SCHEMATIC DESIGN REPORT

CONCORD REPATRIATION GENERAL HOSPITAL REDEVELOPMENT – STAGE 1

NEW CLINICAL SERVICES BUILDING

SYDNEY LOCAL HEALTH DISTRCT

V08 – 23 NOV 2018

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Schematic Design Report

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Figure 1 – Concord Repatriation General Hospital Redevelopment

1.1 Background

The Concord Repatriation General Hospital (CRGH) Redevelopment is a critical infrastructure project required to improve and replace outmoded facilities to meet the substantial growth in clinical service demand from across the hospital's catchment that has occurred and will occur over the next 10 years. This report builds on the previous 2016 Schematic Design Report V3 and responds to the Masterplan Optimisation Report V4 dated December 2017.

The Project provides a new multi-storey clinical services building that:

- responds to the clinical priorities as identified by the Sydney Local Health District (SLHD) and Concord Hospital in the Clinical Services Plan and Final Business Case
- provides a logical decanting solution, and facilitates the strategic replacement and renewal of existing facilities
- responds to the significant heritage and history of Concord Hospital as a wartime repatriation hospital that still provides ongoing care and services to both current defence force personnel and returned veterans

The project will provide new Aged, Complex Care and Rehabilitation facilities replacing the 70 year old Ramp Wards in the current General Geriatric and Rehabilitation Medicine (GGRM) precinct. The new facility will significantly improve connections to existing services as well as increase services to the veteran community and consumers requiring networked quaternary services. The new building will provide inpatient accommodation, rehabilitation and ambulatory care services, and address the short-term pressures to predominantly meet Concord Hospital's 2021. The project will also collocate cancer care from several locations across the site and provide a home for the ANZAC Clinical Research Centre.

The completion of the new Clinical Services Building (CSB) will allow the Ramp Wards in the GGRM Precinct to be demolished to make way for a temporary on-grade carpark to accommodate approximately 300 cars. A new multi-storey car park will then be constructed on the existing car park site.

The project is cognisant of the need to plan for future growth, particularly for acute services that are currently accommodated in the main Multiblock building. The precinct adjacent and east of the Multiblock and the new clinical services building has been identified for future development to meet the 10-year demand horizon with a capability of further expansion into the future in line with the hospital masterplan.

This Schematic Design Report documents the progression of the Planning Phase from the Concept Design phase through to the conclusion of Schematic Design for the CRGH Redevelopment.

1.2 Project Description

The proposed project responds to the Functional Brief completed in June 2015 and continues the development of the Masterplan and Concept Design through the Schematic Design (SD) phase. The development of the Schematic Design has continued to respond to the key objectives and principles outlined in the Masterplan Report.

In order to effectively manage current and future activity and ensure patients receive timely, safe and high quality care, the hospital has determined the following key immediate service priorities for the project:

- Establish a Veteran's Physical and Mental Health Treatment and Rehabilitation Centre
- Establish integrated Aged Health and Rehabilitation Services
- Establish an integrated Cancer Care Centre

1.3 Project Scope

The schematic design report builds on the concept proposal for the redevelopment of the existing hospital site. Whilst concept approval is sought for the redevelopment of two (2) stages, the schematic design report will primarily focus on Stage 1 detailed design and construction of a new Clinical Services Building, multistorey carpark and associated works.

Detailed development approval for the proposed Stage 2 works will be completed at a later date and does not form part of this submission.

The centre-piece of the Clinical Serves Building Stage 1 redevelopment is the new Rusty Priest Centre for Rehabilitation and Aged Care. The new building re-houses and expands Aged Complex Care and Rehabilitation services, Veteran's Physical and Mental Health Treatment, and Rehabilitation services. The project also includes an integrated Cancer Care Centre; as well as Inpatient services in new purpose-built facilities. The new facility will significantly improve connections to existing services as well as increase services to the community. The design features a new 'Hospital Street' atrium located at the interface between the new clinical services building and the existing main building. Dedicated drop-off and entries are provided for patients attending cancer services and ambulatory care and rehabilitation services. Bridge links within the atrium provide connectivity for patient transfers and goods between the new building and existing. A link at Lower Ground Level, below the Hospital Street, enables goods and services to be transported between the new building Delivery Port and the existing building.

A new multi-storey carpark to accommodate the increased demand will be provided by a separate procurement model and business case.

1.4 Budget and Costing

The NSW Government in 2017 committed a capital budget of $341.2 million for the Project. This commitment includes the contribution of $5.87million for the design and fit out of the Solider On unit. The financial case outlined in the Final Business Case, which this schematic design is based upon, reflects an affordable option.

An expression of interest process will be undertaken to identify a third party provider to fit out and operate the Radiation Oncology department (shown as shelled space).

The top floor (level 5) provides cold shell space for 48 future inpatient beds, including provision for wet area set-downs and in-ceiling drainage plumbing below. The Project Governance has endorsed a cost mitigation strategy to delete the cold shell floors if deemed unaffordable. The project is including the floors in the design noting this strategy. If the cold shell floor was deleted, the floor could be provisioned a future build.

The Project also allows the Ramp Wards to be demolished and together with optimisation of the Masterplan enables delivery of Stage 2 and the multi-storey car park, which will address growth of all other services to 2026.

The capital cost plan Error! Reference source not found.**ECOM** provides the detailed schematic design costs. A s ummary of the capital cost are as follows:

Item	$ million
Net construction	158,509,730
Allowances, overhead, margin	40,113,067
Gross construction	198,622,797
Fees	29,776,984
Furniture Fittings and Equipment	16,858,205
Land Acquisition	-
Total cost (excluding escalation, contingency, HI costs)	46,635,189
Escalation	39,590,205
Contingency	49,655,700
Health Infrastructure Costs	6,696,109
Total end cost	341,200,000

The capital cash flow for the Project is summarised below and will continue to be reviewed throughout the Project.

2017/18	2018/19	2019/20	2020/21	2021/2022
$9.4m	$44.7m	$124.9m	$108.1m	$54.1m

1.5 Program

The programme for the planning, delivery and commissioning is provided below.

Table 1 – Critical Milestones

Milestone/ Activity	Forecast Completion	Comment
Project Initiation	September 2017	
Master Planning	November 2017	To address whole of campus requirements for CSP.
Feasibility Development	November 2017	
INSW Gate 2 Review Business Case	January 2018	
Car park Business Case (to be informed by this project)	December 2017	Separate Business Case
Schematic Development	March 2018	Including Clinical Design Development
Design Development	September 2018	
Contract Documentation	November 2018	
Tender Evaluate and Award	February 2019	
Contract Admin Enabling Works	September 2018	
Contract Admin – Early Works	February 2019	
Contract Admin – Main Works	June 2021	
Commissioning and Handover	September 2021	
Post Completion Warranty Period	June 2022	

1.6 Risk Management

A Risk Management Plan has been developed for Concord Hospital Redevelopment Stage 1 as part of the Final Business Case. This is based on the HI Risk Management Framework. This approach is based on a continuous and proactive approach to risk management from planning through to implementation and commissioning and includes

- Identifying the key risks following consultation with key stakeholders and review of documentation;
- A risk workshop with the project team to review and confirm risks. In particular, all services consultants are required to identify risks relevant to their discipline for addressing within the risk framework;
- Ongoing risk reviews with the project team to update the risk register;
- Reviewing specific risks from the risk management strategy at PDC;
- Escalating (where required) risks to the ESC for direction; and
- Working with the Cost Planner to quantify the capital implication of the risks identified and assessing them against available contingency.

A risk workshop was held comprising SLHD, HI and the consultant team on the 18 October 2017 to identify and manage the initial risks of the Project. As part of the schematic design finalisation a safety in design workshop and review of the risk register was undertaken between HI, SLHD and consultant team early March 2018. The project risks will be continually reviewed and mitigation strategies implemented. Key risks will be reported monthly to the PDC and ESC.

The current top five risks are outlined below

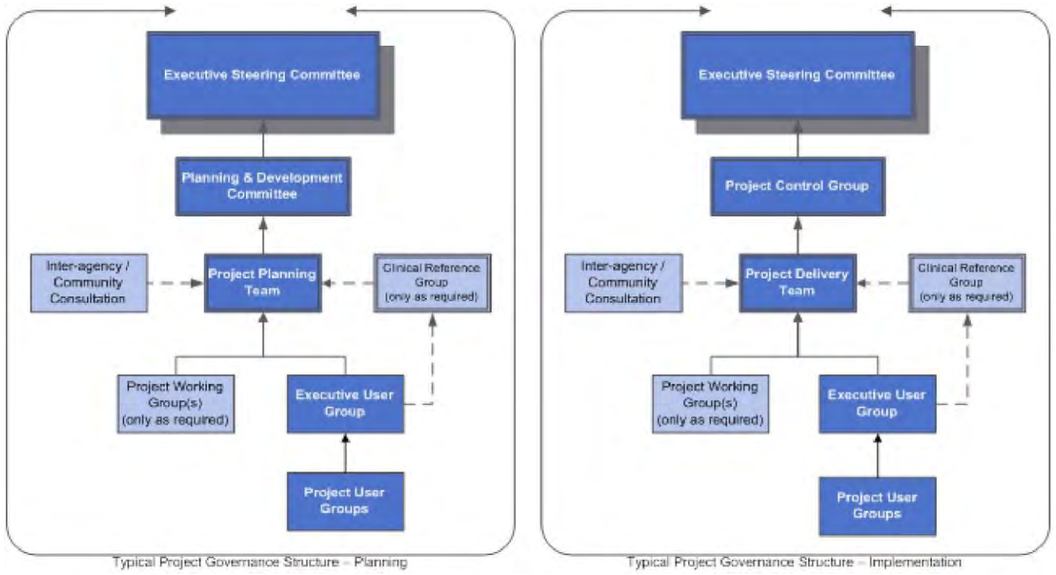
Risk Rank	Risk Category	Risk Description	Mitigation Strategy	Status
1	Commercial / Budget	The scope is unaffordable	A peer review of the planning has been undertaken and VE options were supported by ESC. Regular and consistent reviews of the project budget including a Cost Plan at each stage.	VE option supported by ESC. Risks costed and probability review undertaken showing risks are under contingency.
2	Time	Delays to the project programme, especially in relation to: • Planning Approval • Design • Tender and Award	Project team are to be kept informed of the project milestones and master programme. LHD decant strategy is to be resolved. Early warning to be provided for critical decisions. Design team and specialist engagements are to be finalised	Key milestones have been agreed and will form part of the project Business Case. Regular meetings are progressing in line with the project governance to inform the project team and key project stakeholders on progress.

Risk Rank	Risk Category	Risk Description	Mitigation Strategy	Status
				Design team and specialist consultant engagements are completed.
3	Business Continuity	Business continuity for the Concord Hospital during the project	A logistics consultant has been engaged to advise on the Hospital logistics changes including the closure of the Delivery Port. Disruptions to be minimised during the enabling works scope. Disruptions to be managed with the LHD to ensure impacts are minimised. Detailed planning required for the works to existing Hospital buildings.	Logistics consultant has prepared a strategy for the campus for the permanent and temporary solution. Enabling works design are progressing. A Head Contractor is to be engaged to manage the enabling works to minimise the impact on the LHD.
4	Traffic Management Planning	Traffic and transport planning for the current project and the Master Plan	Engagement of a traffic and transport consultant. A Traffic Impact Assessment will be generated for submission with the SSD application. Traffic planning will be reviewed as part of the Master Plan optimisation phase. Traffic planning to be undertaken for the enabling, early and main works packages to confirm traffic impacts.	Arup have been engaged as the Traffic and Transport Consultant. Arup have reviewed the Master Plan in relation to traffic planning optimisation. Traffic Impact Assessment has been developed and will from part of the SSD submission.
5	Site Conditions	Additional complexity and cost to the project associated with the site, e.g. in ground contamination, planning constraints etc.	Seek technical advice from engineering and technical consultants regarding options to address site specific issues. Retain contingency allowance.	Preliminary geotechnical and contamination investigations have been undertaken. A geotechnical and contamination investigation consultant is being engaged to undertake further details investigations on site.

1.7 Stakeholder Engagement

The project is underpinned by a robust governance and stakeholder engagement strategy. Extensive stakeholder consultation through the Project User Group has taken place throughout the SD phase, achieving a high level of participation and engagement at all levels of the organisation

Figure 2 – Project Governance Chart



The interface with hospital users is structured with Project User Groups and Project Working Groups providing input to a Project Planning Team (PPT) overseen by a Planning and Development Committee (PDC).

1.8 Schematic Design Consultation

The previous Schematic Design consultation processes culminated in with the stakeholder endorsement in July 2016.

Stakeholder engagement during the 2017/16 SD process has focussed on the optimisation of support areas which are generally located in what has become known as the ‘Support Bar’. This is the zone located at the interface between the Multi-Block and the new Clinical Services Building. As the term implies it accommodates shared support services. Consultation occurred at Working Group and/or Executive User Group level. The outcome of this process is included **Section 2.6** in **Table 9 – Summary of Schematic Design Optimisation changes** and

Table 10 – Room by Room Comparison of key changes to support areas

1.9 Clinical Design Development

Clinical DD consultation occurred during the Schematic Design. This process comprised of the preparation and review of a comprehensive list of repetitive Generic Rooms. Prior to user group meetings Health Infrastructures Solutions Team reviewed each Room Layout Sheet and provided guidance. The review process occurred over three rounds of meetings. The second round meeting was convened as an Executive User Group to review a number of overarching issues that had LHD policy implications. The outcome of this review was fed into the final 3rd round of meetings.

Table 2 – Executive Working Group (EUG)

Members	Organisation / Department
Tim Sinclair	SLHD, General Manager, CRGH
John Cullen	SLHD, Head of Department, Geriatric Medicine
Philip Beale	SLHD, Head of Department, Oncology
Sharne Hogan	SLHD, Director of Nursing & Midwifery, CRGH
Vivienne Bush	SLHD, Director of Corporate Services, CRGH
Jon Gowdy	SLHD, Director, Capital Assets and Contract Services
David Ballantyne	HI, Executive Director – Planning
Hayley Bell	HI, Senior Project Director
Matt Malone	HI, Project Director
Niven Gengiah	HI, Graduate Officer
Chris McDonald	MoH, Principal Planning & Policy Officer
Hayley Bell	Project Director (Chair)
Invitees	Organisation / Department
Dr. Teresa Anderson	SLHD, Chief Executive
Deborah Jenkins	SLHD, Redevelopment, Planning and Transition Coordinator
Kirsty Chapman	SLHD, Change Manager
Carly Mcloughlin	SLHD, Communications Officer
Matt Inch	Johnstaff, Project Manager
Tracey Ronald	Johnstaff, Project Manager
Chin Young	Jacobs
Don Garner	Jacobs

1.10 The Project User Groups:

These groups are populated with a diverse membership that includes representatives from all aspects of the hospital and includes ICT, FFE, Engineering, Site Planning, Infection Control, Occupational Health & Safety and General Services. For Mt Druitt these consultations will be undertaken in the Design Development (DD) phase.

Architecture, Landscape, Interiors and Wayfinding were reviewed with separate Architectural Working Groups

1.11 The Project Working Groups:

These groups are populated with a diverse membership that includes representatives from all aspects of the hospital and includes ICT, FFE, Engineering, Site Planning, Infection Control, Occupational Health & Safety and General Services.

Architecture, Landscape, Interiors and Wayfinding were reviewed with the Executive Steering Committee rather than separate Architectural Working Groups.

Figure 3 – Project User Groups and Project Working Groups

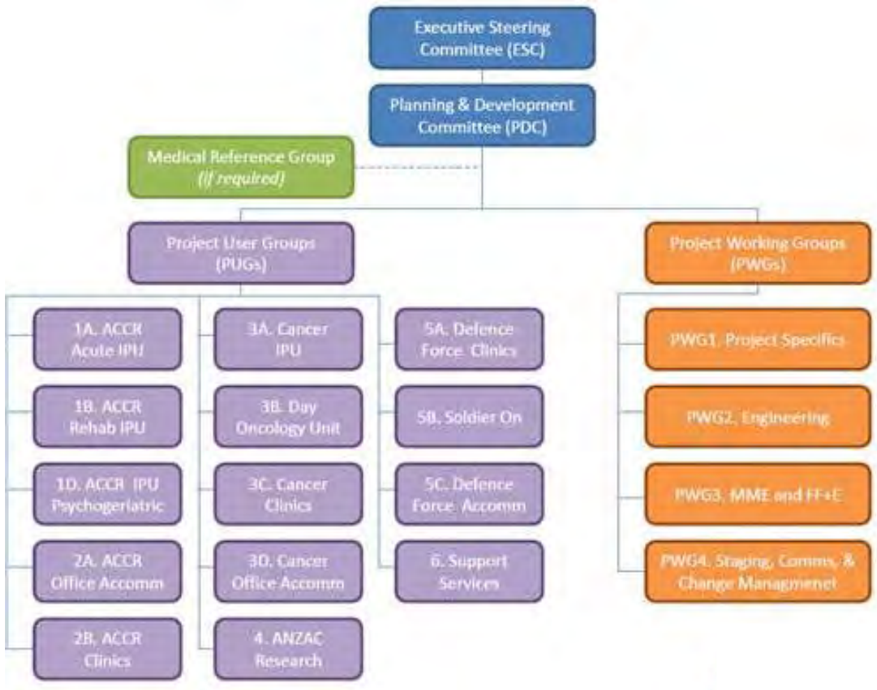


Table 3 – Engineering Working Group (EWG)

Name	Organisation / Department
Vivienne Bush	CRGH Corporate Services
Chris Batch	SLHD Engineering
Helmut Blarr	CRGH Engineering
Rick Stratten	CRGH Security
Deborah Jenkins	SLHD Capital Works
Nick van Domburg	SLHD
Chin Young	Jacobs
Warren Boucher	Jacobs
Keith Ryan	WGE
Denis Zekusic	WGE
Paul De Gabriele	WGE
Antonio Lo Monte	WGE

1.12 Project Team

The design process is implemented by the Project Team, comprising the Project Manager and the Design Consultants, working with the Governance structure outlined in Figure 2 above. Coordination of the design process continued through SD, with overall management by the Project Manager, Capital Insight, and the Design Team coordinated by Jacobs.The Project Team consists of the following companies and lead contacts:

Table 4 – Project Team

Name	Organisation / Department
Hayley Bell	HI
Niven Gengiah	HI
Matthew Malone	HI
Matt Inch	Johnstaff, Project Manager
Tracey Ronald	Johnstaff, Project Manager
Marc Carneiro	Johnstaff, Project Manager
Justine Butler	Johnstaff, Project Manager
James Bourne	Johnstaff, Project Manager
Chin Young	Jacobs, Architect
Don Garner	Jacobs, Architect
Arthur Collin	Jacobs, Architect
Vanessa Hawkes	Jacobs, Architect
Patrick Chu	Jacobs, Architect
Ernest Fan	Jacobs, Architect
Warren Boucher	Jacobs, Architect
May Wang	Jacobs, Architect
Stella Wongso	Jacobs, Architect
Vaishali Deshpande	Jacobs, Architect
Serafina Antonella	Jacobs, Architect
Yvonne Lai	Jacobs, Architect
Ben Yee	Jacobs, Architect
Nick Metcalf	Site Image, Landscape
Jane Dumbleton	Site Image, Landscape
Hans Gerber	Minale Tattersfield, Wayfinding
Renee Jacob	Minale Tattersfield, Wayfinding
Joshua Milston	Arup, Transport
John Fahey	Arup, Transport
AECOM	Richard Gamble, Cost Consultant
AECOM	Andy Lappas, Cost Consultant
Keith Ryan	WGE Mechanical
Alex Kass	WGE Mechanical
Alex Hutto	WGE Mechanical
Steven Brims	WGE Electrical
Rowan Barwood	WGE Electrical
Peter Flinn	WGE
Nicholas Johnson	WGE
Eugene Goulding	WGE
Liam Murtagh	WGE
Tom Wise	WSP Hydraulic
Mark Price	WSP Hydraulic
David Bolt	WSP Fire Services
Ralph Bacha	WSP Fire Services
Christopher Augostin	WSP
James Skubevski	WSP
Yinuo Xing	WSP
Matthew Beazley	WSP
Glen Fowlie	TTW Structural
Stephen Braine	TTW Civil
Rob MacKellar	TTW Structural
Tim Henderson	TTW
Hannah Jones	TTW Structural
Robert Johnston	TTW
Andrew Brohier	McKenzie BCA, DDA
Angela Chambers	McKenzie BCA, DDA
Vijay Perumal	McKenzie BCA, DDA
Vanessa Batty	McKenzie BCA, DDA
Frazer MacDonald	Umow Lai Fire Engineers
Dionne Haeri	Umow Lai Fire Engineers
Tom Taylor	Acoustic Logic
Jane Fielding	Architectus Planning
Jonathan Archibald	Architectus Planning
Stuart Lumsden	JSBG
Mitchell Hodgins	JSBG
Matthew Dowle	Ecoaus
Jennie Powell	Ecoaus
Warwick ???	Allied Trees
James Cole	Biosys
Bill Callan	Premeng
Simon Hay	Coffey

2. Functional Design

2.1 Model of Care

2.1.1 Aged and Complex Care and Rehabilitation (ACC&R)

The Project will enable the expansion and implementation of integrated services for the highly regarded Aged Complex Care and Rehabilitation (ACC&R) service. As well as increasing the capacity for inpatients and ambulatory care services there are a number of new services that will be implemented.

The implementation of the Day Hospital, within the ACC&R ambulatory care floor, will provide clients in the community with in-centre assessments, consultations and rehabilitation. This has been identified as a hospital avoidance strategy for elderly patients.

The number of Residential Aged Care Facility (RACF) beds is increasing with an aging population, resulting in an increase in ED presentations. Data from the Concord Emergency Department in 2013 showed there were between 67 and 106 presentations of RACFs residents per month. To help manage this cohort of patients a new model of care was implemented in December 2014, called the Aged Care Triage (ACT) Service. The Project will enable the expansion of this service and allow for timely referrals and/or admission of their clients

2.1.2 Comprehensive Cancer Care Centre

The current cancer services at Concord Hospital are disjointed with most of the services located in inadequate accommodation. This leads to staff inefficiencies and unnecessary patient movements throughout the hospital. A new integrated Comprehensive Cancer Centre will address both these issues.

