Architecture Interior Design Landscape Architecture Planning Urban Design Australia China Hong Kong Singapore United Kingdom

# AUSTRALIAN NATIONAL UNIVERSITY -RESEARCH SCHOOL OF PHYSICS AND ENGINEERING PRECINCT

# MAJOR WORKS APPROVAL APPLICATION

Volume 02

Prepared for Australian National University August 2017





Front cover image: ANU RSPE Precinct

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A	30.08.2017	MR	Major Works Approval Application Issue					

01

# Planning Report

\_Works Approval Planning Report

# Schedule of Proposed Works

\_Architectural Design Statement \_Landscape Design Statement \_Exterior Lighting Design Statement \_Works associated with Services Connections \_Extent of Earthworks \_Supporting drawings - Refer to Document Transmittal

# 03

## **Detailed Site Plan**

\_Site and context diagrams

- \_Site Works Plans Refer to Document Transmittal
- \_Undergorund Services Drawings Refer to
- Document Transmittal \_Demolition drawings - Refer to Document
- Transmittal

# 04

## **Architectural Drawings**

\_Refer Document Transmittal

**Consultation Report** 

06

# **Civil and Excavation Plans**

\_Supporting drawings - Refer to Document Transmittal

# **Drawing Schedule**

\_Document Transmittal - (xlsx format)

08

## 3D Model

\_Aerial view \_Entry podium \_Parkes Way view approached from the west

\_South facade

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# 05

# Landscape Plans

\_Refer Document Transmittal

#### **Architectural Design Statement**

#### Background

The proposed development for the Research School of Physics & Engineering (RSPE) at the Australian National University (ANU) in Canberra is the first step in the realisation of the 2016 RSPE Master Plan. Working within the specific urban design and landscape considerations of the City and Campus, the proposed development provides an opportunity to:

- \_Provide a stronger visual identity for the ANU campus from Parkes Way but also to the wider City of Canberra
- \_Articulate a renewed public address for RSPE to reflect the world-leading research activities within the building
- \_Establish the core built framework to anticipate the long term realisation of the Master Plan for the entire RSPE Precinct.

#### Site Response

The RSPE Precinct holds a prominent position in the south-west corner of the ANU campus on a knoll overlooking West Lake of Lake Burley Griffin. As a major arterial road connecting to Canberra southern suburbs, Parkes Way, sits between the ANU campus and lake as a major noise source and physical barrier to lake edge connectivity which is only possible via the bridge underpass at the Sullivan Creek.

Parkes Way is one of the few external road vantage points providing views toward the ANU campus with the RSPE Precinct in the foreground and the Accelerator Tower prominent through the tree canopy.

The combination of the site topography and landscape directly influenced the architectural design response. A complimentary landscape strategy establishes a courtyard structure with a connection to the campus landscape beyond, preserves and enhances the Sullivan's Creek corridor and retains the boundary landscape slopes.

#### **Conceptual Approach**

Given the diversity of disciplines and research areas in the field of Physics at ANU, the conceptual approach is to provide an abstracted interpretation of Physics woven into the building form, materials and expression. From the simple definition of Physics - "a branch of science concerned with the nature and properties of matter and energy" - we posed two questions:

- 1. How can we suggest energy without actually moving something? (movement)
- 2. How can we indicate matter through a building somehow? (matter)

The design is conceptually driven by the dual propositions of movement and matter.

#### Movement

To create a sense of movement in a static building, the proposed design explores the kinetic through the moiré effect or the effect of light on the facade.

A series of fine vertical blades repeating across the full length of the facade creates a sense of movement by a moiré effect when viewed from Parkes Way. The profile of these blades vary along the elevation to create an abstracted pattern inspired by gravitational waves.

The design and setout has a mathematical basis rather than just an arbitrary expression of curves and lines. We developing these facade concepts through a blend of quantitative computational design and qualitative architectural design iteration.

#### Matter

The proposed design takes an abstracted view of 'matter' by the expression of materials and form through duality. That is, contrasting heavy and light, machine-like versus organic, transparent and translucent throughout the exterior and interior of the building.

This can be seen through the contrast of the visually heavy stone plinth and the lightweight vertical blades and perforated screen enclosing the main building forms. Similarly a combination of clear and translucent facade zones on the auditorium expose and reveal to respond to internal function and external contextual conditions. This notion of duality follows into the interior design.

#### Form and Massing

The proposed development of RSPE brings cohesion and order to the ad-hoc accumulation of existing buildings through new built forms. The proposed laboratory and workplace box forms are deployed in alignment to the ANU campus 'peninsula grid' which integrate with the legacy buildings (Oliphant, Cockcroft) being retained on site. Clarity of internal circulation is paramount to provide the legibility in the RSPE precinct currently lacking. This is supported by the simple grid arrangement of the primary building forms.

Overall building massing maintains views to the top of the Accelerator Tower (an informal marker of Griffins' Water Axis running through the RSPE site)

To reduce the visual bulk of the proposed building, each functional mass is separated and then offset in plan and in elevation. This reduces the scale, responds to the linear character of the legacy Cockcroft and Oliphant buildings and assists in settling the building into the site topography. Each linear form is separated to facilitate opportunities to bring light deep down into the primary multi-level circulation spines via skylights and courtyard glazing.

Each of these linear forms sit upon a stone plinth that provides a cohesive base to the building and connects it to the surrounding landform.

As a counterpoint to the three long linear laboratory forms, the auditorium form is deliberately physically and visually distinctive as a 'bookend' from other parts of the building. This reflects a more public use and function as well as creating a welcoming entry to the precinct.

The auditorium is skewed into a rhomboid to open up the main entry forecourt between the Auditorium and the Oliphant Building as well as preserving the existing view corridor of West Lake from the Oliphant Building. Additionally as a rhomboid, the southern facade is rotated towards West Lake - a subtle nod to Walter Burley's Griffin's underlying city plan and the Water Axis. A blend of transparent and translucent facade panels enables different 'readings' of the Auditorium form. Apertures in the facade control and direct the view, culminating in the large picture window that allows occupants an expansive view over the West Lake.

#### Materials and Finishes

For the proposed development, the strategy is to complement the existing legacy buildings in the Garran Precinct - as a link to the past - while introducing new contemporary materials and finishes to point to the future. Overall a palette of natural finishes complimenting the context of the Australian natural environment. The colour palette will likewise complement the natural warm tones of the native campus planting and complement the surrounding tree canopy on site. An enduring quality is sought with the selection of external materials and finishes.

Facade materials and finishes also respond directly to the facade concept by reinforcing the main ideas of opposites (heavy/light, transparent/translucent) and capturing the essence of the building functionality. Where appropriate, the facade materials and finishes move away from the earthy tones, to precise, machine-like elements to visually distinguish these elements. For example, clear glazed areas facilitate uninterrupted views or are employed to clearly separate old and new built fabric.

Each material and finish relates to a specific component of the building, each clearly articulated from each other:

#### Plinth

A grey local basalt plinth is a nod to the nearby mid-century modern Menzies Library and ties the different building forms together and helps blend the building into the surrounding landscape and nearby Acton Underhill / Tunnel. The inherent rustication of the local stone provides texture and human scaling through detail.

#### Veil

Above the plinth sits a series of long boxes that are wrapped by a series of thin blades and a colourmatched perforated metal screen (West elevation). This screen is an interlayer between the tree canopies and the interior and is intended to reflect the fineness of the leaves. An anodised finish in warm tones such as light bronze is envisaged.

# Glazing Areas of clear performance glazing visually separate different forms within the overall precinct. For example a large clear glazed picture window separates the workplace and lab block from the auditorium form. Similarly clear glazed circulation links connect the legacy buildings to the new building.

#### Landscape Design Statement

The landscape design response will ensure that all disturbed surfaces are re-vegetated or treated with high quality landscape finishes that will enhance the experience and presentation of the ANU campus.

