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Neuroscience Research Precinct

Architectural Design Report

Issue 05

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01	10 December, 2008	Initial Draft for consultant team review
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05	16th April, 2009	Issued for Concept & Project Applications Minor additional edits

Contents

Executive Summary

The Neuroscience Research Precinct has been identified as a site suitable for the expansion of existing Neuroscience Research on the Randwick Hospitals campus.

It will provide necessary expansion and growth capacity to support leading research in this field and permit joint projects to be undertaken between the Prince of Wales Medical Research Institute, the Black Dog Institute, the Prince of Wales campus Hospitals, the University of New South Wales, and other future research partners.

The Concept Application described herein will provide an assured framework for growth in the future and establish planning principles for a purposeful relationship with the remainder of the Randwick campus.

The Stage 2 Project Application describes the first major series of phases which will provide necessary growth and expansion within the Concept Plan framework. This will achieve a building which, from the outset, will establish a strong new identity for the facility, appropriate to the world-class standard of research being undertaken. It will complement and enhance the remainder of the campus and enable the growth of scientific research at the Randwick location.

Introduction

Cox Richardson Architects & Planners (COX) has been engaged by POWMRI Ltd since 2004 in the study of various options for future growth for the existing neuroscience research facility at this site.

Since that time, a development brief and Guiding Principles for the design of future facilities have been developed by POWMRI. These have guided the development of options and their evaluation, leading to a preferred scheme.

This report summarises the development of these options and the resulting Concept Application and Project Application scheme.

Background

In 2007 consent was granted by Randwick Council for Stage 1 additions to provide necessary minor expansion and decanting space due to continued growth of the Institute. This work is now underway and the space created within the new additions is expected to be fully utilised on completion, due in early 2009.

Concurrently a series of studies have been undertaken to determine the most appropriate form of ultimate growth on the site, in conjunction with:

- Identification of an appropriate precinct within the hospital campus in which this might occur;
- Consultation with SESIAHS as landowner as to the creation of such a precinct and relationship to other facilities;
- Consultation between POWMRI and adjoining stakeholders on the campus to evaluate common interests and potential for integrated planning of a research facility in the future.

An iterative design process has followed these studies, which has resulted in the Concept Application and Project Application.

Limitations of Current Facilities

POWMRI currently employs approximately 230 staff in its existing facility. This total is undergoing sustained growth, subject primarily to capacity of the site and facilities. POWMRI has successfully continued to attract world-renowned research scientists from many countries.

POWMRI has assessed its current space provision and determined that is inadequate to meet current needs for:

- Office areas and administration;
- Laboratory areas;
- Staff amenities and support areas including recreation spaces.
- Shared specialist scientific facilities, including PC2 (Physical containment level 2) laboratories and very-low temperature freezer stores.

The existing premises in Villas 1 and 2 on the site comprise buildings which have been adapted over several decades for their present use, with limitations on their lifetime and fitness for current uses. Mechanical plant has reached the end of its useful service life and the building fabric demonstrates wear in many locations.

The existing planning of the consolidated Villas results in long travel distances between research groups. This is inefficient for goods handling and servicing. It also mitigates the potential for interaction between a majority of staff and does not present an image of leading research to the wider community.

The current building fabric is also unsuited to future expansion and does not adequately utilise the site area.

For each of these reasons it is considered that a new building, able to be staged in its delivery, would better address current and future research needs and contribute to the enhancement of the Randwick health campus.

Site Analysis

Site Location

The Neuroscience Research Precinct site is located at the southern portion of the Randwick Hospitals campus, addressing Barker Street in Randwick. This is some 500 metres east of the University of NSW campus which also addresses Barker Street.

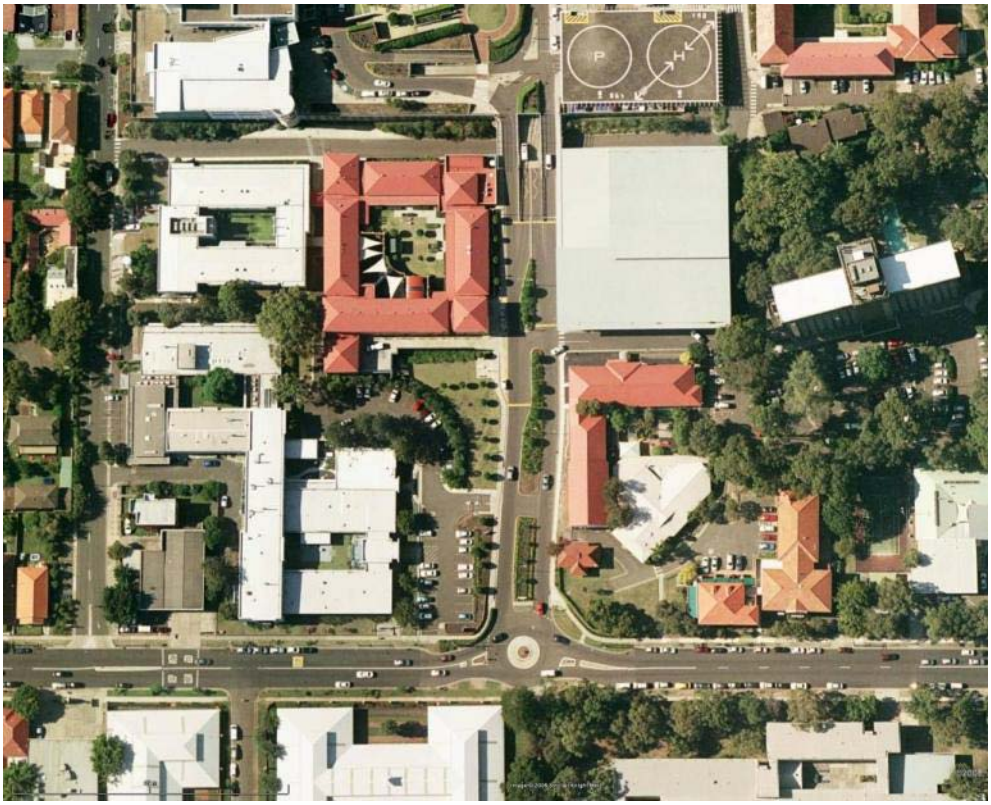
The Neuroscience Research Precinct

The Neuroscience Research Precinct is identified as an area bounded by Barker Street, Hospital Road, Francis Martin Drive, Easy Street; but excluding the remaining portion of the Destitute Children's Asylum cemetery and the Kiloh Centre, within the Prince of Wales Hospital Campus at Randwick NSW.