The vision for SLHD and Concord Hospital is to bring Cancer Services together into a comprehensive centre that integrates inpatients, ambulatory, treatment / diagnostics and clinical research.

The new Comprehensive Cancer Care Centre will be part of the SLHD network comprising ambulatory Medical Oncology, Haematology, Radiation Oncology (future provision), Cancer Survivorship services and Cancer Research. The scope, range and accessibility of ambulatory care services will be broadened to accommodate unplanned rapid assessment, thereby avoiding ED presentations and hospital admissions. The Centre will have seamless links to acute inpatient medical and surgical cancer services, nuclear medicine and, PET-CT in Stage 2.

2.1.3 Specialist Healthcare Services to Veterans and Emergency Services Personnel

There is an identified need at a state and national level for a centre of excellence that provides specialist services in the healthcare of newly returned veterans and their families. Australia now has approximately 60,000 veterans, who have served in conflicts and peace-keeping missions over the past 15 years. Their needs are not confined to treating their physical injuries; mental illness is now increasingly identified in these younger men and women. Emergency personnel including federal and state police officers, paramedics and fire officers have related issues which require a similar model of supportive care.

Concord Hospital is well placed to provide integrated care to these service personnel through its comprehensive range of specialities including the state-wide Burns Unit, Rehabilitation Medicine, Bone and Joint services, and tertiary level Drug Health services. The Concord Centre for Mental Health has significant experience in post-traumatic stress disorder, anxiety, depression and a range of other mental health services.

2.1.4 Clinical Research

Concord Hospital has a vibrant and strong research presence established in collaboration with the University of Sydney including the ANZAC Research Institute (ARI), Ageing and Alzheimer's Institute (AAAI) and the Asbestos Diseases Research Institute (ADRI). The ARI was established in 2000 to improve the health of veterans and their families. Over the years the ARI has expanded research into aging, cancer and other relevant areas. The AAAI is an organisation studying aging and age related diseases. Its aim is to improve the quality of life for the aging population through multidisciplinary research. The ADRI is the world's largest research facility dedicated to studying asbestos related diseases.

At the core of Concord Hospital's purpose as a tertiary referral hospital, is the advancement of health and medical knowledge and its translation into clinical care. The Project will enhance current clinical research by providing co-location of the relevant institutes with ACC&R and Cancer clinical services.

2.1.5 New Models of Care

The Hospital recognises that continual examination and renewal of Models of Care is required to maintain optimal service delivery and performance. During functional briefing consultations were undertaken with key service groups to identify: the models of care and key service partnerships, care pathways, facility and technology requirements and the skill sets required to support best practice service delivery. These consultations were informed by the CSP and the projected growth in activity.

A key objective of consultations was to understand the functional requirements of each service group and the implications for the future configuration of services and infrastructure on the Concord Hospital campus. Key themes from the Models of Care statements are summarised in the table below along with the planning implications that informed the service planning

Theme		Planning Implications
1	Integrated Consulting and Ambulatory Services Services aligned with the problem/condition One stop shops - consult & investigation on the same day	Provide access to multidisciplinary consult space with capacity for interdisciplinary consults including allied health Develop integrated and comprehensive ambulatory care centres for: • Cancer and Related Services • General Ambulatory Care • Defence Force Centre of Excellence • Endoscopy including bronchoscopy • Ophthalmology • Renal including Satellite Dialysis
2	Integrated Clinic, Ambulatory and Inpatient Services	Retain comprehensive care centres with ambulatory care services and inpatient units for: • Aged, Complex Care and Rehabilitation Services (including Veterans service) • Burns • Cardiac Services • Drug Health and Respiratory
3	Urgent Assessment/ Review Services	Increase ambulatory capacity to meet growth in demand for urgent assessment/review services to support ED avoidance strategies e.g. Day Hospital services, Cancer day assessment, Post-Surgery Urgent Review for chronic patients, direct admission to MAU, and Renal day assessment
4	Outreach and HITH programs	Enhance the mobile workforce (medical, nursing & allied health) with telehealth to grow RACF and partnerships with GPs, HITH and home therapy services
5	Single bed inpatient accommodation for management of patient's with infection control and/or behavioural issues	Increase % of single bed rooms
6	Early initiation of rehabilitation	Services and facilities to be redesigned so that rehabilitation is an integral part of the acute care
7	Access to Maintenance Care prior to appropriate placement	Improve access to sub-acute accommodation both on-site and through partnerships with RACF for patients waiting placement.
8	Access to Imaging critical to optimisation of patient flow	Increase imaging capacity and improve connectivity to Imaging Hub; provide satellite services where justified by activity levels i.e. ED, PET/CT near Cancer Ambulatory Care, ERCP with Endoscopy.
9	Integrated and Supported ICT Systems in accordance with the SLHD ICT Strategic Plan 2015-2020	Develop an integrated eMR capable of communicating with private providers and patient controlled systems; features to include automatic use of care protocols and predictive algorithms for early identification IT surveillance of home based patients & videoconferencing Mobile computer devices and communication tools to support mobile workforce Telemedicine in ambulatory clinics to reduce the need for patient presentations Staff training in IT systems and local IT support
10	Strengthening of Public Private Partnerships	Improve access to on-site private practice medical suites to attract and retain senior medical staff and facilitate involvement in campus activities e.g. MDT clinics, clinical research and education etc.

2.2 Functional Capacity

As a result of the Project there will be an additional 111 hospital beds delivered, 29 more ambulatory care spaces, and an extra 13 day oncology chairs which will meet the subacute and aged care demands and cancer service requirements to 2026 as shown in the bed table below.

Table 5 – Bed Allocation

Concord Hospital						
Service	Baseline (Bui	2026/27 Demand	Proposed CS built -2027	Activity Increase	Built Scope (Stage 1)	Total 2027 Operational bed
Acute Beds						
Emergency Medical Unit (EMU)	0	8	8	8	-	8
Intensive care (ICU) and high dependency Unit (HDU)	13	24	24	11	-	24
Medical assessment unit (MAU)	14	20	20	6	-	20
Medical						
Neurology/Neurosurgery/Stroke	24	38	38	14	-	38
Respiratory/Endocrinology/Gen Med	24	38	38	14	-	38
Sleep Study	4	4	4	-	-	4
Renal/Vascular/infectious Diseases	24	24	24	-	-	24
Cardiovascular						
CCU	8	10	10	2	-	10
Cardiology	16	24	24	8	-	24
Cardiothoracic/Vascular	30	40	40	10	-	40
Acute aged care	48	72	72	24	72	72
Cancer						
Oncology/Hematology	24	34	28*	4	28	28
Head Neck/Urology/Breast/Plastics	30	42	42	12	-	42
Procedural						
DOSAC	12	12	12	-	-	12
Burns	10	15	15	5	-	15
Surgical Short Stay	0	6	6	6	-	6
Gastro/Colorectal	24	33	33	9	-	33
Gastro/Upper GI	24	33	33	9	-	33
Orthopedics/Rheumatology non-spec	24	44	44	20	-	44
Total Acute beds	353	521	515	162	100	515
Sub-Acute beds						
Aged Care rehab	28	46	48*	20	48	48
Psychogeriatric	12	18	18	6	18	18

Concord Hospital						
Service	Baseline (Bui	2026/27 Demand	Proposed CS built -2027	Activity Increase	Built Scope (Stage 1)	Total 2027 Operational bed
General rehabilitation	15	35	48*	33	48	48
Drug & Alcohol Detox and Rehabilitation	24	24	24	-	-	24
Palliative care	20	20	20	-	-	20
Total Sub-acute beds	99	143	158	59	114	158
Total Acute and Sub-acute beds	452	664	673	221**	214	673
Other Day / Clinical Spaces						
Ambulatory Care spaces Cancer ACC&R areas Other	 15 15 96	 25 29 138	 30 29 138	 15 14 42	 30*** 29 -	 30 29 138
Same day beds / chairs Medical Day only HITH Day Surgery -recovery Renal Dialysis – In-centre Renal Dialysis – satellite Chemotherapy chairs Haematology chairs	 0 15 12 12 14 18 17	 16 15 16 15 40 24 24	 16 15 16 15 40 24 24	 16 0 4 3 26 6 7	 - - - - - 24 24	 16 15 16 15 40 24 24
Emergency department Resuscitation bay Fast track Acute bays (adult) Acute bays (Paed)	 3 0 27 0	 5 7 37 2	 5 7 37 2	 2 7 10 2	 - - - -	 5 7 37 2
Interventional Suite Operating rooms Endoscopy Bronchoscopy Cardiac Cath Lab Angiography	 11 2 1 2 1	 20 4 1 3 1	 20 4 1 3 1	 9 2 - 1 -	 - - - - -	 20 4 1 3 1
Medical Imaging X-ray CT Fluoroscopy Ultrasound rooms MRI Mammography OPG	 3 2 2 4 1 1 1	 5 4 2 7 3 1 1	 5 4 2 7 3 1 1	 2 2 - 3 2 - -	 - - - - - - -	 5 4 2 7 3 1 1
Nuclear Medicine Gamma Camera PET/CT	 2 0	 0 2	 0 2	 - 2	 - -	 - 2
Radiotherapy Linear accelerator	 0	 2	 2	 2	 -	 2

** number indicates demand for 2026 and provides future growth

*** number reflects consult rooms arranged in 3 pods of 10 and provides future growth

* indicates the IPU build of 24-28 beds rather than the specific CSP determination

2.3 Change Management

A Change Management Plan for Concord Hospital Redevelopment has been developed to transition the Hospital from the current state to the desired future state as part of the redevelopment.

The Initial Change Impact Assessment (CIA) was undertaken in November 2017 in consultation with Concord Hospital Executive, Project Communications Manager, HI and the Project Manager. At this stage of the project the change impact assessment is medium. The major change risks identified through this process are:

- This is a State Significant Redevelopment and will attract State interest. A proactive communication and media plan has been established to manage all necessary media events and interest;
- Implementation of a new logistic system, affecting the whole hospital as well as the relevant corporate service staff;
- Implementation of new services for Defence Force personnel and Veterans; and
- Staff working in ACC&R and Cancer Services will need to acquire new skills. Workforce modelling and identification of training requirements has begun. The new logistics will require new skills.

2.4 Summary Schedule of Accommodation

The table in this section summarises, by department area, the Designed Areas compared to Functional Brief Schedules of Accommodation.

Table 6 – Summary Schedule of Accommodation

A snapshot of this is shown in **Table 8 – GFA Schedule of Accommodation** on the following page.

The following table summarises area changes between the 2016 SD and the current 2018 SD. Note that additional scope was added in January 2017 prior to the commencement of the current SD process. This additional scope included provision of two additional floors to the central wing on levels 4 and 5.and a significant reduction in shell space.

Note: the 2017 SD Update was not measured or included in Jacobs SOA

Table 7 – GFA Comparison Summary Schedule of Accommodation

	2016 SD		2018 SD		Diff	
GDA	25,937		29,481		3,544	
T&E	10,842	41.8%	11,531	39.1%	689	
GFA	36,778		41,012		4,234	
LINKS	2,954		2,951		-3	
TOTAL	**39,732**		**43,962**		**4,230**	1. Two additional floors in central wing added in Jan 2017 update. 2. Space redistributed to whole floor on level 5 in 2018. 3. Shelled bunkers added in 2018
SHELL (included in above areas)	11,655		5,047		-6,608	4. Shell space reduced in Jan 2017 update 5. Shell Bunkers added in 2018
REFURB	0		280		280	6. Refurb in Multiblock added in 2018 -not previously measured

The full tables showing areas of individual rooms and spaces are available on request. At the completion of Schematic Design, the schedule of accommodation was updated to reflect the 100% SD drawing status. The schedule includes a comparison to the AHFGs and departures from the Functional Brief.

Table 8 – GFA Schedule of Accommodation

JACOBS

180329 CRGH_Floor Area Summary_V10

	CONCORD Schematic Design		BRIEFED															
	Departments	CI - V2	GDA	B	LG	G	1	2	3	4	5	6	7	8	9	TOTAL	Diff	Comments
MAIN BUILD																		
	(SHELL) IPU										2,981					2,981	2,981	
	(SHELL) ANZAC RESEARCH CENTRE	15-Jul-16	609							712						712	103	
	(SHELL) SHARED AREAS									246						246		
	ACC&R OFFICES	15-Jul-16	1,717	99						1,907						2,005	288	
	IPU - GENERAL REHAB -A	15-Jul-16	1,113						1,165							1,165	52	
	IPU - GENERAL REHAB -B	15-Jul-16	1,147						1,182							1,182	35	
	IPU - GENERAL REHAB SHARED	15-Jul-16	536						491							491	-46	
	IPU - ACUTE AGED CARE - A	15-Jul-16	1,061					1,165								1,165	104	
	IPU - ACUTE AGED CARE - B	15-Jul-16	1,061					1,165								1,165	104	
	IPU - ACUTE AGED CARE - C	15-Jul-16	1,061					1,182								1,182	121	
	IPU - ACUTE AGED CARE - SHARED	15-Jul-16	538					530								530	-9	
	IPU - AGED CARE REHAB - A	15-Jul-16	1,127				1,182									1,182	55	
	IPU - AGED CARE REHAB - B	15-Jul-16	1,093				1,165									1,165	72	
	IPU - AGED CARE REHAB - SHARED	15-Jul-16	541				632									632	91	
	IPU - CANCER X 1	15-Jul-16	1,222				1,266									1,266	44	
	DAY ONCOLOGY	15-Jul-16	1,698			1,835										1,835	137	
	SATELLITE PHARMACY	15-Jul-16	299			336										336	37	
	CANCER RESEARCH OFFICE	15-Jul-16	224			263										263	39	
	DF CENTRE OF EXCELLENCE	15-Jul-16	1,288			1,131										1,131	-157	
	DF SOLDIER ON	15-Jul-16	443			486										486	43	
	IPU - PSYCHOGERIATRIC	15-Jul-16	1,254			1,246										1,246	-8	
	ONCOLOGY CLINICS	15-Jul-16	1,945		1,734											1,734	-211	
	(SHELL) ONCOLOGY CLINICS				314											314	314	
	CANCER & PALL CARE OFFICES	15-Jul-16	569		697											697	128	
	ACC&R AMBULATORY CARE	15-Jul-16	2,653	141	2,678											2,819	166	
	(SHELL) RETAIL				15											15	15	
	(SHELL) VETERANS DAY	15-Jul-16	196		508											508	312	
	SUPPORT SERVICES	15-Jul-16	697	443												443	-254	
	ATRIUM			131	112	106										348	348	
	(SHELL)			55												55	55	
	(SHELL) BUNKER			190												190	190	
	Gross Departmental Area - GDA		24,092	1,058	6,056	5,402	4,244	4,041	2,837	2,864	2,981	0	0	0	0	29,481	5,389	
	Travel			727	918	1,001	626	664	585	529	329	114				5,490		
	Engineering			1,862	415	361	380	377	485	478	257	1,429				6,041		
	T&E			2,588	1,333	1,361	1,006	1,041	1,070	1,006	585	1,542				11,531	39.1%	T&E
	Total GFA (GDA plans including shell)			3,646	7,389	6,763	5,250	5,081	3,907	3,870	3,566	1,542	0	0	0	41,012		Excludes links, tunnels and Hospital Street
LINKS	STAFF LIFT			20	79	60	54	54	54	54	54	54	54	54	54	644		
	SERVICE BRIDGE LINK						161	161								321		
	HOSPITAL STREET					740										740		
	(SHELL) RETAIL				28											28		
	SERVICES STREET				765											765		
	ATRIUM LOBBY				205											205		
	SERVICE TUNNEL			248												248		
																0		
	Bridge and Tunnel Totals (not incl above)			268	1,076	800	215	215	54	54	54	54	54	54	54	2,951		
	TOTAL NEW BUILD GFA			3,914	8,465	7,562	5,465	5,296	3,961	3,924	3,620	1,596	54	54	54	43,962		Includes shell space, links, tunnels and atrium
Shell	Total Shell Area			245	864					957	2,981					5,047		

REFURB	SUPPORT SERVICES	15-Jul-16			243											243	243	
																0	0	
	Subtotal Refurb High		0	0	243	0	0	0	0	0	0	0				243		
	Travel					37										37		
	Engineering															0		
	T&E				0	37										37		
	Total Refurb				243	37										280		
	TOTAL NEW BUILD AND REFURB		24,092													44,242		GFA TOTALS

2.5 Functional Relationships & Department Location Plans

The following plans show the departmental layout as endorsed by the Project User Group process.

2.5.1 Departmental Stacking & Floor Plans

The following diagram demonstrates how the departmental functional relationships both vertically and horizontally. It also indicates how the building could be phased if required. The number beds yielded in existing and phases 1 are also represented.

Figure 4 – Stacking Diagram

STACKING DIAGRAM

STAGE 1

6	PLANT		PLANT				
5	IPU - MEDICAL/SURGICAL (Shell) Inc shared areas		IPU - MEDICAL/SURGICAL (Shell) Inc shared areas				
4	ACC&R OFFICES ANZAC RESEARCH CENTRE (Shell)		ACC&R OFFICES				
3	IPU - GENERAL REHAB Inc shared areas	24	IPU - GENERAL REHAB Inc shared areas	24	PLANT		
2	IPU - ACUTE AGED CARE Inc shared areas	24	IPU - ACUTE AGED CARE Inc shared areas	24	IPU - ACUTE AGED CARE Inc shared areas	24	
1	IPU - CANCER Inc shared areas	28	IPU - AGED CARE REHAB (temp GEN REHAB) Inc shared areas	24	IPU - AGED CARE REHAB Inc shared areas	24	
G	DAY ONCOLOGY SATELLITE PHARMACY CANCER RESEARCH OFFICES		DOF - CENTRE OF EXCELLENCE SOLDIER ON		IPU - PSYCHO GERIATRIC	18	
LG	ONCOLOGY CLINICS - 2 Pods ONCOLOGY CLINICS - 1 Pods (Shell) CANCER OFFICES		ACC&R AMBULATORY CARE DOF - VETERAN'S DAY CENTRE (Shell)		ACC&R AMBULATORY CARE		
B	LOADING DOCK PLANT Potential Radiation Oncology (Shell)		SUPPORT SERVICES PLANT		DROP OFF PLANT EQUIPMENT LOAN POOL / STORE		
	BEDS	76		72		66	

TOTALS	
NEW BEDS	214

SHELLED AREAS

	MULT-BLOCK 1942		MULT-BLOCK 1980		OTHER BLDGS	
7	IPU -BURNS	10				
6	IPU -RESPIRATORY IPU -SLEEP STUDIES IPU -ORTHOPAEDICS	24 4 24				
5	IPU - ACUTE MEDICAL / SURGICAL IPU - NEUROLOGY / NEUROSURGERY	24 24	VACATED ONCOLOGY / HAEMATOLOGY IPU			
4	IPU - UROLOGY/BREAST/PLASTIC/ENDOCRIN IPU - RENAL/VASCULAR/INFECTIOUS DISEASES	30 24				
3	IPU - CARDIOLOGY/CORONARY CARE UNIT IPU - CARDIOLOGY/VASCULAR SURGERY	24 30				
2	IPU - MAU IPU - ICU / HD IPU - DOSAC	14 13 12	OPERATING SUITE			
1	IPU - COLORECTAL SURGERY/GASTRO IPU - GASTRO/UPPER GI SURGERY	24 24	MEDICAL IMAGING NUCLEAR MEDICINE		BLDG 75 DF CoE ACCOMMODATION	400
G	GDU BLOOD BANK DIAGNOSTIC PATHOLOGY INFUSION CLINICS		ADMIN MICROBIOLOGY PHARMACY		BLDG 75 DF CoE ACCOMMODATION	450
LG	EMERGENCY KITCHEN		EMERGENCY PHARMACY		IPU - PALLIATIVE CARE	20
					IPU - DRUG & ALCOHOL DETOX & REHAB	24
	EXISTING BEDS	305		0		44

