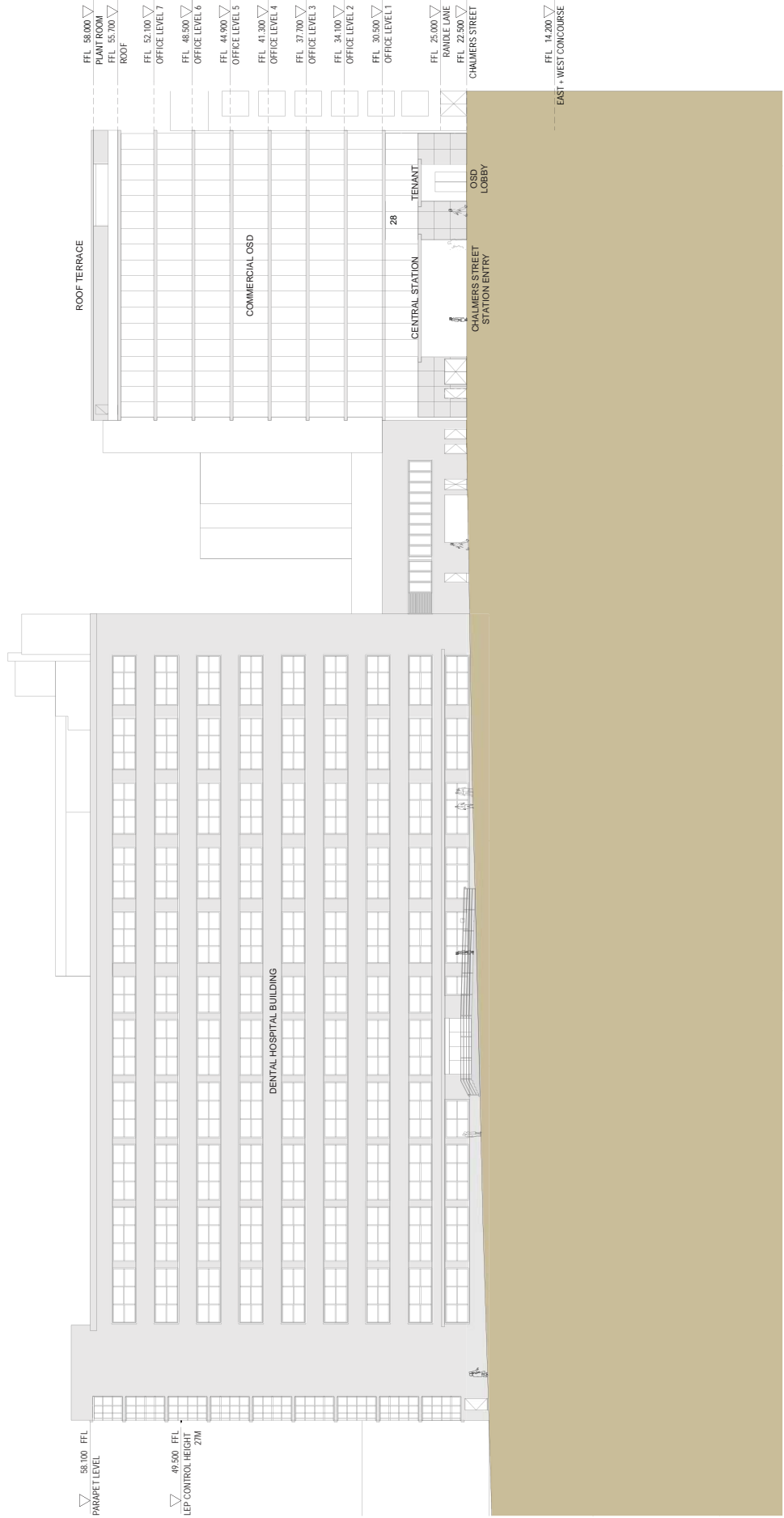
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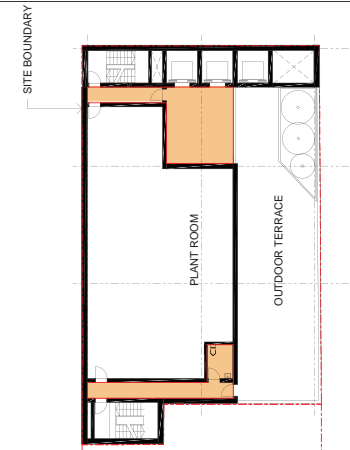
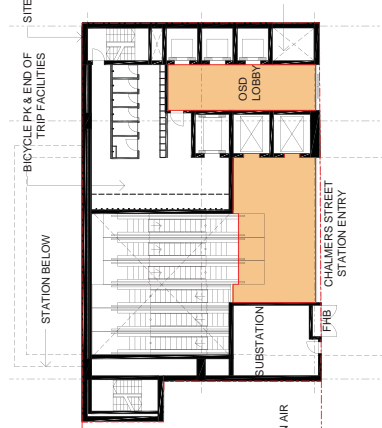
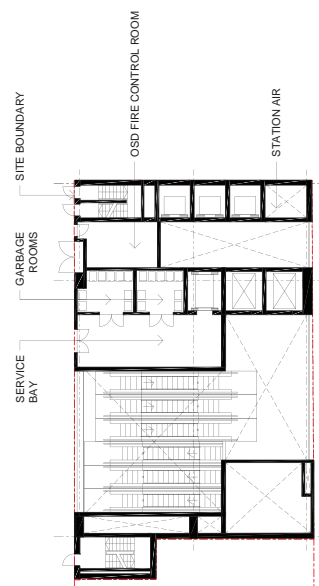
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APPENDIX 2: KONE Escalators + Autowalks Guide

