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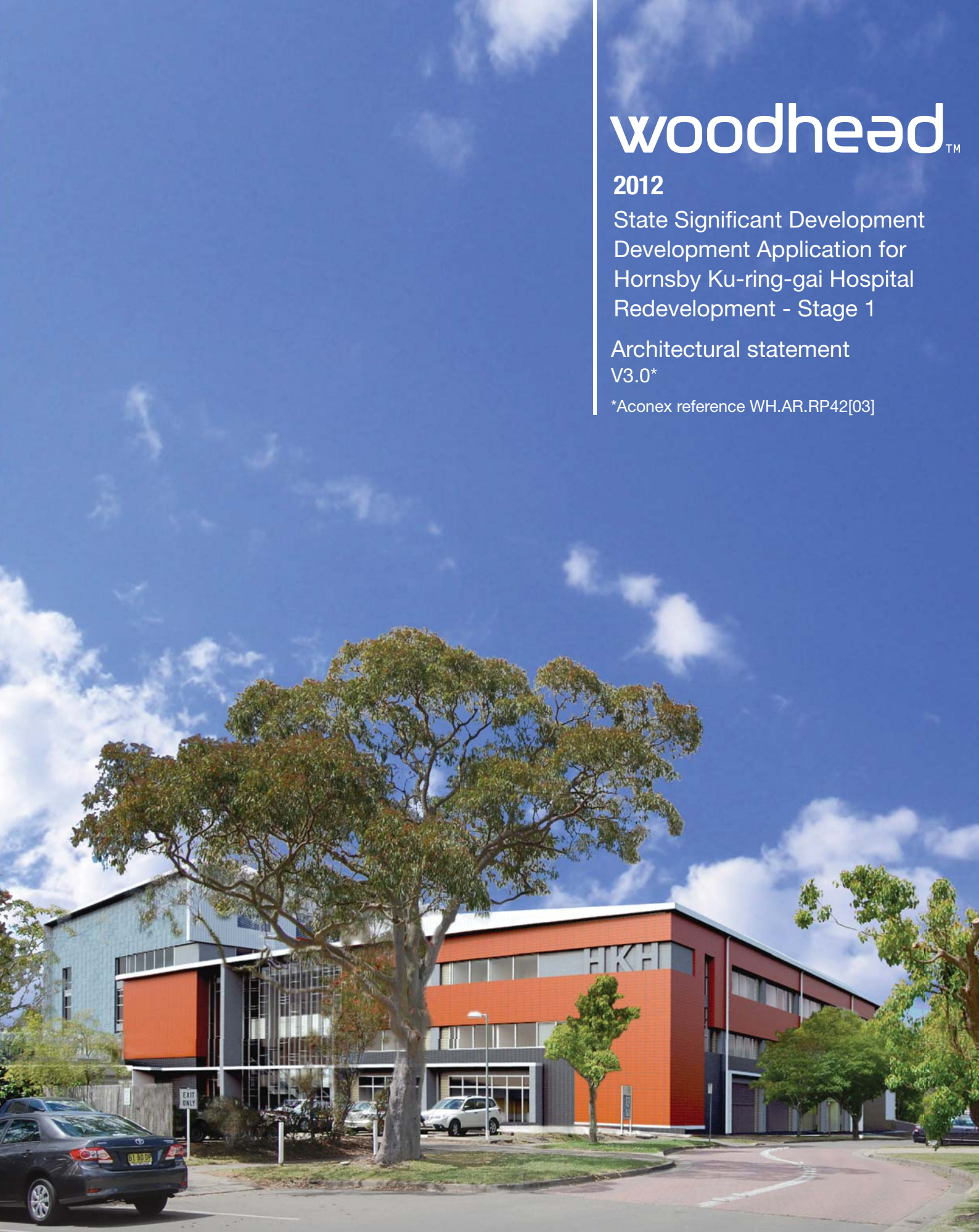
2012

State Significant Development Development Application for Hornsby Ku-ring-gai Hospital Redevelopment - Stage 1

Architectural statement

V3.0*

*Aconex reference WH.AR.RP42[03]



NSW GOVERNMENT Health Infrastructure

NSW GOVERNMENT Health Northern Sydney Local Health District

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Version Control

Version	Date	Issued To	Remarks	Issued By
V1.0	22.08.2012	JBA	Draft – For Review	D McGirr
V1.1 (aconex rev 01)	23.08.2012	Project Team	Draft – For HI progress issue 24.8.12	D McGirr
V2.0 (aconex rev 02)	09.11.2012	JBA	Client review + EIS submission	D McGirr N Justins
V3.0 (aconex rev 03)	21.11.2012	JBA / Project Team	Final revision for lodgement (minor formatting updates to previous Rev 3)	D McGirr N Justins

Cover Image: View of proposed building entry from Burdett Street (from Appendix 1)
Image Below: View of proposed building south-east corner from Derby Road and Burdett Street intersection (from Appendix 1)

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Table 1: List of Acronyms

BMS	Building Management System
CPTED	Crime prevention through environmental design
DA	Development Application
DD	Design Development
DGR	Director General Requirements
EIS	Environmental Impact Assessment
EMS	Environmental Management System
ESD	Environmentally Sustainable Design
FFL	Finished Floor Level
HKH	Hornsby Ku-ring-gai Hospital
HKHR	Hornsby Ku-ring-gai Hospital Redevelopment
HI	Health Infrastructure
HLS	Helicopter Landing Site
HOPE	Hornsby Obstetrics Paediatric + Emergency
IPU	Inpatient Unit
ISO	International Organization for Standardization
LEP	Local Environmental Plan
RL	Reduced Level
SD	Schematic Design
SSD	State Significant Development
WH	Woodhead Architects
JBA	JBA Town Planning
WELS	Water Efficiency Labelling Standard

1. Executive Summary

This report outlines the Architectural content of the Environmental Impact Statement (EIS) for State Significant Development (SSD) application 5356: Hornsby Ku-ring-gai Hospital Redevelopment Stage 1.

