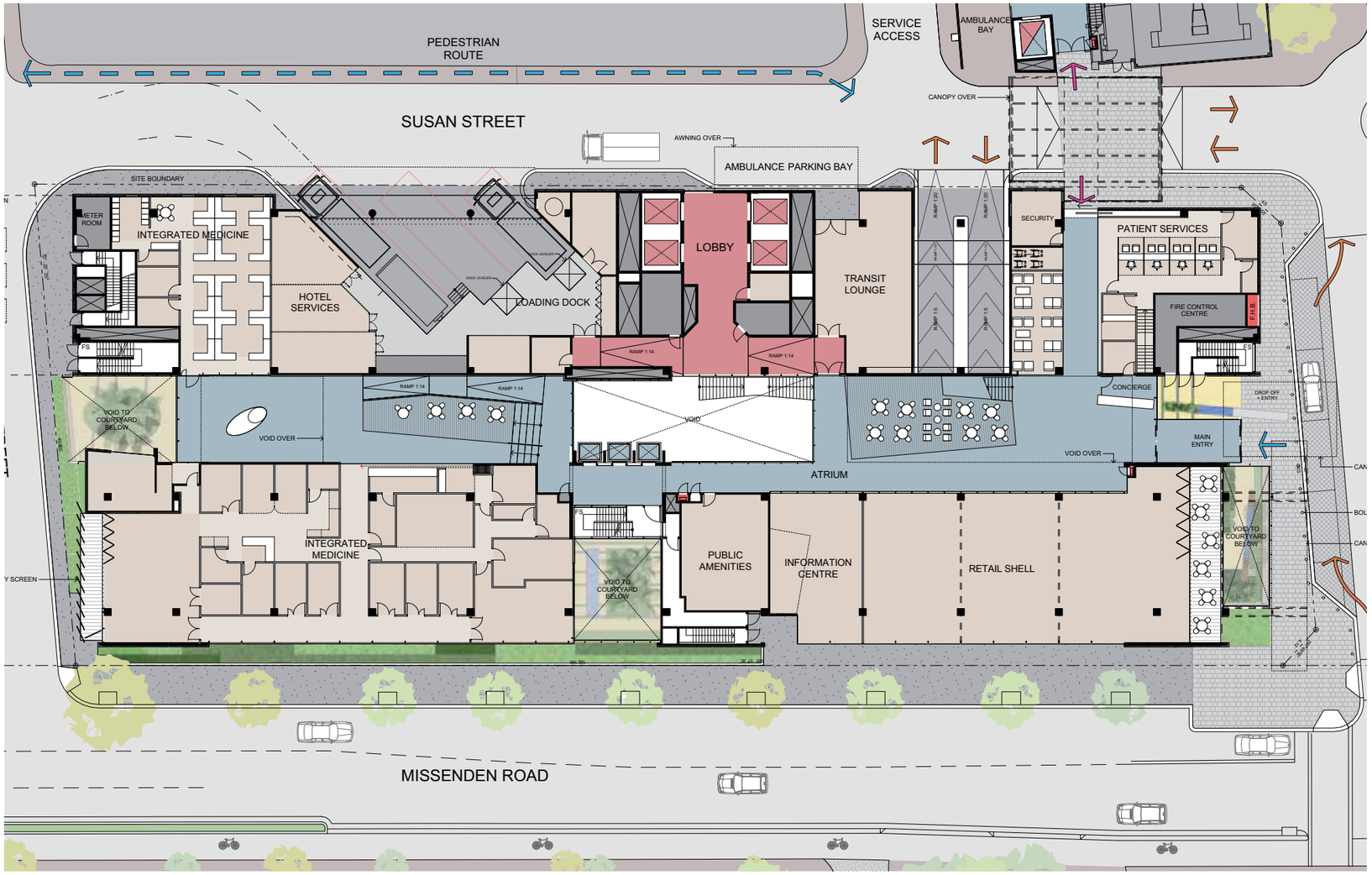
The Chris O'Brien Lifehouse at RPA

DETAILED DESCRIPTION



GROUND FLOOR PLAN

The ground floor indicates clearly the planning concept for the overall building - the central circulation space, the clearly defined adjacent functional areas- to the west zone primarily for service and the east zone along Missenden Road for the more public areas of the facility. The main entrance is provided on grade to the north and is aligned with the central circulation space. This entry is served by a covered vehicle drop off and orientates to the public outdoor space defined by the new building and the KGV building to the north. Adjacent to this is the concierge and patient admissions zone as well as the secondary entrance which creates the physical linkage between the existing Radiation Oncology building and Lifehouse.

Both entries are provided on grade. The ground floor slab has been set at two levels, RL 36.200,37.100 and RL 37100. The plan includes two major lift cores, as well as three fire stairs. The central fire stair adjacent to the glazed public lifts is located within a glazed shaft and will fire protected with sprinklers.

The central circulation space is used for public reception, information points and seating areas. This space focuses on the central atrium which rises through the building and contains the glazed public lifts The change in slab level provides a more public reception space to the north with a quieter, elevated space to the south with open plan seating and waiting areas.

The southern end of the atrium incorporates full height glazing with views into a lowered courtyard below.

Spaces in the east zone comprise retail outlets,likely to include a cafe, bookstore and small retail pharmacy/health store as well the Information Centre for the facility. The eastern zone is split by the landscaped east courtyard with the Integrated Medicine or 'Wellness Centre' accessed from the southern atrium space. This facility has an important ambulatory and public role and will include allied health clinicians as well as providing for a series of parrallel treatments and therapies. Accommodation includes a reflection room and a series of group rooms. There are visual linkages to the surrounding landscaped sunken gardens and green screen wall along Missenden Road.

The western zone includes the administrative offices of Integrated Medicine and the major service zones of the facility focussed around the central service/patient lift core. The loading dock area and medical gas storage is located on grade and accessed from Susan Street.The loading docks are not visible from the public zones of the ground floor and will be provided with roller shutter doors on the street edge.
The docks access directly into the main staff/support lift core providing direct service access to the support areas located on the basement levels below, as well as the most important clinical zones on the upper levels.

The Transit Lounge is located adjacent to this lift core and is served by a secondary ambulance bay in Susan Street. The entry/exit point to the basement staff and patient carpark is accessed off Susan Street. The security office is collocated and overlooks the carpark entry and the secondary/after hours entry.

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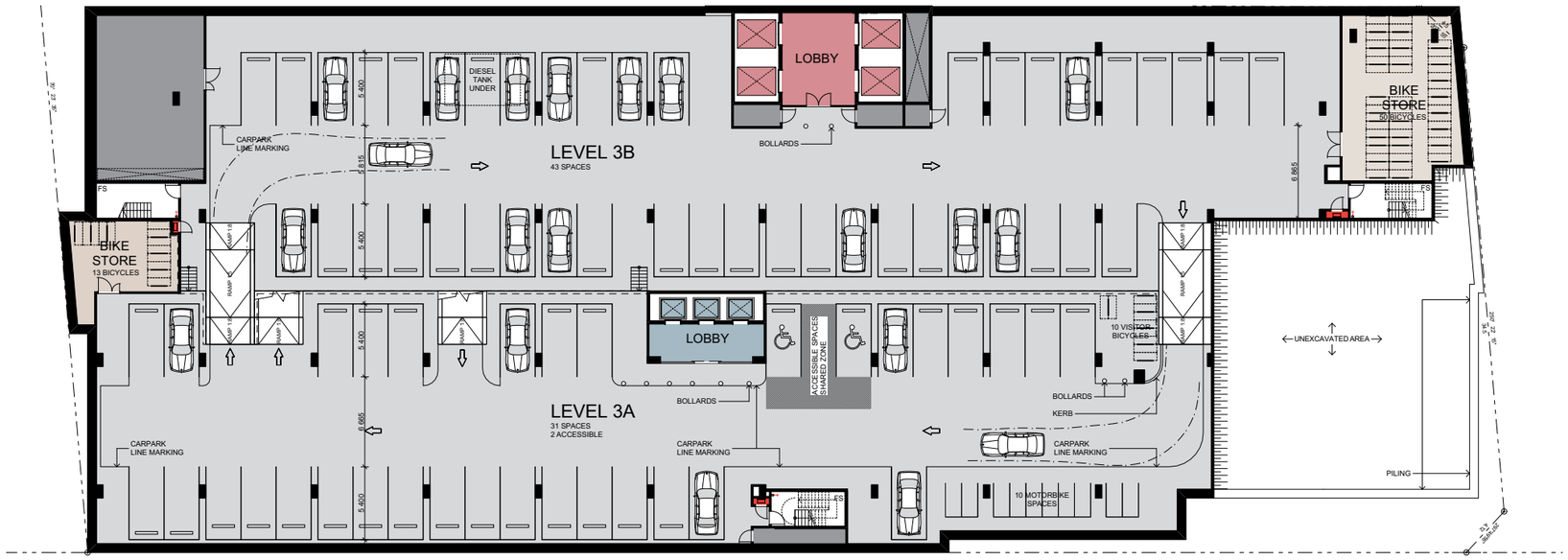
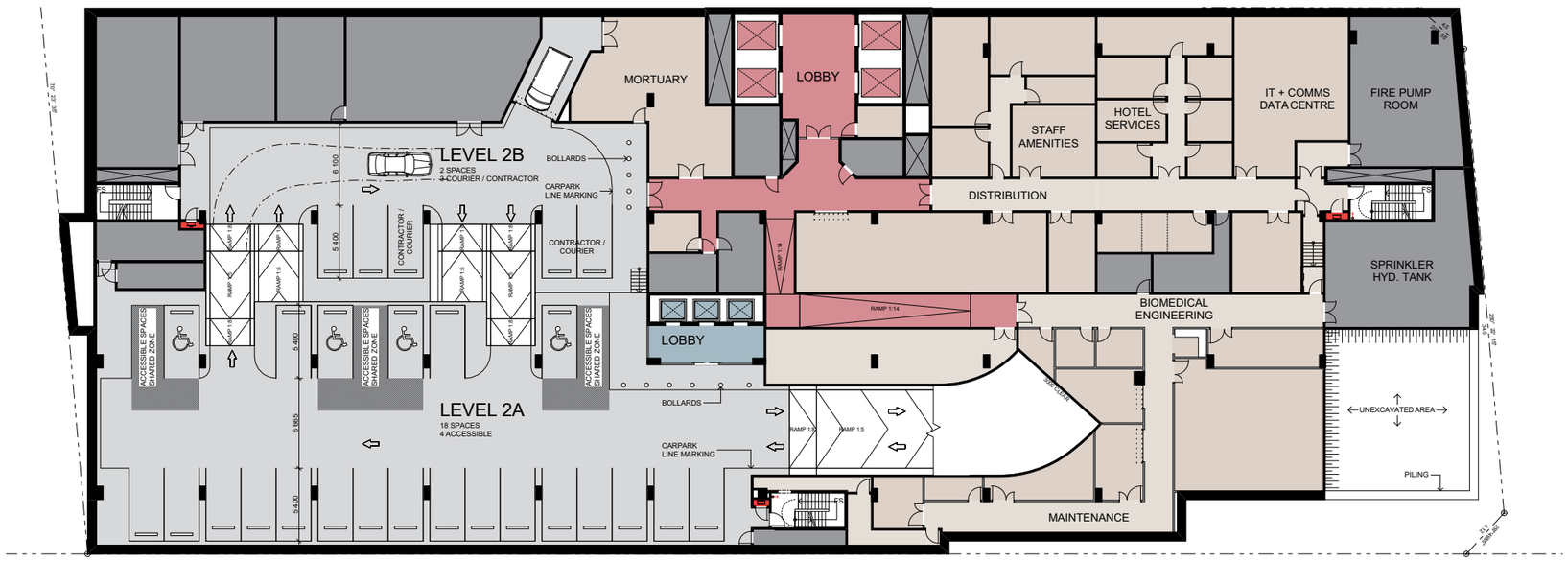


BASEMENT B3

This level contains car parking for 76 cars, 10 motorbikes and 63 bicycles split over two half levels. This level is served by both the public and staff lifts.

Two of the 76 spaces are accessible parking spaces with easy access to the public lifts.

Lockable bicycle storage has been provided for staff, with open bicycle parking for visitors



BASEMENT B2

This level contains car parking for 22 cars on level 2A and 2 cars on level 2B. Four of these spaces are accessible parking spaces with easy access to the public lifts.

Three courier spaces/contractor bays have been provided at Basement 2B level, with oversight by the dock manager. The mortuary is collocated with the vehicle pick up point screened behind roller shutter doors.

This level also contains significant support service for the building including hotel services, stores and the distribution centre, adjacent to the service/patient lift core. As such, public access to this level is limited to the carpark.

Significant central energy plant and equipment, including the co-generation plant is located on level 2B.