TOTALS	
EXISTING BEDS	349

Figure 5 – Site Plan

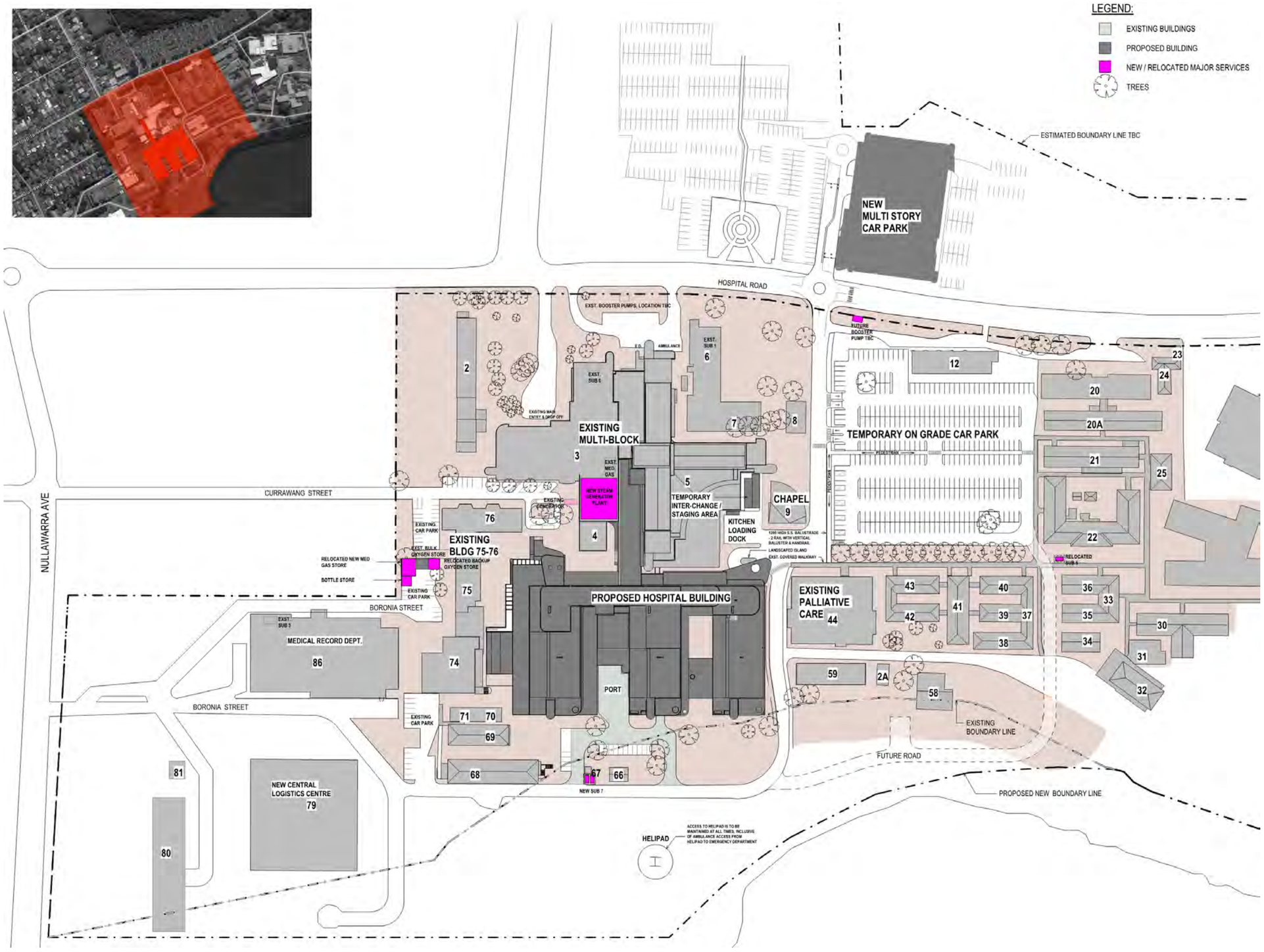


Figure 6 – Basement Plan

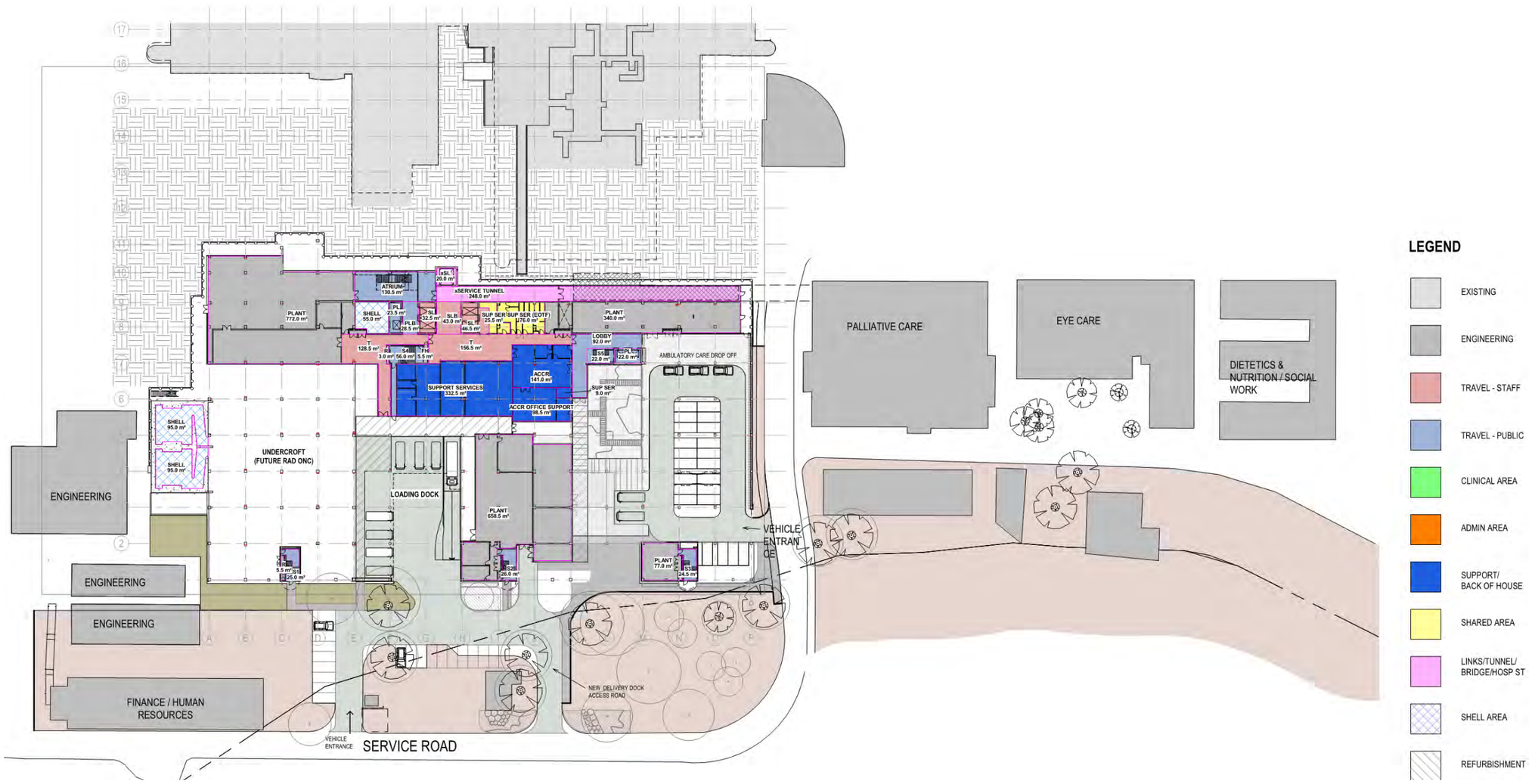


Figure 7 – Lower Ground Plan

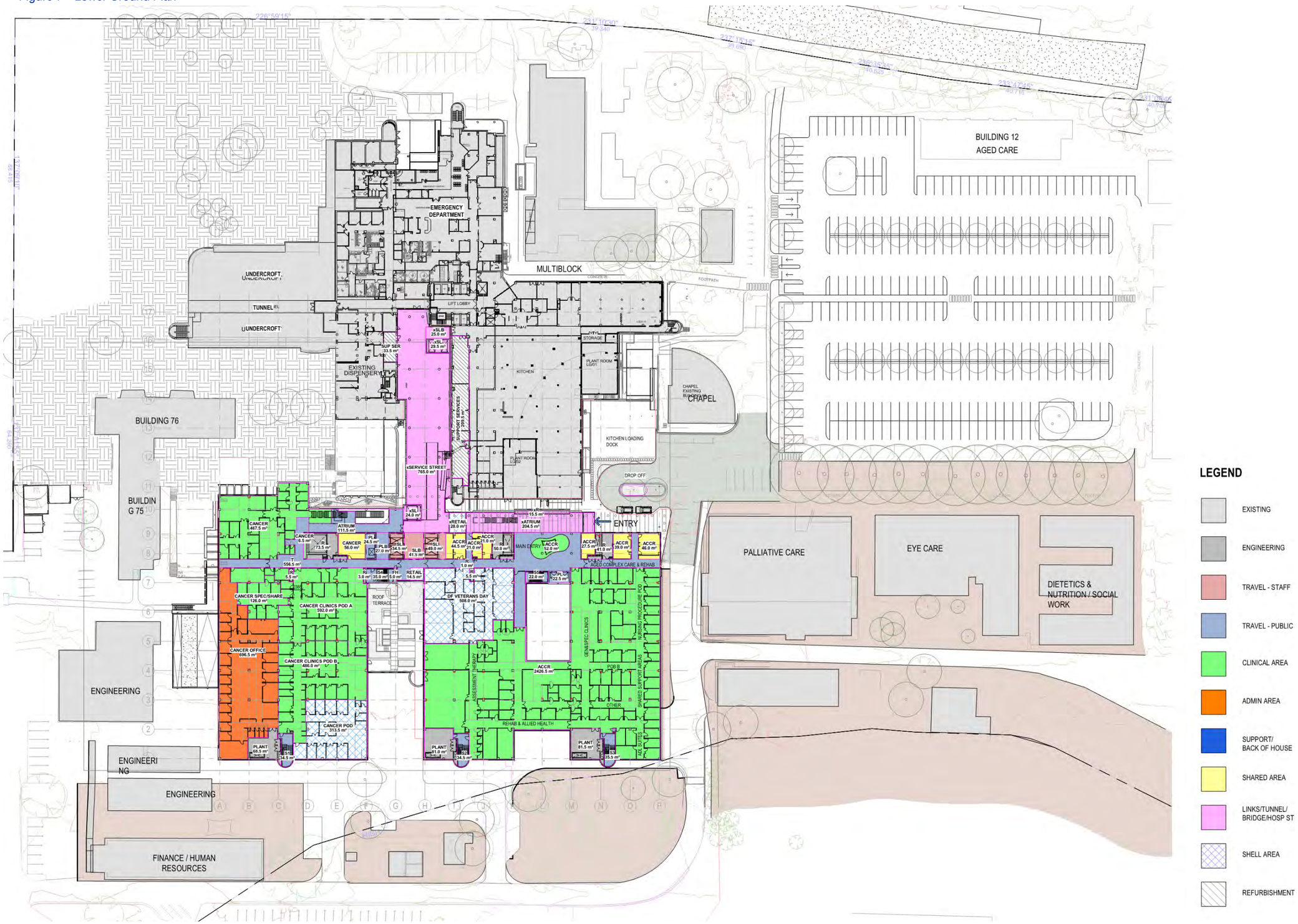


Figure 8 – Ground Plan

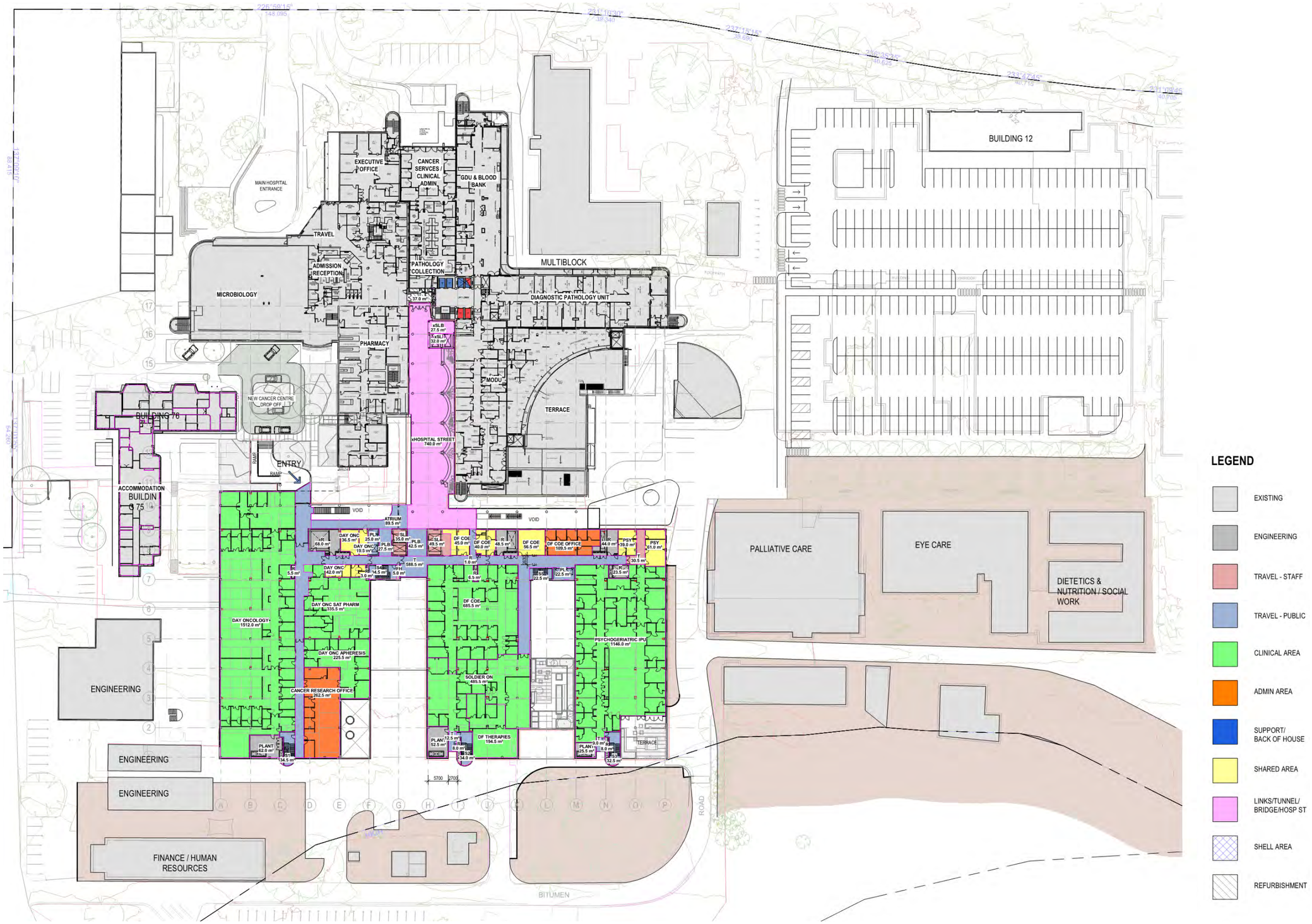


Figure 9 – Level 1 Plan

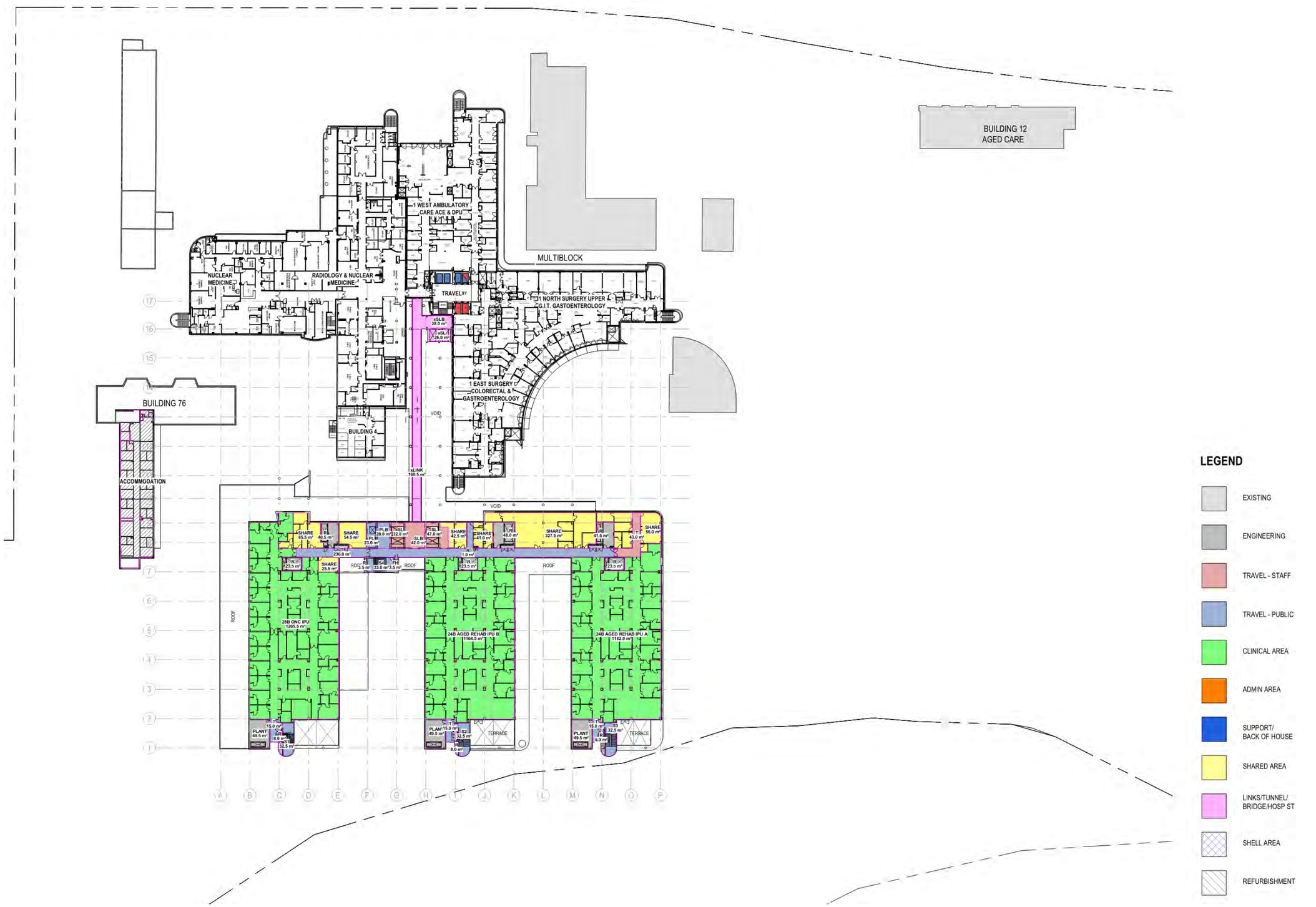


Figure 10 – Level 2 Plan

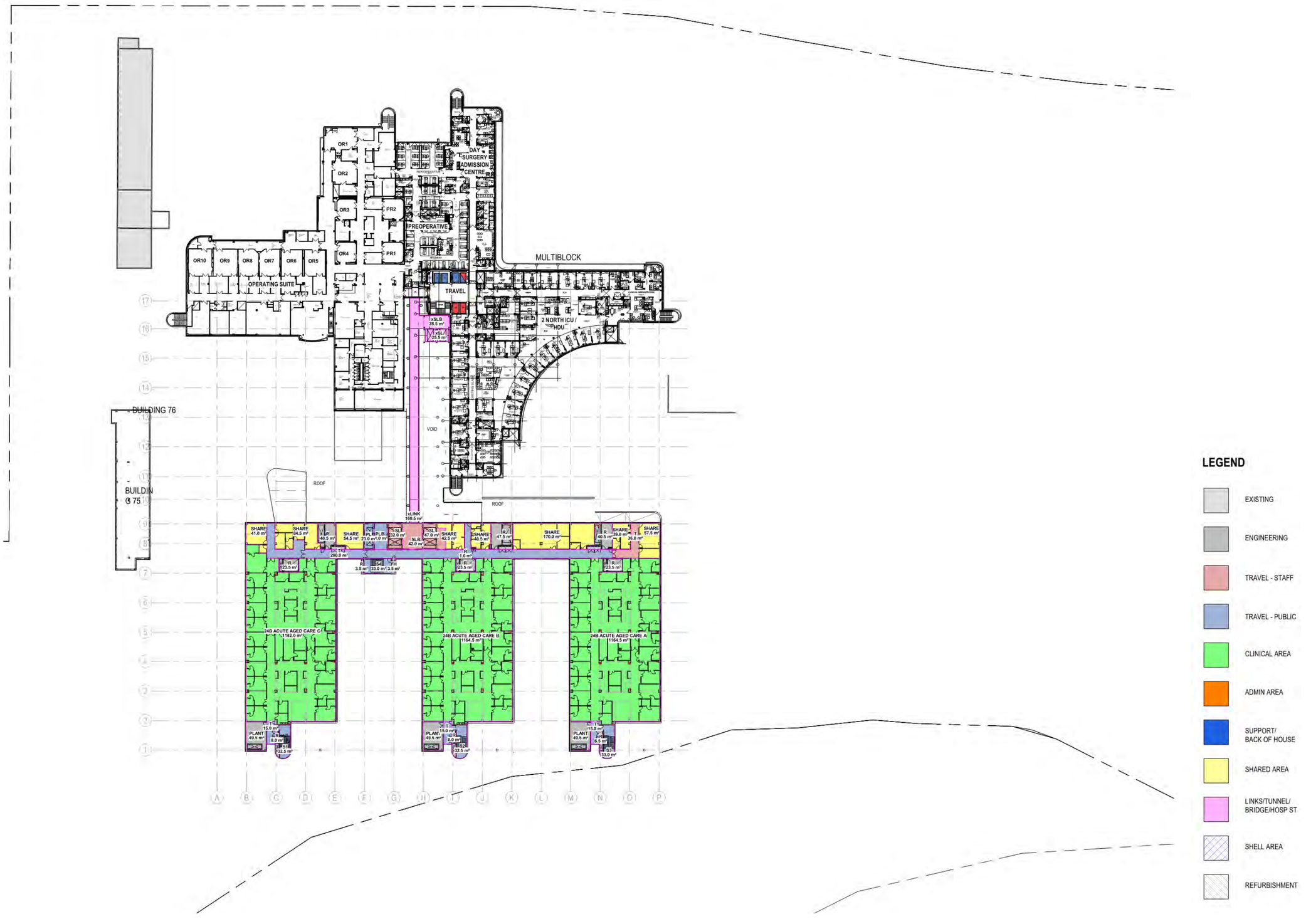


Figure 11 – Level 3 Plan

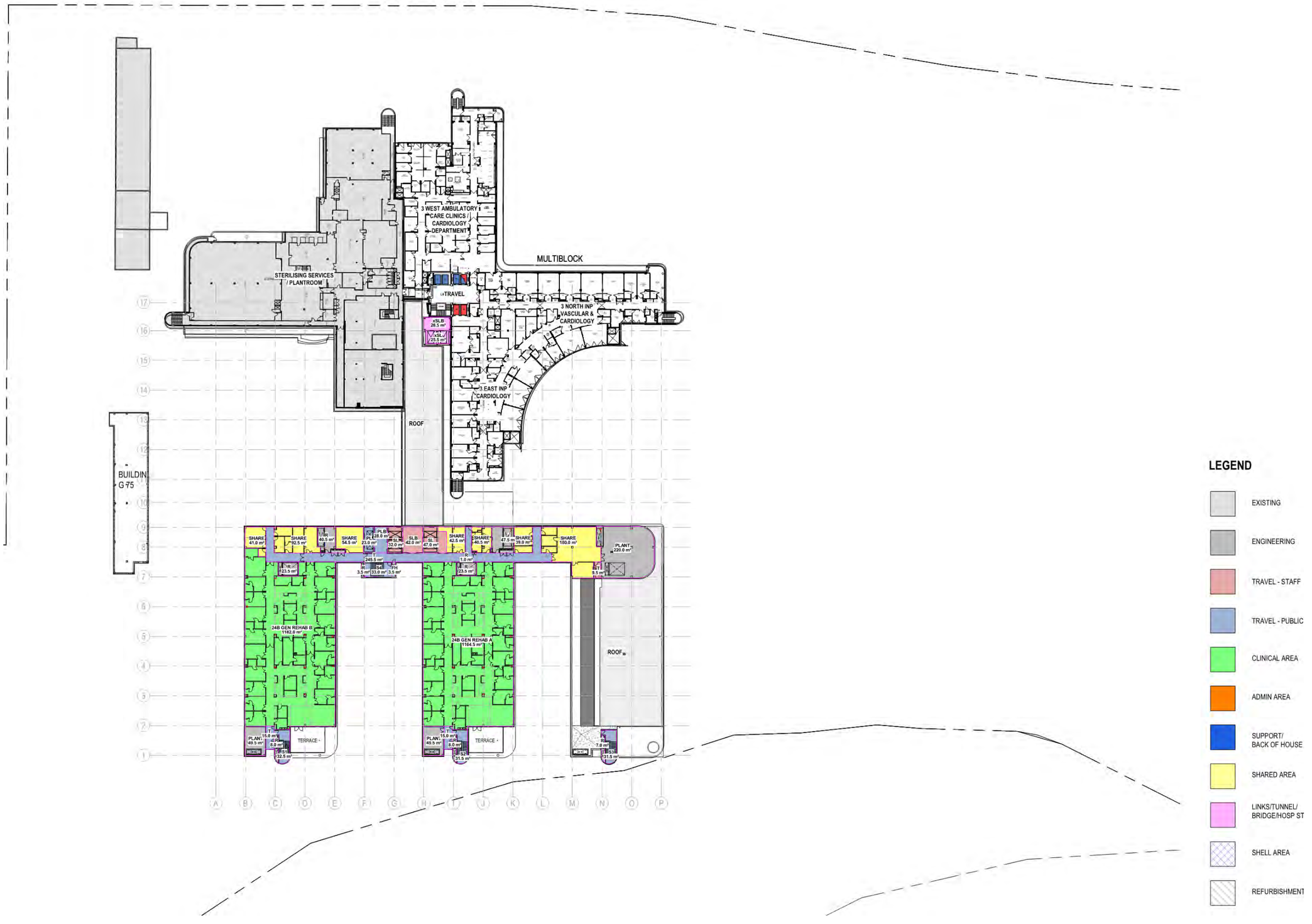


Figure 12 – Level 4 Plan

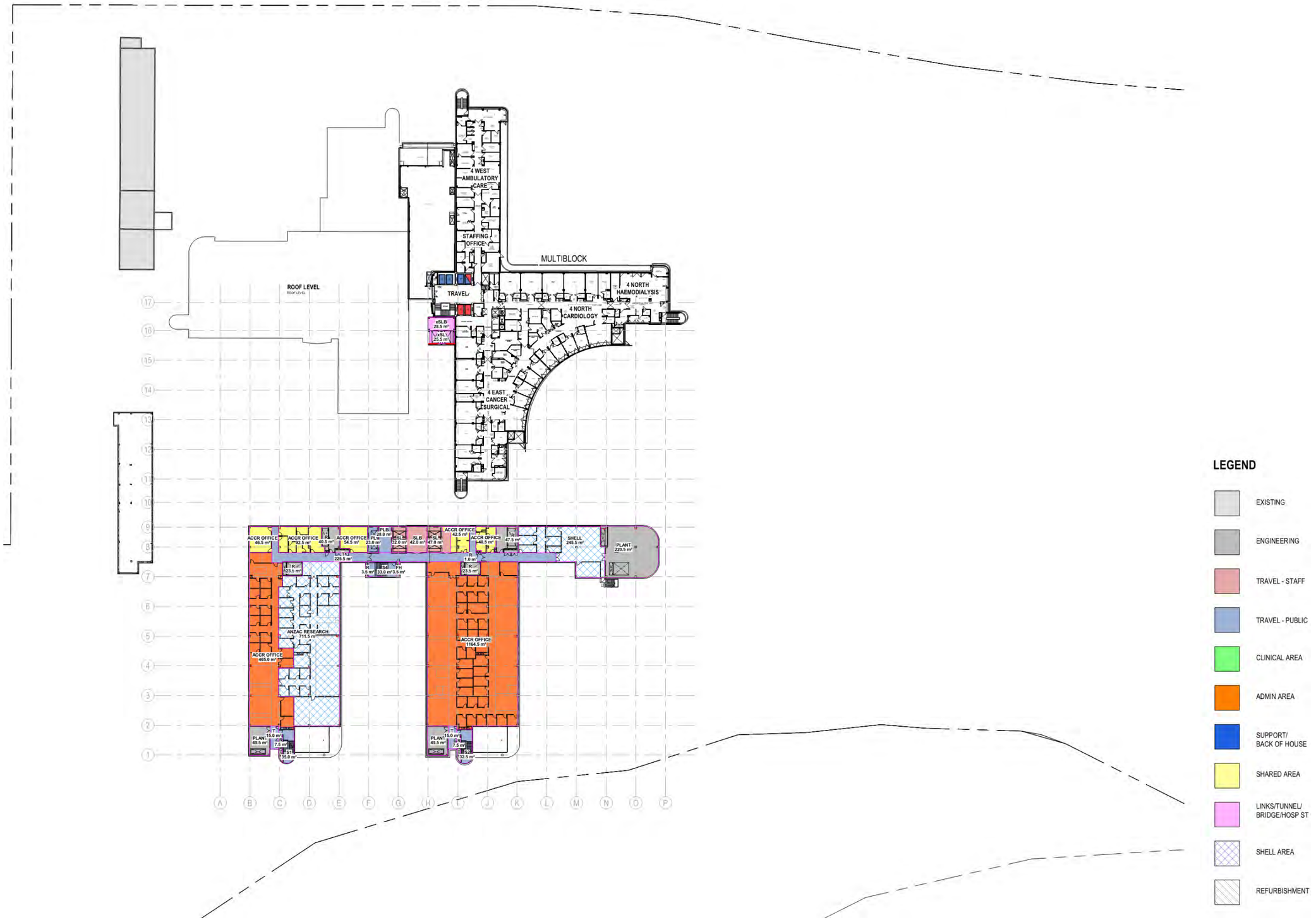


Figure 13 – Level 5 Plan

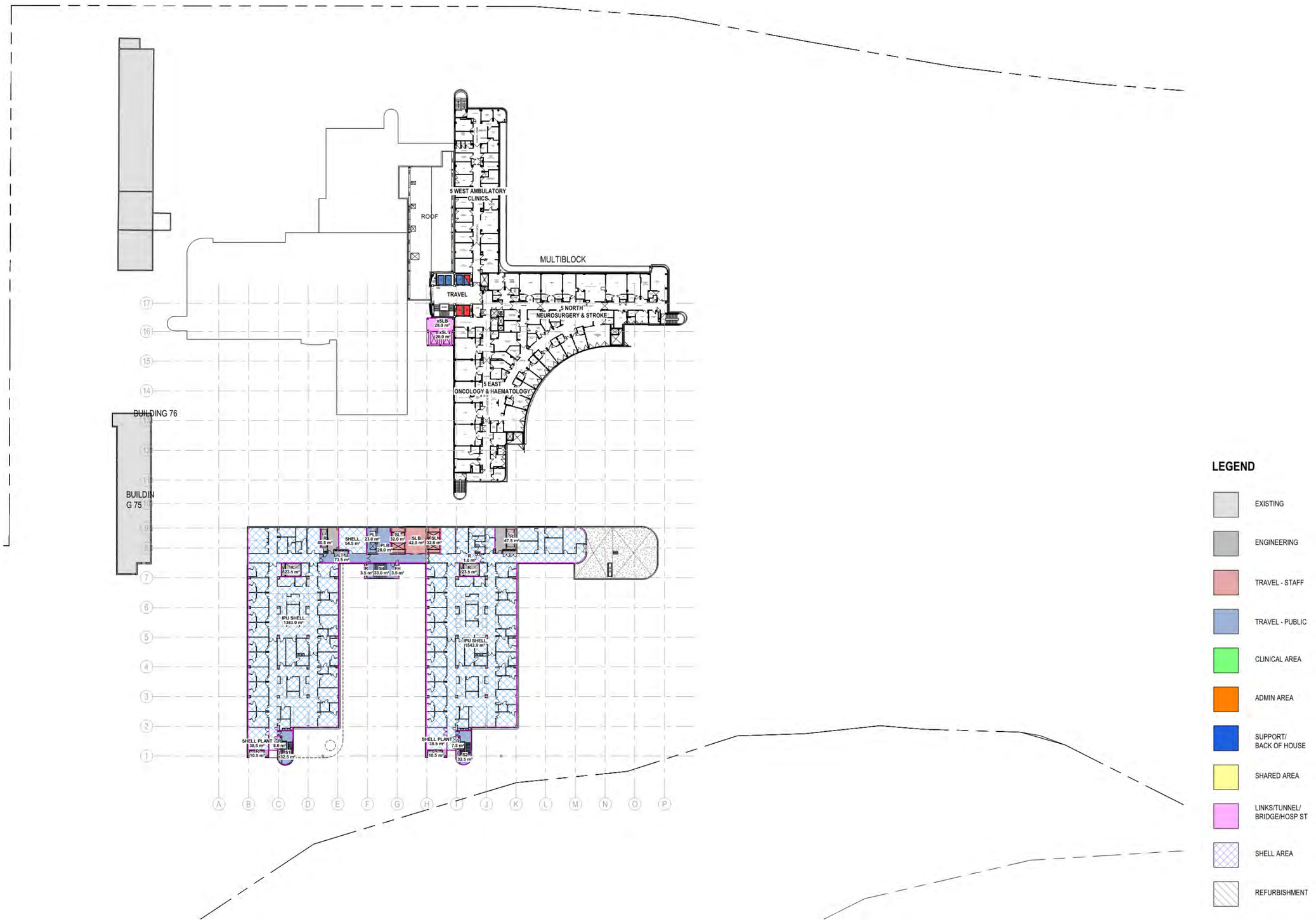


Figure 14 – Level 6 Plan

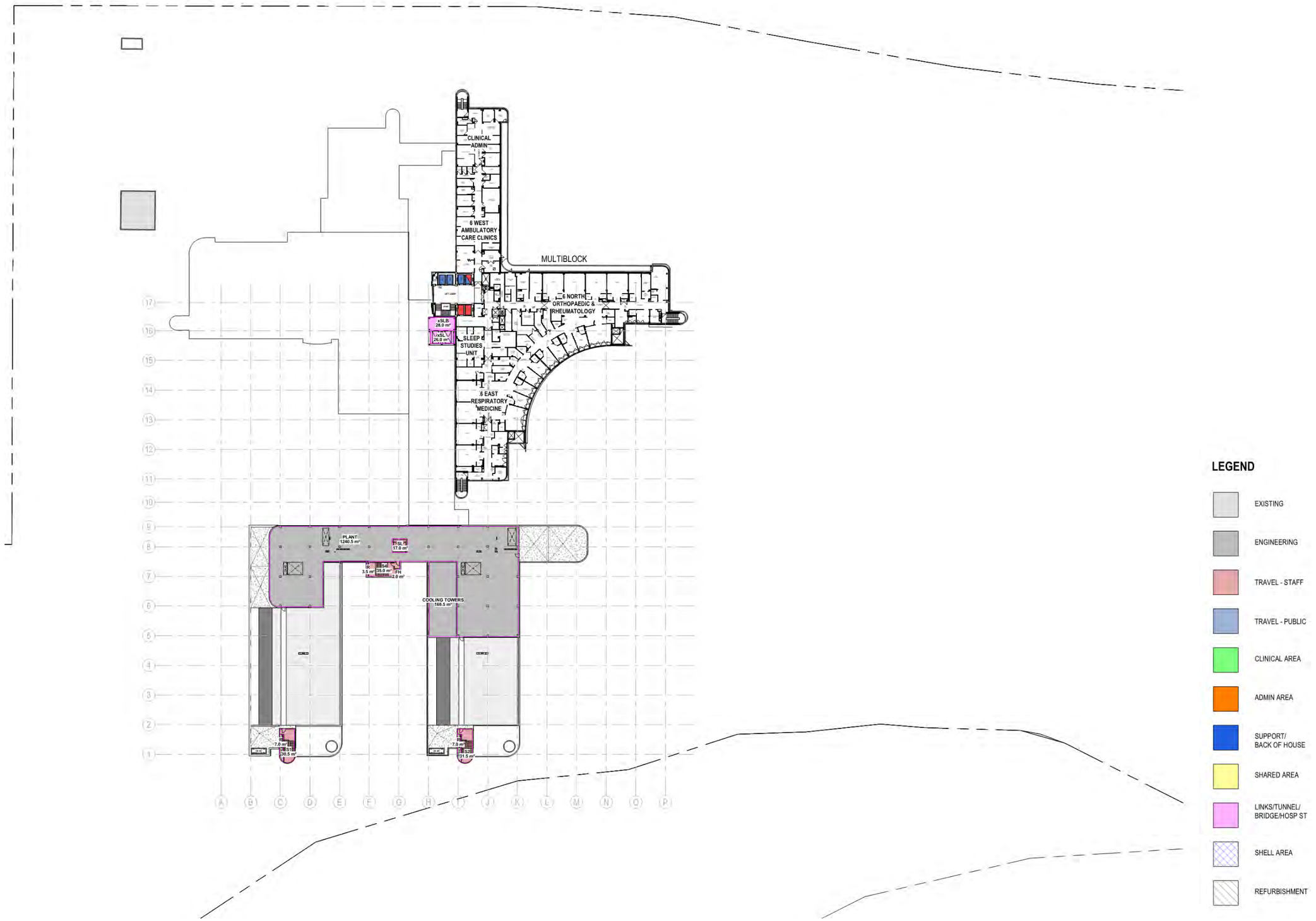
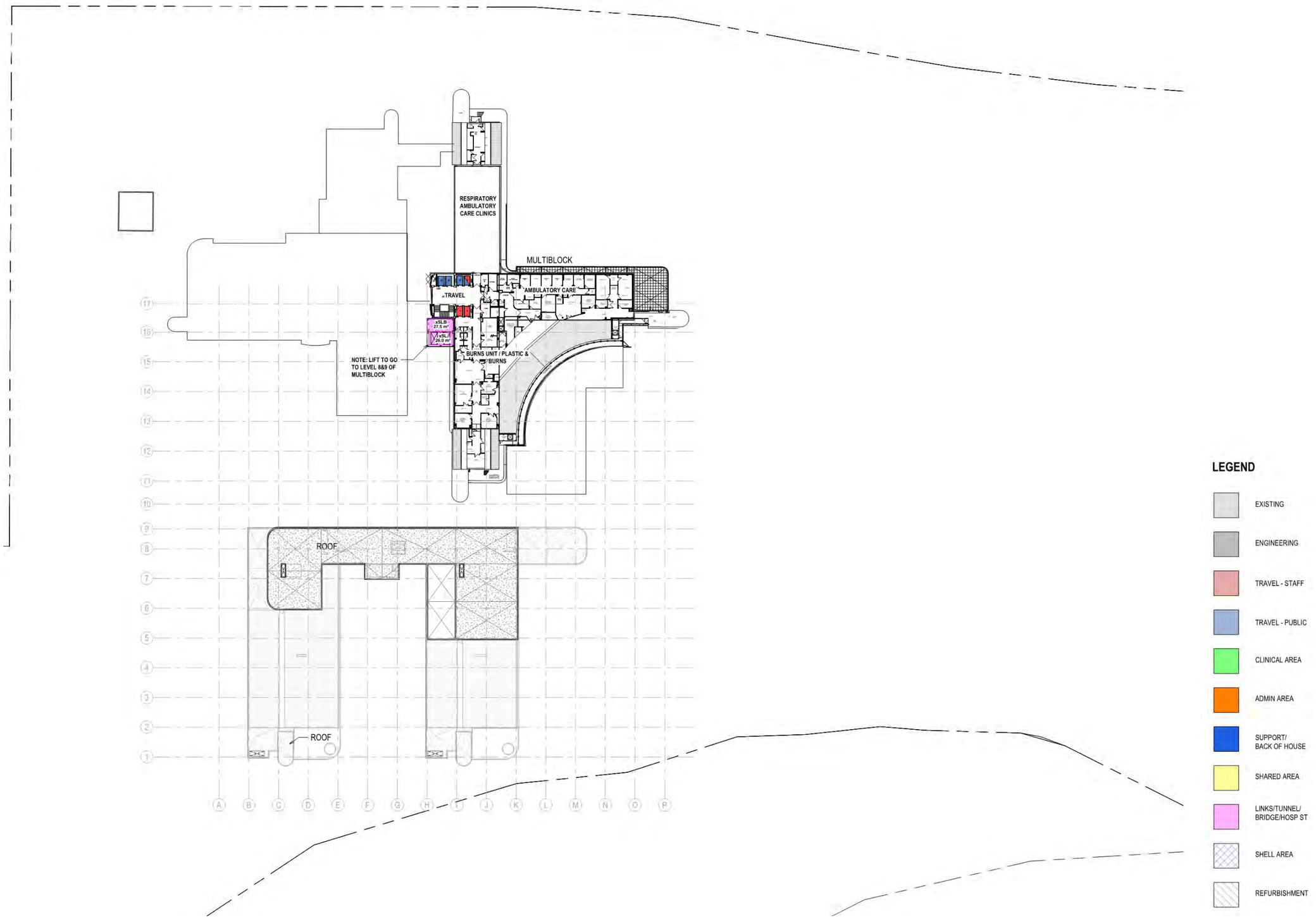


Figure 15 – Level 7 Plan



2.6 Summary Schematic Design Optimisation

The most significant changes are outlined in the tables below.

Table 9 – Summary of Schematic Design Optimisation changes

Department	Previous Design	Optimized Approach
LIFTS	Two services lift lobbies and one public lift lobby	One service lift lobby and one public lift lobby
RADIATION ONCLOGY	Minimal provisions: No bunkers Unexcavated undercroft area only	X2 Linac bunker construction included Public and services access included Test fit analysis completed for future fit-out in undercroft space
SHARED SUPPORT AREAS	Support areas for Staff Amenities, Meeting Rooms, Knowledge Cafes, Quiet Rooms, Cleaners Room mostly department specific	Shared support areas reassigned to shared areas including large Staff Hubs in lieu of dept. specific Staff Rooms, Cleaners Rooms distributed evenly across each floor, Knowledge Cafes and Quiet Rooms redistributed and x1 centralized Disposal Room
OFFICES	Located over two floors – Level 4 and 5 in one wing with shelled IPU's in separate wing over levels 4 and 5	Offices located in two wings on Level 4 Shelled IPU's located in two wings on Level 5
SATELLITE PHARMACY		Planning under review with specialist adviser
LOGISTICS	Traditional raised loading dock and support areas	Reconfigured as Logistics interface dock known as a Port with on-grade access for smaller van like vehicles. A single sunken raised loading dock for larger vehicles provided
DAY ONCOLOGY		The departmental layout is under review following feedback from consumer focus group. Consumers indicated the need for break-out spaces away from the chair bays.