4.3 Understanding your building segment

Not all buildings can be described as either commercial or infrastructure; there are many building segments, each with their own people transportation requirements. Before choosing an escalator or autowalk, it is important to be aware of the key differences between major types of buildings, as their use and their people flow affect the solution you will specify. KONE is fully aware of these differing requirements and offers complete equipment and service solutions for any people flow challenge. Please contact KONE for any people flow planning support you may require. The main segments and their most common people transportation requirements are shown below:



Public transportation segment

- High availability is vital
- High speed (100 fpm [0.5 m/s])
- Increases safety by allowing passengers to leave the platform quickly
- Linked to building management systems
- Standby speed
- Heavy indoor, semi-outdoor and fully outdoor use
- 20-24 hours running time per day



Airport segment

- High speed is usually required, especially for horizontal autowalks
- Visual design is very important; airports are key reference sites
- Availability is extremely important
- Linked to building management systems
- Mainly indoor
- 18-20 hours running time per day



Retail segment

- Visual design and lighting options important
- Very often belongs to the transport system of the building and linked to elevators
- Lowest possible speed to retain shoppers in the building
- Continuous operation very important to guide shoppers to other floors
- Mainly indoor
- 12-14 hours running time per day



Office/hotel/medical segment

- Visual quality outlook important as it represents the luxury level of the building
- Finishing often done by customer (office/hotel)
- Very often belongs to the transport system of the building and is linked to elevators
- Low running speed needed for passenger comfort
- Standby speed operational mode
- Mainly indoor and air-conditioned
- 10-12 hours running time per day



Leisure segment

- Availability is extremely important
- Amusement parks often have busy retail center type of traffic but in an outdoor environment
- Stadiums where the duty cycle is short but with peak loads require a heavier solution, similar to the public transportation segment
- Indoor, semi-outdoor and fully outdoor use
- 12-14 hours running time per day

Table 4.3 Typical configurations for infrastructure units

Railway station	Metro station	Airport	Airport
30° escalator	30° escalator	30° escalator	0° horizontal autowalk
40 in. (1000 mm) step width	40 in. (1000 mm) step width	40 in. (1000 mm) step width	40 in. (1000 mm) step width
100 fpm (0.5 m/s)	100 fpm (0.5 m/s)	100 fpm (0.5 m/s)	100 fpm (0.5 m/s)
Continuous, standby'	Continuous, standby'	Continuous, standby'	Continuous, standby'
Glass or solid inclined balustrade	Glass or solid inclined balustrade	Glass balustrade	Glass balustrade
Stainless steel side cladding	Stainless steel side cladding	Customized or stainless steel side cladding	No cladding

'See Chapter 5.2 for the description of operational modes.