The site occurs within the consolidated Hospital campus title with cadastre described as Lot 1 in DP870720.

The precinct currently includes the following facilities:

- The Prince of Wales Medical Research Institute (POWMRI Ltd) neuroscience research facilities, which occupy Villas 1 and 2 on the site;
- The Black Dog Institute, which provides depression and Bipolar Disorder clinics; and a research and education centre.
- Randwick Ambulance station, fronting Barker St with side access from Hospital Road. This comprises a staff station and garage; and former residential quarters which are partially occupied to the rear of the facility.



Southern portion of the Prince of Wales Hospital campus with POWMRI villas at the lower left

The proposed precinct occupies an area of some 14,020m². The major hospitals on the site, being the Prince of Wales Hospital, Sydney Children's Hospital, Royal Hospital for Women, and Prince of Wales Private hospital, are sited with entry levels substantially higher than the natural ground levels of the Neuroscience Research Precinct.

The precinct also faces three private roads, Hospital Road, Francis Martin Drive and Easy Street within the campus site. To the east of the precinct on the campus lie a collection of older, generally low-rise buildings, with the single exception of the taller Vera Adderley Building.

To the west of the site a mixture of single story and three-story residential flats are located.

An aged care residential facility is located along the western boundary with Hospital Road, with its address to Hay Street.

The site is at the lower end of a landform which falls from High Street in the north to Barker St in the south, over a landscape which in part contains natural contours and altered sections modifying the original landform. The site is relatively flat from east to west at Barker Street but rises along Easy Street where the bridge structure rises above Francis Martin Drive to the podium over the major hospital car park.

Occupying the western corner of Barker and Easy Streets, the precinct will retain a strong presence for all visitors to the Hospitals complex. The opportunity to present a clear image of leading medical research is apparent and will remain visible from both approaches along Barker Street.

Opposite the site on the south of Barker Street is the Inglis Newmarket horse stable complex. To the southeast along Barker Street lies Randwick Girls High school.

Landscape

The site landscape is altered from a natural state after many decades of occupation.

Recently the creation of a bridge road link along Easy Street to the main hospital car park has resulted in a continuous raised surface along Easy street to a plateau surface significantly higher than the Neuroscience Research Precinct and adjacent levels.

The most significant remnant landscape is the Memorial Garden and associated landscape adjacent the Kiloh Centre. This garden faces the Easy Street approach to the hospital and mediates between the southern edge of the Kiloh Building and the Neuroscience Research Precinct. It remains an important historical element which is to be conserved in the proposed development.

Views

From higher levels of the site expansive views toward the Botany Bay may be enjoyed. This is assisted by the low forms of the stables complex to the south of the site.

Due to the surrounding topography of the Randwick basin, little prospect of views to the Coogee Bay coastline to the east will be possible from the proposed building heights.

To the west, the ridgeline along Barker Street limits low-level views, but at higher floors more distant views across Kensington will be possible.

Access & Transport

The location on Barker Street enables good vehicle access to the eastern suburbs road network.

Summary

The site proposed for the precinct has excellent visibility and access for a major research centre.

The location within the hospital campus and adjacent the University of NSW campus provides a strong opportunity for common research activities. Limited residential development occurs directly adjacent the site. The site conditions are favorable to the creation of a large new research facility.

Development Objectives for the Neuroscience Project

Neuroscience Research Growth & Need for Development

POWMRI has advised COX that the design brief should allow a substantial expansion of all the currently existing range of research and support activities.

This expansion is based on an observed growth over the last five years and planned future growth in both research activities and population.

In the medium term (5-10 year) forecast, the Institute plans to increase its current staff to 650, and increase building size in floor area from approximately 6,400m² to approximately 25,500m². This growth is necessary to accommodate laboratories and staff of the Institute and additional recruitment in molecular, cellular and genetic neuroscience.

Design Brief

The functional brief for this proposal is based on a detailed brief developed by POWMRI in December 2007.

Since that time the brief has been refined and further inclusions incorporated in a return brief developed between POWMRI, COX and other consultants.

An extensive user group consultation process with senior scientists and all levels of other staff has contributed to the understanding of the technical and social requirements for the building.

Research and interaction

Important aspects of leading research centres which have been identified are:

- The capacity to accommodate leading-edge technologies;
- The provision of attractive, efficient and spacious accommodation.
- The capacity of the facility to attract leading scientific researchers, often through the recognition of the building identity as a place of leading research through Examples such as the Salk Institute in La Jolla, California designed by Louis Kahn confirm the role of leading architectural examples which have also attracted multiple Nobel prize-winning researchers over many decades. In Australia, many significant recent research facilities have also demonstrated strong architectural forms signifying their roles as centres of advanced research.
- The capacity of the facility to encourage collegiate interaction which initiates the spark of research discovery through the casual exchange of ideas. Similar to other areas of academic building design, a trend is evident in which enclosed space is created and enhanced beyond primary functional spaces to enhance casual interaction spaces such as breakout areas, meeting spaces and even utilitarian circulation areas to promote the possibility of informal interaction.
- Safety, visibility and clarity of functional spaces are paramount and typically achieved in successful examples of this building type.
- Flexibility of base building layouts permits research areas to adapt to rapidly-changing technologies with spatial requirements that evolve and vary over time.
- Interactions between different research disciplines are common and the forms of research are varied.