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20m

PUBLIC + VISITOR CIRCULATION
FUNCTIONAL AREA
STAFF + PATIENT + SERVICE CIRCULATION
PLANT

NOTE:
Internal walls indicative only and subject to change

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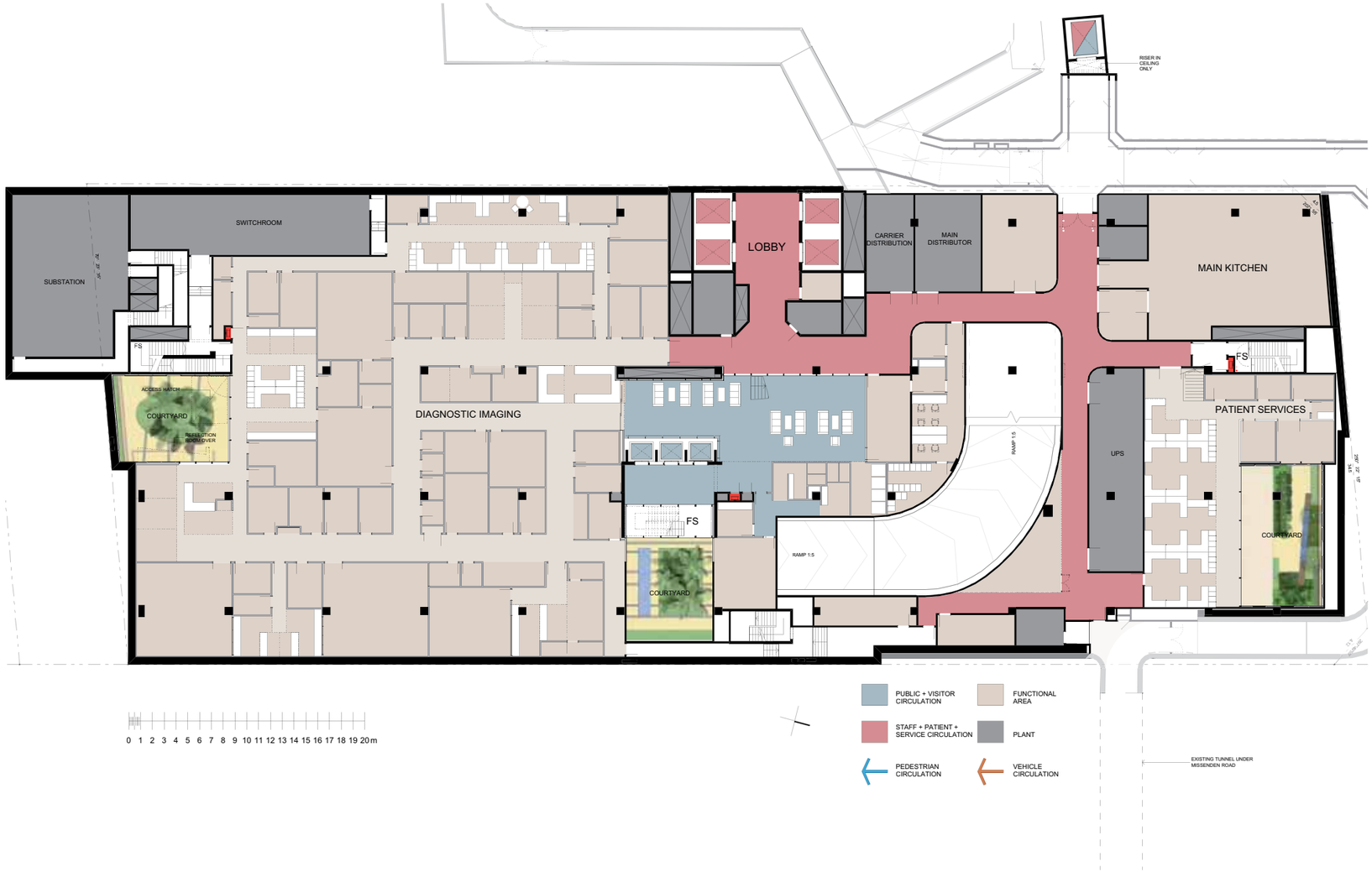
BASEMENT B1



This basement level has three important landscaped areas which introduce natural light and air, as well as providing visual aspect and amenity into the adjacent occupied spaces on this level. It si also the only lower ground floor to accommodate a clinical service. The Diagnostic Imaging department is located on this level. Public access is provided via an open glazed stair from ground level or the central public lifts to the central waiting area. A small child care area is located adjacent to the landscaped courtyard on the east. Patients will access imaging via the service/patient lifts.

The balance of the floor is non public and comprises an administration area for patient services,with an internal stair link direct to the department above. A series of important support services including the main kitchen have discrete private access to the service lifts.

Plant and equipment accommodated on this level includes the main substation (located under Brown Street), the main switch room and UPS plant.

Lifehouse connects into the existing RPA service tunnel which is located on this level. This tunnel provides and important service connection between the eastern and western campuses of RPA Hospital. This tunnel is primarily used for services, however on occasion this tunnel will be used to transfer patients from RPA to Radiation Oncology via the new patient/public lift located in the new works of the adjacent existing Radiation Oncology building.

Works to the existing tunnel form part of a separate approval.

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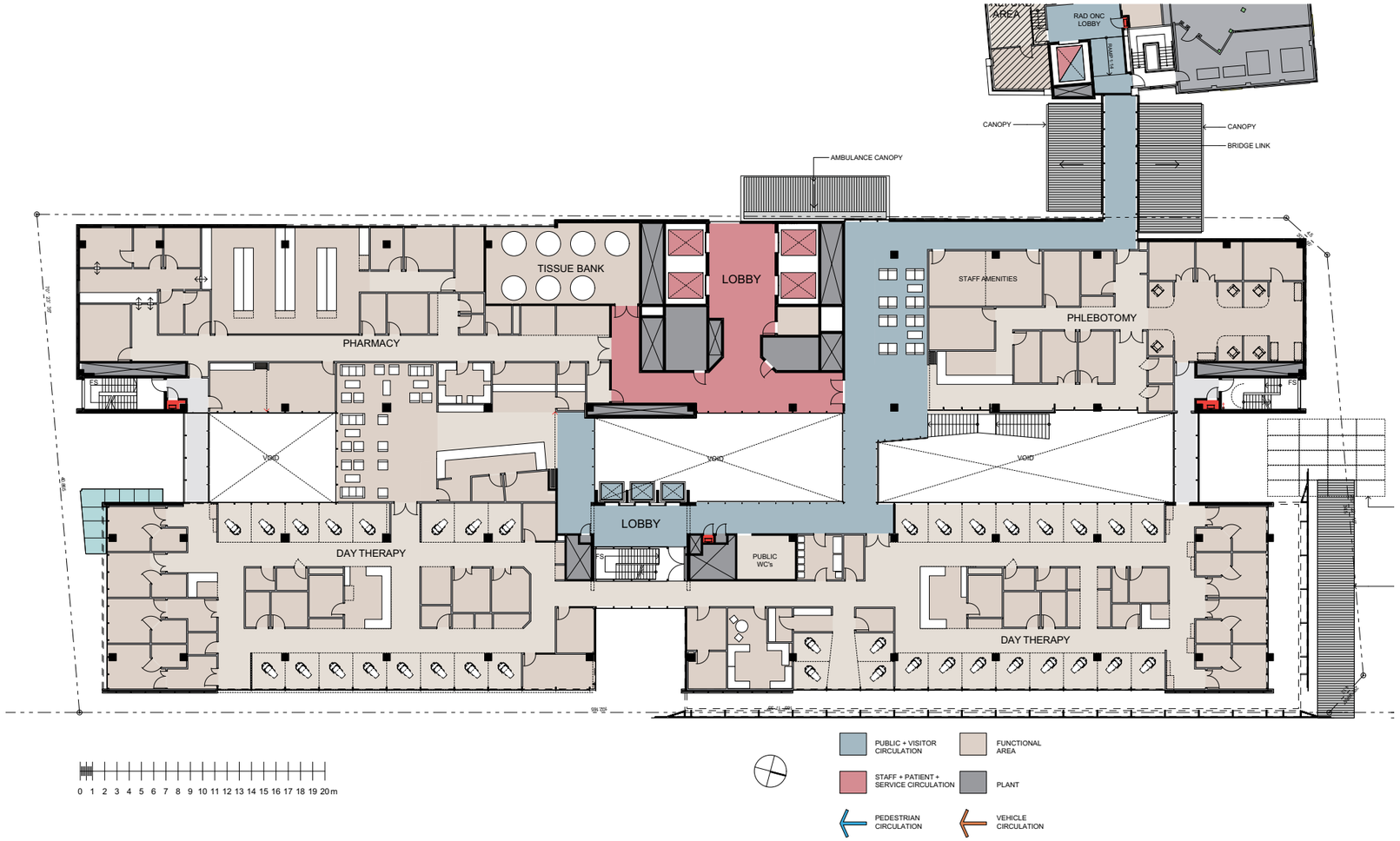
LEVEL 1



Level 1 plan is an important ambulatory care or day patient area. The plan form is clearly divided into a western "servant" zone comprising phlebotomy and main pharmacy, and an eastern "served" zone comprising day therapy or chemo therapy department. These zones focus on the central circulation space and the central vertical atrium

The plan is designed around the public and staff zones. The public (blue) circulation route offers directed access to Day Therapy, Phlebotomy, and the existing Radiation Oncology building. Public access is also available to the 'front of house' pharmacy area. The staff (red) circulation route from the main service/patient lift core is linked directly into the 'back of house' pharmacy areas.

The Day Therapy Centre provides flexible service clusters for chemotherapy treatment, clinical trials treatments and day medical services.
Day Therapy is provided within close proximity to the main entrance with visual links from ground floor up to the reception and waiting area.
Key functional adjacencies are provided horizontally to Phlebotomy and Pharmacy with the Ambulatory Care Clinics one level above.

A level 1 link has been provided for easy access for patients' requiring access to the Radiation Oncology Department.

Phlebotomy is located directly adjacent to the main entrance with access provided by an open glazed stair to the public (blue) circulation bridge link. Less mobile patients will be able to access Phlebotomy via the glazed public lifts in the central atrium.

Phlebotomy will also include a vertical hoist connected to the Interventional Suite to enable samples to be processed and analysed on-site.

Pharmacy is located within direct access to the staff (red) lift for drug delivery and to distribute drugs to the inpatient areas (provided in Stage B1 accommodation). It is located immediately adjacent to the Day Therapy Centre to dispense drugs for morning and afternoon treatments.

The Tissue Bank is located above the loading dock over an area earmarked for liquid nitrogen storage for plasma samples.

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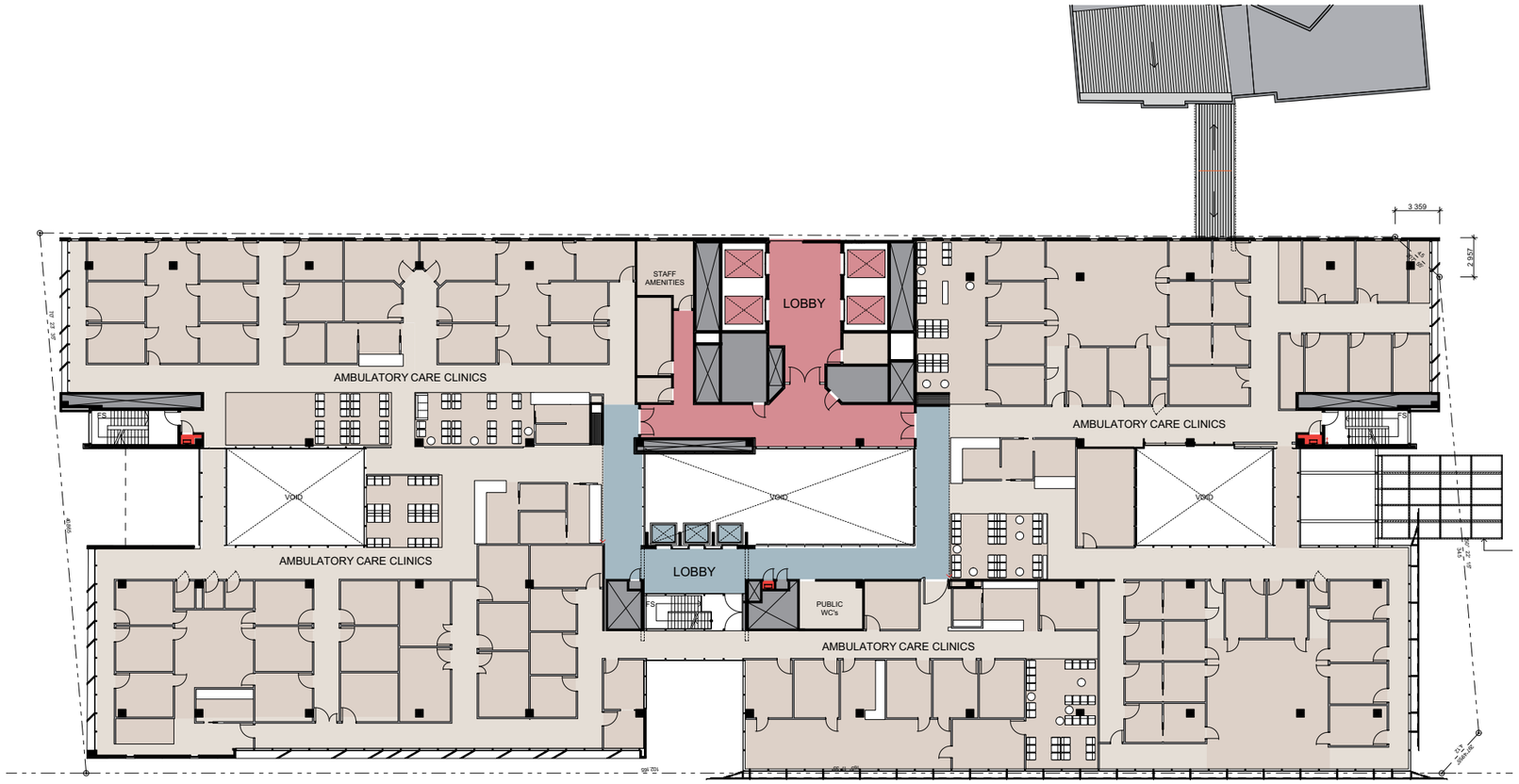
LEVEL 2



Level 2 is the second important ambulatory and day patient zone in the building. This level comprises a unique consolidated Ambulatory Care Clinic centre providing for a range of specialised sub-clinics integrated into a consolidated functional unit. The Ambulatory Care Clinics located on this level are clustered into the following groups.

