

# MAIN WORKS SSDA DESIGN STATEMENT

Liverpool Health & Academic Precinct  
Elizabeth Street, Liverpool NSW

Revision: **04**  
7<sup>TH</sup> MAY 2020

---

Partners  
James Fitzpatrick  
Paul Reidy  
Rod Pindar

Principals  
Brian Cunningham  
Sergio Azevedo

Senior Associates  
Jze Gan  
Kiran Jagdev  
Matthew Mar  
Joanna Murchison  
Elizabeth Need

Associates  
Emma Bond  
Pei-Lin Cheah  
Jessica Rodham  
Quincy Ye

Studio Manager  
Melissa Edwards

Nominated Architects in NSW  
James Fitzpatrick 9303  
Rod Pindar 9019

---

A Level 6, 156 Clarence St  
Sydney NSW 2000

P +61 2 8274 8200

E [enquiries@fitzpatrickpartners.com](mailto:enquiries@fitzpatrickpartners.com)

W [fitzpatrickpartners.com](http://fitzpatrickpartners.com)

ABN 19 081 636 900



CONTENTS

1 INTRODUCTION

1 - 01	INTRODUCTION
1 - 02	DEVELOPMENT OVERVIEW
1 - 03	AREA SCHEDULE
1 - 04	LIVERPOOL INNOVATION PRECINCT
1 - 05	LIP - PRECINCT PLAN
1 - 06	DESIGN PRINCIPLES

2 THE SITE

2 - 01	LOCATION
2 - 02	CONTEXT
2 - 03	PRECINCT SITE ANALYSIS
2 - 04	PRECINCT SITE ANALYSIS
2 - 05	PRECINCT SITE ANALYSIS
2 - 06	PRECINCT SITE ANALYSIS
2 - 07	SITE ANALYSIS
2 - 08	SITE ANALYSIS
2 - 09	SITE ANALYSIS
2 - 10	SITE ANALYSIS
2 - 11	SITE SURVEY
2 - 12	SITE PLAN
2 - 13	GROUND PLANE

3 DESIGN RATIONALE

3 - 01	OPTIONS ASSESSMENT
3 - 02	OPTIONS ASSESSMENT
3 - 03	MASSING & BUILT FORM
3 - 04	ENVELOPE & FACADE
3 - 05	ENVELOPE & FACADE
3 - 06	ENVELOPE & FACADE
3 - 07	BUILDING MATERIALITY
3 - 08	COMPUTER GENERATED IMAGERY
3 - 09	ACCESS & CIRCULATION
3 - 10	ACCESS & CIRCULATION
3 - 11	ACCESS & CIRCULATION
3 - 12	ACCESS & CIRCULATION
3 - 13	SERVICING, WASTE & LOADING
3 - 14	BUILDING PLANT STRATEGY
3 - 15	LANDSCAPE STRATEGY
3 - 16	WAY-FINDING STRATEGY
3 - 17	FUTURE EXPANSION & FLEXIBILITY

4 ENVIRONMENTAL IMPACT

4 - 01	HEIGHT & DENSITY
4 - 02	BULK & SCALE
4 - 03	SETBACKS
4 - 04	ENVIRONMENTAL IMPACTS
4 - 05	VISUAL IMPACT ASSESSMENT
4 - 06	VISUAL IMPACT ASSESSMENT
4 - 07	VISUAL IMPACT ASSESSMENT
4 - 08	VISUAL IMPACT ASSESSMENT
4 - 09	SUSTAINABILITY
4 - 10	CPTED
4 - 11	GA NSW REVIEW PROCESS

NOTE

This Design Report is to be read in conjunction with the Architectural Drawing Set included within the SSDA submission.



# INTRODUCTION

## BACKGROUND

The South Western Sydney Local Health District Clinical Services Plan for Liverpool Hospital to 2031 (CSP) has identified key drivers facilitating the upgrade of Liverpool Hospital.

Theses drivers primarily relate to population growth within the Local Health District, access issues and capacity, meeting the future care needs of the South West Sydney and addressing the substantial population health issues

Liverpool Hospital is a Principal Group A1 tertiary referral academic and research focussed acute hospital. It plays a role as a District hospital for the local catchment of the Liverpool LGA and as a tertiary referral hospital for all of SWSLHD. It also provides critical care for rural retrieval catchments and a supra regional catchment for quaternary services.