Development of Design Principles

Seven Key Design Principles

POWMRI Board & staff have identified the following seven Principles for the Neuroscience Research Precinct facility:

1 Image-Aware

The completed facility is to project an identifiable image which will promote recognition of the Precinct. It should demonstrate qualities of:

- Contemporary and innovative design reflecting the “leading edge” research of POWMRI;
- Enduring design quality which will serve to identify POWMRI through its lifetime;
- Embodies symbolism in the building fabric or associated artwork and landscape design should be explored.

2 Generic

- A common planning configuration should be adopted for general laboratory and work areas wherever possible to ensure efficient and flexible planning.

3 Adaptable

- The building design should adapt to changes of use during its lifetime

4 Interactive

- The building should encourage interaction, both planned an unplanned between different occupants in order to encourage learning and exchange.

5 Safe and “Human-Centred”

- The facility environment should encourage safe work practices and provide a reassuring and secure environment.

6 Risk-Aware

- The design should recognise risks in the workplace and seek to mitigate these, including:
    - intellectual property protection;
    - sample protection;
    - protection of the building & equipment.

7 Environmentally-Aware

- The facility design should recognise the environmental impact and presence and seek to minimise this impact whilst offering the best possible work environment.
- This scope is to encompass energy use and waste minimisation; operating cost reduction and whole-of-life costs.

Functional Analysis

Required functional spaces in the facility will include:

- New research facilities consisting of research laboratories, laboratory special suites, support areas and laboratory offices;
- Office and support areas for the management and administration staff.
- The complex also includes the provision of highly specialised facilities including:
    - “Wet” and “Dry” research laboratories, being wet-bench type laboratories and “dry” workshop and clinical rooms where wide-ranging research is undertaken;
    - visitor clinics;
    - technical workshops supporting the laboratory areas;
- An auditorium, capable of supporting up to 300 persons; and
- An animal facility, supporting laboratory research;
- Specialised imaging facilities including the existing and additional magnetic resonance (MRI) apparatus in the future.
- A cafeteria supporting staff use;
- Associated loading docks and car parking.

Facilities to be shared between all groups in the new facility include:

- The cafeteria and passive recreation areas,
- A single central reception area, emphasising a single identity of the new facility;
- Common stores for both hazardous and non-hazardous goods and general consumables.

User Consultation

Extensive consultation has been undertaken with current POWMRI staff to determine the range of current and probable future research fields; and the technical and spatial requirements for each.

These have been incorporated into a return design brief and the results will continue to guide the detailed facility brief for the building.

Planning Context

State Planning Strategies

The Randwick Hospitals campus is referenced in the East Subregion strategy document issued under the Metropolitan Strategy, published by the NSW Department of Planning.

This document identified the total of 75,000m² identified as a possible Randwick Medical Research Precinct in the NSW Metro Strategy Document **Subregional Planning - East subregion** published by the NSW Department of Planning.

Existing Planning Controls

Randwick LEP and DCP controls have been considered but offer little guidance as to design controls for development of built form on the site. No controls on floor space, height or built form apply to the site.

The site presently is described in Randwick LEP as Zone 5 – Special Uses, as part of the Hospitals campus site.

No height or other built form controls presently apply to the site.

The Randwick Girls high school site is also zoned 5 – Special Uses. To the immediate south, the adjacent sites are zoned 2A- residential A. A heritage conservation area is identified by the LEP in this vicinity.

Hospitals Campus Planning

The development of the campus is informed by the report, Prince of Wales Campus Development Plan (prepared by Cité for NSW Health, 2006) but definitive controls have not been provided for the development of the site.

Design Options considered

COX has explored multiple options for the configuration of the new facility, in conjunction with POWMRI and the consultant team.

Design criteria have included:

- Achievement of the Seven Principles identified by POWMRI;
- Achievement of a strong identity at the earliest stage;
- Capacity for staging and decanting of existing areas.
- Traffic and access management at all times.

Options have been evaluated for their relative success against each of these criteria, in order to determine the most appropriate schematic planning form.

Following selection of a preferred configuration, a number of iterations were developed and tested until arriving at a preferred architectural scheme.

Recent built precedents in Australia and overseas have been evaluated to appraise current laboratory design standards.

Evaluation of Design Precedents

A number of precedents have been examined in the development of the scheme proposal.

These have included a review of leading recent examples of neuroscience research centres and other research laboratories buildings.

Examples studied or visited by members of the design team have included:

Australian examples:

- Queensland Brain Institute
- John Curtin, ANU
- Lowy Cancer Centre, UNSW
- Bio 21 Institute, Melbourne
- Garvan Institute, Darlinghurst
- Victor Chang Institute, Darlinghurst

International examples:

- Brain and Cognitive Sciences Centre, MIT
- James H Clark Institute, Stanford University
- Center for Clinical Science Research, Stanford University
- Leslie L Dan Pharmacy Building, University of Toronto

Common successful planning principles were observed which emerged from this evaluation. These included:

- Buildings with a tangible sense of place and identity which fostered interaction between staff;
- The provision of communal areas being core functional spaces;
- The creation of memorable, welcoming dramatic entry spaces and generous public areas;
- Flexible laboratory areas;
- Visibility of circulation routes and activity through each facility.
- Provision of tempered daylight into work areas.

Evaluation of Options considered

From the evaluation of precedent examples and specific site constraints, two principal planning types emerged for evaluation:

1. **Spine-oriented configuration**

Elements of this scheme included:

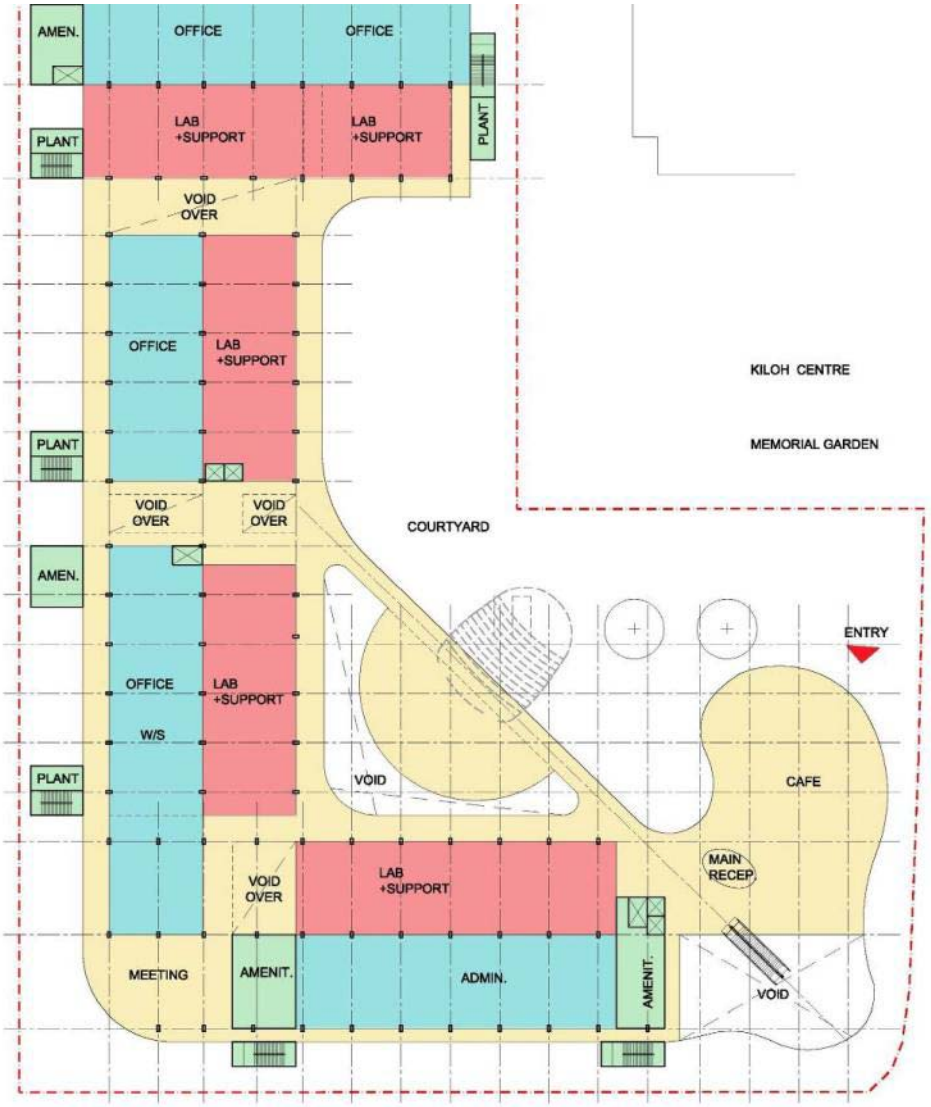
- "Clustered" workplaces with laboratory areas focussed around atria spaces;
- Spine circulation in a grand tall space along a north-south axis which would complement intended growth;
- Garden outlook and address from central entry space;
- Strong Barker Street presence;
- Clusters can be realised in two major stages;
- Importance of the enclosing internal flow paths

Typical floor plan of central spine-oriented scheme

2. Linear configuration

Elements of this scheme included:

- a continuous floor plate section of standard width; configured to align with the site orientation;
- provision for growth by allowing the building to extend in modular segments along the length of the building;
- “Segmented” workplaces with labs facing a central common open space;
- Diagonal circulation across open space to reduce travel distances;
- Garden outlook and address from common atrium space and laboratories;
- Barker Street presence with extended Easy St frontage and corner address;
- Limited interaction between groups, due to a strongly linear circulation pattern and increased distance between functional groups across a wide central open space;
- Less feasible realisation of the “place” in stages.



Typical floor plan of linear configuration scheme

Preferred configuration

Various permutations of each basic option were developed. Following evaluation of the benefits of each, a preferred configuration was evaluated. This option featured:

- A spine circulation pattern from Barker Street northward to the hospitals, with an entry point located centrally on the Barker frontage;
- A series of regular modules disposed along each side of this spine based on a preferred laboratory module.
- Significant research and testing of a preferred module was undertaken. This took into account the requirements of the Building Code of Australia and relevant Australian Standards, and best practice laboratory design. As a result, a module of approximately 40 metres length and 25 metres width was determined to have optimum proportions.
- Orientation of the long axis of each module was found to be clearly preferable when aligned east-west, so that controlled north and south light could be provided to all work areas. Avoidance of glare and close control of external light sources is critical to many work processes envisaged within the facility.

The Concept Plan

The Concept Plan application seeks approval for general controls guiding future development across the Precinct.

The Concept Plan recognises that current controls over the site are limited in scope and seeks to prescribe specific controls for height, floor space, street setbacks and land uses across the site.

Precinct Identification

The Neuroscience Research Precinct has been identified as the site for the creation of the new facility. This precinct occupies an area of approximately 14,020 m² within the hospital campus.

Height

Height controls have been proposed according to a combination of identified and applied constraints:

- Application of the Sydney Airport Obstacle Limitation Surface approach path contour, determining maximum heights across the site;
- Application of height control planes based upon midwinter sun angles at 10am and 12 midday, applied respectively to the Hospital Road and Barker Street frontages; to preserve sunlight access to the adjacent sites to the south and west.
- An assumption that helicopter flight paths from the existing helipad on the hospital grounds to the northeast can be varied to permit these maximum heights.

Floor Space

Based on the conceptual development plan submitted previously, and other design assumptions incorporated in the project, a total of 61,000m² Gross Floor Area (Randwick Definition) could be realised under this height envelope when fully developed.

This compares with the total of 75,000m² identified as a possible Randwick Medical Research Precinct in the NSW Metro Strategy Document **Subregional Planning - East subregion** published by the NSW Department of Planning.

Schematic analysis of the ultimate building footprint and potential building height indicates that the scheme can support this proposed amount of floor space.

Street setbacks

- A six metre averaged setback has been applied from the Barker Street frontage, consistent with other setbacks in the vicinity under Randwick Council controls and as adopted generally to major frontages under the UNSW DCP.
- A minor setback has been adopted matching existing setbacks to the Kiloh Centre along Easy Street.
- Setbacks along Hospital Road within the proposed Precinct, with general facades approximating setbacks typical of the existing POWMRI Villa 2 and the Black Dog Institute.