- Haematology and Palliative Care
- Thoracic, Head and Neck
- Upper Gastrointestinal and Colorectal
- Urology, Dermatology and Melanoma
- Breast, Bone and Soft Tissue Sarcoma
- Gynaecology

This level is served by the public lifts in the central atrium and the service/patient lifts in the separate core. This will mean that any staff or in-patients who may need to access these clinics would have completely discrete access.

The planning allows for public waiting areas and meeting rooms to be clustered around the central open circulation zone enjoying the views and open aspect of this space.

Ambulatory Care Clinical Office space and Lifehouse Clinical Trials are located on level 7 with vertical connections provided by both the staff and public lifts.

Key adjacencies are with the level 1 Day Therapy Centre, phlebotomy and Pharmacy. Additional functional relationships are with diagnostic imaging (basement 1) and Integrated Medicine or 'Wellness Centre' at ground level.

The Ambulatory Care Clinics will provide consultation and diagnostic services aiming to provide same day diagnosis and treatment advice.

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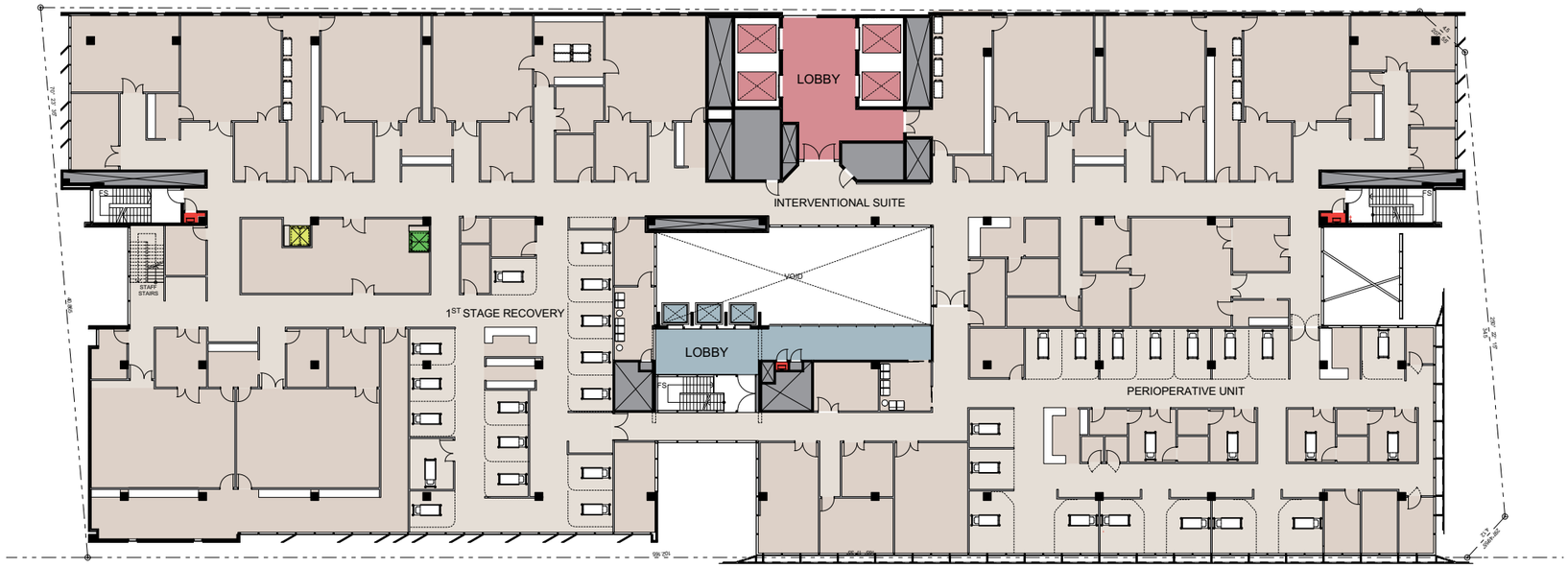
The Chris O'Brien Lifehouse at RPA

LEVEL 3



Level 3 provides accommodation for the Peri-Operative unit and the Interventional Suite. Importantly though this is not the point of public access to the peri-operative unit which is accommodated on level 4 above. Therefore the glazed public lifts in the central atrium will not stop on this level.

The Peri-Operative Suite accommodates a 23 hour unit with 18 patient bays and in stage A will have 3 operating rooms. The suite is served primarily by the dedicated service/patient lifts. Supplies and servicing will be provided through discrete pass through facilities at the service core. The theatre suite will be served by staff change areas on level 4 above, and a central sterilizing department located on level 5 and linked via dedicated clean/dirty service hoists into the sterile area of the Interventional floor.

The stage B1 fit out will see a significant expansion of this department including a further 7 operating rooms, two of which will be large Interventional theatres. The main first stage recovery and various additional support spaces will also be completed as part of the stage B1 fit-out by 2016.

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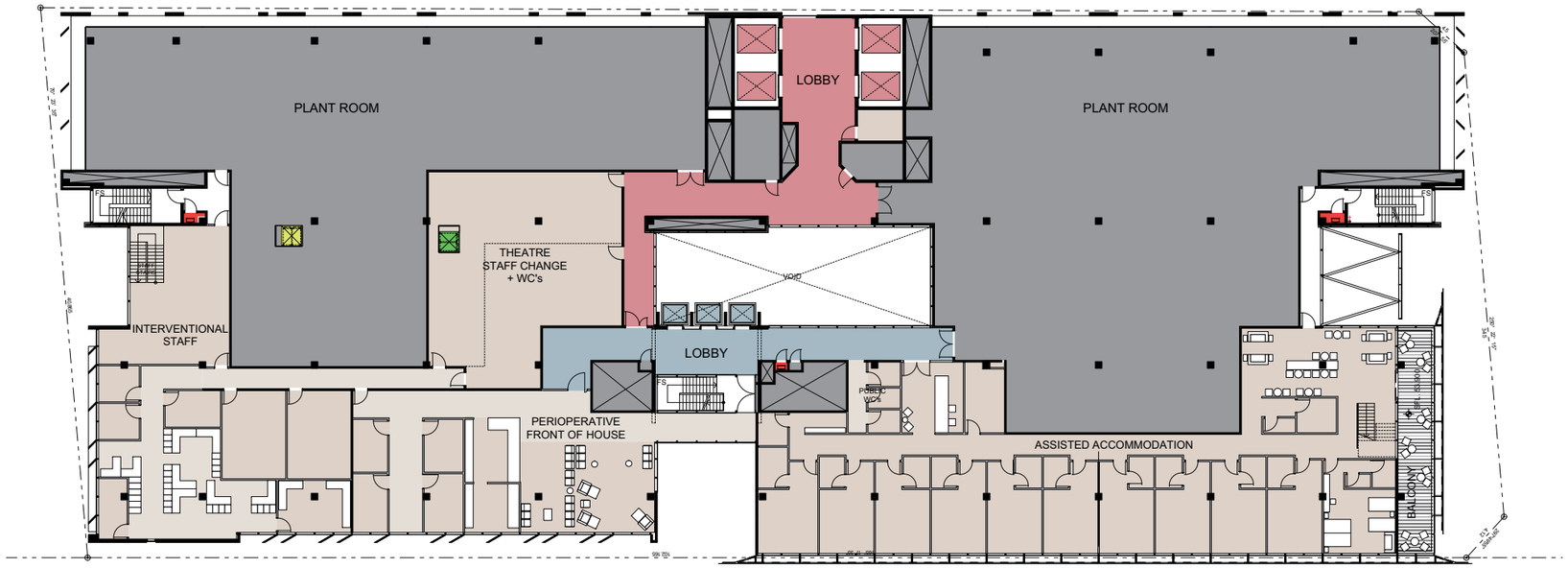
The Chris O'Brien Lifehouse at RPA

LEVEL 4



Level 4 accommodates the main reception area for the Peri-Operative suite. Therefore all patients arriving for procedures will report to this level and will be escorted via the glazed stair or public lifts to patient areas on the Interventional floor below. This area include a large waiting area for family members to use during and post surgery.

Theatre change and staff support accommodation is provided at this level. Access to the theatre change is provided off the staff corridor. An open stair has been provided with direct access to the Interventional floor below to link the administrative offices with the clinical areas below.

Assisted accommodation is located on this floor for patients and family members undergoing treatment in Lifehouse. This will largely be self-catering and the facilities include a common kitchen and dining area as well as a lounge or group area.

The remainder of this floor is the western or servant zone around the service lifts and is dedicated to plant and equipment. This centrally located plant zone is efficient in supporting rational service reticulation to the accommodation above and below.

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The Chris O'Brien Lifehouse at RPA

LEVEL 5

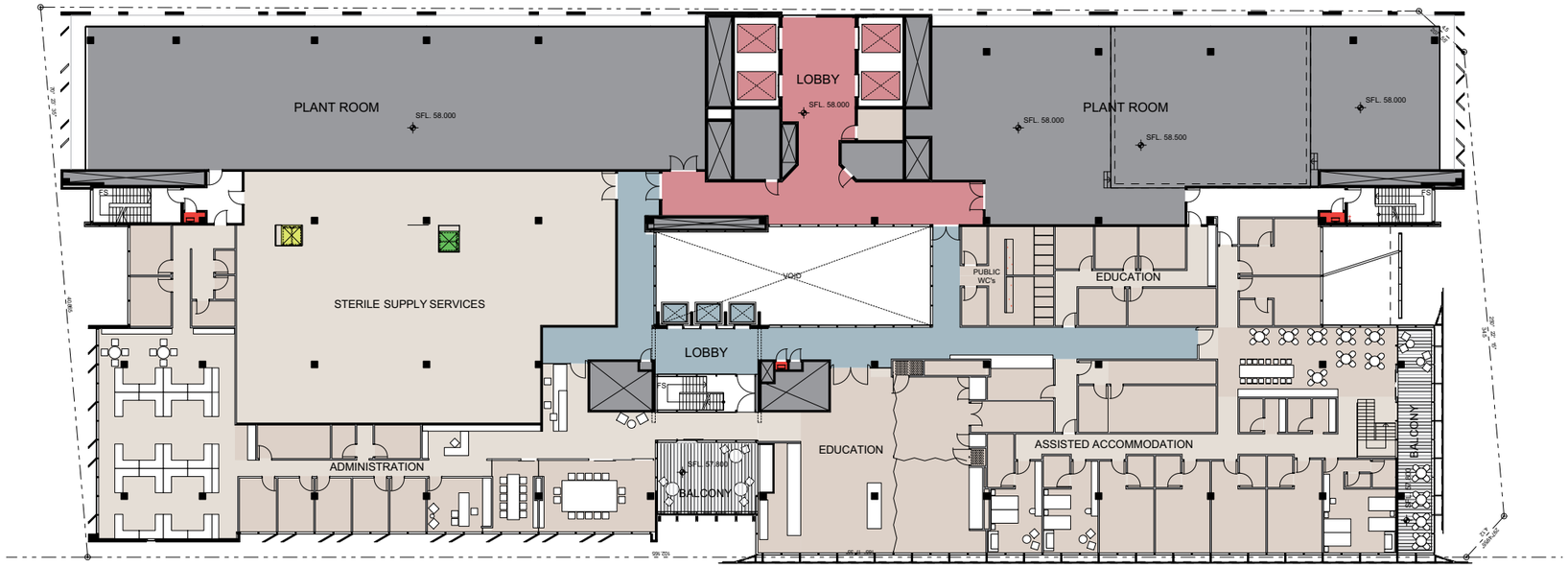
Level 5 accommodates the main Administrative Department and Executive Suites as well the Education Centre. These facilities are accessed from the main public lifts in the central atrium space, which link the Administration component to Main Entrance and Patient Services on ground floor and to the basement car park.