The Development Application (DA) seeks approval for a new 4 level clinical building located at Burdett Street, Hornsby NSW, proposed by NSW Health Infrastructure (HI).

The Author of this report, Woodhead Architects, have been engaged by HI as Architect and coordinating design consultant for the Hornsby Ku-ring-gai Hospital Redevelopment Stage 1.

This report specifically responds to architectural items and 'Key Issues' within the Director General Assessment Requirements (DGRs) of the aforementioned application as follows -

3. Built Form and Urban Design

4. Amenity

5. Ecological Sustainable Development (ESD)

The key items identified within this report are as follows -

- Stage 1 of the Hornsby Ku-ring-gai Hospital Redevelopment is a significant and important development that will assist the needs of the growing and changing Hornsby Community.
- The building design must respond to the urban context within which the development is situated.
- The siting of the development within the south east corner of the campus is the result of significant and rigorous testing and is the most appropriate area for the development on the site.
- A key planning parameter of the development has been to maximize the setback to Burdett Street and Derby Road, and to minimize the impact of the development on residents through strategic massing and stacking of the building
- Use of appropriate materials, colours, landscaping and way-finding has been employed to enhance the impact of the development on the street and to promote amenity in the area.

2. Introduction

2.1 Purpose of Report

This report outlines and covers the Architectural and related matters of the Environmental Impact Statement (EIS) for State Significant Development (SSD) application 5356: Hornsby Ku-ring-gai Hospital Redevelopment Stage 1 located at Burdett Street, Hornsby NSW.

This Report is intended to be combined with other consultants reports compiled by JBA Planning (on behalf of applicant NSW Health Infrastructure), to form a consolidated EIS which responds to all of the General Requirements and Key issues within the Director General Assessment Requirements (DGRs) issued on the 11th of July 2012.

2.2 Response to Director General's Requirements

Specifically this report responds to the following "Key Issues" within the DGRs (specific content provided by others is noted herein) -

3. Built Form and Urban Design

Address the height, bulk and scale of the proposed development within the context of the locality.

Address design quality, with specific consideration of the overall site layout, streetscape, connection with the existing adjacent hospital buildings, axis, vistas and connectivity, open spaces and edges, primary elements, gateways, façade, rooftop, mechanical plant, massing, setbacks, building articulation, materials, choice of colours, including an assessment against the Crime Prevention Through Environmental Design (CPTED) Principles*.

5. Ecologically Sustainable Development (ESD)

Detail how ESD principles (as defined in clause 7(4) of Schedule 2 of the Environmental Planning and Assessment Regulation 2000) will be incorporated in the design, construction and ongoing operation phases of the development.

Include a description of the measures that would be implemented to minimise consumption of resources, water and energy, including an Integrated Water Management Plan which details any proposed alternative water supplies, proposed end uses of potable and non-potable

water, and water sensitive urban design

*CPTED principles are incorporated within the architectural design/plans of Stage 1 building and are specifically referred to in the JBA authored EIS.

4. Amenity

- Assess solar access, acoustic impacts**, visual privacy, servicing requirements (including but not limited to, waste management, loading zones, mechanical plant), view loss, overshadowing, lighting impacts and wind impacts. A high level of environmental amenity for land uses immediately adjacent and the surrounding residential area must be demonstrated.

**Refer also to EIS Appendix I - Acoustic Report by Norman Disney & Young for detailed acoustic impact information.

In addition to addressing key issues as outlined above, this report responds to the following requirements within the DGRs under the heading Plans and Documentation. All such drawings and documentation are included within Appendix 1 - Architectural Drawing Booklet. Where the requirement relates to a specific drawing number within the booklet, this number is provided below in blue

Architectural drawings; App 1- Architectural Drawing Booklet

Site Survey Plan, showing existing levels, location and height of existing and adjacent structures / buildings and boundaries; 34302T09[01]-01

Site Analysis Plan; WH.AR.1202/03

Stormwater Concept Plan; Refer to EIS Appendix G - Civil Engineering and Integrated Water Management Plan by TTW Consulting Engineers

Shadow Diagrams; WH.AR.1216

View Analysis / Photomontages; WH.AR.1210/13/14

Landscape Plan (identifying any trees to be removed and trees to be retained or transplanted); WH.AR.1001/02

Preliminary Construction Management Plan, inclusive of a Preliminary Construction Traffic Management Plan; Refer to EIS Appendix M - Preliminary Construction Management Plan by Thinc Health and Appendix E Transport Assessment Report by TTW Consulting Engineers

Geotechnical and Structural Report; Refer to EIS Appendix J Geotechnical Investigation Report by Aargus

Arborist Report; Refer to EIS Appendix F - Arborist Report by Moore Trees Arboricultural Services

Schedule of materials and finishes. WH.AR.1209/15

2.3 The Development

The Development Application (DA) seeks approval for a new 4 level clinical building plus roof plant level accommodating surgical services (including sterilising services department); Inpatient accommodation and support services.

The works are proposed by NSW Health Infrastructure.

Details of the works (as they relate to architectural and built form issues), are described in section 3 of this report.

3. Architectural Statement

3.1 Analysis of context

The following extract from a recent Planning Review by JBA summarizes the regional context of the development (See also figure 1) -

“The Hornsby Ku-ring-gai Hospital Site is located within Hornsby Local Government Area, situated in the north-west of metropolitan Sydney, approximately 25 kilometres north of the Sydney CBD and 19 kilometres northeast of the Parramatta CBD.

Hornsby Town Centre is considered a subregional Major Centre which offers a diverse mix of residential, business and industrial development and natural landscape settings. Hornsby is well serviced by public transport including railway links to the Sydney CBD and further north to the Central Coast and Lower Hunter regions. The Pacific Highway, F3 Freeway and Pennant Hills Road are the main arterial links to and past Hornsby. The Hospital Site is located approximately 1km to the east of the Hornsby Town Centre, 1.5km east of Hornsby railway station, 1.8km north-east of Waitara station and 2km south-east of Asquith railway station.”

The Hospital Site is bounded by Lowe Road and James Park to the north, Derby Road to the east, Burdett Street to the south and Palmerston Road to the west (see figure 1 and Appendix 1.