Both the hardscape (pavements, walls, furniture) and softscape (trees, shrubs, groundcovers) have been carefully selected to complement the existing materiality, colours and species selections that have been successful on campus.

The hardscape palette features local basalt stone and a selection of high quality finished concrete surfaces that will provide an enduring legacy finish. Planting has been selected that will reinforce the remnant eucalypt fringe to the building perimeter whilst the courtyards and main arrival plaza feature exotic species that have performed well on campus and continue the more formalised garden-esque campus character prevalent within recent projects.

Broadly the landscape has been composed to ground the building comfortably and confidently within both the natural and campus built environments. The height and form of the building has been considered and moderated within the landscape response and a deliberately complementary materiality has been adopted to achieve a seamless but nonetheless distinctive common creative identity.

#### Exterior Lighting Design Statement

All building entry points will be provided with lighting for outdoor safety and security as a preventive and corrective measure against intrusions or other criminal activity around the building. Further it will also increase the feeling of safety for occupants entering and leaving the building.

The Main entry Plaza will be provided with post top luminaires, supplemented by inground strip light LED luminaires recessed into the pavement. Step lighting will be provided along any steps to highlight the difference in floor levels.

Furthermore, selected trees near the entrance will also be lit with in-ground uplights to highlight the tree features. All lights and supply conduits will need to be carefully positioned so as not to disturbed the tree roots.

General lighting will be provided along all pathways, either from post top light fittings or low level bollard mounted along the pathways. Roadway lighting to the Loading dock area will be provided by pole top luminaires. The pedestrian walkway along the south boundary will consist of either post top light fittings or low level bollards. This will be further determined during the design, with a view of what is more appropriate method of lighting the pathway, so as not to detract views from the facade of the building.

All exterior lighting will be utilising LED luminaires for energy efficiency and will be controlled via PE cell and time clock with building lighting control system.

All external light fitting will need to be selected to ensure there will be minimum spill light to the sky.

#### Works associated with Servicecs Connections

#### Water Supply and Sewer Discharge

The proposed development works involves the demolition of several buildings and reconstruction with new building development, including the building over an Authority water main.

The associated works and services connections include:

- \_Disconnection of existing water meters and supply branches to buildings to be demolished
- \_Cut and seal of tapping at existing water main connections
- \_Disconnection and abolition of sewer drain connections to Authority manholes
- \_Cut and seal manhole connections at manholes \_Abolition of Authority water main for temporary
- disconnection (during bulk earthworks period) \_Maintain continuity of supply to existing services
- supplying remaining buildings
- Installation of new Authority water main external to the new building footprint
- Relocation of Authority water main for continuity of water supply in ring main
- Installation of new fire and water services connections and tapping to the new building(s).

#### Natural Gas Supply

The proposed development works involves the demolition of several buildings and reconstruction with new building development.

The associated works and services connections include:

- \_Disconnection and demolition of existing gas meters and associated supply branches to buildings
- \_Maintain continuity of gas supply service to existing remaining buildings
- \_Installation of new Authority gas main external to the new building footprint, including:
- \_Connection to the new building
- \_Connection to existing gas main to form precinct ring main.

#### Power Supply and Communications Cabling New building will be provided with new power

- supply as follows: \_Disconnection and demolition of existing external
- substation in redundant building. \_Existing underground HV cables will be pulled back
- and used as temporary supplies for construction works \_New indoor substation is proposed in the loading
- dock of the new building
- \_All new High Voltage (HV) cabling will be provided to the new building from the nearest kiosk substation
- New trenches for High Voltage (HV) and Low Voltage (LV) cabling will be provided along new access road to the loading dock
- Installation of new supplies will be to Local Supply Authority (ActewAGL) and ANU requirements \_New HV supplies and transformers in the new substation are proposed to be installed on a Ring Main - to allow dual feed.

New building will be provided with new Communications link as follows:

- \_Disconnection and demolition of existing fibre cable connection to existing redundant building. Existing underground fibre cables will be pulled back and removed
- \_New building will be provided with new Main Communications room on Level 1 and additional Communications rooms on each level
- \_The new Building Main Comms room will be linked to the Campus with new 2 x runs of fibre optic cables
- \_The cables will run internally through the existing buildings, to the new building.

#### **Extent of Earthworks**

#### **Off Site Works Requirements**

The proposed development involves significant earthworks to form the building platform, surrounding landscape areas, vehicle access ways and pedestrian areas.

The extent of earthworks can generally be described as consisting of cutting and filling operations, with a significant volume of cut material required to be removed from site. To ensure that the excavation activities are carried out safely and efficiently, it is proposed that the bulk of the excavation for the Stage 1B works be completed prior to the construction of Stage 1A. This will allow full use of the available site area to be used without the risks associated with excavating around services and adjacent the Stage 1A structure.

The following is a specific description of the excavation activities associated with the proposed development, and are shown on the sketches (SK-002 and SK-003) accompanying this report.

\_Excavation of the top of the existing southern embankment to nominal RL562.0.

- \_Extension of the building pad over the existing southern embankment to nominal RL 562.0. \_Excavation of building envelope to nominal RL
- 561.5 (noting that variance in this level will be required to suit the overlying structural elements).
- \_Filling of the void under the existing suspended podium to form the new building entrance.
- \_Fill and cut operations to form the loading dock access road, noting that generally the southern side of the access road will be within nominally 1-1.5m fill.

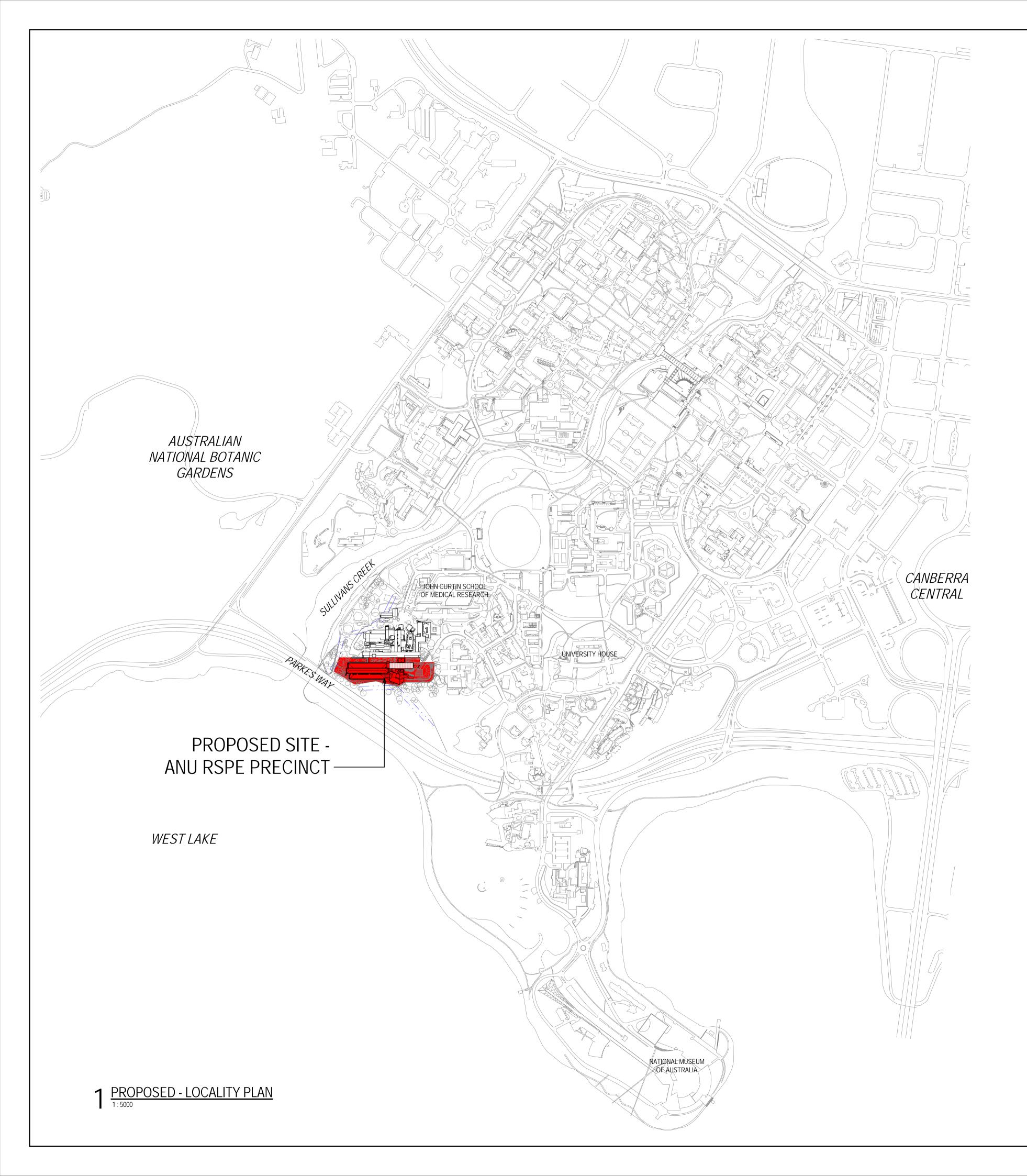
\_Minor earthworks to facilitate the grading of pedestrian paths to the west of the proposed building connecting to existing infrastructure. \_Excavation of the courtyard area to the north of