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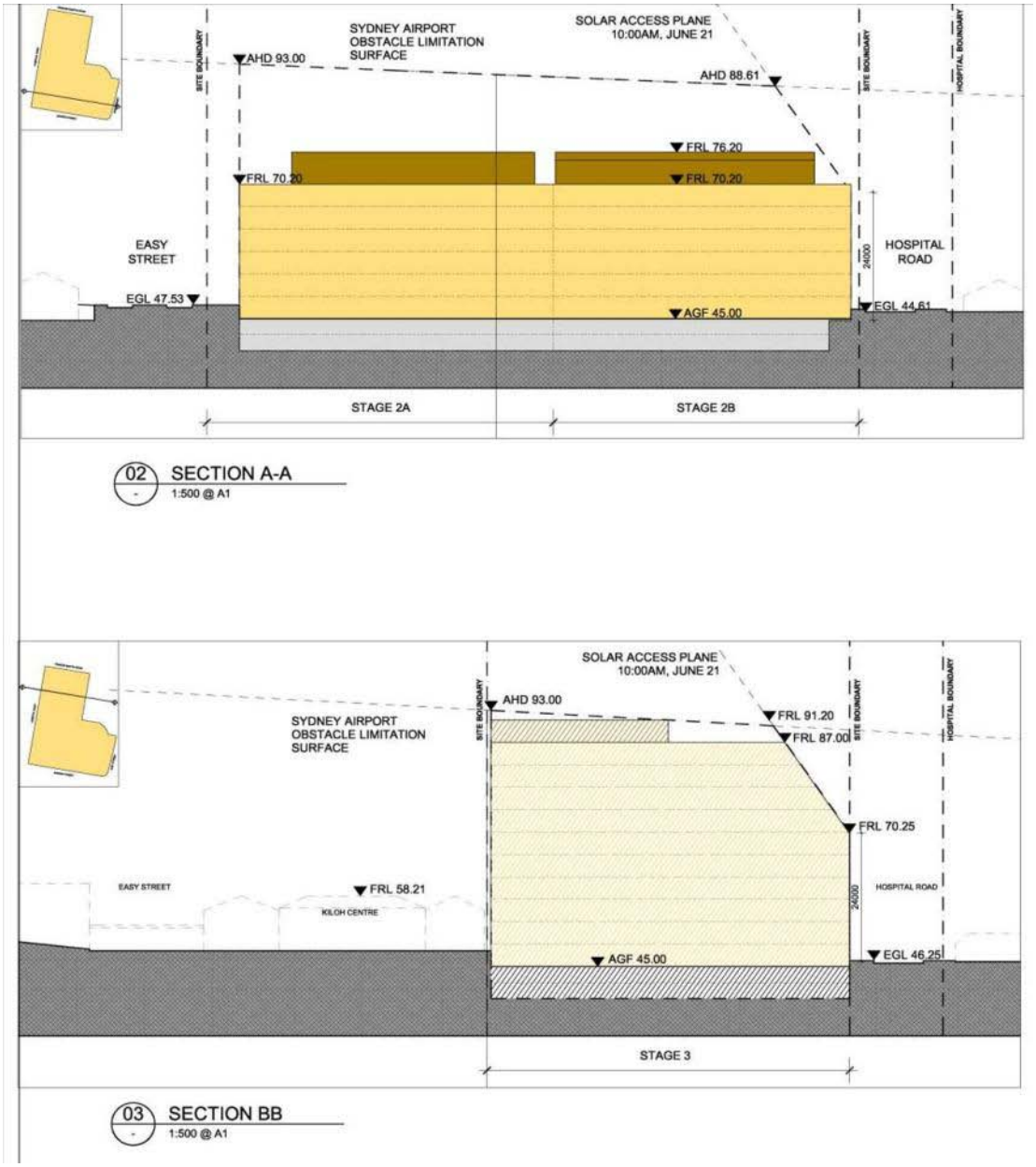
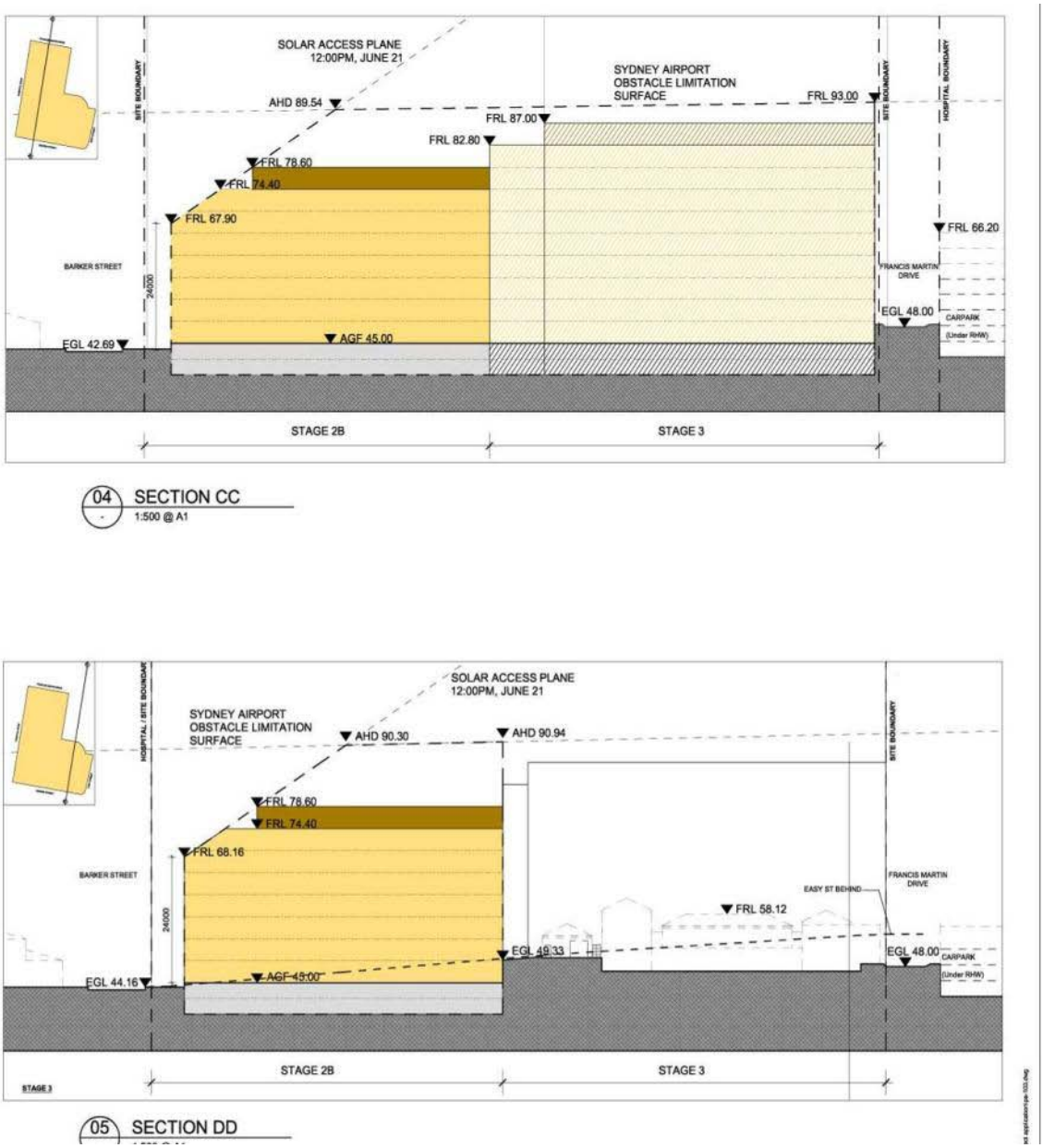