The hospital has the highest number of emergency department presentations in NSW, is second only to Westmead in the number of inpatients treated, is one of seven major trauma units in NSW for adults and one of only three adult Brain Injury Rehabilitation Units in Sydney.

## FUTURE PLANNING REQUIREMENTS

The infrastructure planning for the Liverpool Health and Academic Precinct (LHAP) was announced by the NSW Government in 2017 under the management of NSW Health Infrastructure with an initial target budget of \$740 million addressing the 2026/27 component of the overall CSP.

Work commenced on the masterplan for Liverpool in early 2018. The Master Plan has been informed by the clinical expansion priorities of the CSP which includes the following scope:

- Comprehensive and integrated cancer centre and centre of excellence including inpatient, ambulatory, haematology, diagnostic, outpatient facilities
- Emergency Department and critical care services including paediatric emergency/ short stay, Intensive Care, Neonatal ICU and Special Care Nursery
- Maternity and paediatric inpatient beds, birthing suite & ambulatory care services
- IR and OT expansion including trauma capacity, increased number of hybrid theatres and associated anaesthetic and perioperative capacity
- Medical and Surgical inpatient capacity
- Aged Care and Rehabilitation expansion
- Ambulatory Care, outpatient clinics and day procedures
- Mental Health - including acute aged care psychiatry and sub-acute
- Establish renal transplantation services
- Facilities and capacity for integrated teaching and clinical research in partnership with industry and higher education partners
- Associated clinical and non-clinical support services (including Pathology, Medical Imaging and Pharmacy)

## PROJECT OVERVIEW

The vision for Liverpool Health and Academic Precinct (LHAP) is to create an integrated health and academic precinct that meets the health services needs for Liverpool and beyond.

The LHAP project will establish Liverpool hospital as a leading integrated health facility, creating a foundation for world-class clinical expertise, innovation, research and technological advancements to continually improve the delivery of quality healthcare for greater Sydney.

This SSDA seeks consent for:

- Demolition and site preparation work
- Redevelopment of the Liverpool Hospital Campus including construction of a new six-storey **Integrated Services Building (ISB)** as well as building refurbishment and associated site works
- Introduction of a shared way to Campbell Street between Goulburn and Forbes Streets
- Internal road reconfigurations and revised connections to the existing road network
- Covered pedestrian walkway connections to the existing hospital facilities
- Wayfinding and signage
- Associated landscaping

The project will help the hospital realise a number of benefits in the delivery of health services including:

- Development of improved contemporary models of integrated care and patient flows that will improve the provision and efficiency of inpatient and emergency services
- The co-location of key clinical services, providing opportunities for enhanced integration of service delivery
- Improved amenities for Liverpool Hospital consumers, their carer's and staff
- Improved evidence based research and academic outcomes through affiliation with Ingham Institute, the University of New South Wales (UNSW), the Western Sydney University (WSU), South West Private Hospital and South Western Sydney TAFE as well as the University of Wollongong (UOW)
- Improved staff productivity, attraction and retention
- Improved communication access to a range of ambulatory care
- Teaching and education benefits as Liverpool Hospital provides undergraduate training and active education program for medical practitioners, nurses and other health professionals to the UNSW, WSU and UOW



Existing context



Proposed built form



CGI

DEVELOPMENT OVERVIEW

SITE AREA

The current total hospital campus is 156,235 m² (15.6 ha).  
This includes:

- 89,560 m² on the western campus
- 66,675 m² on the eastern campus

Refer page 2-07 for details.

GFA & FSR

The current hospital GFA is approximately 117,045m² inclusive of all buildings on both the western and eastern campuses. The proposed works will result in an overall GFA of approximately 140,050m².

The current hospital FSR is approximately 0.75:1 inclusive of all buildings on both the western and eastern campuses. The proposed works will result in an overall FSR of approximately 0.90:1.

Note that these areas are an approximation only based on building information currently available. Refer page 1 - 03 for details.

USE

Health care services and other health-related uses including administraion, education and building services.