Table 10 – Room by Room Comparison of key changes to support areas

Level	Dept.	2016 Design	Ref No.	2018 SD
4 & 5	Shared Support	Staff Room / Prop Bay 2 x 23m2	40401	Staff Hub 1 x 55.5m2
3	Shared Support	Staff Room / Prop Bay 2 x 23m2	30401	Staff Hub 1 x 55.5m2
2	Shared Support	Staff Room / Prop Bay 1 x 23.5m2 1 x 25m2	20401	Staff Hub 1 x 55.5m2
1	Shared Support	Staff Room / Prop Bay 1 x 23.5m2 Staff Room / Prop Bay 1 x 36m2	10401	Staff Hub 1 x 55.5m2
G	Shared Support	Staff Room / Prop Bay 1 x 19m2 Resource Room 1 x 13m2	G0711	Staff Hub 1 x 58.5m2
LG	Shared Support	Staff Room 1 x 38.5m2 Staff Room / Prop Bay 1 x 33.5m2 Work Room 46m2	L0401 L0925 L0924	Staff Hub 1 x 56.5m2 Staff Room 1 x 42m2 Work Room 1 x 37m2
5	Shared Support	Disposal Room 1 x 18m2	shell	Disposal Room 1 x 18m2
4	Shared Support	Disposal Room 1 x 18m2	40720	Disposal Room 1 x 18m2
3	Shared Support	Disposal Room 1 x 18.5m2 Disposal Room 1 x 29m2	30720	Disposal Room 1 x 18m2
2	Shared Support	Disposal Room 1 x 18.5m2 Disposal Room 1 x 29m2	20720	Disposal Room 1 x 18m2
1	Shared Support	Disposal Room 1 x 18.5m2 Disposal Room 1 x 29m2	10720	Disposal Room 1 x 18m2
G	Shared Support	Disposal Room 1 x 19m2 Disposal Room 1 x 29m2	G0720	Disposal Room 1 x 18m2
LG	Shared Support	Disposal Room 1 x 19m2 Disposal Room 1 x 28.5m2	L0718	Disposal Room 1 x 18m2
B	Shared Support	Disposal Room 1 x 19m2 Disposal Room 1 x 22m2	B0701	Disposal Room 1 x 18m2
5	Shared Support	Cleaners Room 1 x 8m2	shell	Cleaners Room 1 x 5m2 Cleaners Room 1 x 12m2

Level	Dept.	2016 Design	Ref No.	2018 SD
4	Shared Support	Cleaners Room 1 x 8m2	40110 40703	Cleaners Room 1 x 7m2 Cleaners Room 1 x 12m2
3	Shared Support	Cleaners Room 1 x 8m2 Cleaners Room 1 x 8m2	30111 30703	Cleaners Room 1 x 8m2 Cleaners Room 1 x 12m2
2	Shared Support	Cleaners Room 1 x 7.5m2 Cleaners Room 1 x 8m2 Cleaners Room 1 x 8m2	21003 20703 20110	Cleaners Room 1 x 7m2 Cleaners Room 1 x 12m2 Cleaners Room 1 x 5.5m2
1	Shared Support	Cleaners Room 1 x 8m2 Cleaners Room 1 x 8m2	11016 10703 10104	Cleaners Room 1 x 5m2 Cleaners Room 1 x 12m2 Cleaners Room 1 x 6.5m2
G	Shared Support	Cleaners Room 1 x 8.5m2 Cleaners Room 1 x 8m2 Cleaners Room 1 x 8.5m2	G0285 G0703 G1104	Cleaners Room 1 x 8.5m2 Cleaners Room 1 x 12m2 Cleaners Room 1 x 5m2
LG	Shared Support	Cleaners Room 1 x 8m2 Cleaners Room 1 x 8m2	L0132 L0703 L1224	Cleaners Room 1 x 6m2 Cleaners Room 1 x 12m2 Cleaners Room 1 x 5m2
B	Shared Support	Cleaners Room 1 x 12.5m2	B0703	Cleaners Room 1 x 8m2
3	Shared Support	Knowledge Café 1 x 14.5m2	30108 30710	Knowledge Café 1 X 13m2 Knowledge Café 1 X 14m2
2	Shared Support	Knowledge Café 1 X 14.5m2 Knowledge Café 1 X 17m2	20104 21008	Knowledge Café 1 X 13.5m2 Knowledge Café 1 X 16.5m2
1	Shared Support	Knowledge Café 1 X 23m2 Knowledge Café 1 X 16m2	11009 10103	Knowledge Café 1 X 14m2 Knowledge Café 1 X 13.5m2
G	Shared Support	Knowledge Café 1 X 16m2	G1016	Knowledge Café 1 X 16.5m2
G	Shared Support	-	G0420	Changing Places 1 x 20.5m2
5	Shared Support	WCAC SHR ST 1 x 9m2 WCST 4 x 3m2	shell	WCST 1 x 3.5m2 WCAC St 1 x 7.5m2 WCAMB St 1 x 3.5m2 Staff PB 1 x 7m2 WCAC ST 1 x 7.5m2 WC AMB 1 x 4m2 Staff PB 1 x 12m2

Level	Dept.	2016 Design	Ref No.	2018 SD
4	Shared Support	WCAC SHR ST 1 x 9m2 WCST 4 x 3m2	40107 40108 40109 40105 40708 40706 40709	WCST 1 x 3.5m2 WCAC St 1 x 7.5m2 WCAMB St 1 x 3.5m2 Staff PB 1 x 7m2 WCAC ST 1 x 7.5m2 WC AMB 1 x 4m2 Staff PB 1 x 12m2
3	Shared Support	WC ST 2 x 4m2 WCAC SHR 1 x 9m2 WC ST 2 x 4m2 WC ST 1 x 5m2 WCAC SHR ST 9m2	30107 30105 30204 30708 30706 30709 30804	WCAMB St 1 x 3.5m2 Staff PB 1 x 7m2 WCAC SHR ST 1 x 9m2 WCAC ST 1 x 7.5m2 WC AMB 1 x 4m2 Staff PB 1 x 12m WCAC SHR ST 1x 9m2
2	Shared Support	WC ST 2 x 4m2 WCAC SHR 1 x 9m2 WC ST 1 x 5m2 WCAC SHR ST 9m2 WC ST 2 x 4m2 WCAC SHR 1 x 9m2	20107 20105 20114 20708 20706 20709 20804 21011 21009 21104	WCAMB St 1 x 3.5m2 Staff PB 1 x 7m2 WCAC SHR ST 1 x 9m2 WCAC ST 1 x 7.5m2 WC AMB 1 x 4m2 Staff PB 1 x 12m WCAC SHR ST 1x 9m2 WCAMB St 1 x 3.5m2 Staff PB 1 x 7m2 WCAC SHR ST 1x 9m2
1	Shared Support	WC ST 2 x 4.5m2 WCAC SHR 1 x 9m2 WC ST 1 x 5m2 WCAC SHR ST 9m2 WC ST 2 x 4m2 WCAC SHR 1 x 9m2	10117 10120 10113 10708 10706 10709 10804 11011 11017 11104	WCAMB St 1 x 4m2 Staff PB 1 x 7.5m2 WCAC SHR ST 1 x 9m2 WCAC ST 1 x 7.5m2 WC AMB 1 x 4m2 Staff PB 1 x 12m WCAC SHR ST 1x 9m2 WCST 1 x 4m2 Staff PB 1 x 5m2 WCAC SHR ST 1 x 9m2

Level	Dept.	2016 Design	Ref No.	2018 SD
G	Shared Support	WCST 1 x 4m2 WCST 1 x 5m2 WCAC ST 1 x 7m2 WC ST 1 x 5m2 WCAC SHR 1 x 9m2	G0708 G0706 G0709 G1012 G1013 G1103	WCAC ST 1 x 7.5m2 WC AMB 1 x 4m2 Staff PB 1 x 12m WCST 1 x 4m2 Staff PB 1 x 5m2 WCAC SHR ST 1 x 9m2
LG	Shared Support	Property Bay with Staff Room WCST 2 x 5m2 WCAC ST 1 x 7m2	L0911 L1224 L1223	Separate Property Bay 1 x 2..5m2 CLEANER 1x5.5m2 WCST 1 x 4m2 WCAC ST 1 x 7m2
B	Shared Support	WCAC ST 1 x 7.5m2 WCST 3 x 4.5m2	B0707 B0706 B0724,B0725	WCAC SHR ST 1 x 7m2 WCST 1 x 4m2 – WCAMB-ST SH ST – 8 x 3m2 - EOTF
	Shared Support	GENERAL WASTE 50.5m2 RECYCLED WASTE 50.5m2 CLINICAL WASTE 50m2 DIRTY LINEN 73.5m2 HOLDING 75m2	B0809 B0501 B0502	GENERAL WASTE 139.5m2 DIRTY LINEN 70m2 HOLDING 68m2

2.7 Summary of Sign-off Caveats

The following outlines the status of SD 2016 sign-off caveats in relation to final SD documentation.

Table 11 – Summary of sign-off caveats

Department	Sign off Caveats	Action/ status
B -SUPPORT SERVICES	• No comments	-
LG -ACCR AMBULATORY CARE	• No comments	-
LG - CANCER CLINICS	• No comments	-
LG -CANCER DAY ONCLOLOGY & SATELLITE PHARMACY	• No comments	-
G -DEFENCE FORCE CENTRE OF EXCELLENCE & SOLDIER ON	• No comments	-
G - PSYCHOGERIATRIC IPU	• No comments	-
G / L1 - DEFENCE FORCE ACCOMMODATION	• No comments	-
L1 ONCOLOGY / HAEMATOLOGY IPU	• Lounge vs open to be confirmed • WC opening into Lounge to be confirmed	Design Development
L1 - ACUTE AGED CARE REHAB IPU	• No comments	
L2 / L3 AGED CARE REHAB & GENERAL REHAB IPU	• Confirmation of Bath requirements vs Store Room in Aged Rehab IPU	Design Development
L4 -ACCR OFFICES	• Store – share with Anzac Research needs a lockable room • Shell Space – Allocation not determined. Plan does not restrict future linkage from work office zone • Potential additional WC/Shower	Design Development
L5 ANZAC RESEARCH	• No comments	-

2.8 Shell Space Strategy

Table 12 – Shell Space

Floor - Dept	Shell Areas	Comments
L5 – Future Acute IPU	Cold Shell - Type 2	
L4 – ACC&R / Offices	-	Minimal provision for future IPU conversion. Includes integral sacrificial zone in floor slab but drainage plumbing for future wet areas.
L4 - ANZAC Research	Cold Shell - Type 1	
L3 – General Rehab IPU	-	
L2 – Acute Aged Care IPU	-	
L1 – Cancer IPU	-	
G – Soldier On	-	
LG - Veterans Day	Cold Shell - Type 2	
LG – Cancer Clinics 1 pod only	Cold Shell – Type 2	
LG – Cancer Offices	-	
LG – ACC&R Ambulatory Care	-	
B – Support Services	-	
B – Equipment Loan Pool	-	
B – Future Radiation Oncology	Cold Shell – Type 3 Bunkers Cold Shell Type 2	

Table 13 – Shell Space Scope Definitions

Type	Included	Excluded
Cold Shell – Type 1	• Floor slab, external walls and roof • All essential fire safety measures	• All internal walls, ceilings, floor finishes • All Group 1, 2 and 3 FFE, MME, ICT • Installation of wet area set downs • Installation of below slab drainage plumbing for future wet areas
Cold Shell – Type 2	• Floor slab, external walls and roof • All essential fire safety measures • Wet area set-downs with under slab drainage plumbing installed	• All internal walls, ceilings, floor finishes • All Group 1, 2 and 3 FFE, MME, ICT
Cold Shell – Type 3	• All essential fire safety measures	• No floor slab or external walls
Warm Shell – Type 1	• All doors, windows, walls, floors and ceiling finishes • All essential fire safety measures • All lights (excluding lights on pendants) • All bed head medical service panels and power, data, medical gas points • In-ceiling structural provisions (i.e. cotton reels) to facilitate future installation of pendants • In-ceiling structural provisions to facilitate future installation of patient lifters • All HVAC mechanical provisions • All hydraulic fixtures (i.e. toilets, HWBs, taps, shower heads, tundishes, filtered water connection points etc. • All Group 1 MME, FFE, ICT items, excluding pendants	• All below ceiling hung medical service pendants and clinical / surgical lights • All Group 2 and Group 3 MME, FFE, ICT • Patient lifters below ceiling track, cassette (hoist motor) and slings

2.9 Systems and Equipment (MME, ICT, FFE)

It is important to deliver a realistic provision of FF&E which meets the nature of the anticipated services and ongoing operation of a health care facility. The health care environment, service delivery and technological advances are constantly changing and impact greatly on the FF&E requirements, therefore, an optimal FF&E outcome will allow health care environment to maximise the staff and client experience as well as gain operational efficiencies.

The room data sheets (RDS) and FF&E Schedule for CRGH strive to deliver an optimal outcome. A robust, systematic approach was taken incorporating relevant information from:

- Australasian Health Facility Guidelines
- The Functional Brief and SOA (noted on the RDS)
- The PUG minutes
- Similar, past projects.

There was no Major Medical Equipment (MME) identified for this project during schematic design. FF&E is shown generically focussing on quantum for the purposes of Schematic Design.

Enhancement to ICT/AV will occur during Design Documentation. The FF&E Schedule includes hardware such as computers, telephones and audio-visual requirements. ICT infrastructure in Comms and Server rooms are not included in the FF&E Schedule. Refer to Electrical Consultant specifications.

It is recommended the LHD undertake a review and audit of Group 2 and Group 3 to ensure the FF&E scheduled aligns with Models of Care and to verify transfer suitability and quantum.

FF&E is categorised as per traditional Australasian Health Facility Guidelines groupings and as outlined in the project specific Systems and Equipment Plan:

- Group 1 (supplied and installed by contractor)
- Group 2 (supplied by LHD, installed by contractor)
- Group 3 (supplied and installed by LHD)
- Group 4 (supplied and installed by LHD, nil capital cost)

Note that:

- Group 3 includes workstations
- All FFE is shown as new except for the washing machine and dryer on the LGF
- All Group 3 FF&E is shown for consideration by the LHD.
- RDS/FFE has not been reviewed by the LHD

2.9.1 MME Replacement Strategy

MRI replacement route pathe to the existing buildings will remain as it is currently with delivery of magnets via Currawang Street to the southern side of the Multiblock directly into the MRI room.

Currently delivery of imaging equipment is via the existing loading dock with glazing removed from the existing L1 corridor adjacent to the main stair and the equipment craned directly onto the imaging floor.

The Scheme Design proposal for delivery of imaging equipment will be via the new Delivery Port craned through level 1 glazing on the southern elevation and tracked through the Level 1 link bridge to the existing Level 1 corridor. Structural loading on the slab on this route will be designed to meet the load requirements for imaging equipment and is to be reviewed further during Design Development.

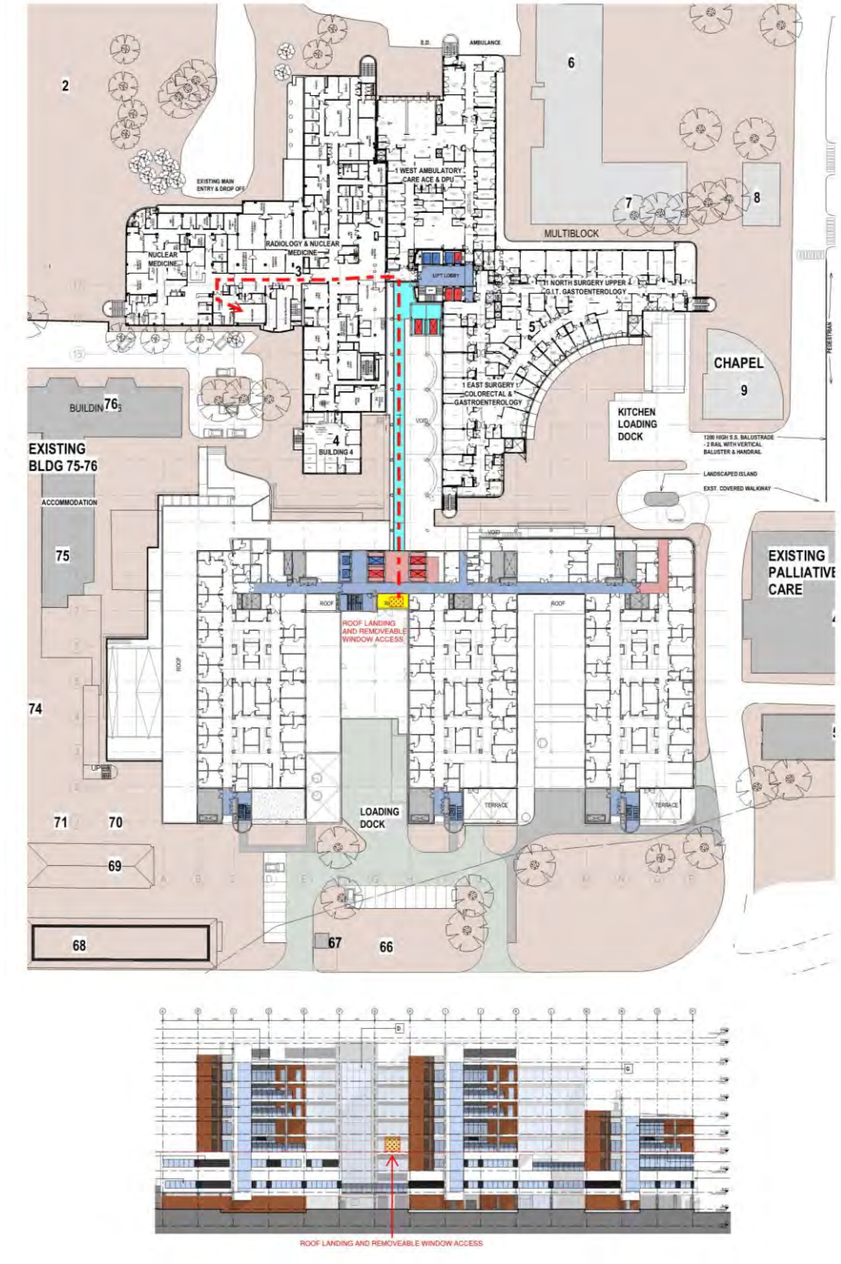


Figure 16 – MME Replacement Strategy

3. Architectural Design

Figure 17 – View of the new building from the foreshore to the east

3.1 Design Principles

The proposed design concept has evolved from the following key principles.

The design:

- is geared to patient-focused Models of Care
- creates connections, facilitates interaction, and keeps wayfinding intuitive
- targets both environmental and social sustainability
- maintains flexibility for an unpredictable future

More specifically, the design aims to:

Models of Care

- Enable delivery of contemporary models of care
- Meet the facility requirements and Models of Care in the CSP
- Provide appropriate health care adjacencies

Operational Efficiencies

- Enable services to be provided efficiently

Patient and Family Centred

- Prioritise the needs of the patient and family
- Create a better experience for patients accessing health services
- Maintain privacy and dignity
- keep patient journeys as short as possible

Education and Research

- Provide a platform to deliver research, education and training

Attract and Retain Workforce

- Attract and retain a high quality, flexible workforce

Intuitive Way-Finding Strategy

- Provide good hospital identity and clear intuitive wayfinding
- Establish clear departmental zones and circulation paths

Flexibility & Adaptability

- Provide flexible and adaptable facilities and services
- Create development zones for expansion

Site and Heritage Constraints and Opportunities

- Utilise the site efficiently and enable future re-development in accordance with the masterplan
- Be responsive to the site and maximise opportunities while recognising that the Stephenson and Turner buildings are outstanding examples of early modern Sydney architecture, imbuing the campus with a unique identity

Environmental Sustainable Design

- Integrate ESD principles, especially access to natural light
- Establish “Green Zones” and access to landscaped areas

Links & Connections

- Maintain efficient and effective strategies for circulation across the campus
- Identify a long term strategy for circulation

Collaboration and Interaction

- Provide flexible and shared space for patients, public and staff
- Establish social and community zones

The design provides a clinical planning solution that is operationally efficient and responsive to the Clinical Services Plan. It represents best-practice for the design and delivery of contemporary healthcare buildings and reinforces the hospital’s vision for the campus.

3.2 Site Review

The Concord Repatriation General Hospital is located in the City of Canada Bay Local Government Area. The site is located approximately 15km from the Sydney CBD, adjacent to the Parramatta River between Yaralla Bay to the south and Bray’s Bay to the north.

The campus is located on a peninsular with all land access from the southwest only. Hospital Road is the only public road access to the hospital and the campus car parking, and it is also a ‘dead end’. However, the campus has a broad frontage to Hospital Road and extends down to the foreshore. Emergency and Ambulance access is via Hospital Road whereas service access is via Boronia and Currawang Streets.

Bordering the campus is an established residential area on Fremont Street, Hospital Road, Nullawarra Avenue, Currawang Street and Boronia Street. Currawang Street was originally a major entry corridor into the campus, to which the hospital originally presented an approximately symmetrical frontage, but this entrance is now closed to the public. There is a moderate fall across the site from the main entry along Hospital Road down to the foreshores of the Parramatta River.

CRGH was originally built in 1942 and consists of the award-winning Stephenson and Turner designed buildings, the Multiblock, Nurses’ Quarters and Medical Officers’ Quarters, surrounded by a series of low rise buildings dating from the 1940s to the 2000s.

CRGH provides services from ageing buildings that impose significant constraints on operational efficiencies. Expansion opportunities and potential for new models of care are constrained by the buildings’ age and design, and the heritage value of the main buildings.

The Masterplan established a roadmap for the logical expansion of clinical and non-clinical services on the site to meet short and long term needs. Feasibility studies undertaken during Concept Design further developed the principles of the masterplan.

Figure 18 – Local Context

Services are located on the campus as follows:

- Acute services are located in the Multiblock and the 1980s / 90s extension
- Sub-acute and Allied Health are located in the GGRM single storey buildings to the northeast of the Multiblock and in low rise buildings to the southeast of the Multiblock
- A Research and Education precinct is immediately northeast of the GGRM single storey buildings
- Beyond the Research and Education precinct, Mental Health buildings are furthest from the entry at the eastern end of the site
- Ancillary support buildings are concentrated at the southwest end of the site, accessed via the vehicular entry from Boronia Street
- Public car parking occupies most of the campus on the left (northwest) side of Hospital Road
- Public access from the main carpark to the main entrance requires pedestrians to cross Hospital Road, the busy access road to the campus

Refer to the Masterplan and Concept Design Reports for full details of existing services, existing buildings, traffic and car parking, surveys, environmental assessment and hazardous materials. Also refer to the engineering consultants' input in Section 5.

The majority of the site is located within a Special Purpose Zone, General – SP2 Hospital. The site is not affected by Floor Space Ratio or building height restrictions. It was recently pointed out by Canada Bay Council that the E2 Environment Conservation area around the northern perimeter of the peninsula is larger in the Canada Bay LEP than the actual area of coastal vegetation and includes part of the existing on-grade public carpark. The current Multi-storey Carpark (MSCP) design extends into this area, although it doesn't require removal of any vegetation. Town planning advice will determine whether the MSCP design needs to be revised so that it remains completely within the SP2 Land Use Zone.

3.3 Architectural Intent

The architectural form of the building has been led primarily by clinical planning considerations. As a complex health services facility, the proximity of various services to each other is of prime importance (refer back to Figure 4 - Stacking Diagram). This has resulted in a building form that comprises three parallel wings with a uniting podium base (refer Section 3.6, Building Form).

The proposed architectural expression is a response to both the Design Principles (Section 3.1) and the Context (Section 3.2). The response to context is broadly to create appropriate relationships with the original Stephenson and Turner designed buildings and the location on the river foreshore.

The massing defers to the Multiblock as the most prominent building on the campus. The elevational treatment of the new building is a contemporary interpretation of the heroic mid-20th Century architectural idiom to which the Stephenson & Turner designed buildings belong. Harmony between new and existing will be achieved using a continuity of form and materiality.

Continuity of form comprises an emphasis on horizontality, using balconies, canopies and expressed horizontal 'courses' between storeys, as well as the use of bullnose and rounded forms, especially projecting stairways and articulation of the building corners.

Continuity of materiality (refer Section 3.10, Material Selection) is achieved by selecting the best contemporary building systems that have an appearance similar to the existing materials, especially in terms of colour and texture.

The idea of 'continuity' is to interpret and develop the positive and memorable aspects of the heritage buildings, not to copy them or disguise the age of either building. In fact, the Multiblock itself could be considered to be a Modernist update of the 19th Century 'blood and bandages' hospital aesthetic.

Further consideration is being given to the detailed design of the Stage 1 building to ensure that it is seen as clearly contemporary and to address concerns raised in the NSW Government Architect's review for a clearly contemporary building. Material selections for the façade have been carefully considered so that the detailed tectonic appearance of the building is markedly different from the Multiblock, while maintaining a similarity in overall colour and form. This contrast will be highlighted at the heart of the project, the Hospital Street atrium, where the traditional brickwork and white sash windows of the multi-block will face the flush surfaces and lightweight panelling of the new building.