Concept Plan building envelopes and relationship to proposed height controls



Concept Plan building envelopes and relationship to proposed height controls

Stage 2 Project Application proposal

Design Concept

A developed design has been realised from the preferred configuration adopted for the scheme, for the Stage 2 project scope.

The developed Project Application scheme has retained the general principles of the preferred configuration, but with specific enhancements:

- Recognition of the floor plate addressing the Barker and Easy Street corner as the initial construction stage, to establish identity of the facility at the outset;
- Development of a pedestrian entry along the Barker Street frontage, slightly offset from the central spine axis to create a substantial and impressive entry space in the initial phase;
- Provision of a porte-cochere vehicle entry in this location to assist clinical visitors with limited mobility, or specially invited guests;
- Development of an articulate façade expression which reinforces an individual identity for the precinct.
- Further development of the façade design so that subsequent stages will complement the initial stage;
- Provision of high quality façade materials including precast coloured concrete panels, high-performance glazing, extensive metal sunshading
- Development of a courtyard space to the northeastern quadrant, addressing the Kiloh Centre and Memorial Garden, whilst also relating to the entry spaces and being directly accessible from these.
- Enhancement of the circulation spine as a glazed, multiple height space which serves both regular occupants and occasional visitors, opening up views to the exterior and between occupied areas within the building.

Built Form and Architectural Expression

The proposal has been developed with an expressive glazed veil form which dramatically sweeps around the corner site, at once revealing the research activities within and engaging passers-by with a canopy form at street level. Constructed as a conventional curtain wall, it is shaped as a serrated form which curves in response to the rise and fall in site levels and the corner site. A strict modular configuration is applied to this relatively informal form.

Surrounding the glazed veil expression is a more regular vertical wall construction consisting of glazing and coloured precast concrete. The concrete wall panels are arranged in vertical strip forms, alternately spaced together where solid wall enclosures are needed; or elsewhere spaced apart with glazed infill panels to reveal the internal spaces.

The deeply recessed entry, with extensive glazing and large canopy over the porte-cochere, welcomes the occasional visitor and staff member equally and provides simple interpretation of the arrival sequence. Brightly coloured internal surfaces assist way finding and reinforce the lightness of the space.

Suspended bridges link upper floors across the entry space from the lift lobby allowing visitors to glimpse staff on multiple levels.

Directly to the north, a triple-height glazed wall offers expansive views to the courtyard space and reveals the major entry sequence to the precinct. This pathway invites visitors to the conference facility in a simple journey around the courtyard perimeter.

Midway along this spine, a linking stairway opens to the west to reveal the major atrium space uniting the work areas of the two western wings. At the top of this stairway, the floor of the atrium space provides a common gathering space for staff, within view of many work spaces and fostering casual interaction. Stairs between each of the levels above project into the void of the atrium to reveal further everyday activity and movement.

Elsewhere facades exposed to the east and west are heavily protected with metal louvre assemblies, in differing configurations according to solar incidence.

Design and Built Form

The master planning of the facility has been configured as a series of discrete but interconnected wings along a principal north-south spine.

This configuration has been adopted after a review of alternatives which demonstrated that this form offered best results for:

- Flexibility of staging;
- Adaptability of floor plates to varying uses;
- Recognition of design constraints such as life safety compliance and laboratory design code guidelines determining maximum compartment sizes.

The exterior has been configured as a dynamic, expressive serrated form which alludes in a very abstract manner to relevant physiological forms.

It is evocative of the buildings uses and activities approaching from the west along Barker Street, the subsequent phases in Stage 2 will have a complementary expression but relate to the uses within each wing.

The floor plates to the west of the major spine are of similar dimensions and configuration, whereas the plate to the east adjacent the Easy & Barker Street corner has been modified to reflect its special role as the marker of the dominant entry to the site.

Building articulation

This wing has been modelled with a deep, inflected three-storey entry void, substantial porte-cochere entry, articulated façade fenestration and high degree of visibility to project the activities of the NRP to passing visitors and the community. It is intended that both by day and night the interior will be visible and open to ready interpretation as a leading research facility. Similar approaches have been explored in other recent examples such as Bio21 Institute in Victoria, where internal activities at ground level are visible from the street.

The single eastern wing affords a generous open space to be created to the north of this area, created as an open landscaped space which allows recreation space for the occupants of the facility.