The Hospital Site is surrounded predominantly by low-density residential development with some specialist medical facilities (mainly along the west side of Palmerston Road), many of which are themselves converted residences. There are about 40 buildings spread across the 6.5 hectare hospital site itself. With the exception of Masonic Towers on the north west corner of the site, which is a 10-storey building, most of the buildings are single to four storeys in height and are reflective of a history of ad-hoc development on the site which has occurred since 1933.

The Circa 1890 sandstone Collingridge House is the sole heritage listed item on the site and is listed under the Hornsby LEP register of Heritage items (not State register). Being in the middle of the site (see building 32 on context Analysis site plan within Appendix 1) it and it’s curtilage are not within te zone of development

3.2 Architectural intent of the development

The design for the new Stage 1 building seeks to address two complimentary themes which have arisen through the consultation process. The first of these themes is the palpable excitement expressed by stakeholders that Hornsby is close to receiving a long awaited modern health environment that will reflect the needs of its growing and changing community.

The second of these themes is the recognition of a feeling of ownership and agency that the Hornsby community, as a key stakeholder, has over Hornsby Hospital in general, and will have over the Stage 1 building when it is completed.

The intent of the architecture in response therefore is two-fold -

1. Firstly it must reciprocate the anticipation and optimism around its own inception with an aesthetic that is reflective of the important long term civic role it will play within the Hornsby shire.

2. Secondly it must engage the community by being welcoming, dynamic and responsive to its context, its users and its surrounding environment.

Figure 1: Location Plan (from Appendix 1)

Figure 2: Context photos of site and surrounds (from Appendix 1)

3.3 Siting

The selection of the south east corner of the site for Stage 1 development was the result of rigourous testing in both the feasibility and early schematic design periods of the project.

The key drivers for the selection of the south east corner can be outlined as follows -

- Functional adjacency and connection to the relatively recently completed Hornsby Obstetrics, Paediatric and Emergency (HOPE) building, facilitating fast access from Maternity and Emergency departments to Theatres and supporting other key flows.

- Minimum disruption to remaining operating services

- Minimal decanting and relocating of significant support services (allowing for maximum provision of clinical services within the budget)

- Alignment with Campus masterplan zoning

- A large site area is required to accommodate the high priority clinical services being provided within Stage 1

Recent efforts in resolving the Stage 1 siting further has centred on the following planning parameters –

- Consideration of the adjacency of the Stage 1 building to residential properties on Burdett and Derby Road, and subsequent adjustment of the plan to maximise setbacks at these boundaries and thus minimize environmental impacts to the nearby properties including overshadowing and visual impact on the street (particularly residences immediately to the south of Stage 1 on Burdett Street).
- Interface with HOPE building, including longitudinal and cross sectional access on Ground Level and critical flows from Maternity in HOPE building to Theatre on Level 2 (see plans in Appendix 1)
- Maintaining of Gate 8 services driveway to ensure operational continuity during and after Stage 1 construction.
- Achieving a strong legibility and delineation between public and non public areas to facilitate easy access in and around the building as well as outside the hospital site (see Figure 4)

Figure 4: Concept Diagram of Stage 1 IPU floor (Level 3)