The NSW Government Architect have stated that "New buildings should enable old buildings to be legible by maintaining clear distinction between the two by creating thresholds and adopting contrasting but complementary articulation and expression". The Multiblock has been extended and modified significantly in the past so that currently, in many places, it is not clearly legible, especially internally. The new work, although unable to repair that damage (because the existing hospital must remain fully operational throughout construction), manages to maintain legibility despite the need for total functional integration.

The circular openings in the canopies are a key component of the new building's identity and architectural expression. The balconies and canopies with openings are of such a scale that they will be clearly visible across the river and by pedestrians approaching the main entries. Sunlight passing through the openings will create a large illuminated oval on the façade or paving below. With the passing day that oval will move and will be visible both from within the building and externally.

The openings allow passage of sun, wind and rain but the balconies are not intended to be used by patients during inclement weather, whether they are covered or not. The openings in entry canopies are not above principle pedestrian paths.

Jacobs' design is a genuine and thoroughly thought through response to the often-contradictory opinions and interests of all the various stakeholders and a carefully considered balance with the resources available and the constraints imposed. We believe it will produce a high quality architectural outcome that sets a standard and a future pathway for continued development of the hospital campus.

3.4 Facade

Externally, the white acrylic render creates uninterrupted monolithic forms that are a counterpoint to the busy panelised cladding of the terracotta, aluminium and glazing. To further differentiate the new building, the proposed colour of the window framing has been changed from white, which would match the Multiblock to the same pale bronze colour as the aluminium cladding. This will be more recessive and subtle, giving the new building a less busy appearance. The detailed design of the drop-off and entry canopies will aim to achieve a thinner more contemporary edge profile.

The terracotta façade comprises 1200 x 300mm suspended rainscreen panels. This and the glazing and other proposed cladding systems are clearly contemporary with tolerances, details and finishes that are quite different to the 75-year-old buildings. A contemporary hospital *cannot possibly* mimic a 75-year-old building. The very essence of the intended relationship between the two buildings will be the contrast between the actual scale, materiality and detail of the two buildings. The new building will make the existing buildings look very old and we don't consider this a bad thing. Hopefully it will be a catalyst for a high quality restorative refurbishment of the heritage buildings.

Following recent fire events in Australia and overseas, a lot more attention has been paid to problems associated with combustible cladding. The building code and guidelines have been updated and the approach of the FBNSW has been made stricter requiring full-scale fire testing to AS5113. Sto render has been subject to such a test, and although formal results have not been received, it is understood that it may not have passed the debris criteria of the test.

In anticipation of this possibility, Jacobs has studied potential alternatives. These will be further reviewed during the design finalisation stage and any changes reviewed with the Executive User Group and Project Governance.

Substitute material options

- Fibre C Cladding – A glass fibre reinforced concrete board. Pre-finished board. ventilated façade system.
- Inex Board - A glass reinforced cement board. Paint finished with a texture additive. Mesh laminated Magnesium oxide board. Paint finish. ventilated façade system.

- Laminam Cladding. Ceramic tile cladding. Ventilated façade system. TBC

The project already includes many landscaped terraces, so it was considered unnecessary to incorporate additional green walls and green roofs, as recommended by the Office of Environment and Heritage, bearing in mind the additional burdens in terms of maintenance, durability, safety and cost.

The carpark façade has articulations associated with the canopies and stairs and projecting floor slab bands, a level of detail not normally provided to hospital carparks. There is potential for the incorporation of public art into this façade.

3.5 Siting

The orientation of most existing buildings on the site is approximately 45 degrees to north, which is not ideal in terms of solar and thermal performance. To achieve efficient use of the land available, the proposed building will need to adopt the same orientation.

In response to NSW Government Architect's concern on orientation and overshadowing, Jacobs have accessed in detail and have found the building orientation is predetermined by the orientation of the existing buildings and the limited area available for the development. The orientation of the new building therefore matches that of the existing. Being to the south east of the taller Multiblock, the new building is inevitably overshadowed by the Multiblock during the afternoon. That is, overshadowing primarily affects the amenity of the new building itself and associated external areas, not the adjacent residential properties which are unaffected by the proposal.

The external terraces are oriented towards the view and the morning sun but are mostly in shadow later in the day. However, given the nature of the rehabilitation activities intended for the terraces, shade from direct sun is likely to be a requirement and so the proposed arrangement is seen as appropriate.

Siting of the proposed buildings is guided by the Conservation Management Policies of the CRGH Conservation Management Plan, 1999, which was recently updated by the project Heritage Consultants. The CMP recommends:

- Providing a visual curtilage to the Multiblock;
- Retaining the landmark significance of this building as a dominant feature of the hospital site;
- Enhancing the heritage precinct and significant fabric.

The location of the multi-storey carpark has been selected because it is likely to be directly opposite the future main hospital entrance in Stage 2. Walking distances from the multi-storey carpark to the existing buildings and Stage 1 will not be more than that from existing on-grade parking.

It should be noted that parking for patients with limited mobility is provided under and directly adjacent to the Stage 1 building. More extensive excavation for underground parking beneath clinical buildings is not practical because of excessive cost, acid sulphate soils and proximity to the foundations of existing heritage buildings and the river.

For the foreseeable future any facilities that do not require close adjacency to the acute services can be accommodated in existing buildings. With the exception of the multi-storey carpark, most of the land north of Hospital Road is unaffected by this proposal and is available for future development.

Figure 19 – View of new multi-storey carpark

Figure 20 – Lower Ground Drop-off at northern corner (Aged Care and Rehabilitation Entrance)

3.6 Building Form

The building has a deep plan rectangular podium which is below the existing Ground Level of the hospital, but will appear two storeys high from the east and south where the topography slopes down to the river. Above the podium the building from is an 'E' shape with three parallel wings connected by a 'Support Bar' along the north east of the building adjacent to the Multiblock.

The east wing is the lowest at 5 storeys (Basement, Lower Ground, Ground, Level 1 and Level 2), whereas the central and west wings extend a further two storeys up to Level 5. The Support Bar is a storey higher than the adjacent wings because it includes rooftop plantrooms. The Support Bar extends to level 6 at the southwest end.

The result is a stepped structure that addresses both the river and the Multiblock. The stepped form maximises views from patient rooms northeast to the river. The predominantly aged care and rehabilitation functions of the building require a significant number of external terraces and many of these will also enjoy great views with the proposed configuration.

The new building will be lower than the Multiblock and by stepping down to the northeast, it respects the form and massing of the Multiblock, preserving views to and from the large curved glazed facade on its east side.

3.6.1 Height

The building has a podium extending over the lower ground and basement floors. Above that there are two six-storey wings and a three-storey wing. The building will extend up to approximately RL 43.5 with flues extending a further 3m beyond that. The current building design ***does not*** include provision for future vertical expansion.

The "Effective Height" as defined by the BCA is approximately 30.5 metres. This requires the fire stairs to be pressurised in the event of a fire, and therefore they are fully enclosed.

3.7 Integration with Other On-Site Facilities

The new building is designed to integrate functionally with the existing Multiblock so that services can be delivered seamlessly across both buildings.

Central to the integration of the new and existing buildings is the connecting Hospital Street atrium, which will enhance the hospital's identity and will become both the functional and symbolic 'heart' of the hospital campus.

The Hospital Street atrium will connect the new and existing buildings at Ground Level, with overhead link bridges accommodating bed movements at Levels 1 and 2. Staff-only access is provided below the atrium at Lower Ground Level. This will cater for service trolleys including deliveries, linen, meals and waste.

The Hospital Street has been designed to be capable of extension to the northeast in future to link with future development zones.

3.8 Staging and Construction

Construction of the new building is contingent on the prior completion of a number of enabling and early works, particularly services diversions, decanting and demolition of the buildings that currently occupy the site.

Most of the building's footprint will be excavated to below RL 4.0 to enable construction of the new Delivery Port at Basement Level, which is the ground floor level of the building on its southwestern side and the level at which service vehicles will access the building.

The detail of the staging strategy is subject to further consultation with stakeholders and contractors, but in any case, the adopted strategy will maintain the existing hospital as fully operational throughout.

3.9 Future Expansion Capabilities

3.9.1 General Provisions

Although the current building design does not include provision for future vertical expansion, a number of design initiatives to future-proof the project in the short, medium and long term have been identified. Initiatives that will enable the future change of use of spaces include:

- An 8.4m modular structural grid, in accordance with the HI systemised approach
- Integral topping slabs, which allow wet areas with set-downs to be retrofitted
- Flexible façade designs which can accommodate changes in the location of windows
- Provision of plumbing stacks and 'soft zones' at columns, to facilitate installation of additional sanitary fixtures in future

In regards to the long term plan for urban form as a concern raised in the NSW Government Architect's review, the masterplan outlines a general strategy for expansion and urban form on the hospital campus. However, the size and configuration of future developments is likely to be largely determined by the clinical service needs, priorities and funding available at the time of development. Further consideration will be given to the articulation of the urban form when that information becomes available.

The long term plan for visitor and staff access as a concern raised in the NSW Government Architect's review is outlined in the masterplan. It outlines a general access strategy based on creating additional public access to the Hospital through the Boronia Street entry with a link road connecting it around the perimeter of the main hospital buildings to the Hospital Road entrance. Further consideration will be given to the detailed design of the roads and adjacent pedestrian and parking areas both as part of the Stage 1 design development and as part of the future Stage 2 design when the ring road is likely to be completed. It is intended that all future development stages will independently address both the ring road and the future main public entry in the Stage 2 building.

3.9.2 Shell Space

Some areas of the building (refer plans) will be constructed as a 'shell', without a full fit-out, and will not be operational at the completion of these redevelopment works.

During schematic design consideration has been given to accommodating a future Radiation Oncology service on the basement floor, directly below the other cancer services to create a comprehensive integrated service. It is envisaged that the Linear Accelerator bunkers would be constructed outside the building footprint to the west

'Shell' space will effectively comprise an open undercroft with no floor slab or enclosing walls, but it will be secured with temporary screening. The concrete linear accelerator bunkers will be constructed in 'cold shell'. Engineering services reticulation will be provided up to the shell space enclosure only and capped off. Only lighting and HVAC required for compliance will be installed. The balance of all fit-out and equipment will be subject to future procurement.

Figure 21 – Entry to Cancer Centre

3.10 Material Selection

3.10.1 Material Selection Criteria

Material selection has been made using the following criteria:

- Durability and Maintenance
- Ease of Construction
- Sustainability

The project aspires to achieve the equivalent of a 4 Star Green Star rating and will include and maximise green initiatives where possible and appropriate. Where cost effective, initiatives have been considered across the following Green Star categories:

- Management
- Indoor Environment Quality
- Energy
- Transport
- Water
- Materials
- Land use and Ecology
- Emissions

Figure 22 – External facade materials

3.10.2 Exterior Materials

The material selection and architectural expression of the facades is based on the design of the Multiblock (refer Section 4.3, Architectural Intent).

The Multiblock has warm rich orange/red brickwork contrasting with smooth plain white and cream surfaces, and small highlights of aqua green. The windows have prominent white mullions and transom bars.

The principle cladding materials proposed for the façades of the new building are:

- Natural Terracotta Panels
- Monolithic White Acrylic Render
- Solid Aluminium Cladding Panels
- Clear and Colourback Glazing

Lightweight terracotta panels (1200mm wide x 300mm high x 16mm thick) are a contemporary equivalent to the brickwork of the Multiblock, providing a warm earthy traditional texture that will appear at home both in the suburbs and on the face of a technically innovative facility.

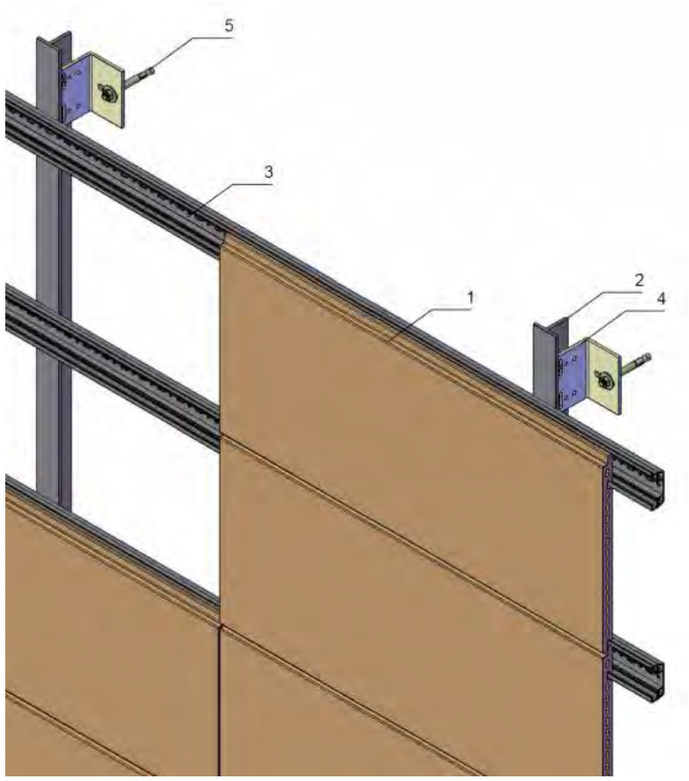


Figure 23 – Terracotta rainscreen façade system

A systemised terracotta rainscreen façade offers a number of advantages over traditional brickwork:

- Resistance to seismic events
- Speedy erection
- Less risk of poor on-site workmanship.
- No risk of efflorescence

Matching terracotta baguettes can be used in lieu of louvres, where ventilation or exhaust grilles are required, such as on the south east elevation.

Monolithic Render is an aesthetic foil to the terracotta. It recalls the heroic modernism of the early to mid twentieth century that inspired the design of the Multiblock, and facilitates the construction of smooth flat surfaces that effortlessly bend around curves. The same product has recently been used successfully on UTS's Faculty of Science and Graduate School of Health – Building 7.

Figure 24 – Sto acrylic render façade system at Building 7, UTS

Sto acrylic render offers a number of advantages over traditional cement render:

- Self-coloured and therefore doesn't require painting or repainting
- Suits curved surfaces
- Less risk of cracking or spalling
- Its inherent flexibility doesn't require many expansion joints so it is truly monolithic
- Proven warranted system (minimum 15 years warranty)

Early in the Design Development phase, further checks will be made to ensure that Sto acrylic render meets all HI's and the Fire Brigade's requirements in terms of non-flammability.

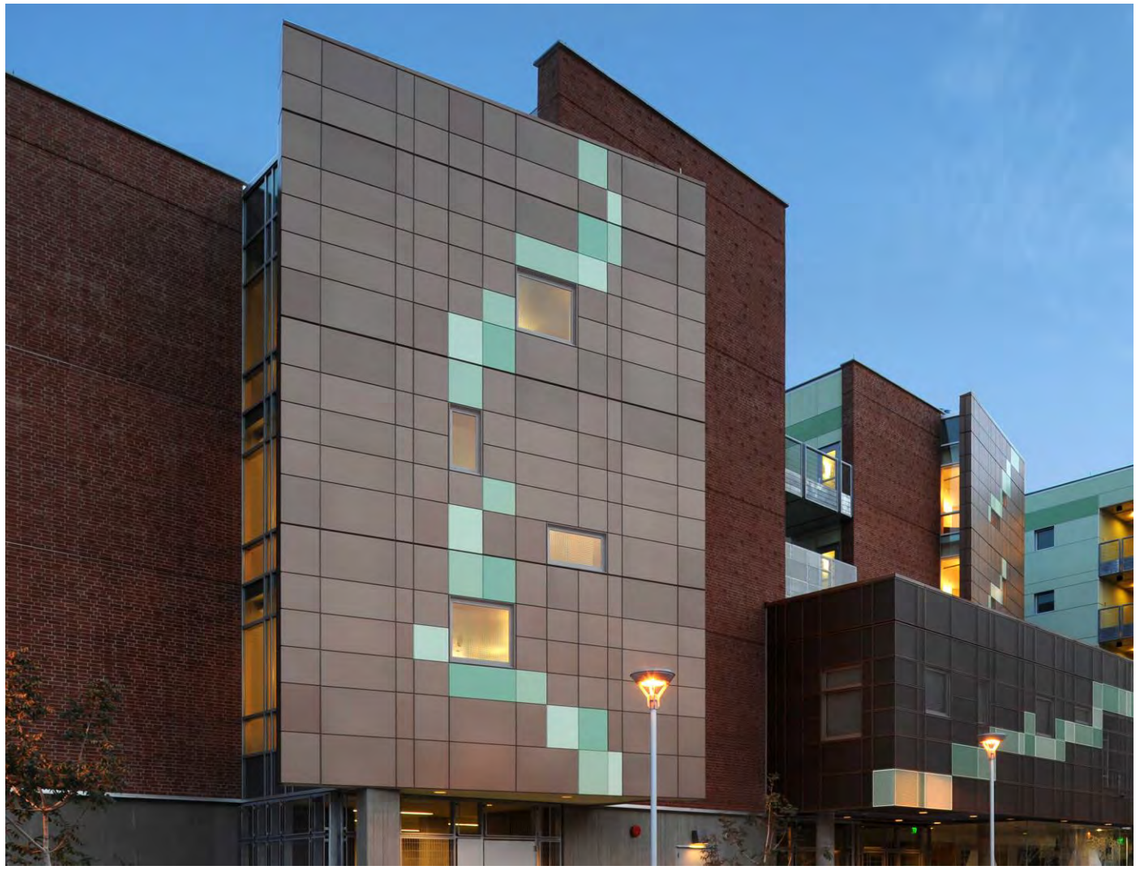


Figure 25 – Solid aluminium cladding, University of Arizona

Solid 3mm aluminium cladding is less expensive than the two cladding materials proposed above. It enables the overall cladding cost to be reduced while providing further architectural articulation to the facades. The warm pale metallic bronze colour is a contemporary version of the painted cream components of the Multiblock.

The main roofing material is Colorbond sheet steel roofing installed at a 3 degree pitch over a concrete roof slab. In addition, there are smaller areas of flat concrete roofs covered with a membrane and large grey pebble ballast. These are used either where the roof surface is highly visible from within the new or existing buildings and a steel roof would be unsightly, or where the roof shape prevents the use of a simple pitched roof, e.g. where the roof perimeter is curved.

3.11 Interior Design

The interiors are intended to be simple and based on the principles of clarity and positivity.

In the Hospital Street a selection of warm natural materials will create a unique environment that is non-clinical, welcoming and reassuring. This space is intended to represent the identity of the hospital and the communities it serves.

Colours in the Hospital Street and principle public areas will be combined with graphics to support way-finding. Further into the building crisp, clean positive colours will avoid negative institutional connotations and instead tune the personality of spaces to their particular uses, differentiating them from others.

Concerns were raised regarding natural light into the Hospital Street atrium as part of the NSW Government Architect's review. As a result, Jacobs are assessing the need and feasibility of adding an additional skylight into the roof at the northwest end of the Hospital Street atrium to increase daylight penetration in that area.

3.11.1 Interior Materials

Materials proposed are selected for both their practicality and their ability to contribute to a positive visual outcome (refer Section 4.7.1, Material Selection Criteria). Materials will also be subject to a high degree of coordinated detailing. To assist reflectivity, finishes are mostly light toned on ceilings, walls and floors. Lighting is a major part of the interior concept and is the glue of any successful scheme. Light enables not only vision but also aids perception and, when used sensitively, has a marked influence on responses by staff and patients to their working and therapeutic environment.

Generic interior material selections are listed in the Architectural Finishes Schedule and illustrated on the Materials Sample Boards. The proposed location and extent of floor and wall finishes is shown on the Finishes Plans. Specific colour selections will be discussed and validated during the Design Development process.

Generally ceilings will be a combination of set plasterboard and 600x1200mm acoustic fibre ceiling panels in an exposed grid. The Hospital Street will have a perforated plasterboard acoustic ceiling.

Floors generally are Tarkett homogenous vinyl with a slip resistance factor of R10 and an integral coved skirting. A custom speckled patterned vinyl using colours specifically chosen for the project is proposed, refer sample VN1 in Figure 28. Non-slip R10 vinyl with an integral coved skirting will be used in all wet areas and ensuites, refer proposed sample VN2 in Figure 28. Ceramic tiles with a matching tiled skirting are proposed for the floors of the Hospital Street, public areas and lift lobbies, refer sample FT1 in Figure 28. There are carpeted areas to offices and interview rooms, refer proposed sample CP1 in Figure 28.

Wall surfaces are generally plasterboard (impact-resistant plasterboard below 1200mm above floor level in corridors) with a low sheen "Natural White" paint finish, refer sample PT1 in Figure 28. The colours of wall vinyl, handrails, bump rails, corner guards and joinery are carefully coordinated to be a matching off-white. Doors are proposed to be a low gloss warm beige (refer sample PT3 in Figure 28) and door frames and architraves are white. Contrast between doors and frames assists identification by those with partial eyesight.

Other joinery is generally laminated particleboard. The default colour is off-white but timber laminate and coloured laminates will also be used. Specific colour and finishes selections will be presented, discussed and validated during the Design Development process.