- Stage 1B to limit the temporary retaining requirements.
- \_Minor regrading for landscape and pedestrian areas outside of the building, podium and vehicle access areas to tie the proposed development into the surrounding site formation.

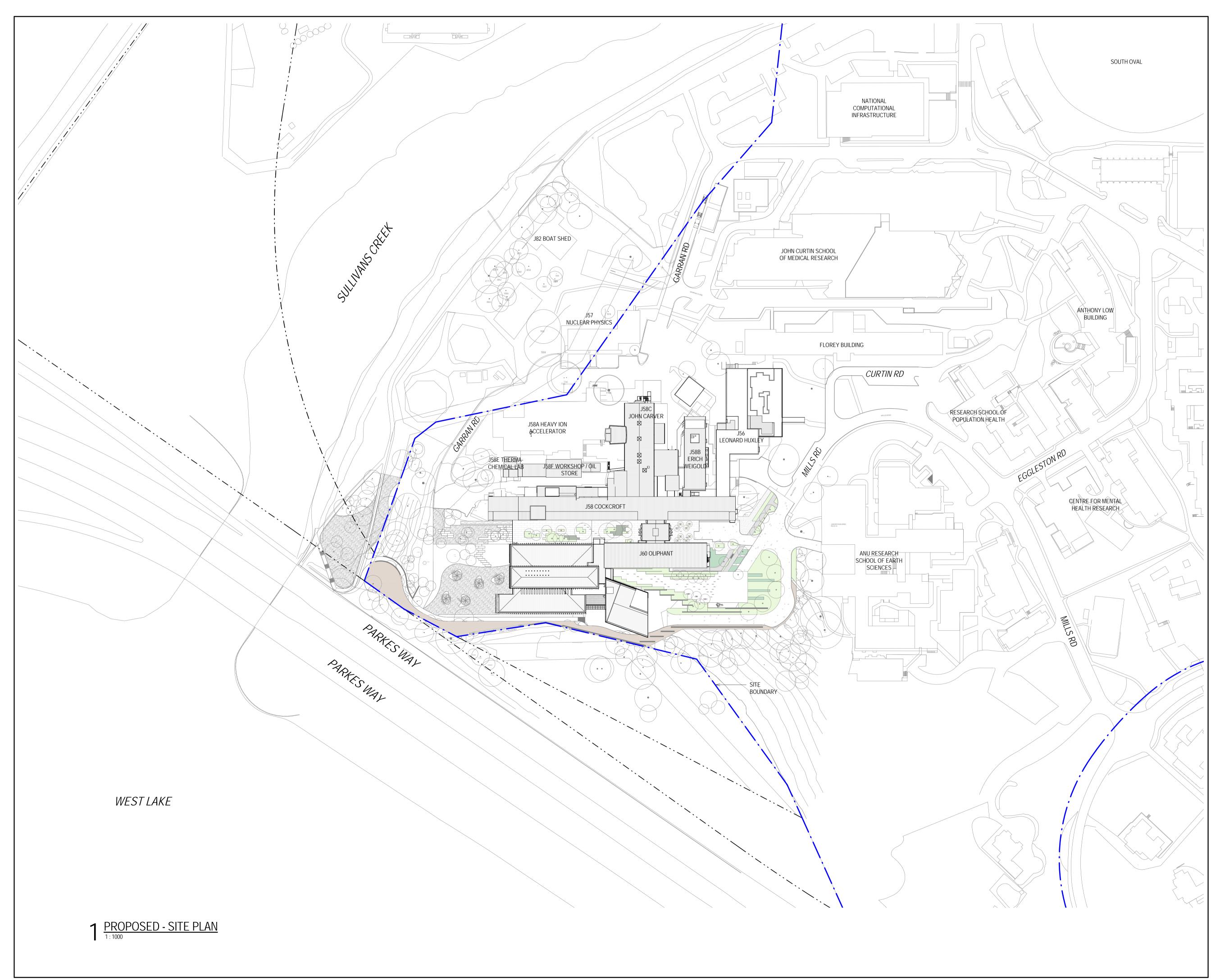
There are no off site civil works required as part of the proposed development.

#### Supporting Drawings

- \_Location Plan showing Site Coverage \_Building Site Plan showing setbacks and site coverage \_GFA Plan of Levels 1 and 2 \_GFA Plan of Levels 3 and 4
- \_Building Elevations (2 off) showing building heights
- \_External Materials and Finishes