The Education Centre incorporates multi-purpose meeting and flexible function space to accommodate education programmes and conferences. This will include a function room for 80 people which can be subdivided into either two seminar rooms or one seminar and two meeting rooms. This centre will have an important role for promotions,training, seminars and presentations and include a large foyer space and outdoor deck.

The Sterile Supply Department is connected vertically via the clean and dirty hoists to the Interventional Suite on level 3. Access for staff is provided via the (red) staff corridor.

Further Assisted Accommodation units are provided on this level, linked to the main accommodation on level 4 below via an internal stair.

The remainder of this floor is the western or servant zone around the service lifts and is dedicated to plant and equipment. This centrally located plant zone is efficient in supporting rational service reticulation to the accommodation above and below.



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LEVEL 6

Level 6 has been allocated as the specialised Research floor of Lifehouse. This fully integrated dry research component is very important within the overall context of an integrated cancer centre. Research groups are provided in pods with the ability to flex dependent department boundaries based on need and developing research programme.

The primary access will be via the glazed public lifts in the atrium, but researchers will be able to use the service lifts if required. Despite the need for individual office space within a research context, these areas are planned as open spaces with shared meeting rooms and common spaces clustered around the central atrium.

The Lifehouse Clinical Trials is located on this level within close proximity to the public lifts. This area has direct links to the Ambulatory Care Clinics on level 2.

Shared facilities on this level include the staff common room with access to an external deck on the east overlooking Missenden Road.

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The Chris O'Brien Lifehouse at RPA

LEVEL 7

Level 7 accommodates the Ambulatory Care Clinical offices and the 18 bed Intensive Care Unit.

Ambulatory Care Clinical Offices have vertical links to the Ambulatory Care Clinics on level 2. Staff will be able to access offices via either set of lifts. Public access to the Clinical Offices is limited.

The public will access the Intensive Care Unit via the public lifts in the atrium. Waiting areas and meeting rooms are located around this central void.

The ICU is planned for 18 individual patient bays. The unit is well served by the service/patient lifts providing discrete efficient links from the Interventional floor on level 3 and the in-patient units on level 8 and 9 above. The unit will have access to an external deck fitted with medical services to allow patients access to the exterior as part of their treatment protocols.

The fit-out of the Intensive Care Unit is to be completed under the Stage B1 fit-out currently programmed for 2016.

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The Chris O'Brien Lifehouse at RPA

LEVEL 8

Level 8 accommodates two in-patient units. Each unit will have 24 single patient rooms with ensuite accommodation. A single larger suite or VIP room is provided in the south east wing. The in-patient bedrooms will be shell space only in Stage A and will be fitted out in the Stage B1 works. During Stage A Lifehouse will use in-patient facilities within the main RPA Hospital.

The in-patient units are configured in a race-track arrangement with staff support facilities located centrally.

Natural light will be provided to all bedrooms and full height glazing will enable patient views from their bed or chair.

Inpatient areas can be readily accessed via the public lifts in the central atrium and are served independently by the service and staff core to the west.

As the in-patient units are set back from the building edge a roof top landscape zone is provided. These healing gardens will be visually accessible from a large portion of the patient rooms and will be directly accessible to a secured landscaped patient garden on level 8 only.

NOTE:
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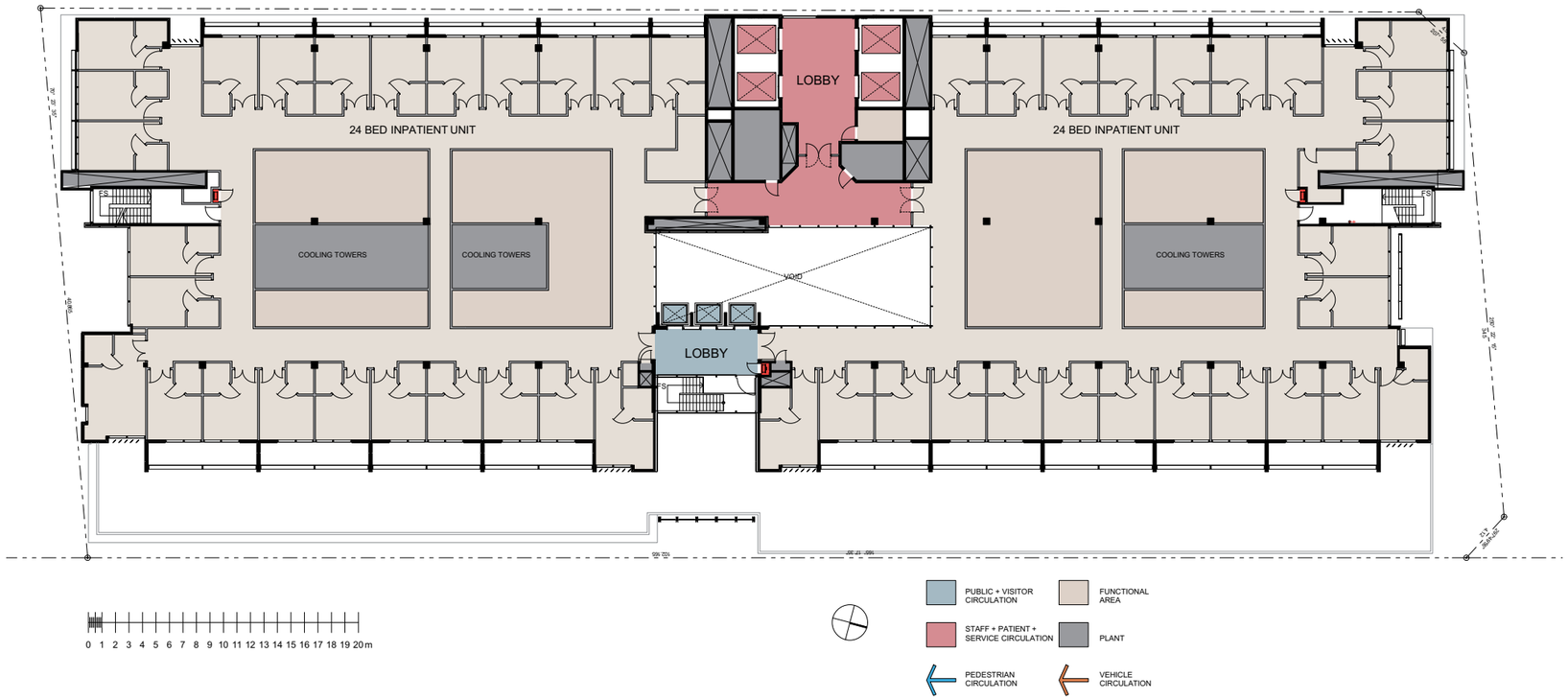

LEVEL 9

Level 9 houses two in-patient units each with 24 single rooms with en-suites.

The layout is similar to the units on level 8, but centralised recessed plant areas are provided for the cooling towers in the central support zone.

Visual access to the landscaped zones only is provided from a number of the patient rooms.

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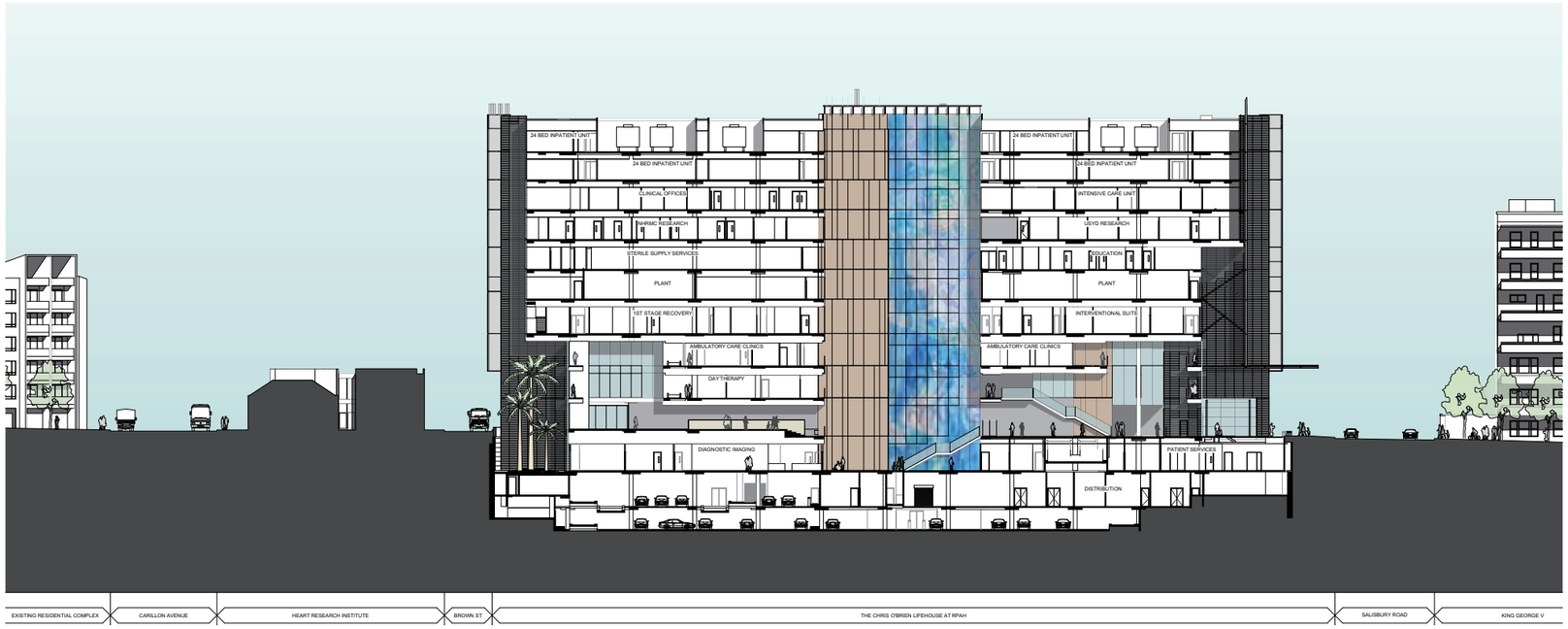
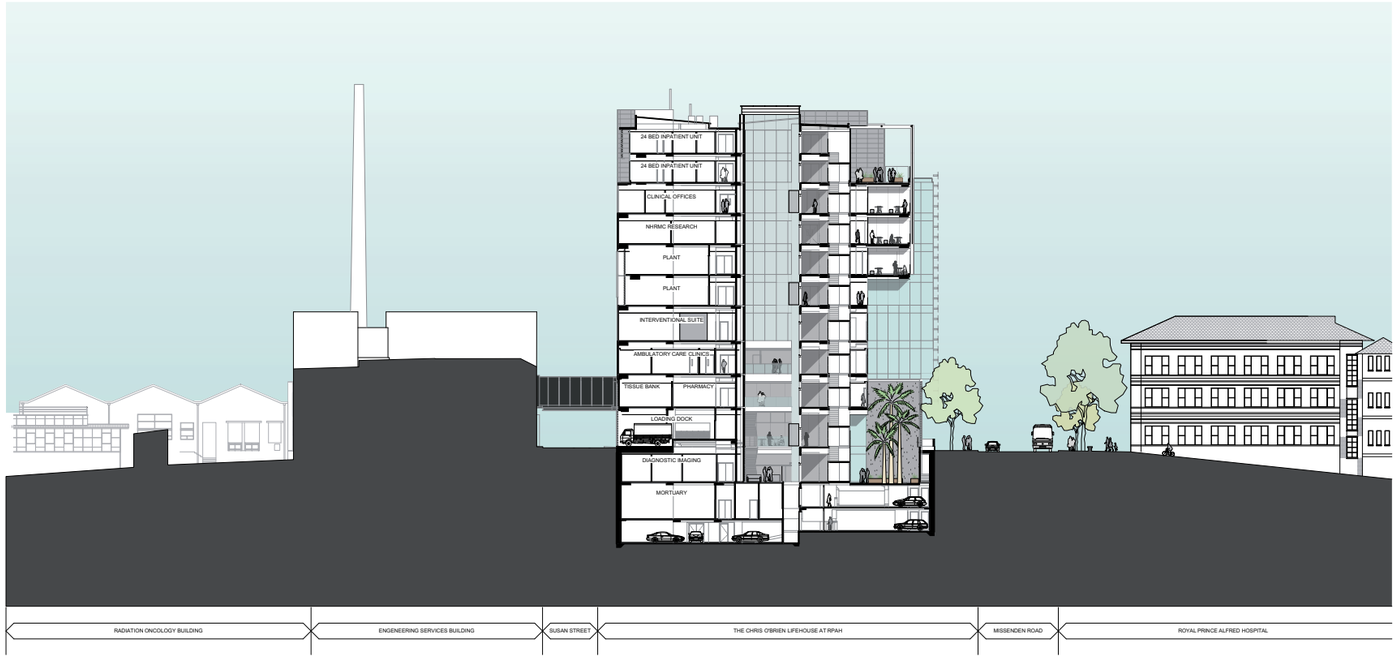
The Chris O'Brien Lifehouse at RPA

SECTIONS



LONGITUDINAL SECTION



CROSS SECTION

The Chris O'Brien Lifehouse at RPA

South West aerial

South East aerial

STAGING

Lifehouse will comprise a single construction contract for the total 42,000 sqm project. Very importantly however, the fit-out of the individual spaces will occur over stages and a specific time programme.