Figure 26 – View of Hospital Street from existing Multiblock Level 1

Figure 27 – View of Hospital Street from seating area above Lower Ground Floor entry

Figure 28 – View of Hospital Street towards Lower Ground Floor entry from Level 1 link bridge

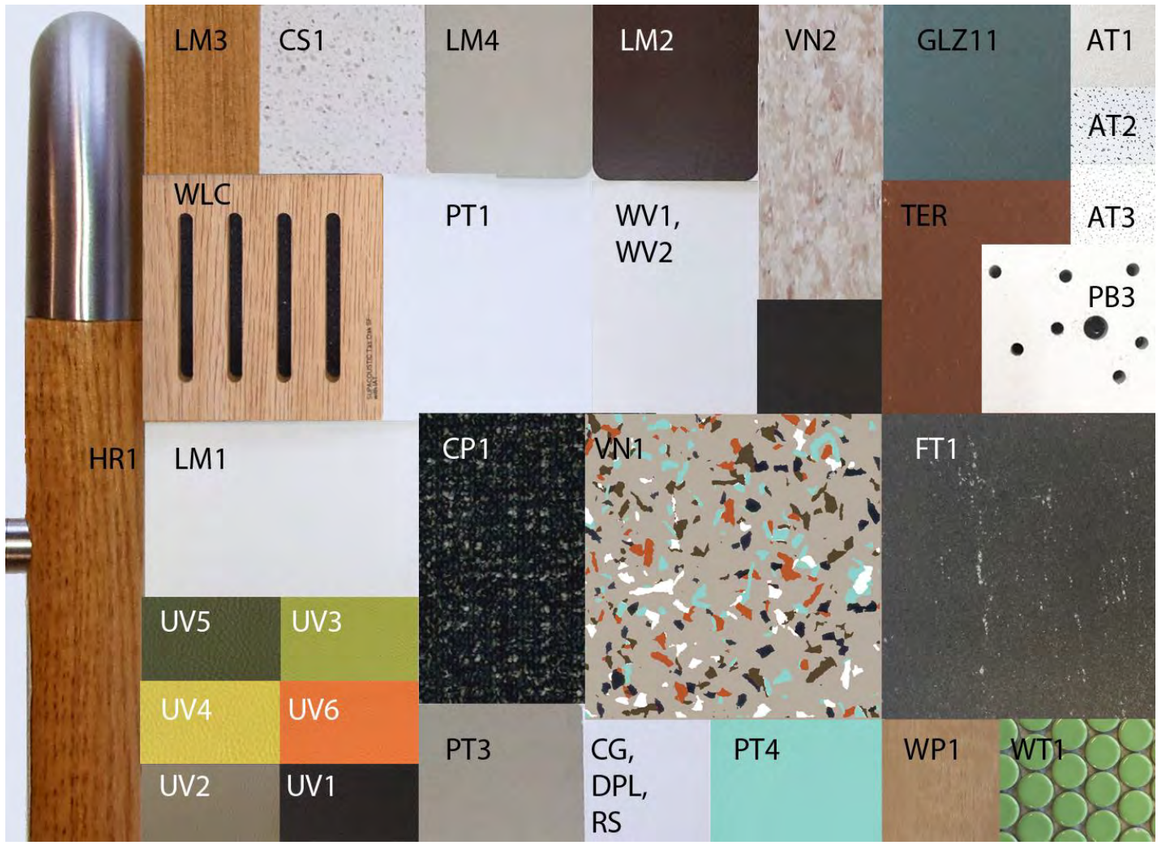


Figure 29 – Interior Materials

3.12 Landscape Design

The landscape for Concord Hospital Redevelopment Stage 1 aims to address:

- **General Amenity:** The proposed landscape works are designed to complement proposed and existing buildings. Spaces are provided for patients' staff and visitors.
- **Visual Amenity:** A consistent palette of materials, planting and forms are proposed to assist in the overall place making on the hospital
- **Ecology / Sustainability:** Where possible native low water use species have been selected. Detail planting design is to be carried out with consideration for available light, adjacent uses and maintenance.
- **Quality of external spaces including landscape and materials proposed to terraces:** Concerns were raised in regards to the quality of external spaces including landscape and materials proposed to terraces as part of the NSW Government Architect's review. The detailed design of the terraces is currently proceeding and it is intended to achieve a high standard of planting and material specification within the constraints of the budget.

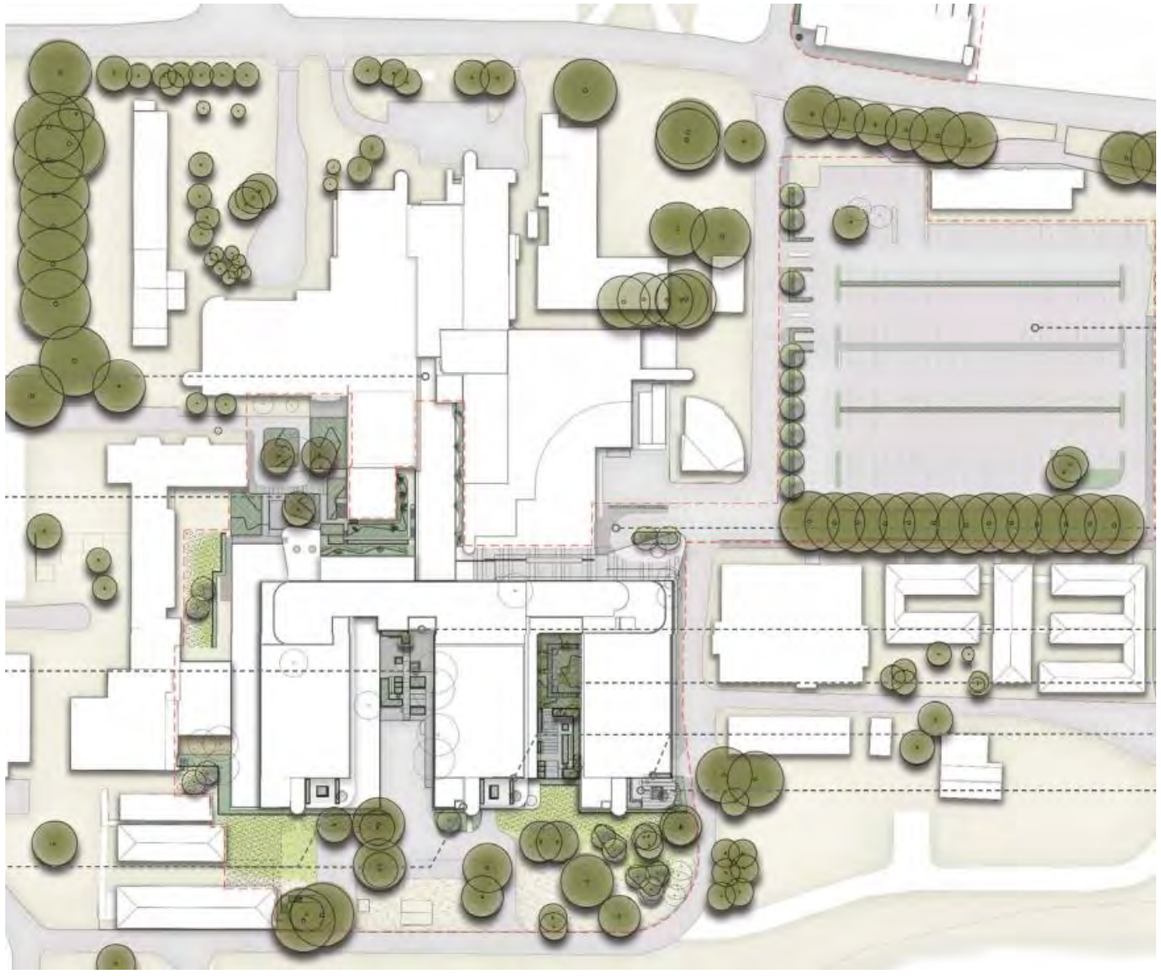


Figure 30 – Plan of Landscaped Areas

Broadly the landscape of the site can be described in the following areas:

Circulation and Drop-off Areas

Circulation and dropoff areas. The dropoff areas are complimented with feature presentation planting. Wayfinding is assisted off the main service road with areas of presentational planting to help indicate significant driveways and dropoff areas.

Roof Terraces

The roof terraces form a number of functions including therapeutic uses and general rest and respite. The terraces range in scale from areas with cafe seating for through to areas suitable for small groups. Consistent elements through the terraces are raised planter beds, built in seating with appropriate back and arm rests, and planting wherever possible. Courtyards are designed to be viewed from above so a strong visual language has been adopted.

Basement Drop-off and Undercroft

The basement level consists of the Delivery Port area and Soldier On drop off. A low garden with stepping stones through it is positioned next to the dropoff area and in a void from above. Planting is to be low shade tolerant species. Around the equipment rooms are areas of contrasting gravel. This will be low maintenance and discourage regular foot traffic. Where possible existing trees are to be retained. Some infill tree planting is proposed on the service road verge, this will assist in screening some of the services from the road and maintain the character of the campus around the building.

Southern Building Perimeter Planting

To the proposed bunker edges and southern building perimeter landscape will be used to soften structures.

Planting will be used to screen any services from the adjacent administration building with decorative ballast on the ground where turf is no appropriate due to shade or maintenance.

Lower Ground Drop Off

The lower ground level drop-off serves the main reception area. A central island with a feature tree this terminates an axis of existing trees running on the east west axis. Screening planting of shrubs grassed and groundcovers will be located in front of the Kitchen Delivery Port with the balance of the area mostly low high quality presentational planting to align with CEPTED and vehicle safety site lines.

Lower Ground Roof Terrace

The lower ground roof terrace has two separate areas; the public area comprises breakout spaces for the adjacent cafe and the private area has physical rehabilitation therapy spaces, including a walking path, steps, ramps, handrails, respite seating, a variety of surface treatments and terraced planter beds. In addition, a space has been provided for further specialised equipment such as a therapy car.

Raised planter beds will have a variety of shrubs grasses and groundcovers bringing texture and colour into the space.

Lower Ground Waiting Area Garden

A garden viewed from the waiting area is proposed. The garden shall help screen any retaining necessary and provide an attractive calming outlook viewed from indoors.

Lower Ground on Grade Carpark

Landscaping is proposed to the on grade carpark along the south west perimeter. Canopy trees will help provide shade to the hardstand area, while low groundcovers allow for sightlines to be maintained across the carpark.

Lower Ground Multi Story Carpark

Landscaping to the multi story carpark will provide softening to the building entry and exit and deter pedestrians from walking in the vehicle areas. A feature planter to the building entry will mark the pedestrian entry and exit.

Rehab Terrace

The rehab terrace similarly to the ground floor terrace includes a walking track, therapy ramps, stairs and a variety of surfaces. Seating is integrated into raised planter beds with grasses, shrubs, groundcovers and feature trees.

Psychogeriatric Terrace

The Psychogeriatric terrace is made up of raised planter beds centred around artificial turf in the centre with a circulation pathway. Seating spaces are provided in fixed furniture on planter edges and dining arrangements. Sensory planting is proposed to have a variety of fragrance, textures and colours. Features such as bus stops or clotheslines can provide additional interest.

Ground Floor Hospital Street

The Hospital Street planting palette is based on species which are shade tolerant and appropriate for the conditions as well as providing a variety of textures to the atrium space.

Ground Floor Cancer Drop-off

The Ground Floor cancer drop-off area centres around existing trees to be retained. Low massed shrubs grasses and groundcovers are proposed to the upper islands and planting adjacent the building.

Planting to the embankment under entry ramp and stairs is to be shade tolerant species with heritage sandstone placed amongst planting to assist in erosion control and add visual interest.

Level 1 and 3 Terraces

The upper terraces are comprised of raised planter beds with integrated seating as well as spaces for additional dining furniture. Paving is proposed to be laid to pedestals to enable drainage beneath and a flat surface.

Planting

Proposed planting shall be a mixture of native and exotic species chosen for their reliability in the local growing conditions. Species shall be non-toxic and low allergenic. Plants shall be sourced from a reputable nursery with stock conforming to NATSPEC guidelines.

The proposed new landscape areas have a permanent, multi zoned irrigation system which incorporates water saving measures such as moisture sensors and drip lines as opposed to spray.

Figure 31 – Concept images for landscaped terraces on upper floors

3.13 Wayfinding

3.13.1 Existing Wayfinding and Signage

Historic Significance - Buildings

The Concord Repatriation General Hospital was established in 1941. The main historic fabric at the CGRH site is embodied by the remaining core of the Stephenson & Turner buildings – the Multiblock, the two Nurses' Quarters buildings and the Medical Officers' Quarters.

Historic Significance – Landscape

The natural vegetation of the area consisted of Eucalyptus forest with the foreshore characterised by mangroves.

The status of historic significance means that the front of the hospital, the kiosk, the main pedestrian entry into the site can in principle not be redeveloped, however landscape and signage work need to be aligned with best practice and with the visitors expectations in mind.

Off-site Signage On Approach Routes

Signage including RMS signage should be of best practice. The current signs provide ambiguous information and do not meet best practice. Well-signed approach routes assure and re-assure oncoming visitors.

The Wayfinding report illustrates strategies to achieve best practice approach route signage which, although beyond the scope of this project, should be considered by the hospital.

Campus Signage

On-site signage also does not conform to best practice and blemishes the image of the hospital and local health service.

The project does not include provision of *all* the new external signs necessary to bring the standard of wayfinding and signage to the level of best practice and visitor expectation. The broad scope is outlined in the following 'New Signage' section, and the detailed scope will be developed during Design Development.

Internal Signage

Signage in the Multiblock is outdated in terms of best practice, visitor expectation and consistency. The signage principles, instead of following the rule of 'progressive disclosure' appear to display the entire menu on a lift directory board, contrary to the rule of naming key destinations only on the directory and sub destinations on each level directory. This is only one, but an important observation.

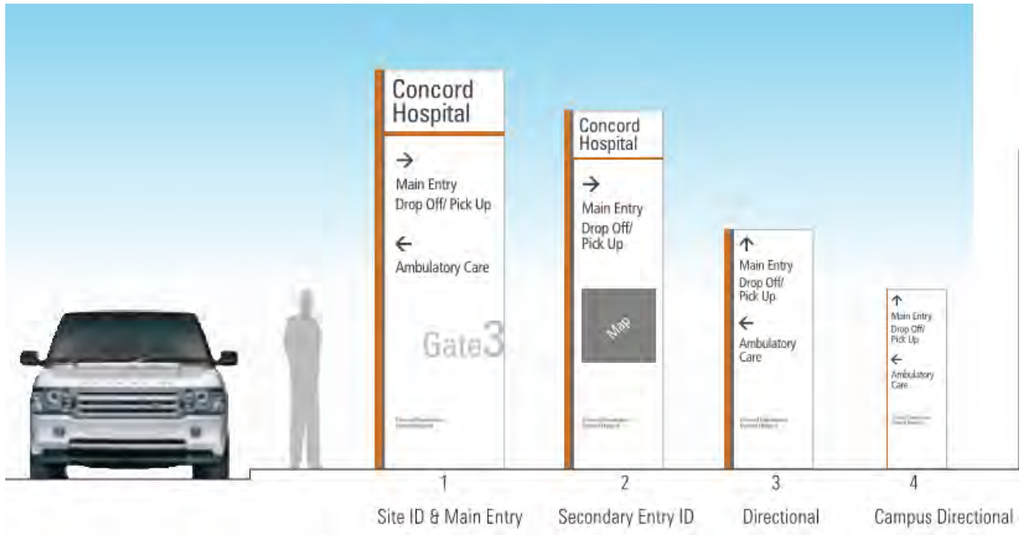


Figure 32 – External sign family design concept

3.13.2 New Signage

There are 3 aspects to this:

1. Signage on approach routes – not part of this scope
2. Signage on periphery and main entries – not part of this scope
3. External and internal signage for Stage 1 - part of this scope

In this document we have illustrated a scheme for typical sign types for the exterior and interior.

The design draws a close visual relation to the colours and forms of the main block architecture and the architectural detailing of the new phase, therefore creating a branded visual language.

The principles for the development of signage are all described in this document.

3.14 Arts and Cultural Program

It is recommended that an Arts and Cultural program be integrated with the project and that a specialist consultant be appointed during Design Development to coordinate a program of consultation with stakeholders and community groups.

The results of the consultation would inform the implementation of the arts program in and around the new and refurbished buildings. This will include the commissioning of artists to create works that will be integrated with the architectural design of the building.

3.15 Safety in Design

3.15.1 Health and safety management

Eliminating hazards at the design or planning stage is often easier and cheaper to achieve than making changes later when the hazards become real risks in the workplace.

Figure 33 – Previous version of Internal signage plan, Ground Level

Safe design can result in many benefits, including:

- more effective prevention of injury and illness
- improved useability of structures
- improved productivity and reduced costs
- better prediction and management of production and operational costs over the lifecycle of a structure
- innovation, in that safe design can demand new thinking to resolve hazards that occur in the construction phase and in end use.

Safe design means the integration of control measures early in the design process to eliminate or, if this is not reasonable practicable, minimise risks to health and safety throughout the life of the structure being designed.

Safe design begins at the concept development phase of a structure when making decisions about:

- the design and its intended purpose
- materials to be used
- possible methods of construction, maintenance, operation, demolition or dismantling and disposal
- what legislation, codes of practice and standards need to be considered and complied with.

The most recent Safety in Design workshop was held on 8 March 2018 and the minutes and preliminary Hazard Logs available on request.

3.16 Environmental Considerations

The project has been designed to achieve a 4-star green star rating.

Where cost effective, initiatives have been considered across the following Green Star categories:

- Management
- Indoor Environment Quality
- Energy
- Transport
- Water
- Materials
- Land use and Ecology
- Emissions

The carpark will undoubtedly shadow part of the street, but other impacts have been kept to a minimum given the various constraints and options available.

The south facing courtyards and balconies receive very little winter sun because of their orientation. The orientation of the new building has been determined by the location of the existing heritage buildings, the adjacencies required with the Multiblock acute services, and the desire not to shade inpatient rooms in the Multiblock. The architectural design is led by the internal clinical requirements, not by the ancillary external spaces. With these constraints it has not been possible to configure the balconies to take advantage of winter sun. They will receive winter sun for a short period in the morning.

Note that the 4.2m floor to floor heights allow considerable depth of daylight penetration from the balconies.

4. Engineering and other Consultant Disciplines

Each consultant has submitted a separate Schematic Design report as part of the State Signification Development Application.

Below is a brief outline of the contents and key issues of each consultant's report.

Engineering and other consultant disciplines have been coordinated with each other and with the architectural documentation to a level appropriate for the completion of SD. The Design Team is satisfied that the spatial allowances made at SD will enable satisfactory coordination to occur in subsequent design phases.

Figure 34 – Aerial view showing new CSB, multi-storey carpark and on-grade carpark

4.1 Structural

The proposed new Clinical Services Building (CSB), Multi Storey Car Park (MSCP) and associated works forms the first stage in the proposed broader redevelopment of the Concord Hospital precinct. The stage 1 structural works primarily comprise the following:

- A CSB building to the south east of the current main hospital buildings, consisting of two (6) storey wings and one (3) storey wing connected by a support bar.
- At ground level a link via a three (3) storey atrium to the existing Multi-Block building with two (2) overhead link bridges within the atrium allowing patient movements between the new CSB and existing Multi-Block building.
- Construction of a new five (5) storey multi-storey car park on the existing at grade car park to the north of the main hospital building.
- Associated interface works to the existing hospital buildings surrounding the stage 1 project including to the Multi-Block building.

For the CSB a standard 8.4m grid of reinforced concrete columns and post-tensioned concrete banded slabs is being utilised after considering alternative slab configurations such as flat slab construction. Reinforced concrete shear walls are located around stair and lift cores to provide lateral stability against wind and seismic loading. Ground conditions under the proposed CSB has rock sloping towards the Parramatta River with bored cast-in-place piles socketed into class II shale selected as the most efficient foundation system. A concrete soldier pile shoring wall with shotcrete infill panels extends around the north, east and west sides of the CSB with a combination of temporary and permanent ground anchors depending on the permanent structure available to prop the shoring wall.

The atrium and link bridges are located between buildings 3, 4 and 5 of the existing Multi-Block building with a new lift located partially within the existing basement of building 5. The atrium structural system has been developed to both satisfy the architectural intent of a large open space at ground level and consider the constructability of the atrium within the context of the overall stage 1 construction. Structural steel construction is predominately used throughout the atrium for both the vertical and horizontal structure except for the cast-in-place piles and concrete slabs. The use of steel over concrete construction allows the long clear spans and tall columns that are a feature of the atrium space to be erected quickly to limit the impact on the construction programme. The lateral stability system for the atrium comprises steel portal frames in both primary directions and permanent movement joints to the surrounding buildings including the CSB.

The CSB and associated atrium have been designed for an importance level 4 in accordance with Health Infrastructure (HI) guidelines and the vibration requirements of HI Design Guidance Note 1 are being implemented to achieve Response Factor 2 (RF2) as there are no operating theatres or other areas that are highly sensitive to vibration in the CSB which require RF1. All other HI guidelines that are applicable have been included in the design including a sacrificial integral topping and allowance for future penetrations adjacent to internal columns. HI have confirmed that no vertical future extensions to the CSB are to be allowed for in the structural design with only a future service tunnel extending east from the CSB basement to be allowed for in the stage 1 design. The structural design considers the impact on the surrounding existing buildings and differential settlements have been accounted for by typically founding the building throughout on similar rock material.

For the MSCP the column grid at the concept stage is likely to be 8.4m x 10.3m with post tensioned bands spanning the longer grid direction. The walls around the stairs and lifts will form the lateral stability system for the building which is founded on piles socketed in Shale rock. Further options to be explore in the next design stage include precast concrete for the vertical elements.

4.2 Civil

The Concord Hospital Redevelopment Stage 1 consists of:

- A new Clinical Services Building (CSB)
- A Multi-Storey Car Park and a temporary on grade car park

- Associated works – existing building alterations, minor road realignments, Delivery Ports and landscaping works.

Civil enabling works consists of stormwater diversions and other services coordination. Stormwater will be diverted around the proposed new building prior to excavation commencing. Coordination of services installation with hospital operations access is required.

The civil works for stage one consists of:

- Bulk earthworks for the CSB
- Road works around the southern edge of the CSB
- Services coordination with a Combined services trench
- Temporary On Grade Carpark in the centre of the hospital site

Stormwater drainage design has been undertaken accordance with Canada Bay Council design criteria. Stormwater from the existing main building will be diverted under the CSB basement, with capacity for a 1% AEP (100-year ARI) storm event. Given the proximity to the harbour, OSD is not required, however stormwater quality treatment is required under the DCP.

The proposed CSB is generally flood free as the basement is above the PMF level.