5.3 Step width

Escalators

Escalators are generally available in three step widths: 24, 32 and 40 in. (600, 800 and 1000 mm).

24 in. (600 mm) step width

- Allows only one adult passenger to stand on each step
- Should only be selected where space for an escalator is restricted, as it is uncomfortable for passengers and presents an old-fashioned appearance
- As space is very restricted between the balustrades, this width is only suitable for installations where passengers will not be carrying large shopping bags or luggage

32 in. (800 mm) step width

- Allows one adult passenger and a small child, or one adult passenger with shopping bags or luggage (i.e. 1.5 passengers) to stand on each step
- Suitable for medium- or low-usage installations, such as shops

40 in. (1000 mm) step width

- Allows two adult passengers to stand on each step
- Maximizes transport capacity for high-usage installations such as large department stores, shopping malls, airports and railway stations

ASME A17.1-2013/CSA B44-13 The maximum and minimum permitted step widths under ASME A17.1-2013/CSA B44-13 are 40 in. (1000 mm) and 22 in. (560 mm), respectively.

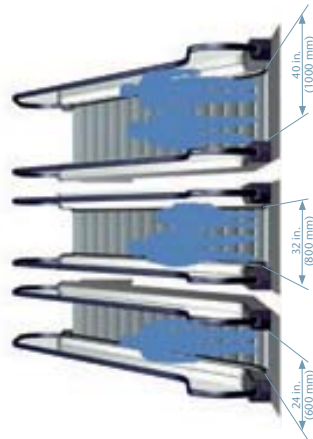


Figure 5.4 Escalator step widths

Horizontal autowalks

KONE horizontal autowalks are available with pallet widths of 32 in. (800 mm), 40 in. (1000 mm), 48 in. (1200 mm) and 56 in. (1400 mm). Per ASME A17.1-2013/CSA B44-13, autowalks are not permitted to have an angle of inclination greater than 12° at any point.

- Generally available in pallet widths of 32 in. (800 mm), 40 in. (1000 mm), 48 in. (1200 mm) and 56 in. (1400 mm)
- As the majority of autowalks are for high-usage installations, such as airports, a 56 in. (1400 mm) pallet width is always preferable
- 56 in. (1400 mm) pallet allows two adult passengers to stand on each one and thereby maximizes the transport capacity
- 40/48 in. (1000/1200 mm) pallet widths are suitable for medium- or low-usage installations, such as smaller airports or hospitals
- 40/48 in. (1000/1200 mm) pallet width allows one adult passenger and a small child to stand on each pallet or one adult passenger with shopping bags or luggage
- 32 in. (800 mm) pallet width are suitable for medium- or low-usage installations, such as shops. This pallet width allows one adult passenger and a small child to stand on each pallet or one adult passenger with shopping bags or luggage

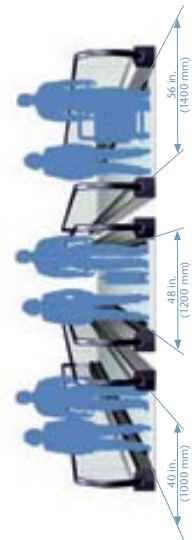


Figure 5.5 Horizontal autowalk pallet widths
*Step width also available in 32 in. (800 mm) width

5.7 Horizontal (level) steps/pallets

Horizontal (level) steps are required at each landing of an escalator to enable passengers to safely board and disembark the moving step band. They allow passengers to steady themselves and position their feet correctly on the steps before reaching the transition curve into the inclined section. When disembarking, horizontal steps allow passengers to safely step off the moving step before their feet touch the combs. Escalators must be equipped with horizontal steps on both ends.

Escalators

ASME A17.1-2013/CSA B44-13

Flat steps

There shall be a minimum of two and a maximum of four flat steps at the entrance and exit of every escalator.