Stage A will include the comprehensive fitout of 26,000 sqm with approximately 16,000 sqm of shell space left incomplete. Stage A is programmed for completion in early 2013.

Stage B1 will include the balance of the fitout of 16,000sqm including the fit-out of the following important areas which are left as shell only in Stage A:

- In-patient accommodation on levels 8 and 9
- The intensive care unit on level 7
- Major expansion to operating rooms on the Interventional floor on level 3
- Expansion to the fit-out of the Diagnostic Imaging department on level B1

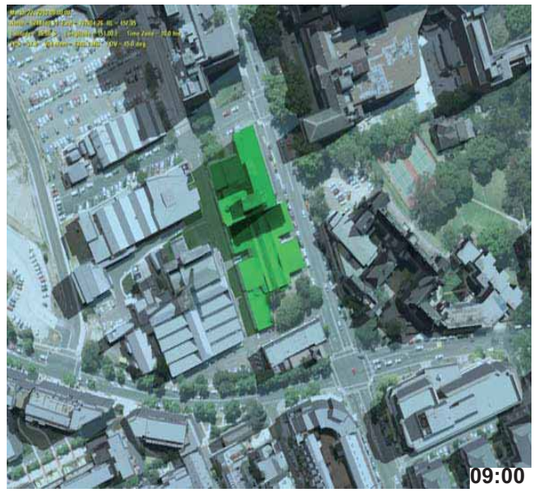
The stage B1 fitout is programmed to occur and be finally completed and operational by 2016.

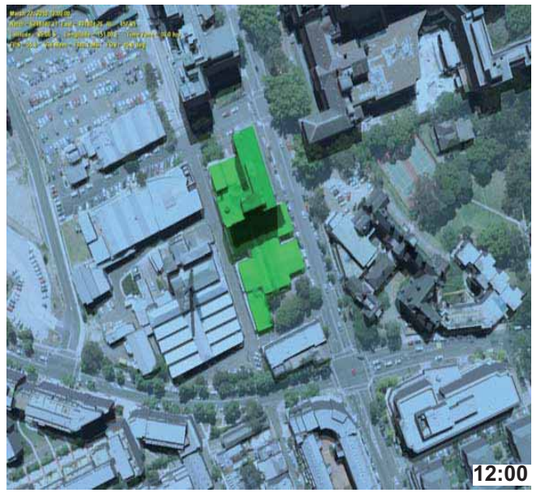
Building functionality will be maintained around all non fitted-out shell spaces. BCA compliance and certification will pay particular attention to issues of safety related to these shell areas. This will include not only the provision of essential services to all shell areas, but also a detailed study of all egress routes affected by the location of the shell areas.

East elevation

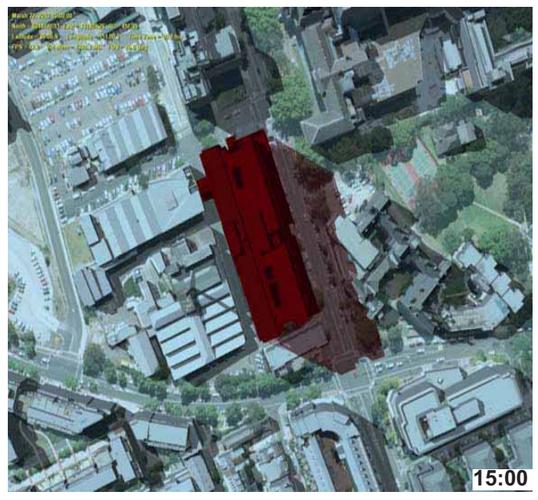
The Chris O'Brien Lifehouse at RPA

EXISTING CONDITIONS





PROPOSED DEVELOPMENT



SOLAR STUDIES

Comprehensive solar studies have been undertaken to closely examine the impact of the proposed building on the surroundings. The attached series of diagrams evaluate two conditions:

EXISTING CONDITIONS:

These model not only the existing built fabric, but also include as "built fabric" the former structures of the Page Chest Pavilion and the Brown Street Outpatient Clinic on the proposed Lifehouse site.

PROPOSED DEVELOPMENT:

These model the entire envelope of the proposed new build, including both the Stage A and Stage B1 shell only. They therefore represent the maximum built envelope of the current proposal.

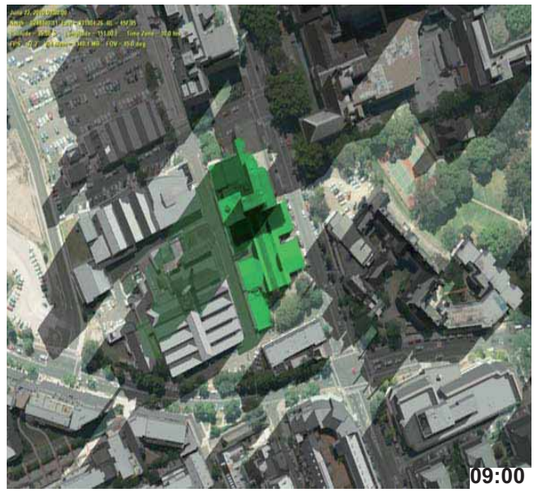
See adjacent diagrams for:

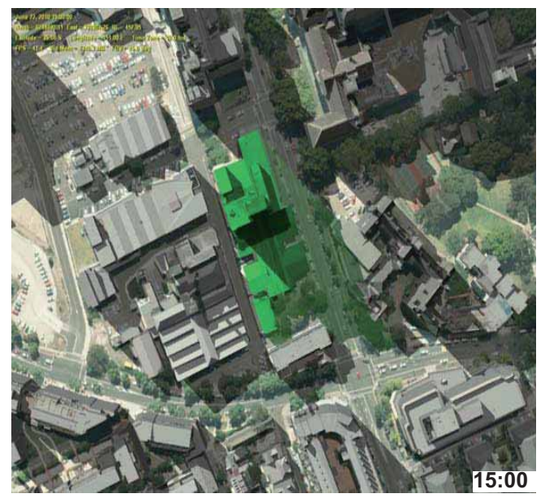
MARCH 22 - EQUINOX

A complete set of studies, including the summer solstice and the equinox are included in the architectural drawing package.

The Chris O'Brien Lifehouse at RPA

EXISTING CONDITIONS





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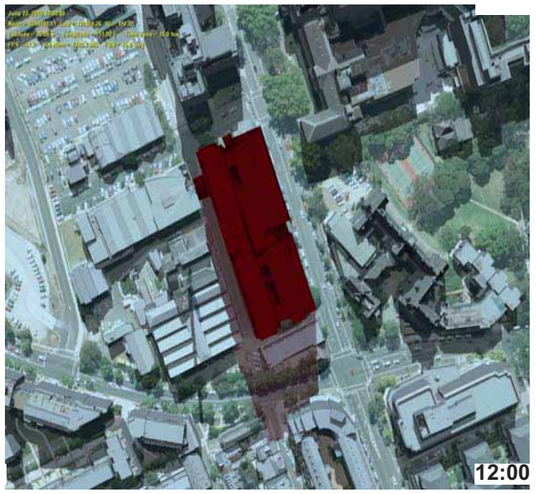

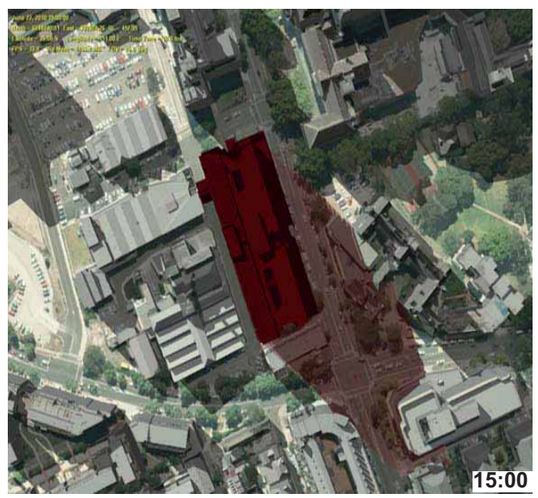

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PROPOSED DEVELOPMENT:

These model the entire envelope of the proposed new build, including both the Stage A and Stage B1 shell only. They therefore represent the maximum built envelope of the current proposal.

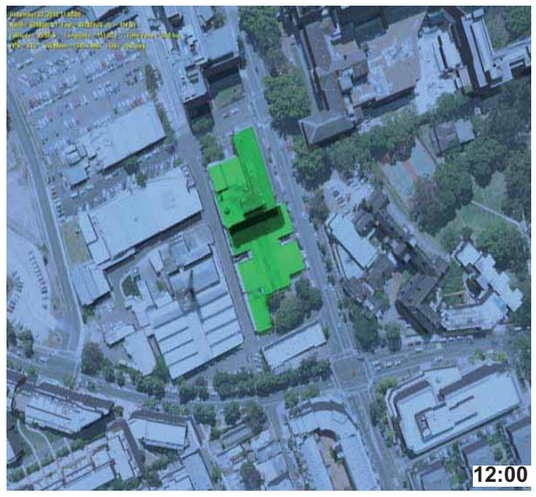
See adjacent diagrams for:

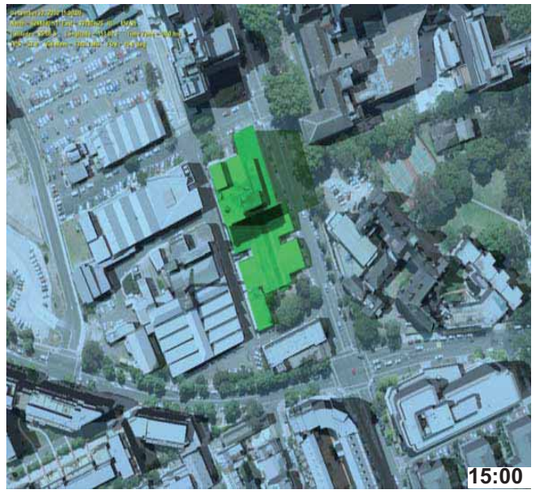
JUNE 22- WINTER

A complete set of studies, including the summer solstice and the equinox are included in the architectural drawing package.

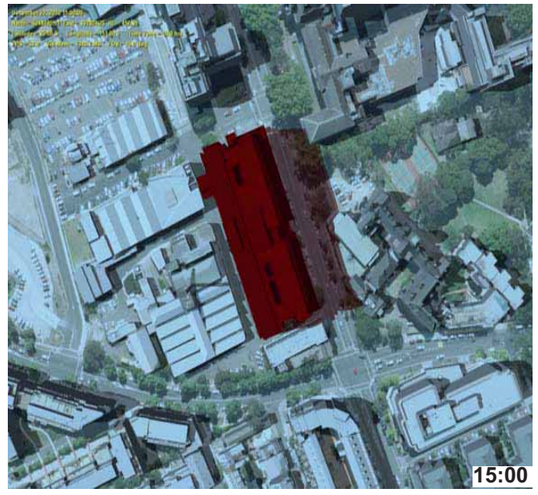
The Chris O'Brien Lifehouse at RPA

EXISTING CONDITIONS





PROPOSED DEVELOPMENT



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PROPOSED DEVELOPMENT:

These model the entire envelope of the proposed new build, including both the Stage A and Stage B1 shell only. They therefore represent the maximum built envelope of the current proposal.