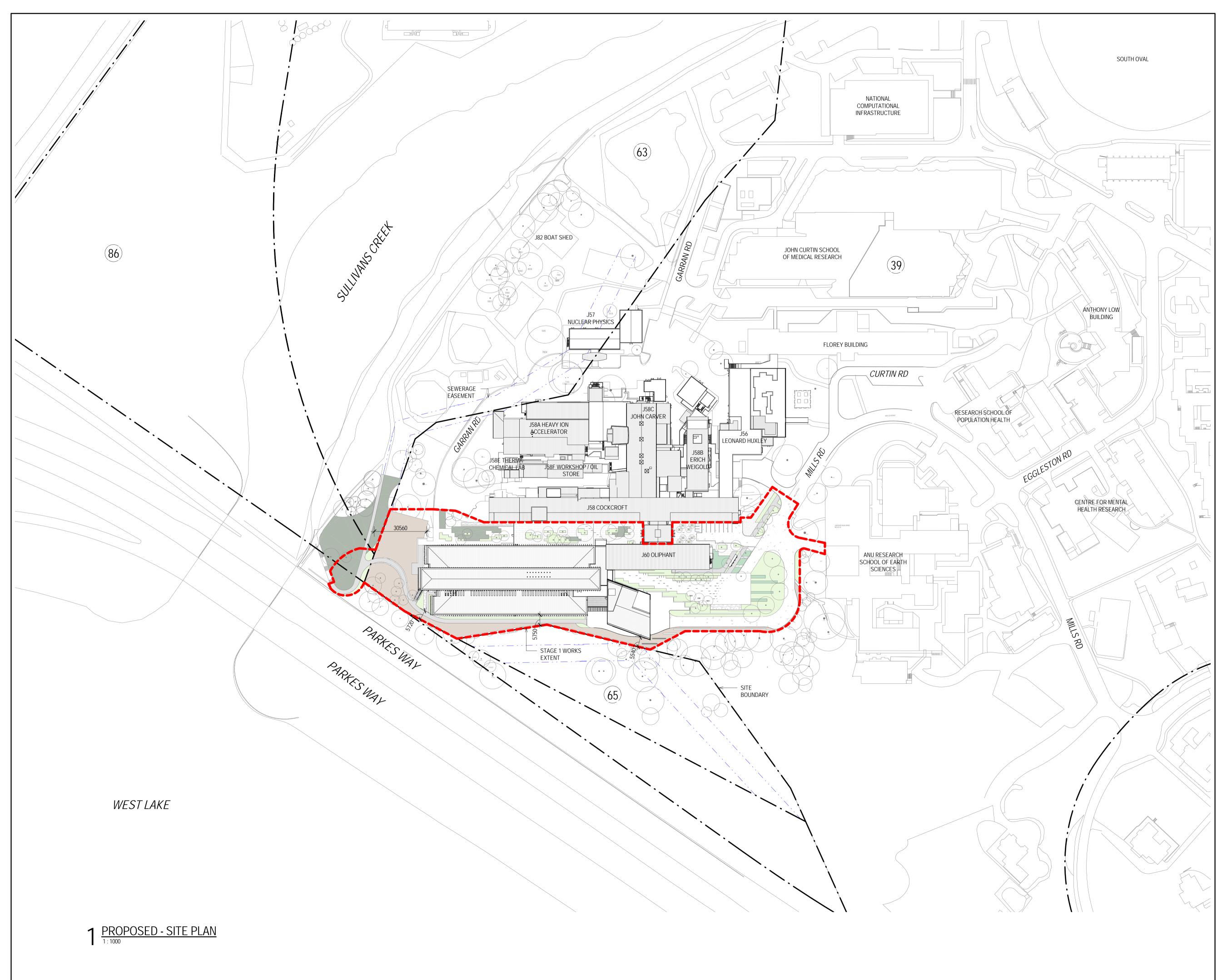
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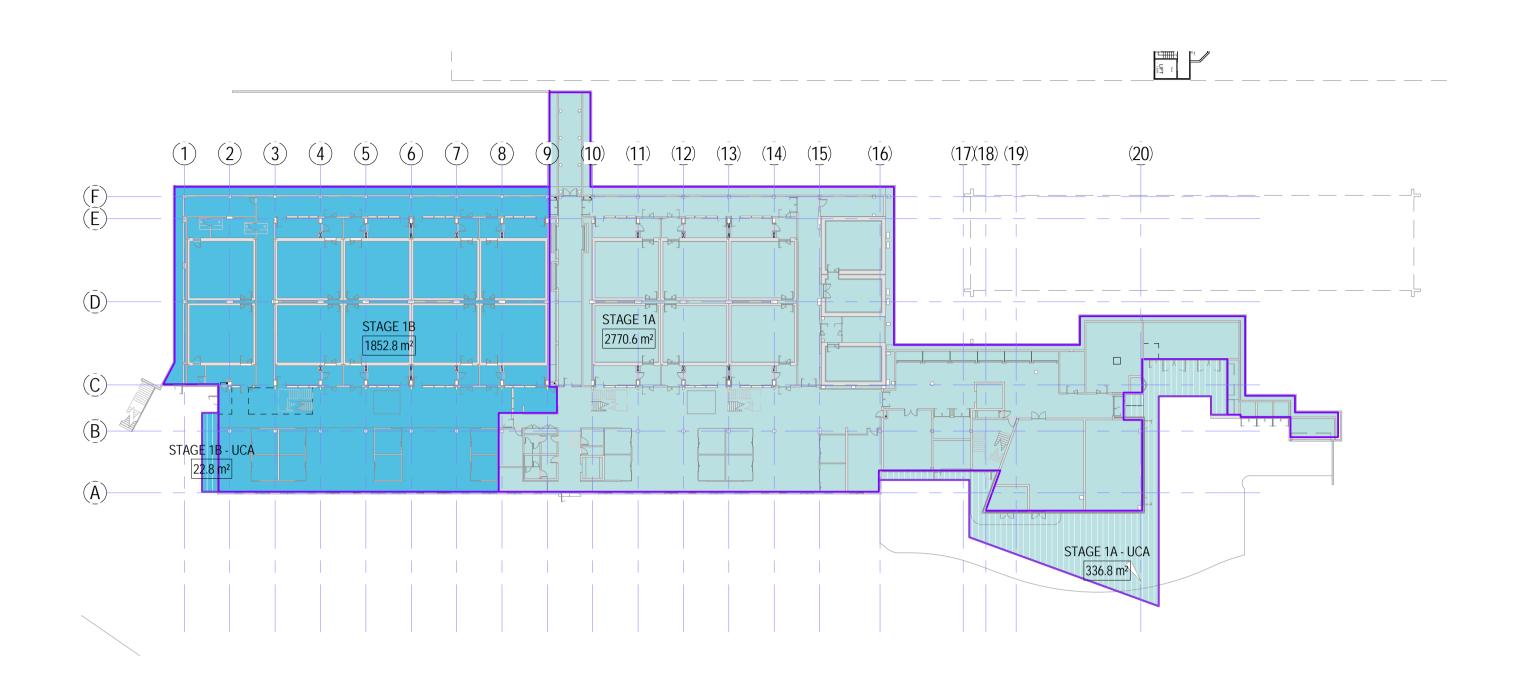
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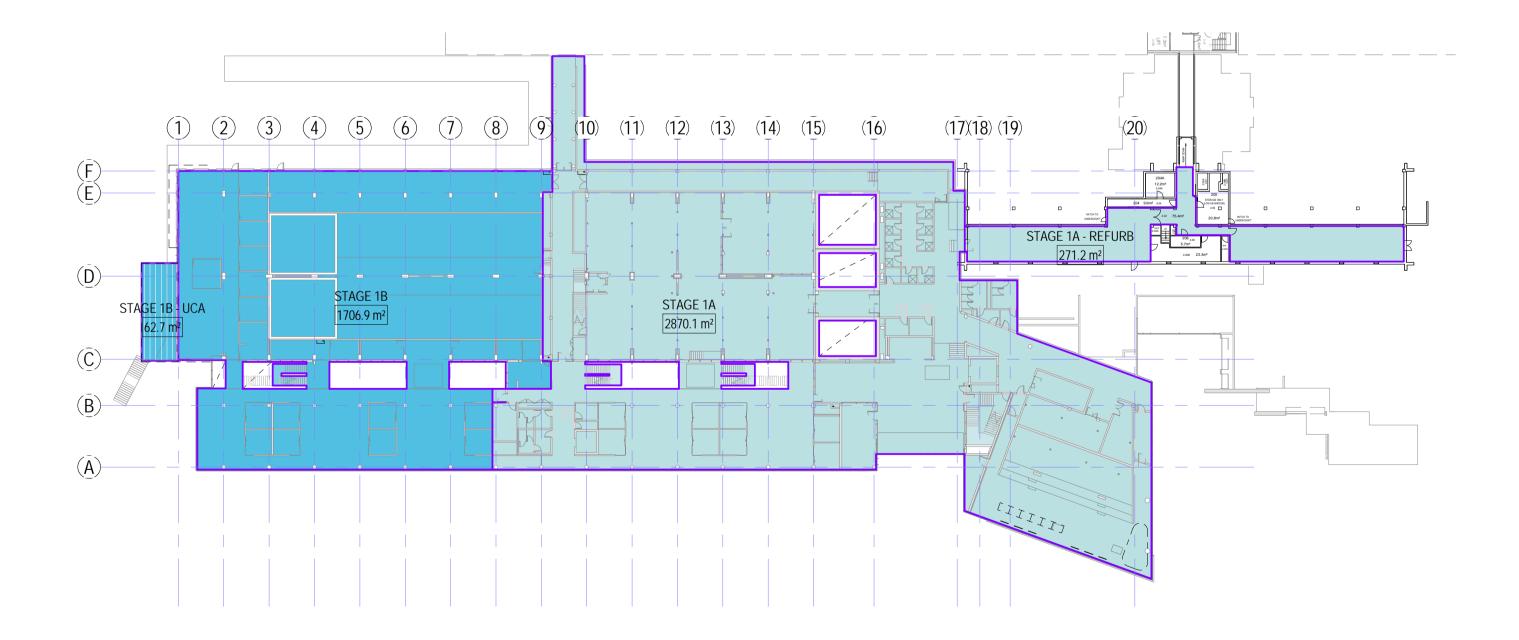
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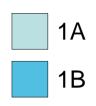