Dimensions of steps

The depth of any step tread in the direction of travel shall not be less than 16 in. (400 mm), and the rise between treads shall not be more than 9 in. (220 mm). The width of a step tread shall not be less than 22 in. (560 mm) nor more than 40 in. (1000 mm).

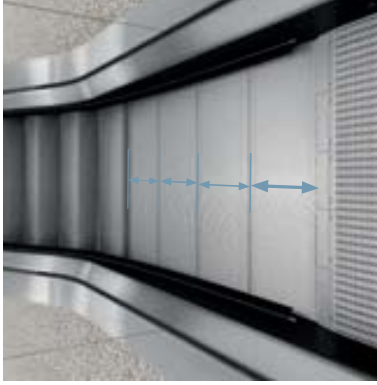


Figure 5.6 Horizontal steps enable a passenger to step safely on and off the escalator

5.8 Vertical rise (travel height)

Table 5.2 gives an overview of the common vertical rise possibilities for different building segments. For actual product information please refer to the product vs.

Equipment	Rise	Equipment	Rise
Retail/office/hotel/medical escalators	7 to 40 ft. (2 to 12 m)	Airport escalators	7 to 40 ft. (2 to 12 m)
Leisure escalators	7 to 60 ft. (2 to 18 m)	Public transportation escalators	10 to 142 ft. (3 to 40 m)

Table 5.2 The most common vertical rises used in different buildings (others are possible)

Escalators and autowalks

ASME A17.1-2013/CSA B44-13 puts no limit on the vertical rise of an escalator or maximum length of a horizontal autowalk.

6.1 Passenger circulation area

To ensure that passengers can safely board and disembark the escalator or autowalk, a clear passenger circulation area must be available at each landing to allow their unimpeded movement. The passenger circulation areas for single and adjacent escalators are as follows.

ASME A17.1-2013/CSA B44-13

Safety zone

The entry and exit zone shall be kept clear of all obstacles. The width of the zone shall not be less than the width between the centerlines of the handrails plus 8 in. (200 mm). The length of the zone, measured from the end of the newel, shall not be less than twice the distance between the centerlines of the handrails (Figure 6.1). Space shall be provided to accommodate all traffic in the safety zone.

NOTE: These dimensions are absolute minimums.

For parallel escalators or autowalks the recommended clear passenger circulation area is shown in Figure 6.2.

NOTE: For autowalks where shopping or baggage carts are used, we recommend you to increase the passenger circulation area in front of the autowalk as much as possible, for example to 17 ft. (5 m), this to increase the efficient people flow within the building.



Figure 6.1 Passenger circulation area for single escalators
A = distance between handrail centerlines

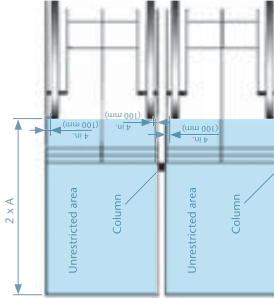
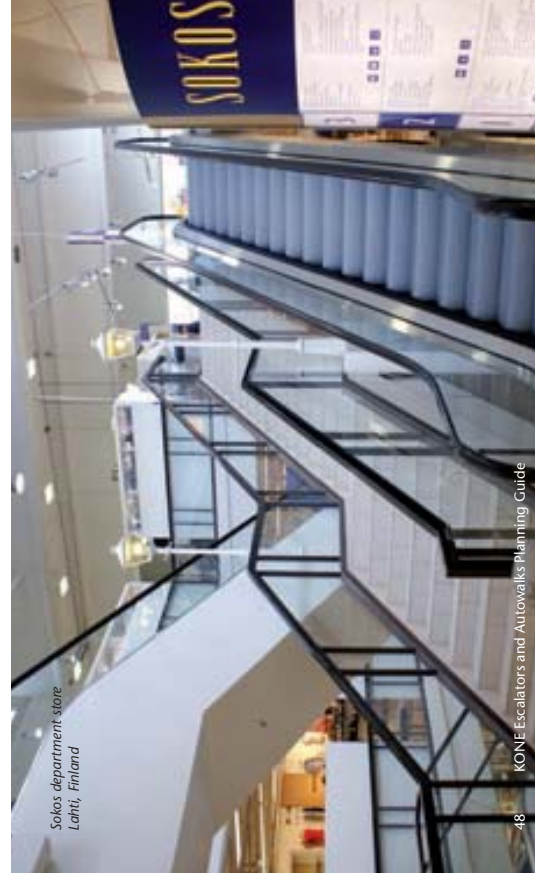