Materials

The building features high quality façade materials, selected for durability, energy efficient material use and insulation properties.

These include precast coloured concrete panels, high-performance glazing, and extensive metal sun shading.

The range of material is limited but appropriate diversity and complexity are achieved in the building form through the articulation of each these primary elements.

The primary façade element along the Barker and Easy Street frontages comprises insulated glazing units, assembled to form a serrated façade where each panel overlaps.

The panels also overlap in section so that the lowest panel forms a canopy at pedestrian level to the street. At the top, the upper panels incline and extend at the corner to create a dramatic, pronounced profile.

A strong dynamic effect will occur as the varying optical effect of this façade assembly is perceived by visitors moving about the building.

Elsewhere the façades are configured to provide more shaded enclosure to internal spaces, and precast coloured panels are employed to provide solid wall surfaces. Vertical jointing patterns and interspersed glazing create a rhythmic facade pattern on each elevation.

Floor Space summary

The Stage 2 scope will provide a total of approximately 25,500m² Gross Floor Area.

Of this total, the majority comprises research areas and associated work space.

Building Height

Stage 2 is of six stories height above existing ground levels. Maximum building heights including plant rooms are within the height control planes established by the Concept Plan, other than minor projections of glazed roof elements along the Barker Street façade.

Vehicular & Pedestrian Access

Vehicular access to Stage 2 works is provided at a limited, controlled number of locations:

- The entry drop off for selected guests and clinical subjects requiring assisted entry in close proximity, as a drive-through lane from Barker Street to the main entry at Level 1;
- The Barker Street footpath is maintained with level crossovers to this drive-through to ensure continuity of the pedestrian footpath.
- The Easy street footpath is widened to improve the pedestrian connection along Easy Street to the hospitals.
- Service access is also provided along Hospital road to a new loading dock, at the northern face of Stage 2. With the completion of Stage 3 in the future, this will be contained within the completed research facility.
- Loading dock access to the Kiloh facility will also be maintained from Francis Martin Drive to the north.
- The removal of the major car park access from Easy Street will reduce conflicts between this pedestrian path and the expected growth in visitation to the Neuroscience Research facility.

Basement car park access is provided from a new driveway and enclosed entry ramp along Hospital Road, minimising conflict with pedestrian routes.

Car Parking

Car parking is provided within the facility for:

- Staff; in accordance with the rate of provision established for the project and as described in the traffic report described by Parsons Brinkerhoff; and
- Clinical visitors and their carers, if arriving by private vehicles;
- Ambulance station staff.

Vehicles will enter this carpark from a ramp on hospital road to minimise traffic disruption to Barker and Easy Streets.

Access to the main entry is provided via a dedicated public / staff passenger lift from the two carpark levels to ensure equal access to all occupants and visitors.

Bicycle parking and change facilities for staff are also included in the basement.

A loading dock at Level 1, entered via Hospital Road, provides for all material supplies, waste collection and goods handling.

Equity of internal and external access

Equitable access has been provided to the facility through several means:

- Level 1 entry at a level close to existing footpath levels so that ambulant access compliant with AS1488.1 can be achieved, from the kerbside bus stop to the entry door without need of ramps greater than 1:200 grade;
- Level floors throughout;
- Direct level access from public areas on Level 1 to the courtyard;
- The use of large, clear public spaces for way finding and short travel routes for clinical visitors form the entry to clinical locations.
- Extensive lift access to all floors for both public and staff use, adjacent major travel paths and complementing open stairs where these are provided;
- Adoption of accessibility principles as described in the Access Associates report included in this application.

Amenity for adjoining properties & residences

View corridors

The configuration of the Neuroscience Research Precinct maintains the major view corridors within the Hospitals campus. In particular, the following avenues are maintained without interruption:

- The Easy Street approach corridor, being the major southern approach to the Hospitals campus;

- Francis Martin Drive to the north will be maintained as the principal east-west connection across the site;

- Hospital Road along the western boundary, which extends from Barker Street to High street in the north, and provides physical separation of new buildings for adjacent neighbours with a clear separation of at least thirteen metres.

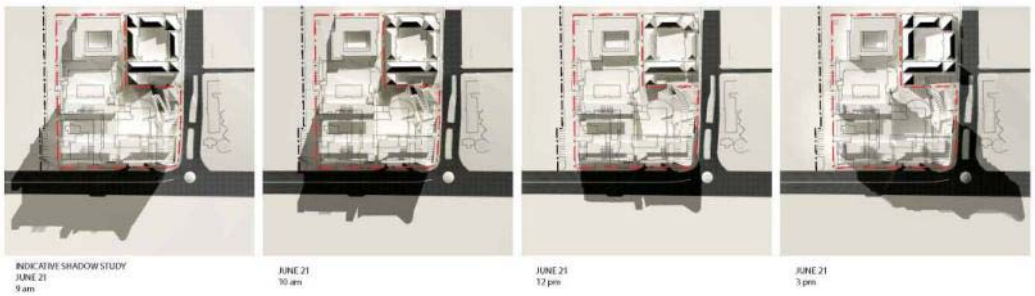
Solar access

The solar access planes proposed in the Concept Application are intended to protect solar access to adjacent properties to the south and west of the site.

The shadow studies shown below indicate that the shadows projected by the building on March 21 are largely self-contained within the site.

At 9am on the March 21, near the equinox there is minor overshadowing of the adjacent properties to the east along Barker Street; this shadow quickly moves to the east in to the site and extends marginally across the width of Barker Street during the day. No other properties outside the Hospital campus are affected.

On June 21, the longer winter shadows extend further across Barker Street in the middle period of the day. However, it is unlikely that any adjacent property will be denied a minimum period of two hours direct sunlight access, as a result of the development.