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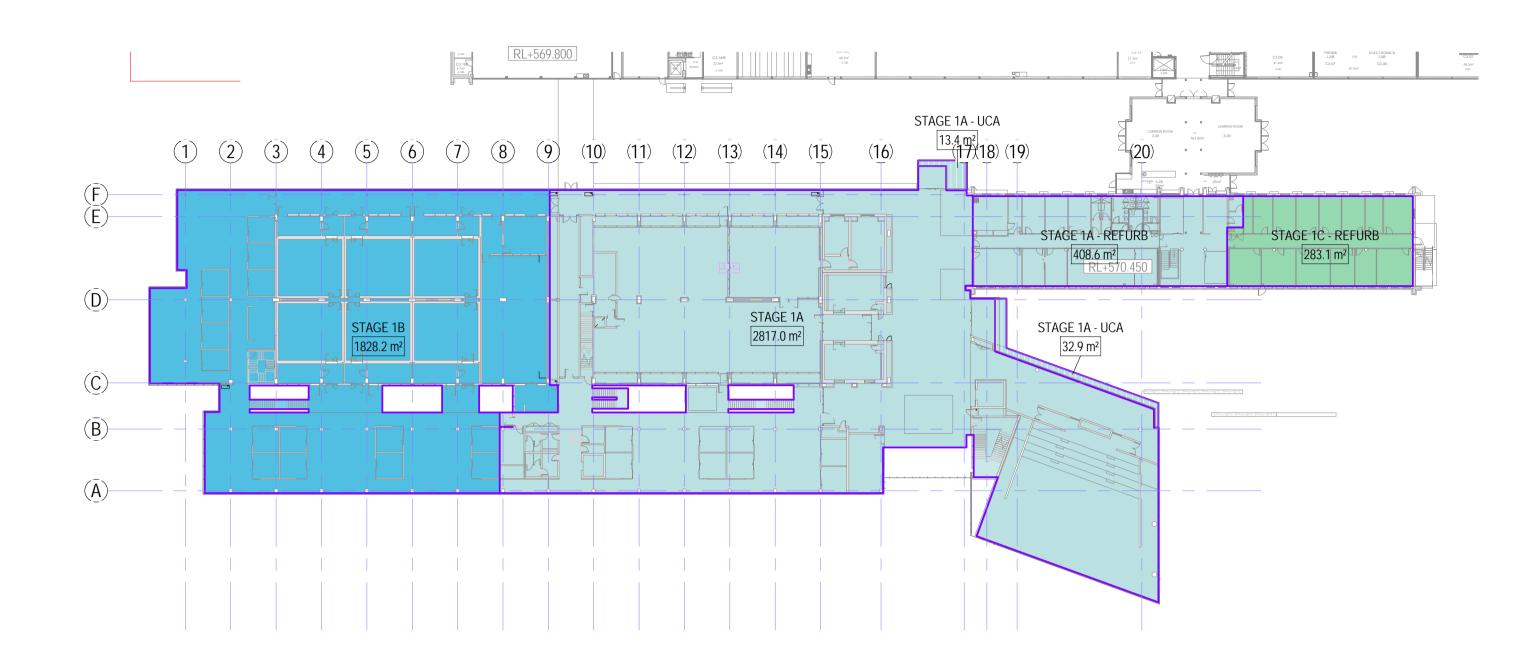
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LEVEL 2	1B	NEW	1770 m <sup>2</sup>
LEVEL 3	1B	NEW	1828 m <sup>2</sup>
LEVEL 4	1B	NEW	442 m <sup>2</sup>
1B			5915 m <sup>2</sup>
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LEVEL 3	1C	REFURB	283 m <sup>2</sup>
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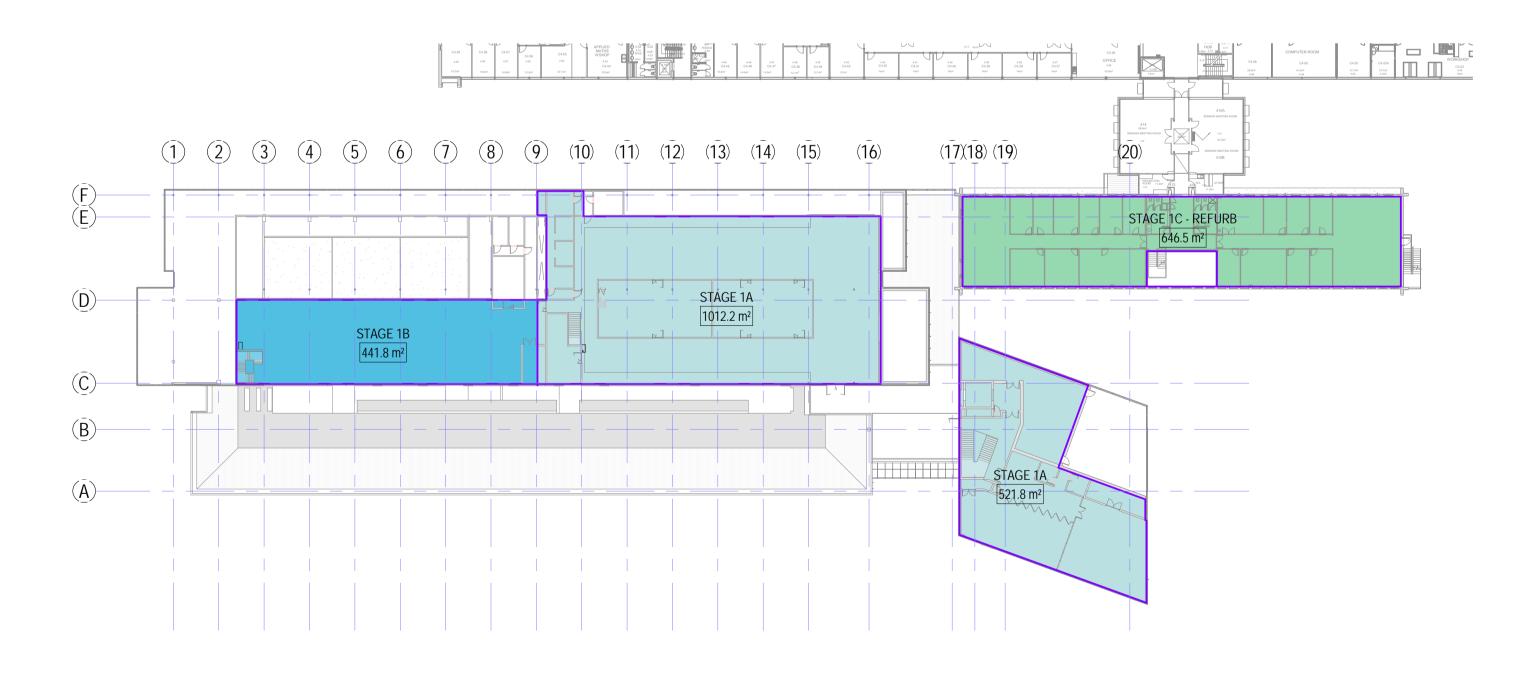


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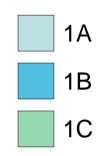