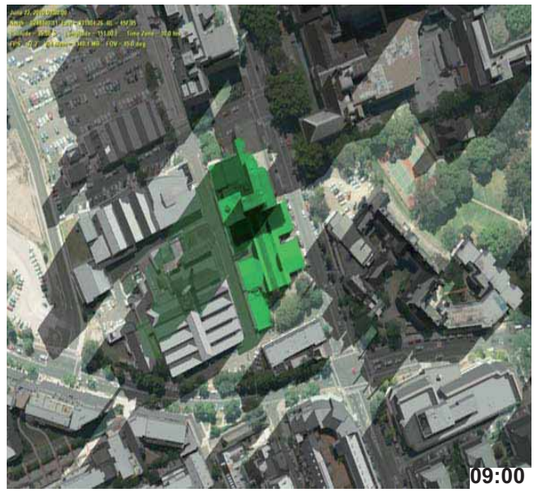
See adjacent diagrams for:

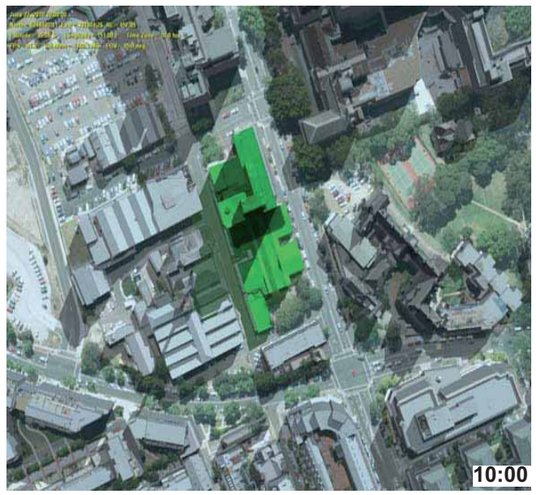
DECEMBER 22 SUMMER

A complete set of studies, including the summer solstice and the equinox are included in the architectural drawing package.

The Chris O'Brien Lifehouse at RPA

EXISTING CONDITIONS





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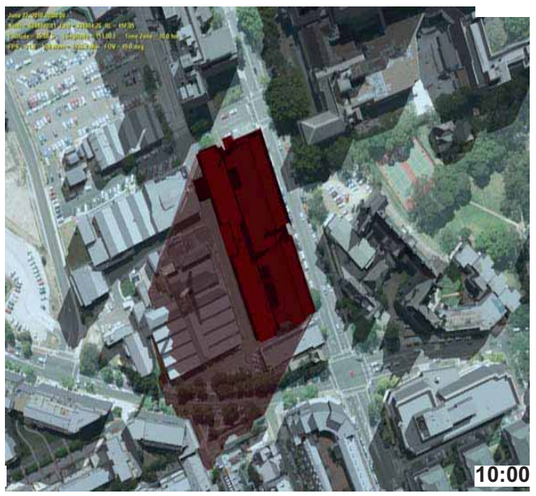
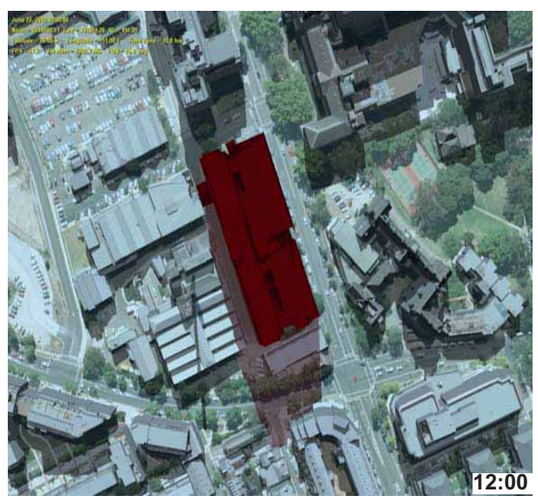
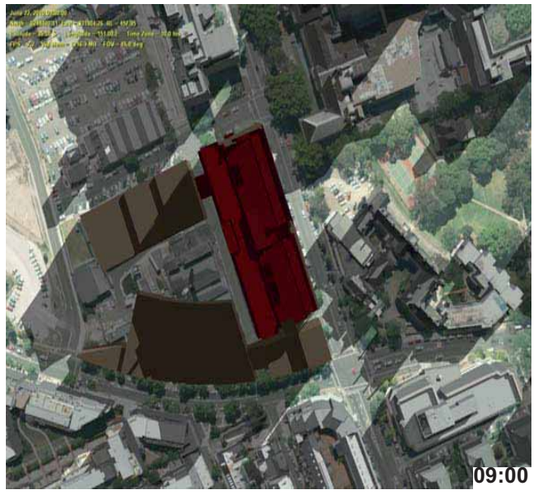
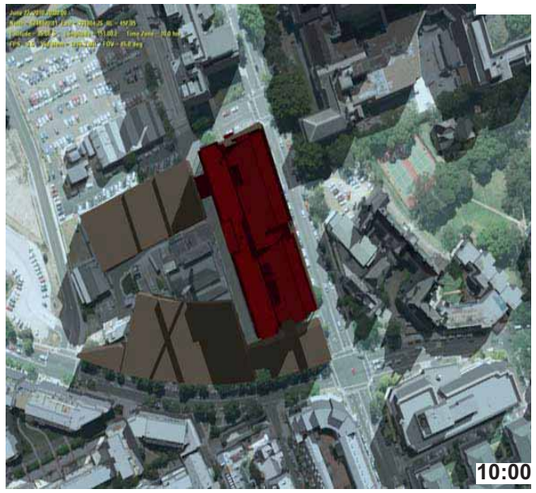
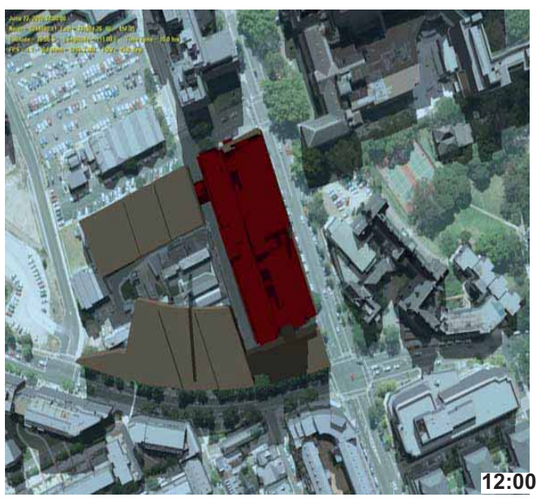




RECOMMENDED LEP + PROPOSAL







SOLAR STUDIES

A further more detailed examination of the impact of the new building on the adjacent properties, particularly the residential properties to the south west of the subject site along Carillion Avenue, has been undertaken.

This study examined the times which potentially would have the greatest over-shadowing impact on these properties, focussing on the early to mid morning period of **22 JUNE (winter solstice)**

The studies included an additional analysis of the conditions at 10am which clearly indicates how rapidly the shadow line will alter during the early to mid morning period on this date. The attached diagrams indicate clearly the level of impact and the potential over-showing.

A further analysis of the project has been undertaken setting the proposed building into the context of the draft LEP for the site. For the exercise the study used a height of 21 metres above the natural ground level for all portions of the adjacent south-western precinct of the RPA Hospital, utilising an indicative footprint of a potential redevelopment potential of the site.
This study is shown as Recommended LEP + Proposal in the attached dia-grams. These diagrams indicate clearly that the proposed building creates a minimal incremental growth in the overshadowing to the southwest of the site, the extent of which is significantly reduced by 10am.

A complete set of studies, including the summer solstice and the equinox are included in the architectural drawing package.

Floor looking South along Atrium

The Chris O'Brien Lifehouse at RPA

ENVIRONMENTALLY SUSTAINABLE DESIGN

Our proposal with the central void maximises the use of natural light into the footprint of the building. The division of the open floorplates on the lower levels together with the sunken courtyards borrows light from the surrounding spaces for improved occupant amenity.

The orientation of the main circulation void, north south, will enable daylight to permeate into the interior of the building and minimise direct solar gains. Naturally ventilated spaces will be included where possible and views and outlook integrated into Lifehouse there by improving the internal environment for building occupants and patients.

The high performance glass façade is designed with floor to ceiling glass to maximise daylight penetration. The glass façade will be shaded by fritted glass horizontal louvres or by mesh screening reducing glare and direct solar gains. The amount of glass to the west elevation is reduced to 30% to minimise heat gain on this exposed façade.

The concrete structure will incorporate a percentage of recycled aggregates. Materials will be selected with low level Volatile Organic Compounds. Timber products will be selected from sustainable sources where possible.

Water storage tanks for rainwater harvesting will be incorporated and used to irrigate the rooftop healing gardens and lowered courtyards. The building will incorporate water efficient fixtures and fittings and energy efficient artificial light fittings will be selected.

Bicycle provision is location in basement levels with lockable storage for staff and public bicycle spaces and staff shower facilities to encourage bicycle usage.

A patient/staff bus will be provided to regularly circulate between local centres/ major public transport routes to help minimise the reliance on private vehicles.

The Chris O'Brien Lifehouse at RPA

CONCLUSION

The proposal for Lifehouse will deliver a world class building for Sydney and New South Wales. The integration of the clinical environment within research and education platforms builds upon existing facilities provided by the Sydney Cancer Centre at RPAH, and the Research Facilities within the wider RPA campus and the University of Sydney.

As an Integrated Cancer Centre, Lifehouse will provide a platform for breakthroughs in cancer treatment for improved patient care serving Lifehouse, RPAH and hospitals within SSWAHS.

This new facility will form a benchmark for Australian Integrated Cancer Centres providing a world class clinical environment attracting the highest class of clinicians and researchers. The collaboration of clinicians and researchers will provide a platform for potential breakthroughs in cancer treatment, and most critically the ability to bring these outcomes to the patients as quickly as possible.

The vision for Lifehouse recognizes the critical importance and value an integrated facility provides. The importance of uniting the clinical environment with research and education, all located at the centre of a well established medical campus of national clinical and cultural significance will ensure Lifehouse will deliver patient care on a level comparable with current international trends. Lifehouse will be a place where the patient is the main focus, a place which empowers individuals to take control of their illness whilst offering the highest level of clinical care, cutting edge research within an integrated facility.

The vision for Lifehouse has always recognized the critical importance and value an integrated facility provides. The design incorporates current thinking around relevant evidence based design outcomes. Issues such as the light quality, view and outlook, healing gardens, appropriate acoustic performance have been key drivers. The design represents not only a highly efficient clinical plan but is as much about the creation of appropriate "place". A positive work environment and an empowering patient focussed environment. The concept of an integrated center is reinforced by the open circulation strategies - the glazed public lift the central atrium - the discrete views and glimpses of the broader activities within the centre.

The design has also focussed on the important considerations of experience based design. As part of the project the design team have expanded the conventional user group process with clinicians and staff and have established a series of cancer patient user groups. These individuals have been key in providing invaluable patient feedback relating to the issues of patient experience and specific difficulties relating to those affected by cancer.

The building presents a complex architectural challenge in terms of context. Significant consideration has addressed these urban context challenges. The design is focussed on being appropriate - in the broader sense for the community as a whole, but also very critically for the community of staff and professionals who will deliver the clinical service. Ultimately, and most critically for the community of cancer patients - in reality this must be the primary concern. The physical realisation of the vision of Prof Chris O'Brien remains a significant architectural challenge.

The Chris O'Brien Lifehouse at RPA

APPENDIX 1 BCA COMPLIANCE

PHILIP CHUN
BUILDING CODE CONSULTING

SUITE 404, 44 HAMPDEN ROAD
ARTARMON NSW 2064
T: 61 2 9412 2322
F: 61 2 9412 2433

sydney@philipchun.com.au

10 June 2010

Ref: 10002_Lifehouse Capability Statement 20100610_Issue

Rice Daubney Group
Level 1
110 Miller Street
North Sydney NSW 2060

Attention: Ronald Hicks – Director Health and Research

Re: The Chris O'Brien Lifehouse at RPA
Missenden Road, Camperdown

Philip Chun Building Surveying has carried out a BCA review of the proposed Chris O'Brien Lifehouse building located within the health precinct at Royal Prince Alfred Hospital. We confirm that the basic BCA Philosophies have been reviewed and we believe that the building design will be capable of satisfying the Building Code of Australia 2010 requirements for construction.

Lifehouse will be a healthcare building with associated support facilities, car parking, healthcare related offices and minor areas of retail use. In addition there is to be a facility provided for on site residential accommodation assessed as Class 3. There will be above ground links to other buildings located on the same health precinct site and connection to subterranean tunnels. The building will be reviewed as a united building over a number of allotments with rationalised (fire engineered) connections to other buildings.

The following matrix shows the use, classification under BCA for each floor level.