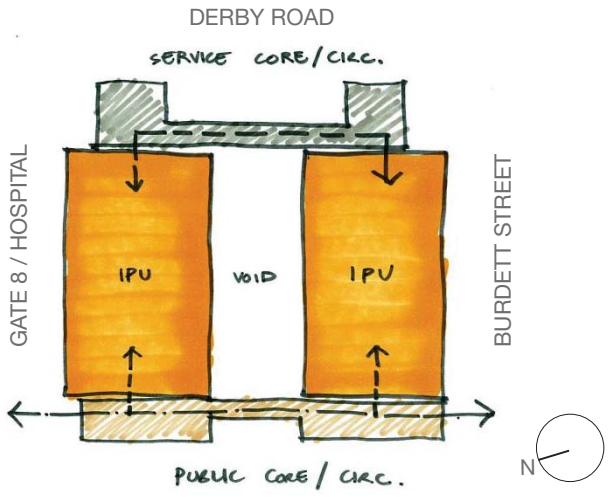


Figure 3: Concept sketch of Stage 1

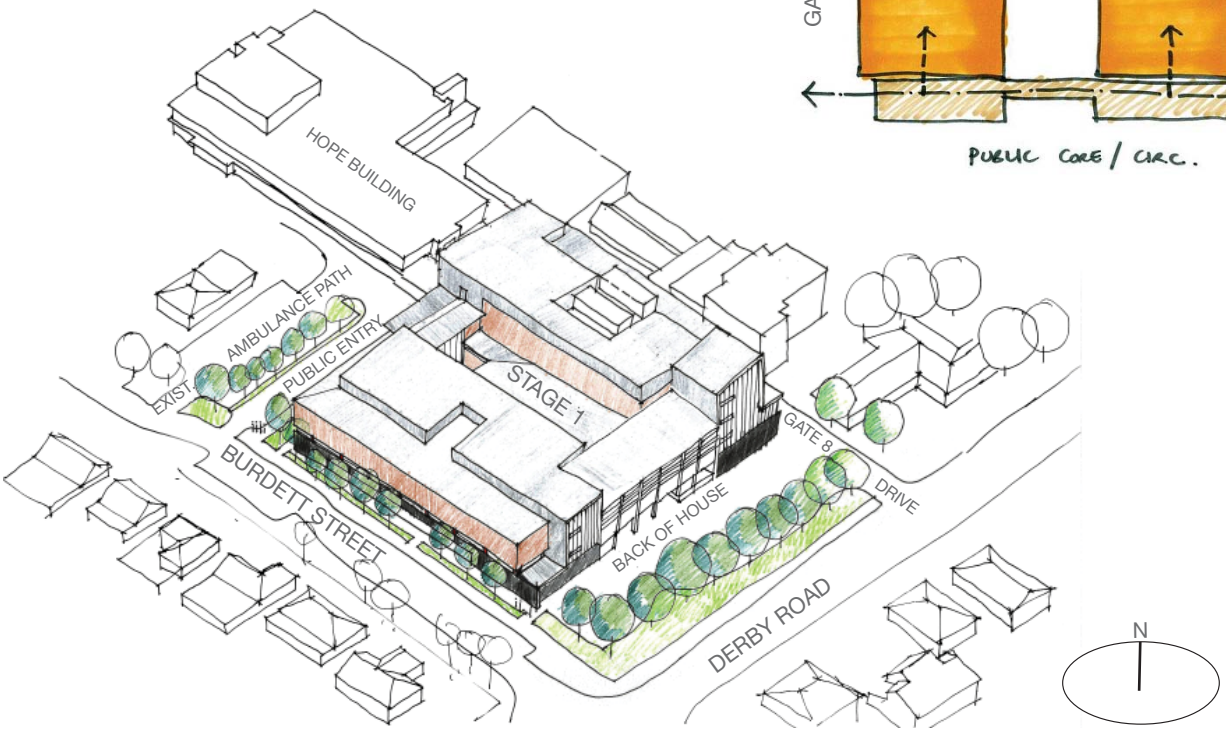


Figure 5: Confirmation of site selection area in early schematic design

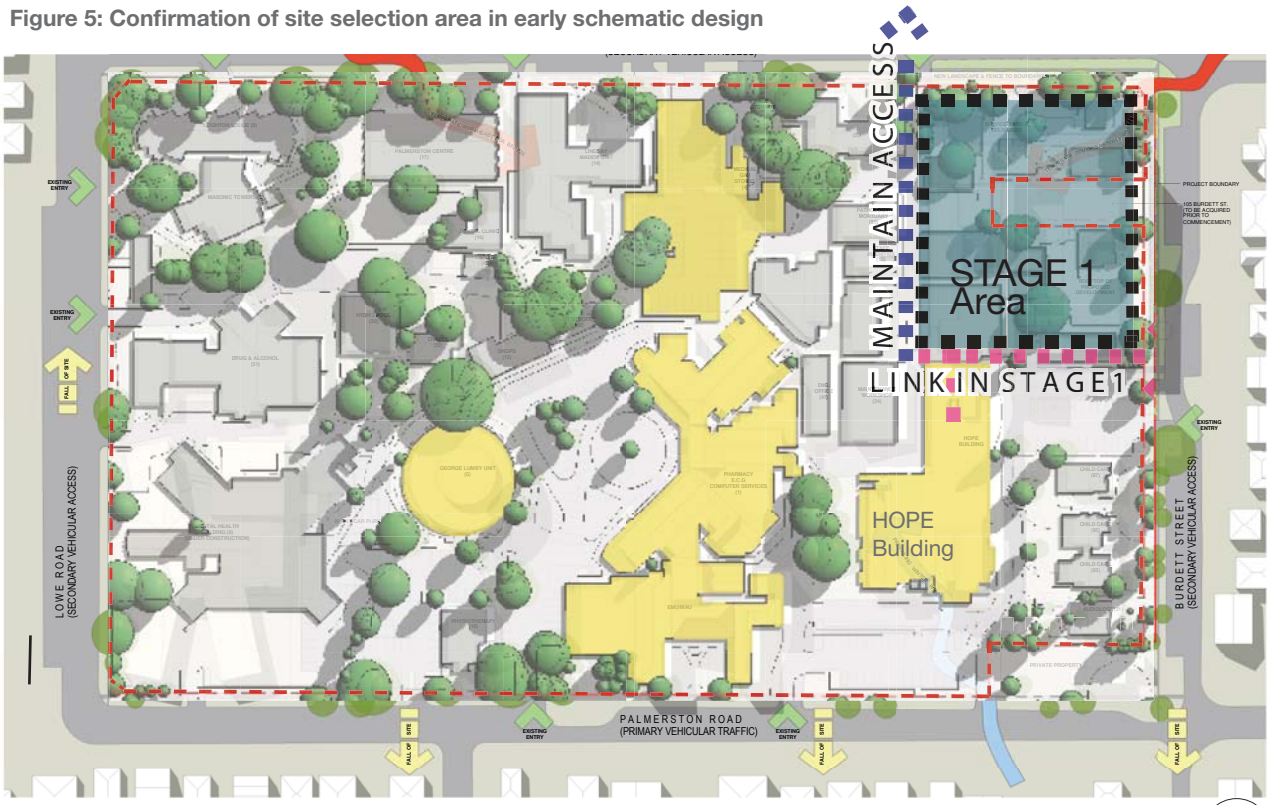
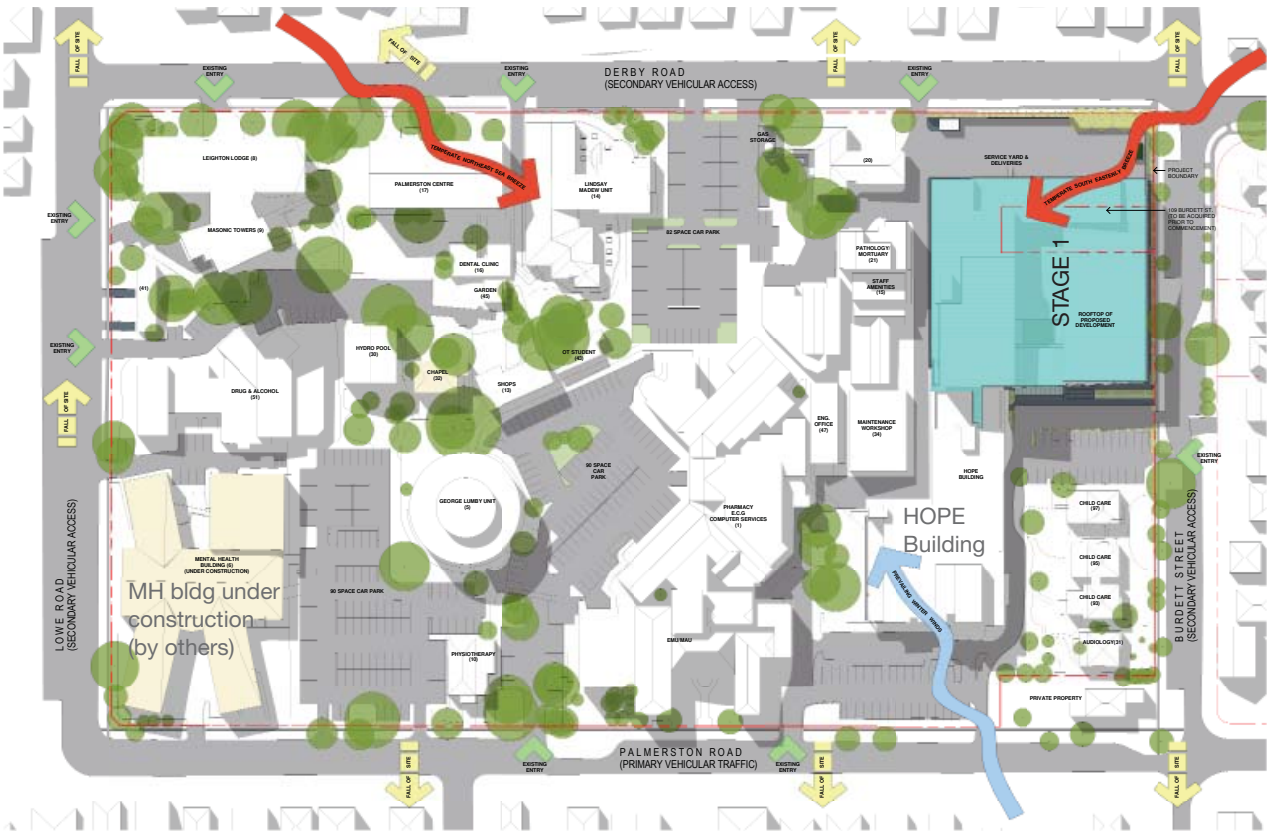