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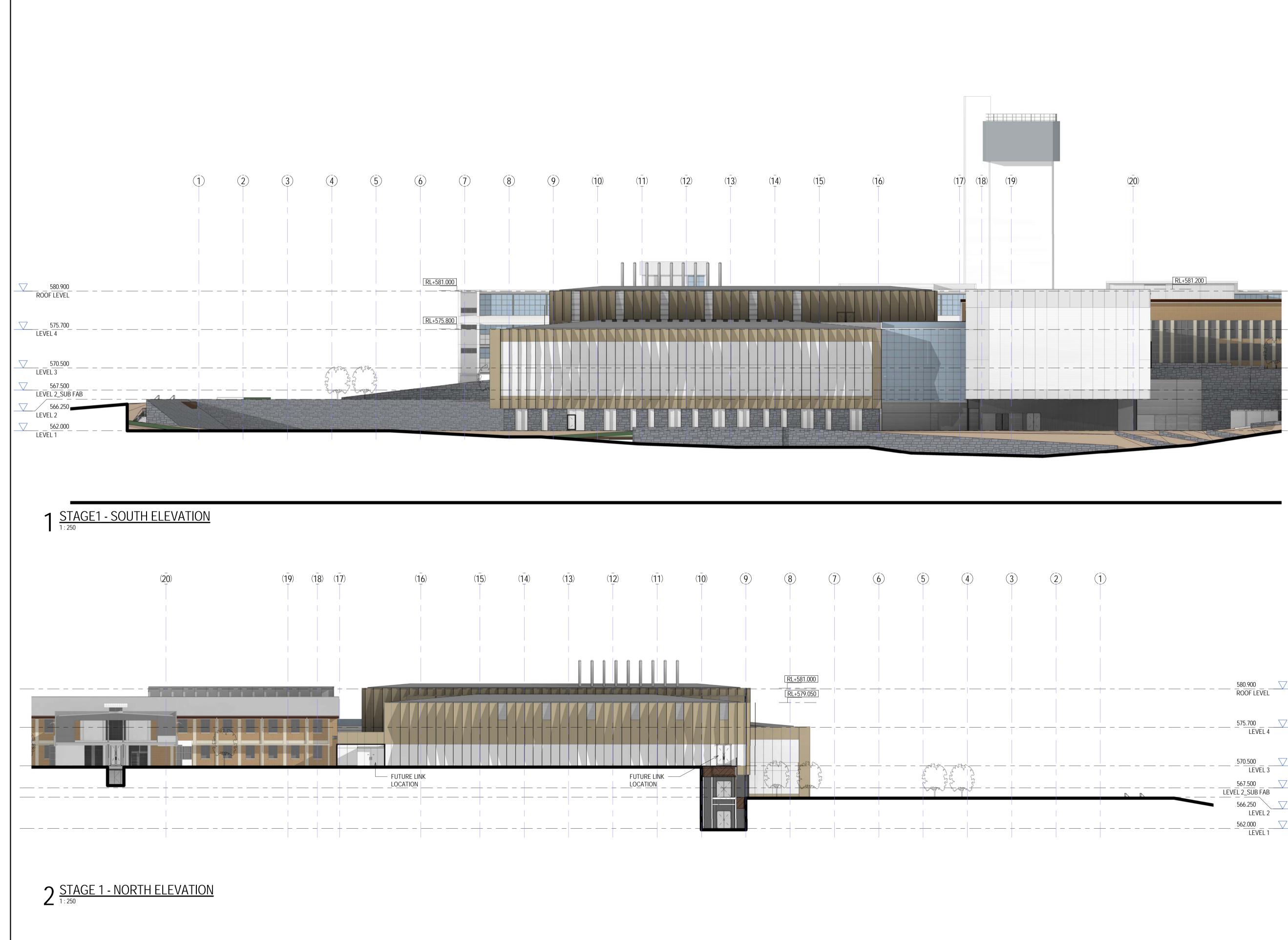


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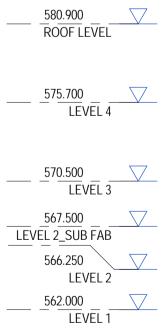
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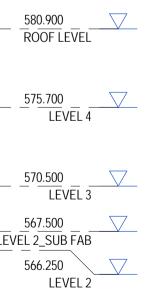


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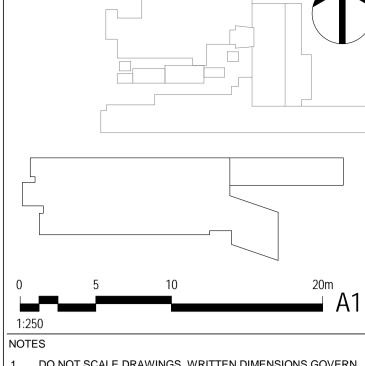




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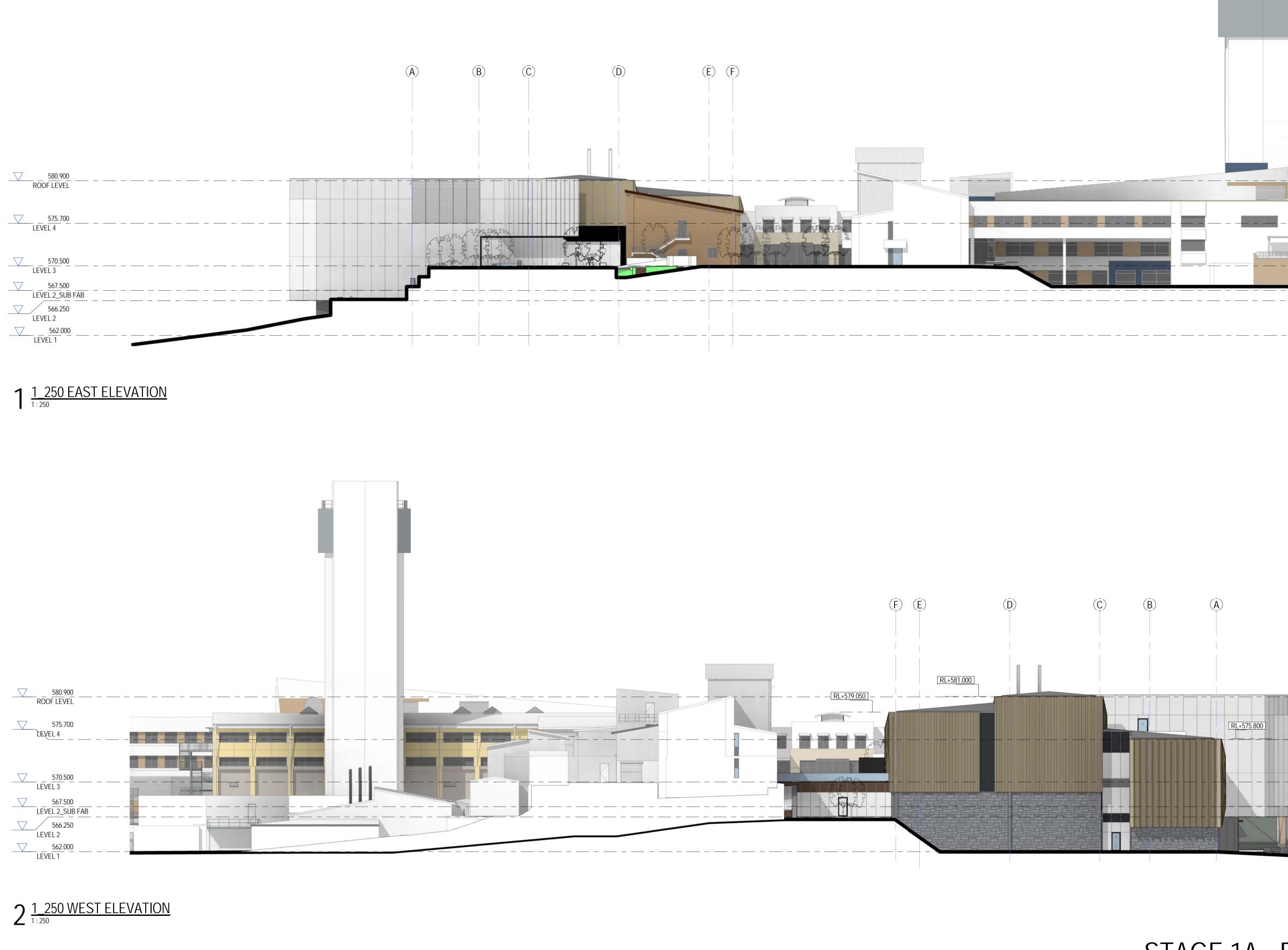
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NORTH