Figure 6.2 Passenger circulation area for parallel escalators



Sokos department store
Lahti, Finland

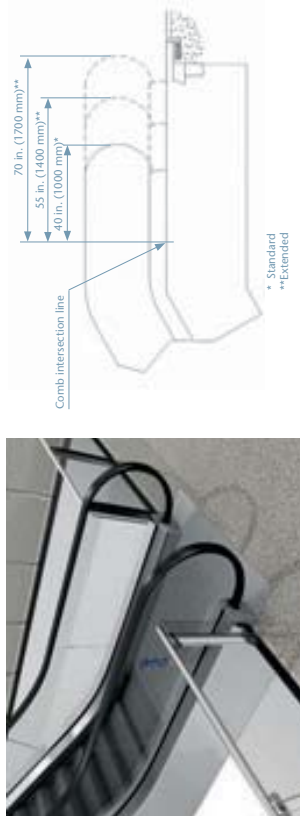


Figure 5.12 An extended balustrade allows railing to neatly butt against the escalator balustrade

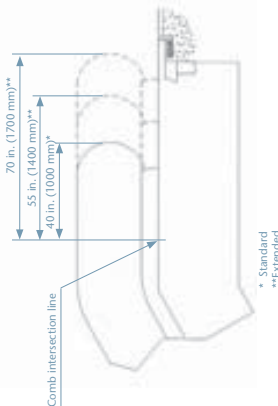


Figure 5.13 Different extended balustrade lengths

5.12 Balustrade height

Balustrade height is measured vertically to the top surface of the handrail from the nose of the steps on the inclined section and from the finished floor level at the landings. The standard balustrade height for escalators is 40 in. (1000 mm).

Our standard balustrade height of 40 in. (1000 mm) is higher than the ASME A17.1-2013/CSA B44-13 required minimum height of 36 in. (900 mm). The higher balustrade increases safety for adults, as the higher the balustrade, the less likely passengers are to fall over the balustrade if they lose their balance.