Items to be confirmed prior to final design:

- Roundabout arrangement on Hospital Road
- Lifespan of the Temporary On Grade Carpark and associated possibility of further landscape works.
- Timing for the various parts of the road network
- Early works services coordination to be resolved
- Extent of peripheral roadwork (internal and external) to be confirmed
- Finalised design of MSCP.
- Connections to the existing stormwater system to be confirmed

4.3 Transport and Parking

The main access route to the campus is Hospital Road, with Boronia Street also used by staff and service vehicles. Travel by private vehicle is main mode of travel for staff, patients and visitors, with census and survey data indicating 85% of staff travel by car. This is not expected to change significantly in the near future and therefore as the hospital grows, additional pressure will be placed on the surrounding road network and campus parking facilities, with the existing provision already at capacity during the day.

The surrounding intersections at close to capacity at peak times, with traffic particularly heavy at the intersection of Homebush Bay Drive and Concord Road. The peak periods in terms of traffic entering and exiting the hospital are 7am – 9am and 3pm – 5pm, coinciding with the main staff shift times.

Access to the campus by public transport is limited to bus and train, with three bus services stoping along Hospital Road and Rhodes Train Station a 15-minute walk away.

There are 1,957 existing car parking spaces on campus for staff, visitors and patients. In general, there is no capacity on campus, with the main Hospital Road car park regularly full during weekdays, in particular between 10am and 4pm. This results in on-street parking spaces also being used on the surrounding streets.

The key transport features of the redevelopment are:

- A new multi-storey car park (approx. 590 spaces) on the site of the main Hospital Road car park.
- A new temporary on grade car park (approx. 300 spaces) on the site of the demolished ramp wards accessed via the existing Gate 2 access road.
- A new mini-roundabout along Hospital Road which will provide access to the Hospital Road car park to the north and the two new drop-off areas and temporary car park to the south.
- A new ambulatory care drop-off with 22 parking spaces and 2 mini-bus spaces at basement level (accessed off existing Gate 2 access road)
- A new drop-off for the CSB just south of the existing kitchen loading dock (accessed off the existing Gate 2 access road)
- A new loading dock with 7 SRV bays and 1 larger vehicle bays
- A new drop-off with a small number of visitor spaces for the cancer care centre
- Bicycle parking at basement level and end of trip facilities

In addition to the above, it is expected that 75-100 parking spaces will be displaced to accommodate the new CSB, with another 200 spaces displaced in the main Hospital Road car park to accommodate the new MSCP.

The parking demand analysis shows that there would be a sufficient amount of parking following the construction of the MSCP to meet demand, however reductions during the construction stage will add additional pressure on the existing supply.

4.4 Other Reports

An Arborist report has been prepared for the 91 trees located within and adjacent to the proposed development area. The report discusses the viability of these trees based on their significance and the proposed enabling works only.

The report addresses:

- Species' identification, location, dimensions, and condition
- SULE and STARS rating
- Discussion and impact of the proposed works on each tree
- Recommendations for the removal, retention and/or pruning
- Tree protection zones and protection specifications for trees recommended for retention.

4.5 Mechanical, Medical Gases, Pneumatic Tube Systems and Vertical Transportation

WGE has been engaged by NSW Health Infrastructure (HI) to undertake the Master Plan Report (MPR) for the Concord Hospital – Stage 1 Redevelopment. The report aims to identify major project decisions that will affect the services budget in the final project.

4.5.1 HVAC Services

The major risk items with respect to site infrastructure include:

- Disruption of medical gas storage and header room due to relocation and staging.
- Minor disruption of steam supply to sterilisers, due to replacement of steam boiler plant
- Disruption to heating hot water services in building 5 due to replacement of heating hot water calorifier in basement of building 5
- Replacement of the existing steam system.
- Disruption of existing BMS system, due to buildings being demolished for new development.
- Impact of future expansion planning to staging and plant layout

- Impact of hospital street and atrium on building 3 & 5 air intakes
- Removal of asbestos

The major issues with respect to site wide infrastructure detailed in this report include:

- Extension of existing Medical Gas systems (Medical Liquid Oxygen, Nitrous Oxide, Medical Dry Air, Compressed Air, and Suction Scavenge)
- Relocation of Medical Gas bottle store and header room relocation.
- Relocation of Secondary Bulk Oxygen VIE Tank.
- Replacement of existing steam system.
- Additional demand on existing Medical Gas systems
- Reticulation of Medical Gas pipework to proposed building
- Re-routing of condensate pipework in below ground services tunnel for steam ring main.
- Demolition of redundant mechanical services in below ground services tunnel.
- Staging of works for continuity of services

The major consideration for future planning for mechanical, medical gases and vertical transportation services on the new build in respect to infrastructure are:

- Extension of Medical Liquid Oxygen reticulation
- Extension of Nitrous Oxide reticulation
- Extension of Medical Dry Air reticulation
- Extension of Compressed Air reticulation
- Extension of Scavenge/Suction reticulation (as required)
- The impact on existing systems.
- Introduction of new lifts.

The following systems are proposed for the HVAC systems:

- Water Cooled Chillers
- Cooling Towers
- Linac Bunker water cooled chiller
- Gas fired Boilers for space heating
- Pumps for Heating Hot Water (HHW) and Chilled Water (CHW)
- Pumps for Condenser Water (CW)
- Air side Variable Volume (VAV) boxes
- Dedicated Multi-zone and single zone Air Handling Units (AHU’s)
- Dedicated Fan Coil Units (FCU’s)
- Exhaust systems
- Zone Smoke control systems
- Suction Scavenge system
- Medical Air system
- Pneumatic Tube system extension

Plant spaces have been nominated in locations that allow independent access for maintenance staff to avoid interruption to the ongoing running of the hospital. Plant have been located on either the roof, basement or perimeter areas to allow for future removal/replacement.

Measures to reduce energy costs will include:

- Connection of new plant to existing site BMCS which allows for close monitoring and control of all major pieces of plant.
- VSD on all major motors and fans.
- Selection of chillers that have good part load efficiency
- Good passive design in relation to glazing, facades and the location of plant and non-conditioned spaces.
- Utilising a BMCS that is both open sourced and open protocol (Protocol meaning the computer language is universal & Source meaning any independent controls contractor can be used).

4.5.2 Vertical Transportation

The vertical transportation design for the Concord Repatriation Hospital redevelopment is proposed to comprise of the following units:

Lift Group	Lift Number	Lift Car Capacity (kg / pers.)	Lift Car Width x Depth (mm)	Lift Type & Speed
New Extension				
Clinical Lifts	L.S1	3150 / 42	2000 x 2850	Overhead machine room (OHMR) at 1.6m/s
	L.S2	3750 / 51	2250 x 3000	
Service Lifts	L.S3	3150 / 42	2000 x 2850	OHMR at 1.6m/s
	(opt.)	*2500 / 33*	*1800 x 2700*	
Public Lifts	L.P1	2000 / 26	2000 x 2000	Machine Room-less (MRL) at 1.6m/s
	L.P2	2000 / 26	2000 x 2000	
	L.P3	*2500 / 33*	*1800 x 2700*	
Public Lifts	L.P4	1600 / 21	2000 x 1650	MRL at 1.0m/s
	L.P5			
Goods Lift	L.G1	3000 / -	3200 x 3200	MRL at 0.8m/s
Appending Existing Building				
Clinical Lifts:-	L.S4	2500 / 33	1800 x 2700	***MRL at 1.6m/s***
	L.S5			

4.5.3 Section J Compliance

A Section J Compliance report has been prepared to review the development against the NCC (2016) Section J Requirements utilising the following methodology:

- Part J1 to J2 – JV3 Performance Engineered Approach
- Part J3 – Deemed-to-Satisfy Prescriptive requirements
- Demonstrate a 10% improvement compared to a Section J DTS solution.

Subject to the conditions and requirements noted in the report, the proposed development is considered to comply with the NCC Volume One Section J JV3 requirements. Any variation to the conditions and requirements may impact the performance outcomes and impact the level of compliance.

4.6 Electrical, ICT and Security Services

4.6.1 Main Electrical Supply

- Ausgrid is the local supply authority. The site is supplied from Two(2) Ausgrid underground feeder on the Hospital Road boundary with both entering the site from this location only one feeder is energized at one time. These 11kV feeders are terminated at service protection devices each rated at 11kV 340A.
- At present the Concord Hospital site has six(6) Chamber substations located throughout the site.
- Based on information provided by NSW Health and Ausgrid the highest combined monthly kVA maximum demand for both substations in 2015/2016 was 11KV 240 kVA. The separate maximum demand of each Substation was not available.
- Concord Hospital is an 11 kV customer and all assets downstream of the service protection devices are owned by NSW Health.
- 2x1500kVA kiosk substations will be provided for the new development.

High Voltage works to the Site

New HV augmentation is required with the proposal to service the hospital utilising the Two feeders down Hospital road this will mean the N-1 redundancy will not be provided however the hospital will be provided with N-1 redundancy by the generators connected to each building including the new building. The upgrade the zone substation protection devices will be required and upgrades to the existing HV switching station on the hospital site will also be required.

High voltage work on site under the enabling works

Concord hospital has 11KV cabling run through the site which will be required to be upgraded for the new supply demand as currently the existing cabling cannot accommodate the additional load

- Concord Hospital has 11KV cabling running through the site terminating in a number of substations, the cabling is now at end of life and is not rated to the new maximum demand of the site. All HV cabling is to be upgraded to allow for 340amps to run through the site.
- Decommissioning of Substation 2 and Main SwitchBoard 2 as located within a non accessible location and non-compliant due to location of an existing building.
- Low voltage Submains from Main Switchboard 2 to be relocated to new Main distribution board feed from the new Main Switchboard 2(5)
- Substation 5 chamber substation is to be relocated to 1x1000kVA Kiosk substations with new consumer mains running to the new MSB 2(5)
- Substation 4 chamber substation is to be relocated to 1x500kVA Kiosk substations with new consumer mains run to existing MSB 4; there will also be a new generator provided with the existing generator servicing MSB 4 relocated to provided generator back up for new MSB 2(5).
- Substation 3 chamber substation is to be relocated to 1x1000kVA Kiosk substations with new consumer mains run to existing MSB 3; the existing generator set which provides backup power for the boilers and 11KV generator aux contacts.

4.6.2 Standby Generator

- A new 1000kVA prime rated (acoustic rated enclosure) generator is to be provided to supply essential power to the new building.

4.6.3 Uninterruptable Power Supply

- A new 100kVA UPS complete with 15minute battery allowance to be located within a dedicated room on the basement level. The UPS shall predominately provide continuous power to the ICT equipment.

4.6.4 Distribution system

- New Main Switchboard will be located in a Main Electrical Switchroom located on basement level
- New Main Switchboard will be Form 4A construction
- Each distribution board will be located in each fire compartment unless a compartment is smaller than 300m2

4.6.5 Lighting

- Luminaires to be proposed for the new building will consist of LED
- All lighting with patient areas will be cyanosis compliant type as per AS1680 standards

4.6.6 Emergency Lighting

- New Emergency computer monitoring system will be provided to comply with AS/NZS 2293.1

4.6.7 Power Outlets

- Power outlets will consist on Non-Essential, Essential and UPS circuits

Wiring in medical treatment Areas

- Where services are located in body protected and cardiac protected areas they will comply with AS/NZS 3003:2011

Wiring in medical treatment Areas

- Where services are located in body protected and cardiac protected areas they will comply with AS/NZS 3003:2011

4.6.8 ICT

- New Communication infrastructure will be provided to the new building with two supplies from Building 5 and Building 58 being installed
- There will be the following type of communication rooms allowed for in the new building 1x Future Campus Distributor, 2 x Building Distributors and 3 x floor distributors on each level with floor distributors reducing as the building reduces in footprint as it rises up.
- A new VoIP system is to be employed within the new building
- The new building will be provided with Wi-Fi coverage throughout including the basement level
- The mobile duress system will consist of a wireless RTLS system
- Allowance for additional paging transmitters will be required for the new building
- Audio Visual services has been allowed for in meeting rooms and training rooms

4.6.9 Nurse Call

A new nurse call system will be installed during detailed design it is recommended the hospital invite vendors into see what is the best solution for the hospital and going forward in the future as at present there is a few system installed in each of the buildings

4.6.10 Intercom system

- An IP based audio/Video system will be provided. The intercom system will be integrated into the VoIP system.

4.6.11 Security systems

- A new Concept intergriti system will be provided to the new building. Requirements will be needed for the interface of the existing concept system as the new software is not backward compatible.
- The new building will utilise IP-based CCTV cameras connected to the existing security system with additional DVR/NVR, Monitors etc being provided for the increased footage.
- Hardwired duress will be provided over the concept security system

4.6.12 Miscellaneous

- A conventional lightning protection system to AS1768 will be provided to cover the new building

4.7 Fire and Hydraulic Services

4.7.1 Hydraulic Services

This report describes the schematic design for the Concord Hospital redevelopment phase 1 and the services that this upgrade ties into. Several hydraulic considerations have been analysed and presented in the preparation of this report with the aim of outlining the schematic design process, that is, the reasoning behind our decisions, options considered and ultimately our proposed design method.

The key items discussed in this report detail the locations of the proposed water, stormwater, sewer and gas services. These schematic design options have been based on the locations of existing services as well as the results from appropriate calculations. Appropriate considerations and measures to be taken when conducting proposed developments have been notably mentioned throughout the report and are in accordance with relevant standards of practice.

In addition to the key design items, the report discusses generally the typical design requirements for hydraulic services making specific note of the expected outcome to be achieved for the Concord Hospital redevelopment Stage 1.

In summary:

Potable cold water services:

A 157.5kL potable cold water tank will be provided on level 6 with three hours peak storage for both the CSB and existing building 5. The tank will supply the CSB through the two separate risers and also connect back into the building 5 supply. Pump sets are required to supply the tank as well as being required on the outlet to provide sufficient pressure to the uppermost levels. Dual 100 micron, 50 micron and UV filters will be provided to reduce microbial growth.

Potable hot water services:

There will be a central hot water plant located on level 6 which will supply the building with a flow and return system through two separate risers in excess of 60degC. TMVs will be provided to each area requiring warm water and dead legs will be kept to a minimum.

Natural gas:

The natural gas will extend from the existing building 3 plant room and reticulate through the CSB @ 7kPa supplying the mechanical boilers and domestic hot water heating plant

Stormwater drainage:

The stormwater drainage will generally be done using siphonic due to the large catchment areas. There is the exception of small roofs where traditional gravity systems will be used. All primary and secondary systems are sized for a 100 year ARI and include catchment areas, façade runoff and overflows from other catchments.

Sewer drainage and sanitary plumbing:

The drainage system will incorporate a reflux valve adjacent to the authority main connection due to it being a sewer surcharge area. Three overflow relief gullies are provided to protect the building; one per each main drain. The sanitary plumbing system will be a fully vented modified system. Clearouts will be provided adjacent to each WC to prevent access into the ceiling space during a blockage.

4.7.2 Fire Services

Warren Smith and Partners (WS+P) has been engaged by Health Infrastructure to assist the design team with the redevelopment of Concord Hospital relating to the fire services.

The fire services schematic design report discusses the current design approach and provide a description of the fire services servicing the new Stage 1 Building and commentary on the service provisions provided and servicing strategies for Stage 2 and 3.

The report describes the concept design and master plan for stage 1 building of the redevelopment. It describes the fire services strategy and infrastructure for the new building and possible future expansions. Fire services infrastructure includes water supply, booster assemblies, system pumps, tanks, and fire detection panels.

Water Supply Connection: It's proposed to connect the new fire system to the existing 200 mm Sydney Water main located in Hospital Road.

Booster Assembly: It is proposed to locate the booster assembly on Hospital Road (at the boundary of the site) and to serve main stage 1 building and future developments in line with the Concord Hospital Master Plan.

The Fire Brigade booster assembly will be:

- Readily accessible to fire fighters.
- Operable by fire brigade pumping appliances located within 8m, as it is located on a main road.
- Adjacent to one of the vehicular access to site.
- In a position so that is not obstructed. Vegetation surrounding the booster will be stripped and the existing street parking near it will be replaced with "Emergency vehicle parking only". The existing fence line near the booster is also to be partially removed.

The Fire Brigade booster assembly will not be compliant as it won't be within sight of the main entrance of the building as required by AS 2419.1-2005. F&R NSW to comment.

Fire Pumps Room: It is proposed to locate the fire pump room in the basement of stage 1 main building adjacent to the proposed fire tank. The fire pump room is to have direct access to road (internal road in our case). The room will house the system variable speed diesel pumps that will be appropriately sized to enable the campus capacity for future development. The building is under 50m therefore; relay pumps are not needed.

Fire Tank Room: It is proposed to locate the fire tank room adjacent to the pump room in the basement of stage 1 main building. The main tank capacity will be appropriately sized to enable the campus capacity for future development. The main tank capacity will be equal to 170,000L and will be supported with a 50,000L Break tank.

Sub Fire Indication Panel (FIP): A sub-FIP will be located on the main entry of stage 1 main building and will be integrated with the campus wide network. (Note, that the existing main FIP is located in the existing fire control centre). Sub-FIPs will also be provided in the main entry of future development buildings and will also be integrated with the campus wide network.

Combined Fire Hydrant and Sprinkler System: A combined Fire Hydrant and Sprinkler system is proposed to served stage 1 building and will comply with AS2118.1-2017, AS2118.6-2012 and AS2419.1-2005.

Fire Sprinkler System: An Automatic Fire Sprinkler System would be provided in accordance with Table E2.2a (c) (ii) of the NCC as the Smoke Hazard Management System.

The Fire Sprinkler System will be designed to the requirements of NCC Part E1.5 and Australian Standard AS 2118 parts 1 and 6 as part of a combined hydrant and sprinkler system.

Any inferior openings in fire walls, in particular, the interface between existing and new building may require external and/or internal wall-wetting sprinklers, or otherwise under the direction of the Fire Engineer via an Alternative Solution.

Anti-tamper monitoring of fire services isolation valves.

Fire Hydrant System: A Fire Hydrant System as part of the Combined Fire Sprinkler/Hydrant system will be provided in accordance with AS2118.6, AS 2419.1 – 2005 and E1.3 of the BCA.

A fire hydrant service will be provided to the Stage 1 Building with Hydrants provided internally as required to satisfy hydrant coverage. Hydrants will be located within fire stairs and on floor adjacent to fire compartments with fire hose reels as required.

External double Fire Hydrants are to be provided adjacent all on-grade building Entry points.

Fire Hose Reel System: A fire hose reel system will be installed throughout the new facility in accordance with NCC Part E1.4 and AS 2441 - 2005 requirements.

A Fire Hose Reel system shall be provided throughout all new buildings. Water supply will be taken from the potable cold water system at an agreed location and may be boosted by either a potable booster pump set or a dedicated Fire Hose Reel electric pump assembly.

Fire Detection System: An addressable Fire Detection & Alarm System will be provided in accordance with AS 1670.1 – 2015, and E2.2a of the BCA.

A networked addressable analogue Fire Detection (FDCIE) shall be provided in the Fire Control Centre of the Building.

The Fire Detection & Alarm System will provide interface between the sprinkler and hydrant systems, smoke detectors and shut-down/control of the mechanical smoke control systems.

Emergency Warning and Intercom System: An EWIS will be provided to the Building in accordance with AS 1670.4 – 2015 and E4.9 of the BCA.

Portable Fire Extinguishers: Fire Extinguishers shall be provided throughout the facility in accordance with NCC Part E1.6 - Table E1.6. In addition, provide CO_2 extinguishers and fire blankets at Nurses / Staff Stations in accordance with NSW Health Policy Directive – Document No. PD 2010 – 024 dated 27th April 2010.

Statutory Reports Summary

4.8 Building Code of Australia

As Accredited Certifiers, McKenzie Group have reviewed architectural design documents prepared by JACOBS for compliance with the Building Code of Australia 2016 (Amendment 1).

Particular areas requiring further review as the project develops are outlined in the BCA Report.

The assessment of the design documentation has also revealed areas required to be assessed against the relevant performance requirements of the BCA. The submission for Construction certificate will need to include verification from a suitably accredited Fire Engineer. These areas are also outlined in the BCA Report.

The fire engineered solution relating to EP1.3, EP1.4, EP2.2, EP3.2 will be subject to consultation with the NSW Fire Brigade as part of the Construction Certificate process under Clause 144 of the Environmental Planning & Assessment Regulation 2000.

The application for Construction Certificate shall be assessed under the relevant provisions of the Environmental Planning & Assessment Act 1979 (As Amended) and the Environmental Planning & Assessment Regulation 2000.

Accessibility

An initial review of the Main Works SD documentation highlighted the following key accessibility issues that require further attention in Design Development:

The following areas may require assessment against the relevant performance requirements of the BCA.

An initial review of the Enabling Works documentation highlighted the following key accessibility issues that require further attention in Design Development:

1. Any proposed performance based solutions with regard to accessibility
2. Any accessibility matters in the project design brief
3. Room Designation Strategy
4. Access from existing works/paths of travel to the new/refurbished works
5. Stair & ramp details to determine compliance with AS1428.1-2009
6. Building 68 Ramp

4.9 Fire Engineering

A fire engineering review of the Schematic Design has been undertaken. A number of performance solutions are proposed to address Building Code of Australia (BCA) Deemed-to-Satisfy (DTS) non-compliance issues through Fire Engineering methods. Refer to the Fire Engineering Report provided which includes a schedule of proposed solutions. The solutions are to be updated into a Fire Engineering Brief (FEB) and Fire Engineering Report (FER) in the Detailed Design stage. The proposed solutions and supporting measures are subject to change following stakeholder input, further BCA review and fire brigade referral.

5. Value Management

In March 2015 a Value Management Workshop was held at Concord Hospital to present the business case options in accordance with VM Standard AS 4183:2007, which prescribes a plan of best value for resources considering purpose, importance and benefit.

5.1 Objectives

The objective of the workshop was to evaluate the presented business case options, using value managing techniques. The criteria were defined beforehand and distributed to the group prior to the workshop.

5.2 Process

Three options were presented and evaluated according to the pre drafted criteria, including the base option (Option 1) which is the Schematic Design presented in this report. The participants allocated scores and order of importance to each option based on the agreed criteria.

5.3 Outcomes

From this workshop the preferred scheme is Option 1. This will now be assessed against economic appraisal and funding availability. Option 2 should be reassessed and presented as Option 3 and be evaluated in the same way as the previous options.

The report from the workshop is available on request, where the different criteria and suggestions are described and analysed, and their pros and cons enumerated.