Levels	BCA Designation	BCA Class	Use
Basement 3	Car Park	7a and ancillary	Car parking, Plant
Basement 2	Public building	7a and 9a (non patient care) and ancillary areas.	Car parking, Plant, Mortuary, Store rooms, Workshops, Offices
Basement 1	Public building	9a both patient care and non-patient care areas, 5 offices	Diagnostic Imaging, Lobby, Offices, Substation, Plant, Kitchen
Ground floor	Public building, retail	5, 6, and ancillary	Integrated Medicine, Offices, Café, Pedestrian Thoroughfare, Plant, Deliveries
Level 1	Public Building	9a non patient care	Pharmacy, Day Therapy, Phlebotomy, Tissue Bank, Ancillary
Level 2	Public building	9a non patient care	Clinics
Level 3	Public Building	9a Patient care area – Treatment Areas	Interventional Suite, Perioperative Unit, Recovery
Level 4	Public building	Class 3 Residential Class 5 Offices Class 9a (non patient care)	Staff support offices, Perioperative unit reception, Assisted accommodation, Theatre Change rooms, Plant
Level 5	Public building	Class 5, Class 9a (non patient care), Class 3	Administration, Education, SSD, IT office, Comms, Assisted Accommodation

Levels	BCA Designation	BCA Class	Use
Level 6	Office floor	5	Dry research offices (not laboratory), IT/Comms
Level 7	Public building	9a Health Care (Treatment), 5 Offices	Intensive Care Unit, Offices,
Level 8 & 9	Wards	9a Health Care (ward)	wards

Building Designation under The Building Code of Australia 2010

Number of storey's	13
Rise in Storey's	10
Maximum floor area and volume (permitted for any compartment)	5000m² and 30000m³
Effective Height	>25m but <50m
Classification	Multiple (see table above)
Type of Construction	A

The fundamental concept of fire rating for the new building works will be as per the following table:

Building Component	Class 5, 7a & 9	Class 6	Class 3
External walls (load-bearing) being 3m of more from a fire source feature	120/60/30	180/120/90	90/60/30
Fire walls	120/120/120	180/180/180	90/90/90
Shaft walls (lift and stairs) load bearing	120/120/120	180/120/120	90/90/90
Service shafts load bearing	120/90/90	180/120/120	90/90/90
Load-bearing columns, internal walls, internal beams and trusses	120/-/-	180/ - / -	90/ - / -
Floors	120/120/120	180/180/180	90/90/90

Compartmentation and separation

The building contains one central atrium void which will be assessed under BCA deemed to satisfy requirements initially and then rationalized through fire safety engineering assessment. The regulatory process will include input and submission to the NSW Fire Brigades.

The various classifications will be generally fire separated where required to assist in controlling compartment sizes. It is possible that the compartment size at ground floor, first and second floor will exceed 5000m² and this would need to be assessed by the fire safety engineer as part of the alternative fire engineered solutions for the building. Some patient care areas may also exceed the prescribed sizes and these will be reviewed, assessed and treated by the fire safety engineer as the design approached construction certificate stage.

Otherwise, the compartmentation will meet BCA requirements including for the separation of treatment areas, and wards.

Access and Egress

Access and egress requirements vary from class to class throughout the building. These are currently being quantified and reviewed. The outcome of this will be that most areas will comply on their own merit and others will need to be considered and addressed by the fire safety engineer. There is nothing apparent that will not be able to be resolved to a satisfactory solution.

Fire Services

Fire services for the building will be required to meet the deemed to satisfy requirements of The Building Code of Australia, except where varied by the fire safety engineer as part of the alternative solution strategy. The active systems include zone smoke control, stair pressurization, smoke exhaust to the atrium, wall wetting drenchers, and a fire sprinkler system throughout. The fire safety systems within the building will be carefully assessed prior to issue of a construction certificate.

Health and Amenity

Ceiling heights, ventilation requirements and sanitary facilities will be provided to meet The Building Code of Australia 2010 and the details will be assessed prior to the issue of a Construction Certificate.

Energy Efficiency

The building will be subject to the energy efficiency regime under Part J of The Building Code of Australia. A specialist energy consulting engineer will be appointed to model the building and ensure design compliance prior to the issue of a construction certificate.

Accessibility and DDA

Expert assessment of the plans has been carried out by others and this component of the design will be reviewed a number of times as the design moves closer to Construction Certification stage.

Conclusion

This capability statement has provided a brief description of the building and the strategy for compliance with The Building Code of Australia. We will carry out further assessments of the design as it moves towards Construction Certification stage. We are confident that the building will be capable of compliance with The Building Code of Australia. We issue this statement with partial reference to the capability statement provided by the Fire Safety Engineer confirming that compliance is achievable.

Development Consent should not be withheld for concern that the building cannot comply with The Building Code of Australia.

Yours faithfully,

Rod shepherd
Associate
PHILIP CHUN CODE CONSULTING

The Chris O'Brien Lifehouse at RPA

APPENDIX 2 DDA COMPLIANCE

PHILIP CHUN ACCESSIBILITY

SUITE 404, 44 HAMPDEN ROAD
ARTARMON NSW 2064
T: 61 2 9412 2322
F: 61 2 9412 2433

sydney@philipchun.com.au

Ref: AN10056 MI 20100601 - Part 3A Submission.doc

1st June 2010

Rice Daubney
Level 1, 110 Walker Street
NORTH SYDNEY 2060

Attention: **Ms. Julia Sutcliffe**

Dear Julia,

Re: **Preliminary Report on Accessibility | Part 3A Submission**
Project: **Lifehouse at RPA – Stage A / B1**
The Chris O'Brien Cancer Centre

Philip Chun Accessibility provides the following professional opinion in regards to access for people with disabilities to and throughout the proposed Lifehouse Cancer Centre.

Philip Chun Accessibility has undertaken a preliminary review of the documentation provided with respect to access to and throughout the proposed development. This report outlines the main issues relevant to the proposed building work with reference to the Building Code of Australia (BCA), Disability Discrimination Act 1992 (Cth) (DDA), and relevant Australian Standards as applicable to this project.

1.0 INTRODUCTION

The following documentation prepared by Rice Daubney (Project No. 08500) was reviewed as part of our assessment:

Document No	Title	Revision
DA 0000	Drawing List	--
DA 1000	Context + Site Plan	--
DA 1101	Basement -3	--
DA 1102	Basement -2	B
DA 1103	Basement -1	A
DA 1201	Ground Floor Plan	--
DA 1301	Level 01	--
DA 1302	Level 02	A
DA 1303	Level 03	--
DA 1304	Level 04	A
DA 1305	Level 05	--
DA 1306	Level 06	A
DA 1307	Level 07	A
DA 1308	Level 08	A
DA 1309	Level 09	--
DA 1401	Roof Plan	--
DA 1501	North Elevation	--
DA 1502	South Elevation	--
DA 1503	East Elevation	--
DA 1504	West Elevation	--
DA 1601	Section 1-1	--
DA 1602	Section 2-2	--
DA 1603	Section 3-3	--
DA 1604	Section 4-4	--

Further reviews of the following areas of the development are required to ensure accessibility by the public and staff, excluding maintenance and storage facilities, enabling safe, equitable and independent travel in accordance with the objectives of the DDA.

2.0 CAR PARKING

There is a two-storey basement car park with 95 vehicle parking spaces, in addition 5 parking spaces for couriers and contractors are proposed on Level B2, and a designated area for motorcycles. Currently, two (2) accessible car parking spaces are proposed on Level B2, which equates to 2% of the total car parking proposed (Levels B3-B2). Four (4) additional spaces have been nominated where an increase in accessible car parking spaces may be required in the future.

2.1 Relocate the two (2) accessible car parking spaces (Level B2) as close as possible to the lift lobby to decrease the path of travel required on the roadway (DDA).

2.2 Provide an additional two (2) accessible car parking spaces as permanent designated accessible car parking spaces to meet enhanced requirements for medical facilities (DDA – 4% of total; BCA – 3%).

2.3 Ensure all accessible spaces (permanent and those marked for future modification) are located as close as possible to the lift lobby to decrease the path of travel required on the roadway and to eliminate any crossing of the vehicle access ramp(s) (DDA).

Accessible car parking spaces have been designed in accordance with AS 2890.6 (2009) which is appropriate, including dedicated spaces of not less than 2400mm X 5400mm (dedicated space) with an adjacent space of 2400mm X 5400mm designated for loading and unloading (per Figure 1).

2.4 Confirm the height between the car park floor and any overhead obstruction to be no less than 2200mm between the car park entrance, accessible parking spaces and the car park exit (AS 2890.6:2009 Clause 2.4) (BCA / DDA).

2.5 Confirm the height between the car park floor and any overhead obstruction at the accessible car parking space, including the adjacent shared area will be no less than 2500mm from the entrance of the space to a distance of no greater than 1000mm from the front of the space, where the height may be reduced to 2200mm, and to no less than 1800mm within 500mm from the front of the space (AS 2890.6:2009 Clause 2.4; Figure 2.7) (BCA / DDA).

2.6 Accessible car parking spaces to be identified by pavement marking incorporating the international symbol for access. Where this sign is not visible from the car park entrance, additional vertical signage indicating the direction of the accessible parking spaces must be provided (AS 2890.1:1993 Clause 2.4.5 (f) and AS 1428.1:2001 Clause 14.2).

- International symbol for access to be in white on a blue (Ultramarine) rectangle with no side more than 1200mm in length. Symbol to be located in the centre of the dedicated space between 500mm and 600mm from the roadway end of the bay (AS 1428.1:2001 Clause 14.2; AS 2890.6:2009 Clause 3.1) (BCA / DDA).
- The perimeter of the accessible parking area, inclusive of the adjacent shared area to be delineated in an alternative colour to standard parking bays (blue preferred). Additional diagonal line-marking to be provided within the shared area to further identify this area as vehicle-free (AS 2890.1:2004 Clause 4.4.1; AS 2890.6:2009 Clause 3.2) (BCA / DDA).

2.7 Vertical signage, incorporating the international symbol for access to indicate the extent of the accessible parking area for people with disabilities to be installed (AS 2890.1:1993 Clause 2.4.5 (f); AS 1428.2:1992 Clause 17.4 (a) Note 2) (DDA).

3.0 EXTERNAL PATHS OF TRAVEL

It is understood the site is bound by a number of existing RPA buildings, including Susan Street (West) which appears to provide access to the distribution / loading dock and basement car park, and Missenden Road (East) which provides access to the Ground Floor retail. The principal entrance to the Lifehouse Cancer Centre is via the North end of the building. Further documentation is required to understand the connection between Lifehouse and the existing RPA buildings and site boundary.

3.1 Provide a site plan for Philip Chun review.

3.2 A continuous accessible path of travel must be provided from the allotment boundary to the main points of entry to the building (BCA D3.2).

3.3 Continuous accessible paths of travel must be provided between the proposed Lifehouse Cancer Centre and the adjacent buildings on the RPA site (BCA D3.2).

3.4 Widths of not less than 1200mm to be maintained (1500mm preferred) (DDA; BCA – 1000mm).

- For paths of travel less than 1800mm in width, passing spaces of 1800mm (width) x 2000mm (length) must be provided every 20 metres to facilitate passing of two wheelchair users.
- Provide a turning space of 1540mm (width) X 2070mm (length) within 2 metres of the end of an accessway, where it is not possible to continue travelling along the accessway, including where the path of travel terminates at a gate or door (Draft Premises Standard D3.3 (d) (ii); AS 1428.1:2009 Clause 6.5.3).

3.4.1 Confirm the camber or crossfall of accessways, walkways, ramps and landings will not exceed 1:40 (AS 1428.1:2001 Clause 5.6) (BCA).

3.4.2 When changes in level are greater than 5mm one of the following shall be provided (AS 1428.1 2001 Clause 5) (BCA):

(a) threshold ramp (max gradient 1:8, max rise 56mm);
(b) step ramp (max gradient 1:8, max rise 190mm);
(c) kerb ramp (max gradient 1:8, max rise 190mm);
(d) ramp (max gradient 1:14); and

(e) walkway (max gradient 1:20).

3.5 Gradients of pathways to not exceed 1:20, or 1:40 where cross-traffic is likely.

- Gradients exceeding 1:20 limit independent travel for some users and require additional provisions, including installation of handrails and kerbrails to both sides and warning tactile ground surface indicators.

3.6 Clearly denote locations where gradients exceed 1:40 for Philip Chun review and comment.

3.7 External paths to be designed and constructed in accordance with AS 1428.1 (2009 and other accessibility guidelines relating to surface finish, abutment of surfaces and path delineation.

3.7.1 Confirm the location of drainage points throughout the site (AS 1428.1:2009 Clause 7.5) (BCA / DDA). Pit and drainage covers to be selected with consideration to the following:

- Exposed grates and manhole covers to be installed flush with the adjacent surface with perforations of no greater than:
  (i) 13mm in diameter where perforations are circular;
  (ii) 8 to 13mm width with length of no greater than 150mm; and
  (iii) 8mm in width with no limit on length.

3.8 Further documentation required to confirm the following:

- Extent of works to existing external pathways;
- Gradient and crossfall of external paths of travel;
- Proposed widths;
- Colour, texture and slip resistance of surface finishes;
- Location and design of proposed drainage points;
- Definition of raised levels and landscaping areas; and
- Provision and design of kerb ramps to driveway crossovers.

There is a drop-off zone proposed at the North end of the Lifehouse adjacent to the main entrance.