HEIGHT

The new Integrated Services Building is 32.9 m high, from RL12.2 (Ground) to RL45.1 (Roof). This includes 6 storeys of health services as well as roof plant and underground basement facilities.

Refer page 4 - 01 for details.

PARKING

This SSDA for the Main Works does not seek to alter the existing parking provision on the campus. This submission should however, be viewed in conjunction with the SSDA for the new Multi-Storey Car Park which outlines the additional parking provisions proposed for the overall LHAP project.

ESD

The project is targeting an equivalent / self-certified 5 Star Green Star rating utilising the Green Building Council of Australia's(GBCA) Design and As-built rating tool (DAB) version 1.3.

Refer page 4 - 09 for details.

COMPLIANCE

BCA		
The project is classified as follows:		
-	BCA classification	Class 9a (healthcare)
-	Rise in storeys	8
-	Type of construction	Type A
-	Effective height	>25m
-	Max fire compartment	2,000 sqm for patient care areas
		5,000 sqm for non-patient care and retail areas
-	Sprinkler protected	Yes
-	Climate Zone	6

While the building is proposed to generally comply with the deemed to satisfy provisions of the BCA, there are some departures which will either be revisited throughout developed design or be addressed by alternative solutions from the BCA Consultant, Fire Engineer and respective specialist consultants.

FIRE ENGINEERING

The project has identified a number of areas where compliance with the prescriptive fire safety provisions of the BCA cannot be readily achieved. The principal areas of departure are the design of the internal Hospital Street, the provision of larger compartment sizes and extended travel distances in certain areas.

Proposed departures requiring a performance solution have been reviewed and assessed by a fire engineer and the BCA consultant to ensure these can be readily addressed and it is expected that the development will achieve compliance. A Fire Engineering Brief has been prepared and initial consultation with NSWFF&R has been undertaken.

DDA

Accessibility has been considered at each stage of the design process undertaken to date. A detailed DDA review of the project is currently being undertaken in conjunction with the DDA consultant and will be further developed and considered in the following project stages. The accessibility code and standards will be incorporated into detailed design in conjunction with the specific details nominated with the Australian Health Facility Guidelines.

FLOODING

Whilst the site's proximity to the Georges River and overall low topography make it susceptible to flooding, the western campus is not at risk from a 1 in 100 year flood event.

Areas of the hospital are at risk from a PMF (probable maximum flood) event. Design has taken this into account with bunding of driveway entrances to basement areas, strategic landscaping to provide natural barriers to flood water as well as active systems such as flood gates where passive design can not provide sufficient protection.

BUSHFIRE

The proposed development does not fall under any Bushfire Protection controls.



AREA SCHEDULE

Estimate of overall campus FSR

Issue: 02  
Date: 12.03.20  
Overall Site Area: 156,235 m2  
Permitted FSR: 2.5:1

GBA <sup>(1)</sup>	Alex Grimson (demolished)	Brain Injury	Caroline Chisholm	Clinical Building	Don Everett	Mental Health	Oncology (demolished)	Oncology (Bunkers)	Pathology (demolished)	TRMC (demolished)	Eastern Campus <sup>(4)</sup>	ISB <sup>(3)</sup> (new)
Basement	2,150			5,100						1,650		5,050
Ground Level	2,150	1,900	1,600	16,700	2,200	3,700	1,750	1,600	1,600	4,150	7,750	10,860
Level 01	2,150		2,250	16,150	2,100	3,000	450		1,450	2,700	1,600	8,440
Level 02			2100	16,450		1,500				1,350		10,500
Level 03				7,800								8,730
Level 04				7,500								7,200
Level 05				7,500								3,570
Roof Plant												2,050
Total	6,450	1,900	5,950	77,200	4,300	8,200	2,200	1,600	3,050	9,850	9,350	56,400