Shadow maps at June 21, for 9am / 10am /12pm / 3pm respectively

Shadow maps at March 21, for 9am / 10am / 12pm / 3pm respectively

Drawing Register

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Project: **POWMRI Neuroscience Research Precinct**
Project Application

Job No: **204179.30**

		DATE OF ISSUE		
	DAY		2	30
	MONTH	C/F	3	4
	YEAR		09	09

DRAWING NO.	DRAWING TITLE	SCALE	REVISION		
GENERAL					
PA 000	Cover Sheet	N/A	5		6
PA 001	Location Plan	1:2500	5	6	7
PA 002	Existing Site Plan	1:500	6	7	8
PA 003	Proposed Site Plan	1:500	6	7	8
PA 004	Existing Elevations	1:200	5	6	7
PA 005	Shadow Study- Concept Plan	N.T.S.	7		8
PA 006	Shadow Study- Stage 2	N.T.S.	2		3
PA 007	Concept Massing 3D view	N.T.S.	2	3	4
PA 008	Stage 2 - 3D view	N.T.S.	1		2
CONCEPT APPLICATION					
PA 101	Porposed Concept Plan	1:500	7		8
PA 102	Height Plane Analysis Plans	1:500	5		6
PA 103	Height Plane Analysis Sections	1:500	6		7
PA 104	Concept Plan Staging Diagrams	1:500	1		2
PROJECT APPLICATION					
PA 201-2A	Floor Plan Level 1 (Ground)	1:200	7	8	9
PA 201-2B	Floor Plan Level 1 (Ground)	1:200	6	7	8
PA 201-2C	Floor Plan Level 1 (Ground)	1:200	6	7	8
PA 201-2D	Floor Plan Level 1 (Ground)	1:200	8	9	10
PA 202-2A	Floor Plan Level 2	1:200	6	7	8
PA 202-2B	Floor Plan Level 2	1:200	5	6	7
PA 202-2C	Floor Plan Level 2	1:200	5	6	7
PA 202-2D	Floor Plan Level 2	1:200	5	6	7
PA 203-2A	Floor Plan Level 3	1:200	6	7	8
PA 203-2B	Floor Plan Level 3	1:200	6	7	8
PA 203-2C	Floor Plan Level 3	1:200	5	6	7
PA 203-2D	Floor Plan Level 3	1:200	5	6	7
PA 204-2A	Floor Plan Level 4	1:200	6	7	8
PA 204-2B	Floor Plan Level 4	1:200	5	6	7
PA 204-2C	Floor Plan Level 4	1:200	5	6	7
PA 204-2D	Floor Plan Level 4	1:200	5	6	7
PA 205-2A	Floor Plan Level 5	1:200	6	7	8
PA 205-2B	Floor Plan Level 5	1:200	5	6	7
PA 205-2C	Floor Plan Level 5	1:200	6	7	8
PA 205-2D	Floor Plan Level 5	1:200	6	7	8
PA 206-2A	Floor Plan Level 6	1:200	6	7	8
PA 206-2B	Floor Plan Level 6	1:200	5	6	7
PA 206-2C	Floor Plan Level 6	1:200	6	7	8
PA 206-2D	Floor Plan Level 6	1:200	6	7	8
PA 207-2A	Floor Plan Level 7 (Plant)	1:200	6	7	8
PA 207-2B	Floor Plan Level 7 (Plant)	1:200	5	6	7
PA 207-2C	Floor Plan Level 7 (Plant)	1:200	6	7	8
PA 207-2D	Floor Plan Level 7 (Plant)	1:200	6	7	8
PA 208-2A	Roof Plan	1:200	7	8	9
PA 208-2B	Roof Plan	1:200	6	7	8
PA 208-2C	Roof Plan	1:200	7	8	9
PA 208-2D	Roof Plan	1:200	7	8	9

Drawing Register

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Email: sydney@cox.com.au

Project: **POWMRI Neuroscience Research Precinct**
Project Application

Job No: **204179.30**

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DRAWING NO.	**DRAWING TITLE**	**SCALE**	**REVISION**																		
PA 209-2A	Floor Plan - Basment Level B1	1:200	6	7	8																
PA 209-2B	Floor Plan - Basment Level B1	1:200	7	8	9																
PA 209-2C	Floor Plan - Basment Level B1	1:200	7	8	9																
PA 209-2D	Floor Plan - Basment Level B1	1:200	7	8	9																
PA 210-2A	Floor Plan - Basment Level B2	1:200	6	7	8																
PA 210-2B	Floor Plan - Basment Level B2	1:200	7	8	9																
PA 210-2C	Floor Plan - Basment Level B2	1:200	7	8	9																
PA 210-2D	Floor Plan - Basment Level B2	1:200	7	8	9																
PA 301	South Elevation Stage 2A & 2B	1:200	6	7	8																
PA 302	East Elevation Stage 2A & 2C	1:200	6	7	8																
PA 303	East Elevation Stage 2D	1:200	6	7	8																
PA 304	North Elevation Stage 2A & 2B	1:200	6	7	8																
PA 305	North Elevation Stage 2C & 2D	1:200	6	7	8																
PA 306	West Elevation Stage 2A & 2B	1:200	6	7	8																
PA 307	West Elevation Stage 2D	1:200	6	7	8																
PA 310	South Elevation (Colour A3)	N.T.S.	6	7	8																
PA 311	East Elevation (Colour A3)	N.T.S.	6	7	8																
PA 312	North Elevation (Colour A3)	N.T.S.	6	7	8																
PA 313	West Elevation (Colour A3)	N.T.S.	6	7	8																
PA 314	East Section AA (Colour A3)	N.T.S.	6	7	8																
PA 315	North Section BB (Colour A3)	N.T.S.	6	7	8																
PA 401	Sections AA & BB	1:200	5	6	7																
PA 402	Sections CC & DD	1:200	5	6	7																
PA 500	Materials Board	N.T.S.	2		3																
3D RENDERED IMAGES																					
PA 600	Photomontage – Corner Easy & Barker Sts	N.T.S.	3		4																
PA 601	Photomontage – Barker St looking East (Stage 2A)	N.T.S.	3		4																
PA 602	Photomontage – Easy St looking southwest (Stage 2D)	N.T.S.	3		4																
PA 603	Photomontage – Courtyard looking to Easy St (Stage 2C)	N.T.S.	3		4																

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