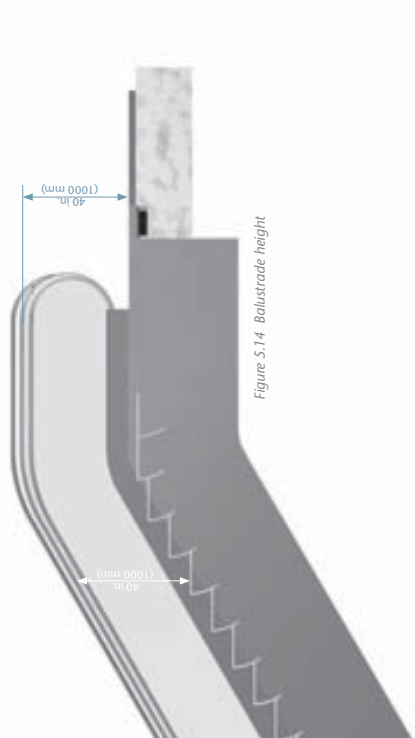


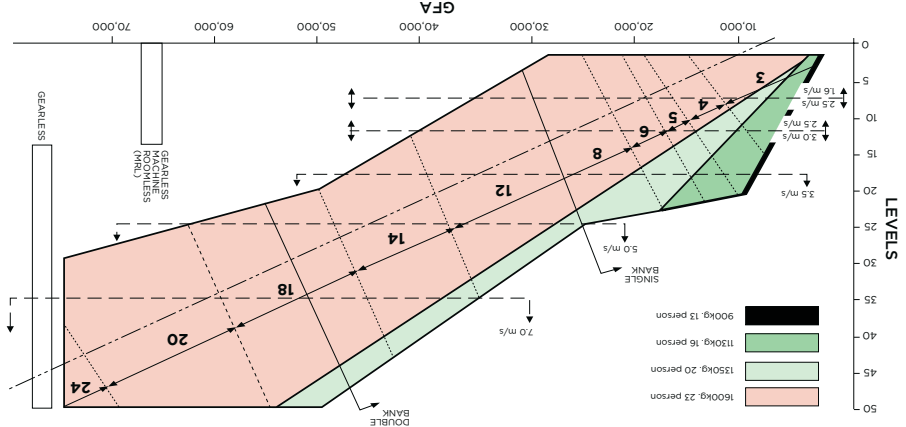
Figure 5.14 Balustrade height

APPENDIX 3: Sydney Construction Vertical Transportation

SYDNEY CONSTRUCTION VERTICAL TRANSPORTATION

APPLICATION	LIFT TYPE	SPEED M/S	NO. OF FLOORS SERVED	BASE COST \$		ADDITIONAL FLOOR	EXPRESS FLOOR
				LOW	HIGH		
OFFICE & RESIDENTIAL	ELECTRO-HYDRAULIC PASSENGER	0.5	2	102,000	120,000	127,700	8,000
	GEARLESS TO 17 PASSENGER	1	5	130,000	150,000	10,900	6,900
	GEARLESS UP TO 17 PASSENGER	1.6	8	167,000	193,000	10,900	6,900
	GEARLESS	2.5	10	446,000	509,000	13,600	8,600
	GEARLESS	3.5	10	493,000	530,000	13,600	8,600
	GEARLESS	4	10	530,000	555,000	13,600	8,600
	GEARLESS	5	10	545,000	585,000	13,600	8,600
	GEARLESS	6	10	590,000	630,000	13,600	8,600
	GEARLESS	7	10	635,000	675,000	13,600	8,600
	GEARLESS	8	10	705,000	765,000	14,100	9,100
HOSPITAL	GEARLESS UP TO 40 PASSENGER	2	5	415,000	493,000	15,700	10,100
	GEARLESS	2.5	10	515,000	550,000	14,700	10,100
LARGE GOODS	GEARLESS MRL TO ZOOING	1.6	10	350,000	385,000	14,700	10,100
	ELECTRO-HYDRAULIC TO 5,000KG	0.5	2	285,000	335,000	15,200	10,100
ESCALATORS	GEARLESS 2,500KG	2.5	10	550,000	590,000	14,600	8,500
	RISE 2,600 TO 5,000MM	0.5	-	175,000	265,000	-	-
MOVING WALKS	2,500 TO 5,000MM	0.5	-	340,000	415,000	-	-
SERVICE LIFT	BENCH-HEIGHT UNIT	0.2	3	32,000	37,000	4,700	1,400
	LARGE UNIT	0.2	3	48,000	56,000	5,200	1,600
DISABLED PLATFORM LIFT	TO 1,000MM	0.1	2	32,000	37,000	-	-
	1,000 TO 4,000MM	0.1	2	38,000	51,000	-	-

Note: Destination Control Lift. System option costs are not included in the above rates.



SYDNEY CONSTRUCTION VERTICAL TRANSPORTATION

LIFT SELECTION CHART

To calculate the number and type of lifts:

- Locate a point on the graph by using the GFA in M² shown on the bottom axis and number of levels on the left axis.
- The colour at the intersection point indicates the lift capacity, the horizontal lines the lift speed and the angled lines the number of lifts and the number of banks.
- By extending the horizontal line to the far right hand side, the type of lift required can be obtained.

Destination control is an optional lift control system in which passengers key-in the number of their destination floor at a button panel located in their current lift lobby area. Each floor lobby has a button panel. The lifts cars themselves do not have destination buttons and are designated to serve the floors as required. Destination control will generally boost the "Up peak" or morning performance of the lift system and will provide additional security provisions. The performance of the lift system during lunch times and at the end of the day is generally not improved with this control system. Lobby area may need to be increased.

Rider Levett Bucknall

RLB

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