Figure 6: Recent resolution of building footrpint in late schematic design (from Appendix 1)



3.4 Built form

3.4.1 Design Evolution

The building design has evolved through a number of iterations which has resulted in a more recessive, less monolithic proposed built form than that of the original design. This evolution has occurred in part in response to comments made by the community, and also reflects the endeavours made by the design team to secure the most space efficient design solution.

The extent of proposed built form adjoining Burdett Street has been significantly reduced through the removal of the level 4 plant room that was previously proposed to sit atop the southern side of the building. This has been achieved primarily through a rationalisation of air handling plant, as well as through relocating plant to previously un-allocated space on the eastern side of the building.

Further reduction in proposed built form has been realised on the eastern side of the building facing towards Derby Road, primarily by terminating the north eastern core of the building at level 4 rather than the plant room level 5 above and by consolidating plant on level 5 towards the western end of the building. Detailed overshadowing studies have been undertaken and have helped to inform the design, with the external envelope calibrated in order to help minimise the extent of any overshadowing onto adjoining properties along Derby Road. It is noted that these refinements to the design represent enhancements over and above ensuring that the minimum three hours of solar access are maintained to all adjoin residential properties on the winter solstice.

The initial design proposal more directly reflected the heavily striated classic tripartite form of base/middle/top. In response to feedback from various stakeholders the façade design has become more articulated and broken down in scale, with stronger emphasis on vertical elements that counterpoise the heavily striated form. In addition abstract referencing of the adjoining HOPE building provides greater context.

The outcome of the strategic reduction in proposed built form and façade articulation that has occurred during the schematic design phase is now reflected in this Development Application.

3.4.2 Overall height and rise in stories

Stage 1 is a four storey building, with rooftop plant rooms and no basement. The finished floor level (FFL) of Ground/Level 1 (RL+181.00) is arrived at in part to resolve the steep downward slope along the site from HOPE to Derby Road and in part to align with the FFL of the HOPE building to which it abuts and connects to.

Level 2 FFL is 4.2mtrs above L1 (RL+185.20) and also aligns and connects with the HOPE building.

Level 3 FFL is 4.5mtrs above L2 (RL+189.70), its relative increased height attributable to increased ceiling heights and services space required by the operating theatres which occupy L2 below.

Level 4 FFL is 4.2mtrs above L3 (RL+193.90). The FFL of the plant above L4 is a further 4.2mtrs above L4 (RL+198.10).

3.4.3 Setbacks

At the Burdett street boundary (south edge of the building), a setback of between 2.7 and 2.9 metres exists (see site plan in Appendix 1), the maximum achievable whilst complying with key clinical planning principles of the design (such as for instance, the connection of Stage 1 to the HOPE building corridor). This setback zone accommodates a pathway as well as new screening planting to assist in softening the impact of the south facade on Burdett street.

On the East Elevation a setback of 21.9 metres to the Derby Road boundary allows for back of house services (including the loading dock) to operate and serve Stage 1 and the campus as a whole. Service vehicles will continue to enter and exit from Derby Road as per the current and historic situation on campus.

Operations of the service yard are screened by fencing and new planting to the Derby Road site boundary.

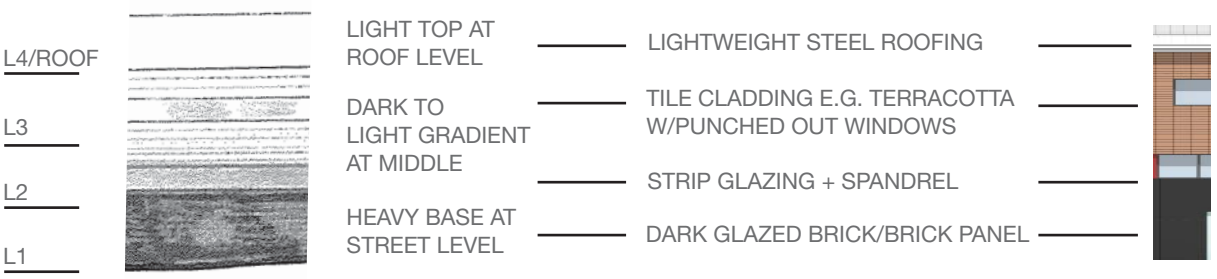
3.4.4 Primary elevational treatment

In elevation, the building has been treated in a stratified manner in order to convert its mass to a more humanistic scale that is more in context with the adjacent urban condition (which is predominantly made up of single storey residential dwellings).