3.9 Differentiation of vehicle and pedestrian zones by means of kerb and appropriate kerb ramps as required, or consideration to the provision of a textural and visual change in surface finish, and installation of warning tactile ground surface indicators and bollards, or combination (DDA).

3.10 Unless another suitable barrier is provided, warning tactile ground surface indicators and bollards to be installed to the length of any pedestrian accessway where at grade with the vehicle roadway (including drop-off zone) (DDA).

- Warning tactile ground surface indicators to be installed, setback 300mm from bollards extending for the full length of the at-grade area (drop-off zone) with a tactile depth of 600mm, per AS 1428.4.1 (2009) Figure 2.5(B).

Further to this, it is noted that an on-grade (raised) pedestrian crossing is proposed on the West side of the building linking the Lifehouse with an adjacent hospital building.

3.11 Warning tactile ground surface indicators to be installed to either side of the pedestrian crossing (DDA).

- Tactile indicators to be setback 300mm from the roadway / driveway edge with a depth of 600mm and extending the full width of the pedestrian crossing (AS 1428.4.1:2009 Clause 2.5; Appendix C, Figure C12).

- Warning tactile indicators to be laid perpendicular to the path of travel.

3.12 Following receipt of further developed documentation for the building entrance, Philip Chun to undertake further assessment to determine the extent of warning and directional tactile ground surface indicators required for installation. Typically, directional tactile indicators are required in the following locations (DDA):

- To designate the location of building entrances; to extend across the transverse path of travel (at 600mm tactile width) to the kerb line / drop-off zone / pedestrian crossing;
- Directional indicators to indicate the location of pedestrian crossings, particularly where kerb ramps are located greater than 3m from the building line.

4.0 BUILDING ENTRANCES

There are two main entrances to the building, including the principal public entrance to the North and a secondary entrance to the West side of the building.

The principal public entrance consists of two double-leaf sliding (automated) doors in an airlock arrangement. The secondary entrance consists of a double-leaf sliding (automated) door.

There is a retail component on the North East side of the building, with access from the internal space and the adjacent footpath. The proposed design of entrances is unclear.

4.1 Each entrance to the development must provide a clear opening width of not less than 850mm to not less than the operable leaf (minimum 920mm door leaf width).

4.2 Approach to entrances to be at no greater than 1:40 grade with sufficient area on either side of the door to enable independent access by wheelchair users, persons with ambulant disabilities and parents with prams, in accordance with AS 1428.1 (2009).

4.3 Where waterproofing is a concern, thresholds to not exceed 35mm in height, with localised ramping installed at the door with a gradient of 1:8 (maximum length 280mm) (DDA; BCA – 56mm in height / 1:8 gradient / 448mm length).

4.4 Manual doors in external walls may exceed allowable operating forces due to environmental factors. Where operating forces exceed 20N (to initially open the door), 20N (to swing the door) and 20N (to hold the door open between 60 an 90 degrees), an automated door operating system to be installed.

- To be observed where swing doors are proposed to the retail component.

4.5 Confirm the operation of entrance doors, i.e. automated, semi-automated or manual.

- If semi-automated, consideration to the proposed location of door operating controls, including location of after-hours controls if doors are secured in the evening.
- To be located no greater than 900-1100mm above the FFL and not less than 500mm from any corner.

4.5.1 Further details regarding the provision of visual indication to fully-glazed or frameless doors and sidelights required to confirm compliance in accordance with AS 1428.1:2001 Clause 7.5.1):

- Install a solid 75mm continuous contrasting strip to glazed doors and panels at a height between 900mm and 1000mm above finished floor level. Indicating strip to possess minimum 30% luminance contrast with the background to which it is viewed from either side of the glazing (AS 1428.1:2001 Clause 7.5.1 Notes 1 and 2; AS 1288:2006 Clause 5.19).

4.6 Further details, including door schedule and legend to be provided for review of the following:

- Door types;
- Door handles;
- Door locks or snibs;
- Door closers.

4.7 Further details required regarding the provision of security measures at building entrances, including installation of card readers, call bells and intercoms.

Philip Chun will undertake further assessments of the project at varying stages of design, through to construction, to ensure the access principles outlined in this report are adhered to, including development of additional design principles with respect to the interior spaces.

If you have any queries in regard to the above, please do not hesitate to contact the undersigned.

Yours sincerely,

Claire Bernadou
Manager Accessibility
PHILIP CHUN ACCESS

APPENDIX 3 HELICOPTER CONSULTANT

The Tyler Family Trust (ABN 30 411 320 406) trading as

HELI-CONSULTANTS PTY LTD

ACN 002 091 830 - ABN 69 002 091 830

18 Martin Grove, COLYTON, NSW 2760 AUSTRALIA
Ph. 61-419-493634, dan@tylerdigital.com

June 6th, 2010

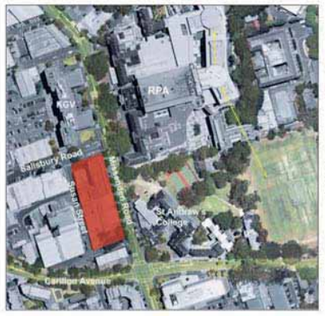
Ms Julia Sutcliffe, B Arch
Rice Daubney
110 Walker Street
North Sydney, NSW 2060

Dear Ms Sutcliffe,

Re: **Lifehouse Construction and Royal Prince Alfred Hospital HLS Flight Paths**

The purpose of this letter is to document our professional opinion that construction of the Lifehouse Building will not significantly impact helicopter operations at the Royal Prince Alfred Hospital (RPAH) Helicopter Landing Site (HLS) off Missenden Road, Camperdown.

The existing HLS and helicopter operations are depicted by the material at Appendix 1 – being the relevant entry current as of this date from the www.helipads.org website. The footprint of the proposed Lifehouse development near the corner of Missenden Road and Carillon Avenue is depicted in Figure 1 below – also showing the flight path centrelines for the RPAH HLS.



The horizontal distance between the eastern edge of the proposed building and the flight path centerline at the closest point is approximately 180 metres.

According to construction records, the RPAH HLS is at RL 59.78 metres (59.78 meters AHD). The height of the tallest portion of the proposed Lifehouse building will be at RL 79.40 metres – 19.62 metres higher than the HLS.

Wind roses for Sydney Observatory Hill are reproduced at Appendix 2.

Figure 1 - Proposed Development and Existing Flight Paths

Cont'd/2

Cont'd/2

It will be seen from the climate data that the most significant morning winds affecting the site year around are westerly – while the afternoon winds are easterly, north easterly, or southerly. The morning winds are influenced by the katabatic flow from the Blue Mountains across the Sydney Basin.

Although the data indicates morning winds are westerly 30% of the time – and south westerly a further 10% of the time – wind strength from those directions is greater than 20 km/h only about 5% of the time.

Figures 2 and 3 below illustrate approximately the relationship of the 7 ½ degree obstacle-free flight path required for HLS. Only the southern flight path is depicted in those illustrations. It can be seen that the construction of the Lifehouse building is well outside the southern flight paths, and thus does not constitute a physical obstacle.

Figure 2 - Looking north at southern RPAH flight path

The only remaining issue is whether the Lifehouse building will generate significant turbulence affecting helicopters landing and taking off along the southern flight path at RPAH HLS.

Cont'd/3

Cont'd/3

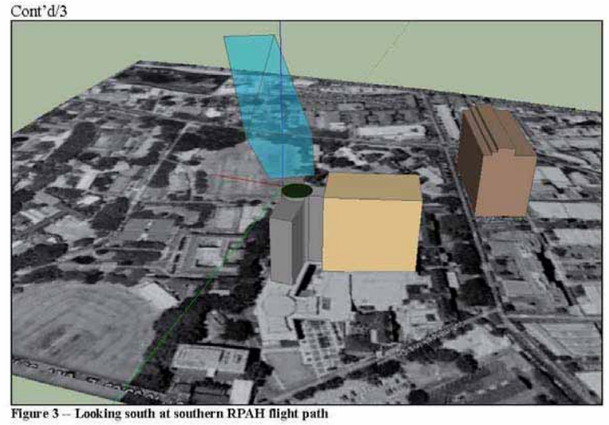


Figure 3 – Looking south at southern RPAH flight path

The proposed building is approximately 43 metres tall. While it is theoretically possible for lee-side disturbances to occur up to 10 times an obstacle's height downstream in very strong winds, we believe the majority of disturbances will be closer to the Lifehouse building and below the level that helicopters would normally be operating as they pass through the affected area.

As mentioned in Appendix 1 (under "permanent obstacles"), the existence of a taller structure immediately adjacent to the RPAH HLS on the western side means that the landing site itself is already affected by turbulence during strong westerly winds. Given the actual climb and descent paths of helicopters departing and arriving via the southern flight path will be inclined at about 9 degrees (i.e. above the minimum obstacle-free gradient of 7 ½ degrees) – we think that operations at RPAH would be more limited by the adjacent structure than by the proposed Lifehouse building.

Detailed quantification of exact influences can only be accurately predicted by scale modelling and wind-tunnel testing by an expert in fluid dynamics. We referred to a US report:- "Evaluating Wind Flow Around Buildings on Heliport Placement" by J.B. McKinley (DOT/FAA/PM-84/25 dated October, 1984) for both qualitative and quantitative discussion of the subject.

Cont'd/4

Cont'd/4

While it is possible there could be some "venturi effect" caused by the "gap" between the proposed Lifehouse building and the adjacent "Page Chest Pavilion" – the gap does not appear to be so narrow as to generate a significant venturi with dangerous wind shear affecting the southern flight path. The ratio of building height to width (with respect to a westerly wind direction) does not appear to place the structure into a risky category in relation to lee-side turbulence.

In summary, based upon our piloting experience (which includes dozens of landings and take-offs at RPAH and hundreds of operations at other Sydney hospital HLS) and our qualitative understanding of the fluid dynamics from the above-mentioned report, we do not believe that the proposed structure will adversely impact helicopter operations at the RPAH HLS – or at least not to a greater extent than is already the case due to the position of the helipad on the lee-side of the existing structure.

Yours faithfully,

Daniel E Tyler, LL.M.
Managing Director
Encl

Appendix 1 – RPAH entry from www.helipads.org

Royal Prince Alfred Hospital

Last Updated:	21/12/2009 16:12 John Hoad
Last Comment:	
Categories:	
HLS-NVG Standard	
Hospital	
Contact:	
Name:	
Email:	helipads@careflight.org
Identifier:	YRPA
State:	New South Wales
City / Town:	Camperdown
Phone:	**** ****
Location:	
Description:	Roof top HLS.
Lat/Long:	S33 53.4 E151 10.9
Elevation (ft):	96
Helipad:	
Max. allowable mass:	5400 kg
Permanent Obstacles:	Hospital building to west. CAUTION possible turbulance from hospital building and from plant room below northern approach path. Magnetic Resonance Imaging unit bearing 290 Deg 70m.
Surface:	Concrete
Windcone:	Yes - Lighted with beacon
Fuel:	Sydney Airport.
Lighting:	
Available:	Yes - manually switched. Notify ETA to hospital switch.
Activation Frequency:	
Approach Guidance:	
Communication:	
Frequency:	
Callsign:	
Airspace Information	
Airspace Information:	Entry in ERSA for this site.
Special Procedures:	Minimise ground running.
Approach From:	North & south.
Departure Direction:	North & south.

Comments:

There are no comments to display

Appendix 2 – Annual Wind Roses for Observatory Hill

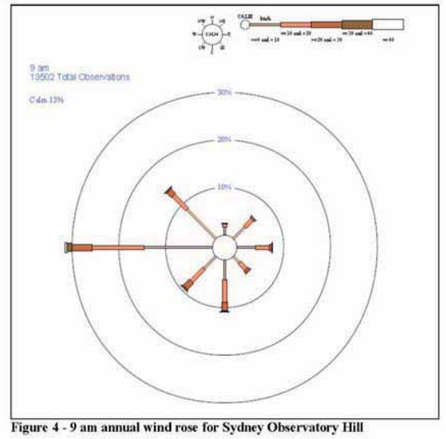


Figure 4 - 9 am annual wind rose for Sydney Observatory Hill

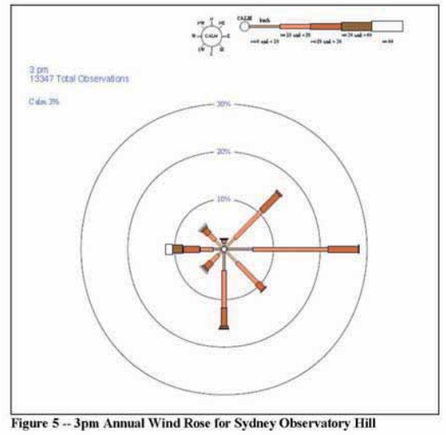


Figure 5 -- 3pm Annual Wind Rose for Sydney Observatory Hill