REFERENCE MAP



# STAGE 1A - ELEVATION

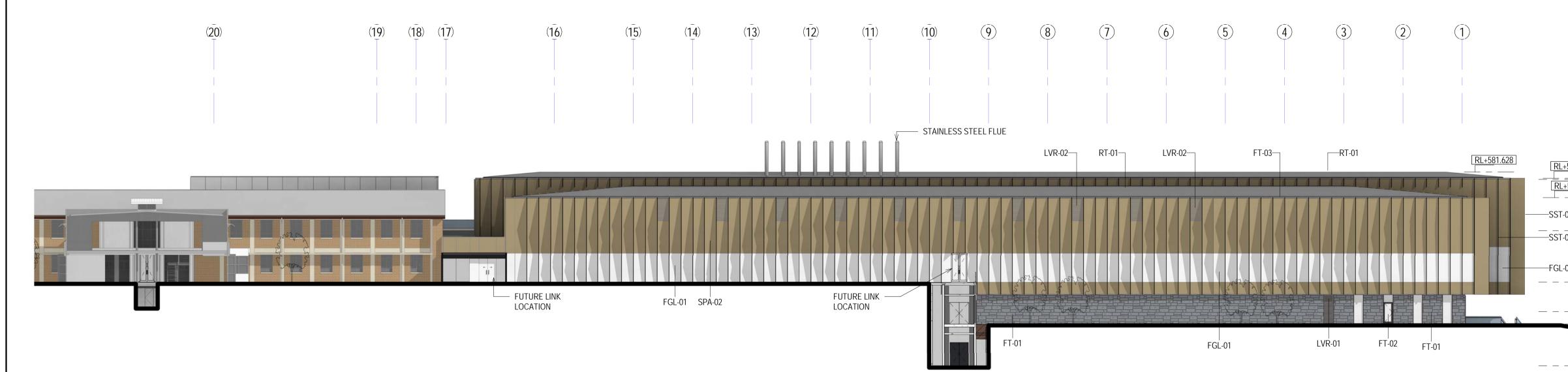
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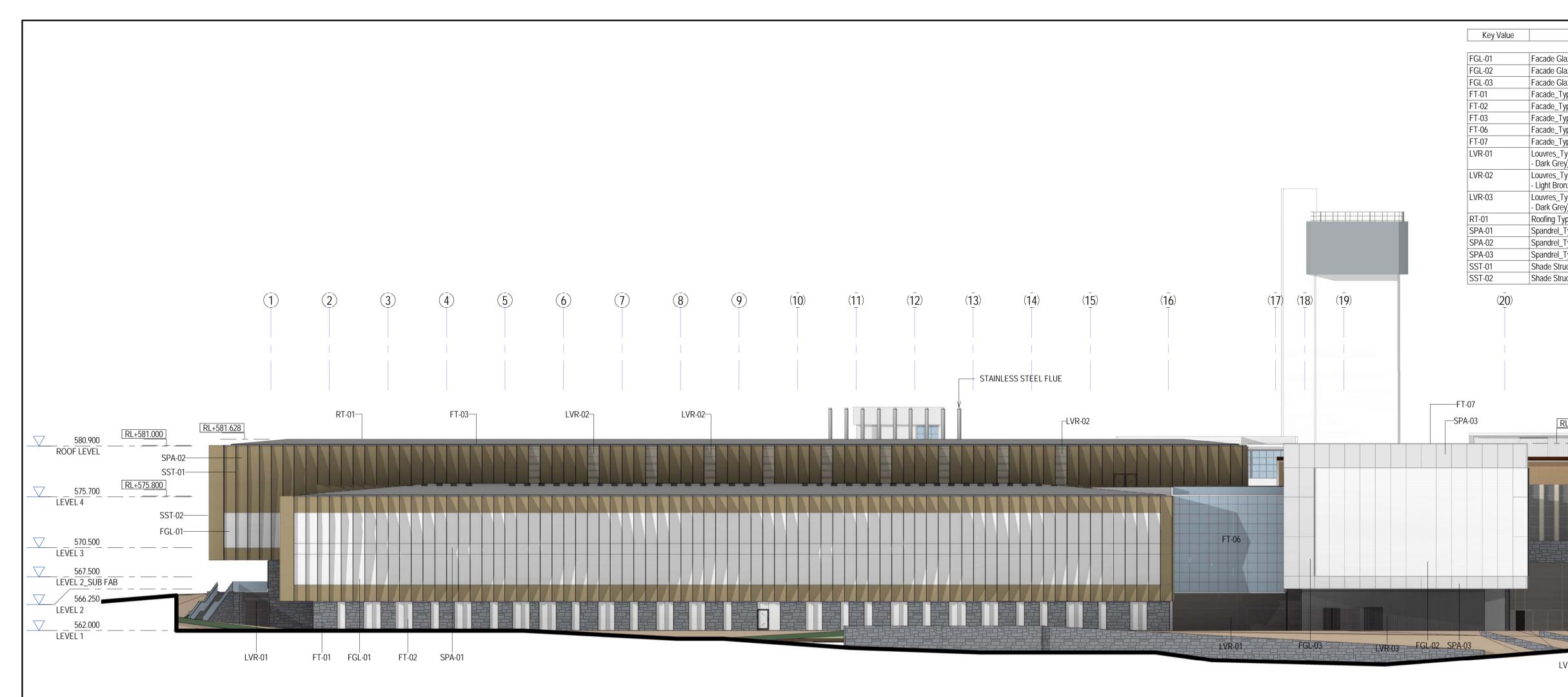
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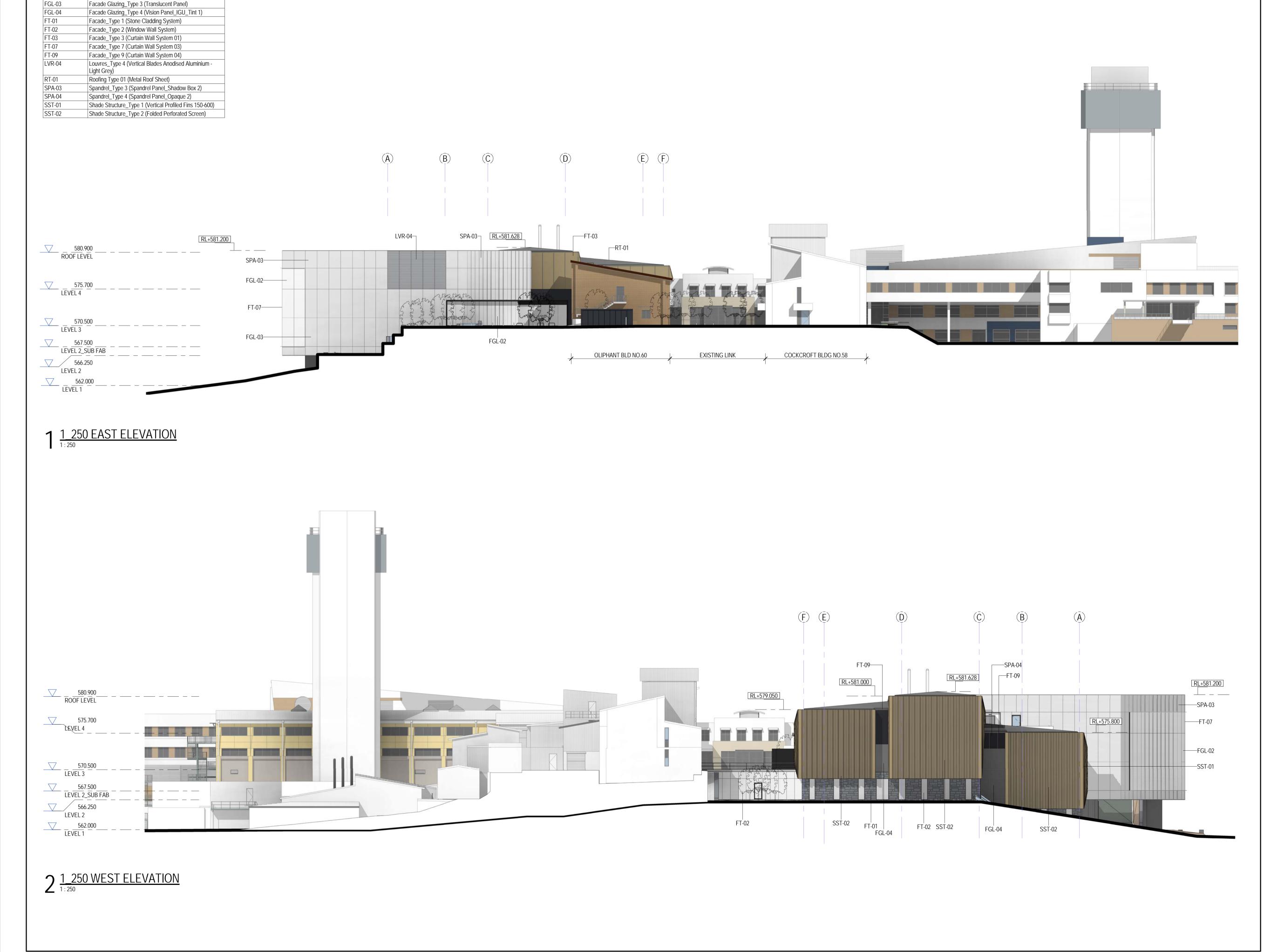