As shown in figure 7, this stratification follows a gradient from solid and grounded at its base to light and ephemeral at its top.

This affect is achieved not only through overall material selection but also through the particular choices of material colour and texture. Such choices also reference (within a contemporary framework) the materials and colour of the surrounding campus

Figure 7: Stratification in texture, material and colour, concept to material specification



buildings and neighbourhood (which has a strong masonry presence).

Despite having a horizontal expression, the major compositional elements of the façade; the dark masonry base, floating glazed middle section and terracotta top, have been arranged in a way that subverts a level by level reading of the building. This strategy not only gives the impression of the building containing less stories than it has, but also allows for variations in fenestration that are appropriate to the internal clinical function on the floors e.g strip glazing to theatre staff and meeting rooms on Level 2 and punched out windows to bed rooms on Level 3.

3.4.5 Massing and stacking to street

As evident from the elevations (See also Appendix 1) and in figures 8 and 9, the building tapers in height from its lowest point at the south face of the building on Burdett Street (3 x stories, 12.9 metres @ RL+193.90) to its highest point between grids 6 and 9 parallel with the north edge of the building (4 x stories plus L4 plant and roof, 22.05 metres @ RL+203.05). This reduction in overall height of over 9 metres north to south is a direct result of an architectural massing strategy which seeks to step down and reduce the building's mass and bulk as the building approaches the edge of the campus and the Burdett street boundary.

Figure 8: Concept sketch for massing - Derby Road elevation

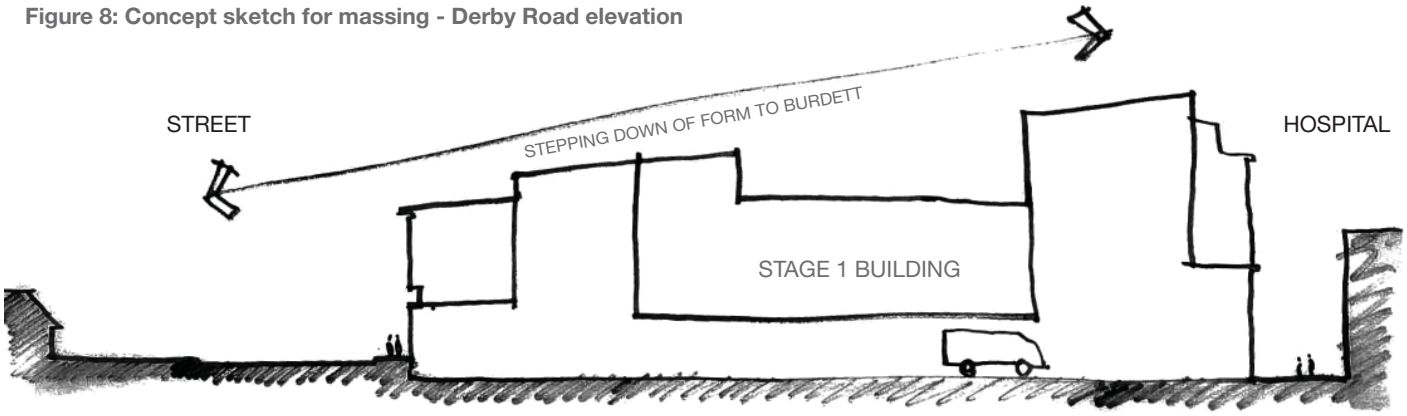
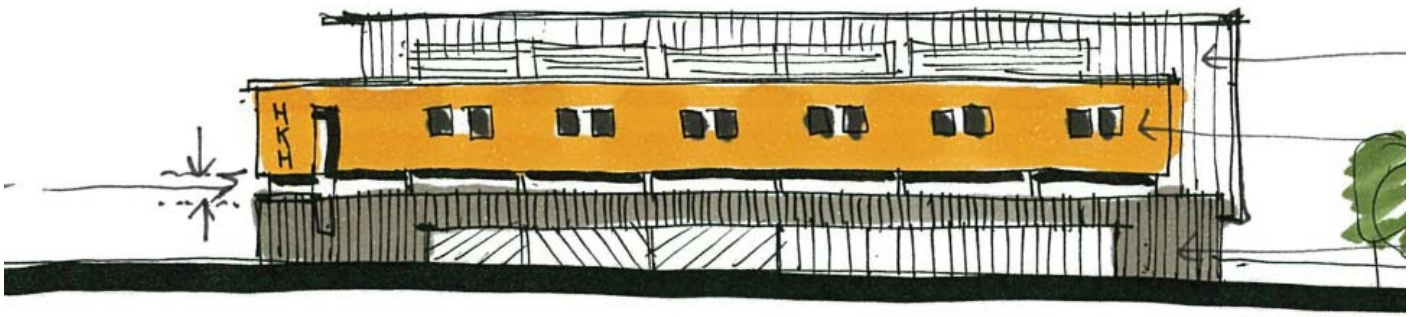


Figure 9: Measured Derby Road elevation (from Appendix 1)

Figure 10: Concept sketch of Burdett Street elevation (from Appendix 1)



3.4.6 Exterior material selection

The final material selection is the result of an options analysis based on the criteria of aesthetics as outlined in 3.4.3, as well as performance and fitness for purpose criteria. The final materials chosen for the Stage 1 façade and rationale for choosing them are described in Table 2 (see also Appendix 1).