GFA <sup>(2)</sup>	Alex Grimson (demolished)	Brain Injury	Caroline Chisholm	Clinical Building	Don Everett	Mental Health	Oncology (demolished)	Oncology (Bunkers)	Pathology (demolished)	TRMC (demolished)	Eastern Campus <sup>(4)</sup>	ISB <sup>(3)</sup> (new)
Basement	1,935			4,590						1,485		3,590
Ground Level	1,935	1,710	1,440	15,030	1,980	3,330	1,575	1,440	1,440	3,735	6,975	9,070
Level 01	1,935		2,025	14,535	1,890	2,700	405		1,305	2,430	1,440	6,440
Level 02			1890	14,805		1,350				1,215		8,510
Level 03				7,020								8,050
Level 04				6,750								3,360
Level 05				6,750								3,380
Roof Plant												
Total	5,805	1,710	5,355	69,480	3,870	7,380	1,980	1,440	2,745	8,865	8,415	42,400

Total Existing GFA	117,045 m2	Includes all existing buildings on the eastern and western campus, excluding major plant and car parking										
Existing FSR	0.75:1	Note this is an estimate only to provide an indication of overall site density and comparison to LEP controls										
Total Proposed GFA	140,050 m2	Includes all existing buildings and the new ISB / Excludes all buildings to be demolished										
Proposed FSR	0.90:1	Note this is an estimate only to provide an indication of overall site density and comparison to LEP controls										

- Notes:
- 1) Existing building GBA is an estimate only based on a measure of available data including design and as-built drawings, surveys and aerial photography
  - 2) Existing building GFA has been conservatively estimated at 90% of measured GBA
  - 3) The new ISB areas are a correct measure of proposed new GBA and GFA according to standard council definitions
  - 4) Eastern Campus is a total of all buildings on the eastern campus combined

# LIVERPOOL INNOVATION PRECINCT

## BACKGROUND

Liverpool has been identified as a 'Collaboration Area' and a 'Health and Education Precinct' in the Greater Sydney's Commission's South West District Plan.

In 2016, the Liverpool Innovation Committee was formed comprising key stakeholders and decision makers with representatives across business, health, education, transport and local council.

In August 2017, the Liverpool Innovation Committee commissioned a report by PWC Australia titled 'Reimagining... the Liverpool Health, Education, Research and Innovation Precinct'.

The report outlined a vision for the future of Liverpool including:

- How health, education and research is undertaken individually and collaboratively to drive innovation
- The industries that will drive the Liverpool economy
- The technologies that will underpin the next wave of economic progress
- The public's perception of Liverpool as an economic entity

## LIVERPOOL HOSPITAL

The report noted the following regarding the advantages of Liverpool Hospital in responding to the vision:

*"A significant benefit of the existing Liverpool Health Precinct is its close proximity to the Liverpool central business district (CBD). Unlike most other hospital locations, the Liverpool Innovation Precinct is within a short stroll to Liverpool's city centre providing unparalleled accessibility to all the services and benefits associated within a major commercial hub.*

*In addition, a number of significant government sites, including those owned by the NSW Department of Education and TAFE NSW, are located adjacent or nearby the Liverpool Hospital.*

*Integrated planning achieved through partnerships exploring joint use opportunities could deliver positive outcomes and public benefit within a new Health and Education Innovation Precinct.*

*The potential for further distinction comes from a commitment to collaboration by the participants within the Precinct"* - PWC Report, pg 7.

## KEY PRINCIPLES FOR AN INNOVATION DISTRICT

- Leading-edge anchor institutions are present
- Companies cluster and connect
- All are physically compact
- Accessible via transport
- Are technically wired
- Offer mixed-use housing, office and retail

## LIVERPOOL INNOVATION COMMITTEE

The Liverpool Innovation Committee represents an alliance of stakeholders including:

- South Western Sydney Local Health District
- Liverpool City Council
- NSW Health Infrastructure
- South West Sydney Primary Health Network
- Ingham Institute of Applied Medical Research
- Sydney Business Chamber
- Liverpool Public Hospital
- South West Sydney TAFE
- University of Wollongong (UOW)
- University of New South Wales (UNSW)
- Western Sydney University (WSU)

The Committee is commissioning a functional and viable strategy to successfully ensure Liverpool's future growth and eminence.