# 1 STAGE1 - SOUTH ELEVATION



Keynote Text		тн
g_Type 1 (Vision Panel_IGU) g_Type 2 (Vision Panel_IGU_Auditorium)		
g_Type 3 (Translucent Panel) 1 (Stone Cladding System)		
2 (Window Wall System) 3 (Curtain Wall System 01)		
6 (Cable Net System) 7 (Curtain Wall System 03)		
1 (Two Stage Extruded Anodised Aluminium		
2 (Two Stage Extruded Anodised Aluminium		
3 (Vertical Single Stage Anodised Aluminium		
01 (Metal Roof Sheet) e 1 (Spandrel Panel_Shadow Box 1)	0 F 10 20m	
e 2 (Spandrel Panel_Opaque 1) e 3 (Spandrel Panel_Shadow Box 2)	0 5 10 20m	1
re_Type 1 (Vertical Profiled Fins 150-600)	1:250 NOTES	
re_Type 2 (Folded Perforated Screen)	<ol> <li>DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS GOVER</li> <li>ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED</li> </ol>	N.
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	CONSULTANT	
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LEVEL 3 	ANU RSPE CANBERRA DRAWING TITLE BUILDING ELEVATION - SHEET 1	

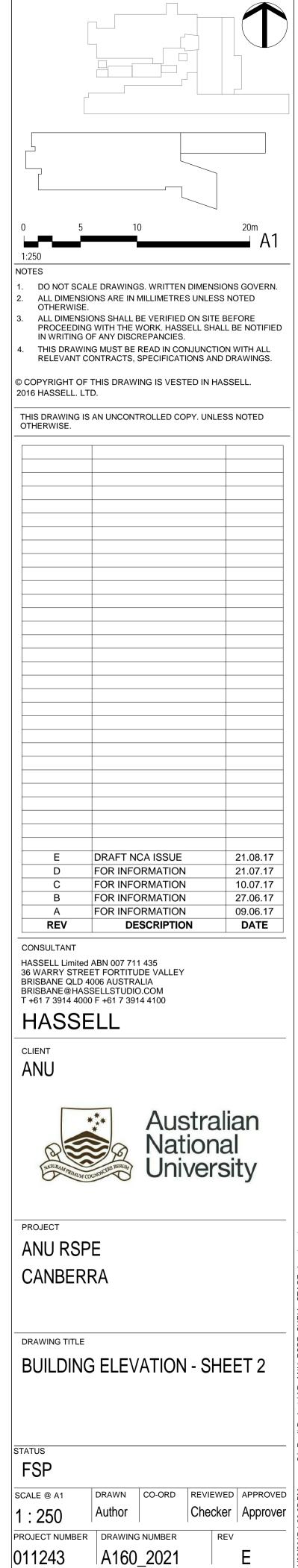


Key Value

FGL-02

Keynote Text

Facade Glazing\_Type 2 (Vision Panel\_IGU\_Auditorium)



REFERENCE MAP

NORTH

# **RSPE Precinct Stage 1A** Materials and finishes

# Facades

- \_Aluminium vertical fins and
- curtain wall system
- \_DGU performance glazing typically throughout
- \_Cable net picture window
- \_Local basalt stone cladding
- to plinth and landscape walls

Colour Light bronze anodising (eg. Portland Stone) \_Dark bronze anodising (eg. Burnt Sienna) \_Translucent white light grey glazing units







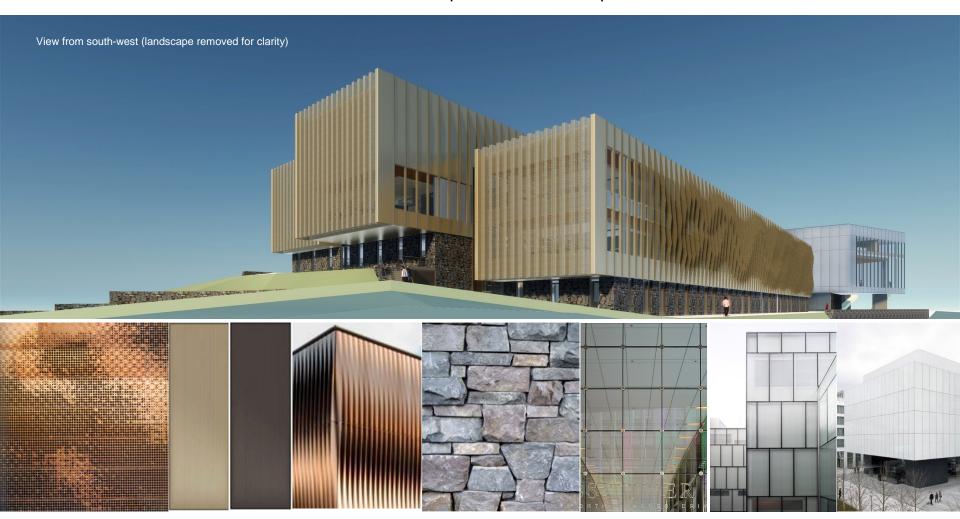
# RSPE Precinct Stage 1 Materials and finishes

### Facades

- \_Aluminium vertical fins and
- curtain wall system \_DGU performance glazing typically throughout
- \_Cable net picture window
- \_Local basalt stone cladding
- to plinth and landscape walls

# Colour

- \_Light bronze anodising
- (eg. Portland Stone)
- \_Dark bronze anodising (eg. Burnt Sienna)
- \_Translucent white light grey glazing units



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