Table 2: Key facade materials nominated

Area for material	Material chosen	Rationale for choice
At base/plinth level	Modular brick panel with glazed brick insert – stack bonded	Durable and robust (suitable for grade level use) inherently anti-graffitti, contextually relevant
Façade Infill panel to undercroft areas	Composite timber batten screening	U/V stable, durable and robust, referencing of timber fencing in the area
Level 2 glazed areas	Banding of continuous low emittance double glazing column to column with coloured spandrel infill across columns inside anodized aluminium frames	High thermal performance Glazing provides visual break between L2 and L3 floors whilst red infill references vertical language of adjacent HOPE building and mediates transition between terracotta middle and brick base of the building
Level 3 and 4 cladding	Terracotta façade system Rain screen type w/internal membrane	Modular, Precision material, humanistic scale, Referential in look, feel and function to tiled roofs in the area but in a form appropriate to a healthcare typology
Roofing and non louvred plant room cladding	Profiled steel cladding w/pre-finished steel fascia	Light, Unifying element on façade (eg west elevation)
Cladding to cores and areas requiring little or no glazing	Zinc finished composite cladding	Durable and Robust Similar to that used on HOPE (to promote an aesthetic connection with the HOPE building)

Figure 11: Precedent imagery of materials selected

3.4.7 Main entry

On the west elevation, the front entry acts as a counterpoint to the typical elevational treatment of the building (such as that which occurs on the Burdett Street elevation). This area, denoted by full height glazing with a 'green screen' shading structure (see section 3.5), is the major 'front door' for all occupants of the building, but particularly for patients and visitors.

It is therefore designed to be intuitive to locate, inviting and most of all memorable and pleasant to encounter whether when entering the building or passing by on the street.

Figure 12: Concept perspective sketch at main entry

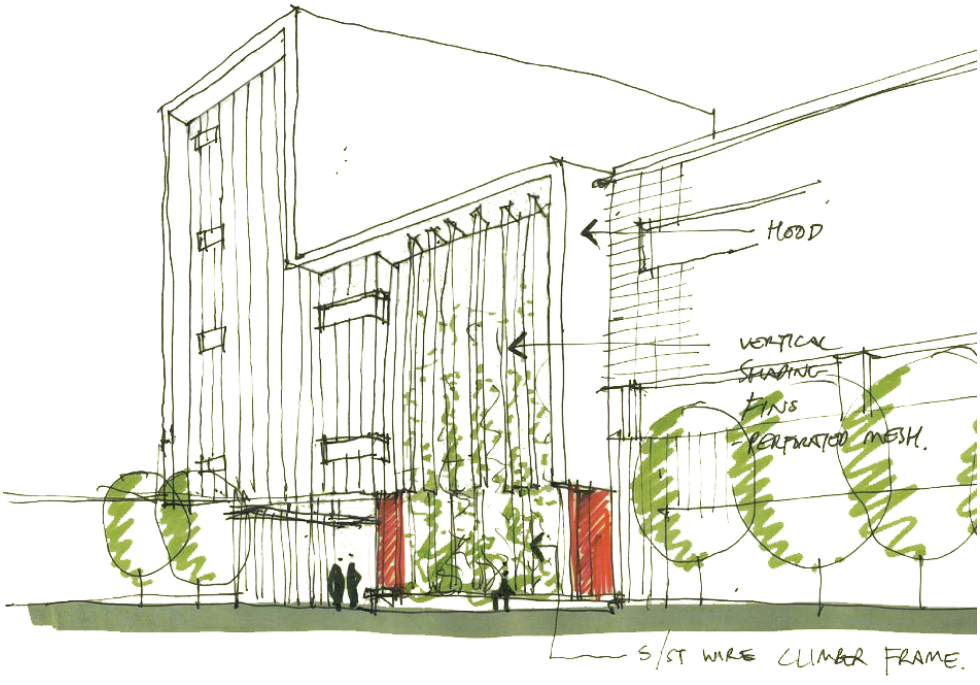
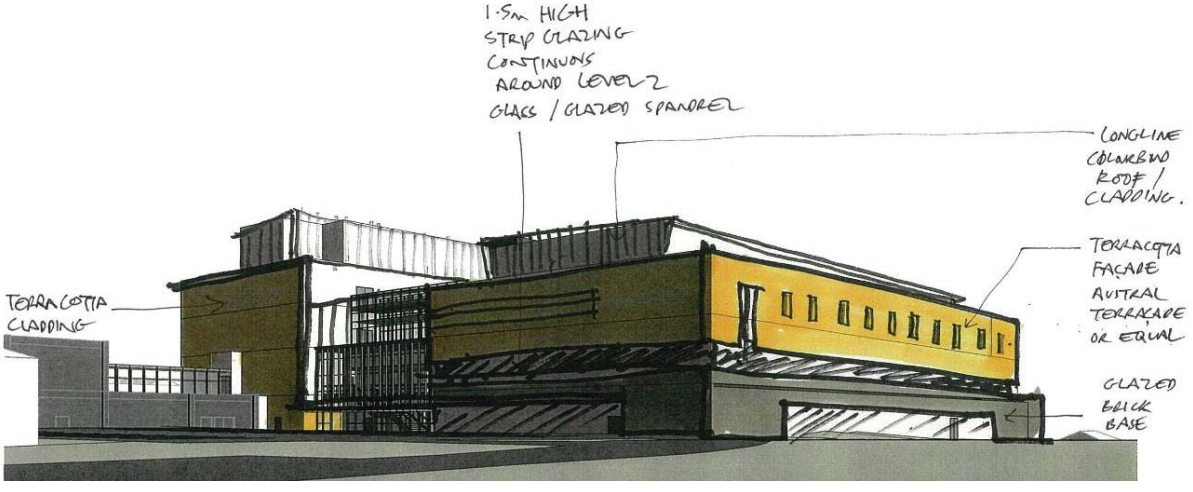


Figure 13: Concept Sketch of Entry from Burdett (from Appendix 1)



3.5 Landscape Design

Opportunities to enhance the amenity of the development through landscape design have been implemented in the design, including strategies beyond conventional ground plane planting. One example of this is the 'green screen' to the west façade,directly in front of the entry and atrium glazing.

Offset from the façade and consisting of a stainless steel wire mesh frame upon which a fast growing heat tolerant climber can grow, the green screen would in time offer additional shading to the west glazed area as well offering visual dynamism, interest and a connection to green space for patients and users inside and outside the building.