The Committee is working in collaboration with:

- The Committee for Sydney
- NSW Department of Education
- The Greater Sydney Commission
- KJA
- Healthcare Property Group

## PURPOSE OF THE LIVERPOOL INNOVATION PRECINCT (LIP)

### GENERATE AWARENESS AND OPPORTUNITIES

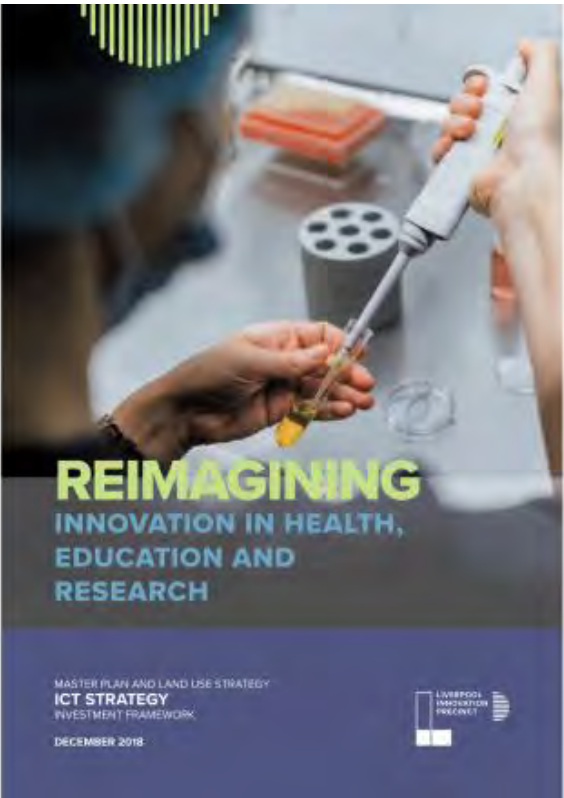
- Generate awareness of the work of the LIP amongst government, business, private investment and the general public
- Identify overlaps & gaps with other proposals and initiatives
- Solidify how and where everyone is heading
- Change the nature of the CBD
- Provide a catalyst to create jobs
- Promote LIVE - WORK - PLAY

### DEFINE THE COMMON GROUND

- Identify opportunities for sharing, collaboration and partnerships between precinct partners
- Identify opportunities for support and leverage from all parties
- Maintain innovation precinct positive momentum
- Establish a framework from which business cases will align

### PROMOTE INVESTMENT

- Promote the work of the LIP to reinforce investment from current stakeholders and promote opportunities for new investors
- Influence future investment in infrastructure and social services
- Supporting directions being pursued under the Liverpool LEP and GSC Place Strategy





# LIP - PRECINCT PLAN

The development of the Liverpool Hospital Campus masterplan has taken into consideration the wider Liverpool precinct and the role that the future Hospital will fulfil within this precinct.

With the Liverpool Hospital Campus's proximity to the Liverpool CBD, major transport hubs and education facilities, the precinct surrounding the Hospital is strongly positioned to develop complimentary industries with a focus on:

- Medical technology and innovation
- Specialist education and clinical skills training
- Specialist medical clinics
- Private sector hospital health providers
- Tertiary education institutions (note that UNSW & UWS have teaching functions at the Hospital with the University of Wollongong recently establishing a major campus within the Liverpool CBD)
- Specialist research institutions (currently the Ingham Institute is centred in the Liverpool CBD adjacent to the Hospital campus)

The development of the masterplan for Liverpool Hospital Campus has also addressed the future development of the surrounding precinct allowing new clinical and support services on the campus to better integrate to future education, research and commercial development within the Liverpool City CBD as a planning strategy.

- Public, community & civic
- Liverpool Health + Academic Precinct (LHAP)
- Education & Research
- Schools
- Future private hospital options
- Shared infrastructure
- LHAP eastern campus
- Affiliated residential & commercial growth



Liverpool Innovation Precinct Master Plan and Land Use Strategy - Oct 2018

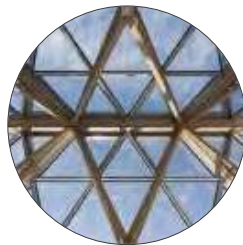


DESIGN PRINCIPLES

The following Design principles have been developed by the Project Design Team, NSW Health Infrastructure, the SWSLHD and Executive Hospital Staff to outline the objectives and vision for the LHAP Project.