Other landscape items that form part of the Stage 1 schematic design include –

- A row of deciduous screening trees along the Burdett Street boundary.
- At Entry forecourt- medium sized shrubs and trees in addition to 'green screen' planting to frame and add interest to entry area, plus seating and areas of respite
- Adjacent Loading Dock - Proposed continuation of planting recently undertaken on Derby Road to continue to Stage 1 area with screening trees to Derby Road boundary
- Xeriscape planting and paving to internal courtyard area
- At Entry - Feature Paving to main entry area including footpath, stairs, ramps immediately outside entry doors
- Refer also Site and Landscape Plan in Appendix 1

3.6 Environmentally Sustainable Development and Energy Efficiency

ESD and Energy efficiency measures on the HKHR Stage 1 project captures both statutory and non statutory items. Descriptions of these items is summarized as follows

3.6.1 Statutory Energy Efficiency within BCA

The design conforms to the sustainability requirements of Section J (which covers Energy Requirements) of the Building Code of Australia 2012 as follows:

J1 – Building Fabric – Selection of materials readily adheres to the limiting thermal resistance of the building envelope requirements

J2 – Glazing – An assessment of the current façade design has been modelled through the glazing calculator distributed by the ABCB, and has verified that current glazing levels are code compliant

J3 – Sealing – the requirements of this section are readily achievable with the current design proposal

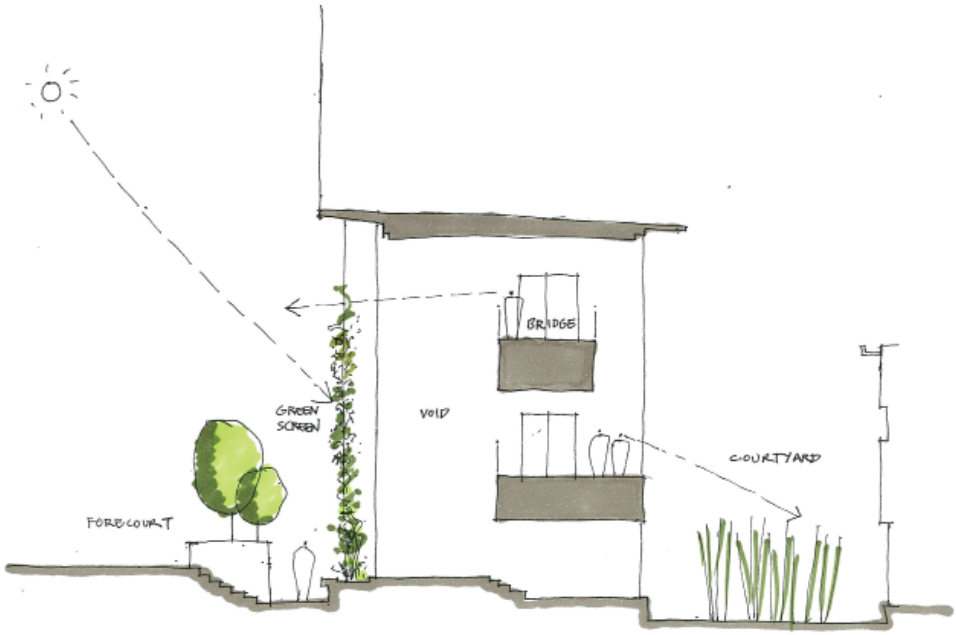
J5 – HVAC –the requirements of this section are readily achievable with the current design proposal

J6 – Electrical –the requirements of this section are readily achievable with the current design proposal

J7 – Hydraulic –the requirements of this section are readily achievable with the current design proposal

J8 – Access For Maintenance & Energy Monitoring – the requirements of this section are readily achievable with the current design proposal

Figure 14: Atrium section diagram showing 3 elements of landscape (forecourt planting, 'greenscreen' + xeriscape courtyard)



3.6.2 Statutory ESD measures within Director General Requirements for SSD/EIS

The Director General Requirements (DGRs) mandate that ESD principles and initiatives for the project are established and outlined as part of the Environmental Impact Statement (EIS) for the project.

Specifically, reference is made to inclusions of a Water Management Plan, which details "any proposed alternative water supplies, proposed end uses of potable and non potable water and water sensitive urban design (WSUD)". Opportunities for deploying alternatively sourced water are limited in a clinical health environment, whilst the limited extent of soft landscaping effectively precludes the viability of WSUD, in particular where surface water from the hardstand area of the loading dock would be subject to the risk of contamination.

Refer to G Civil Engineering and Integrated Water Management Plan by TTW Consulting Engineers for details.

3.6.3 ESD and Energy Efficiency beyond statutory measures

Beyond statutory requirements ESD Initiatives for Stage 1 have been identified as follows:

Environmental Management

An ISO 14001 Accredited Contractor will be appointed to carry out the works.

Indoor Environmental Quality

Improved Indoor Environmental Quality, to be achieved through:

- Reductions in Volatile Organic Compounds, particularly in paints and carpet
- Formaldehyde Minimisation
- Mould Prevention, through well ventilated spaces
- CO2 Monitoring

Energy

- Energy demand to be reduced through:
- Artificial lighting to be reduced through a combination of optimised natural light and provision of lighting sensors
- Enhanced wall and roof insulation levels above minimum code requirements
- Rain screen cladding terracotta façade system that allows façade to "breathe"
- Building tuning during Defects Liability Period
- System Monitoring via BMS
- Sub-Metering of major power consumption elements
- Post Occupancy Evaluation

Transport

Transport Initiatives to include:

- Sourcing Locally Manufactured Products, where possible and commercially viable
- Bicycle parking for 40 bikes to be provided

Materials & finishes

Materials & finishes generally to be selected on an eco-friendly basis, with a preference for those materials that have a reduced environmental impact that takes into account:

- Eco Preferred Content
- Durability
- Environmental Management System (EMS) certification
- Product stewardship certification
- Design for disassembly
- Recycled content

Water

- Low flow WELS rated tap ware to be used in patient areas