**Patient focussed**  
Enhance the amenity, treatment and overall experience for patients and visitors



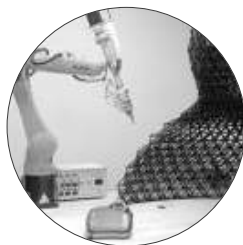
**Centre of innovation**  
Establish a centre of innovation for treatment, translational research, health technology & cancer



**Beyond 2026**  
Outline a strategy for the long term expansion of the hospital beyond 2026



**Campus-wide integration**  
Facilitate collaboration, knowledge & resource sharing and a seamless transition of health services



**An anchor for the LIP**  
Lay the foundation for the Liverpool Innovation Precinct to build upon



**Integrate education & research**  
Enable innovation and collaboration across precinct partners & the community



**Open**  
Dissolve the boundaries of the hospital to enable integration with precinct partners, the CBD & the community



**Minimise disruption**  
Minimise where possible staging & decanting during construction to avoid disruption to existing services & minimise cost



**Improve circulation & wayfinding**  
Reduce congestion, improve campus connectivity & wayfinding for vehicles & pedestrians



**Utilise existing assets**  
Utilise hospital owned assets and available land where possible



**Core clinical relationships**  
Improve connectivity to core clinical services



**Value for investment**  
Maximise return on investment through efficiency in design and clear prioritisation of project objectives



LOCATION

Liverpool Hospital is located on the eastern edge of the central business district of Liverpool between Liverpool and Warwick Farm train stations.



It has an overall area of 16.1ha and is divided by the Southern Rail line forming an eastern and a western campus.

SWSLHD owns a number of adjacent and nearby sites which currently offer various out-patients services and car parking as well as the opportunity to assist with the construction management of the proposed project.

The proposed new ISB is located along the Goulburn Street edge of the western campus.

KEY SITES

- 01. westfield liverpool
- 02. liverpool public high schools
- 03. tafe liverpool
- 04. all saints catholic collage
- 05. liverpool public school
- 06. liverpool bus depot
- 07. university of western sydney
- 08. sydney southwest private hospital

-  site boundary
-  health administration corporation owned sites





CONTEXT

HERITAGE

Liverpool Hospital is surrounded by a number of buildings of both local and state heritage significance. Most notable amongst these is the adjacent TAFE site, which was the original hospital site built in 1813 and includes numerous items of high heritage value including buildings and the perimeter brick wall.

Saint Luke's Church (state) and All Saints Catholic Church (local) are both also closely located along Elizabeth Street.



Saint Luke's Church



All Saints Catholic Church



Original 1813 Hospital (current TAFE site)



BIGGE PARK

Bigge Park is bounded by Elizabeth, College, Moore and Bigge Street in the centre of Liverpool. Commercial premises, home units and the South Western Sydney Institute of TAFE take up the area surrounding the Park.

The park contains landscaped gardens, a War Memorial, bowling green, tennis courts and a new childrens water play area.

Bigge Park demonstrates the history of early urban planning and the early settlement of the city. It is a physical link to the character of the early township, enhanced by its location near a number of other historic sites in the city centre.



Bigge Park imagery



GOULBURN STREET APARTMENTS

The predominant building type along Goulburn Street is walk-up apartments with brick facades of varying colour and detail. It is estimated these building types were constructed in the 1970's and 1980's.

The apartment buildings vary from 4-storey (approx 12m) to 6-storey (approx 18m) in height with generous street setbacks and landscaping.

Some include detailed brickwork including arches and open brick walls for ventilation and screening.



Typical apartment typology along Goulburn Street



EXISTING HOSPITAL CAMPUS

The majority of buildings on the hospital campus date from 1975 (Don Everett Building) to the mid 1990's and comprise mostly 2-3 storey buildings of concrete construction with brick facades and punched windows. These include the original Clinical Services Building (CSB) and the Caroline Chisholm building, into which the proposed new ISB connects. The 2015 CSB extension is the newest development on the site and has addressed some of the needs for clinical expansion.

The Health Services Building and Ingham Institute are located on the northern campus across Campbell Street with a new bridge link proposed to connect the Ingham Institute to the new ISB.



2015 CSB extension



Original CSB



Caroline Chisholm



PRECINCT SITE ANALYSIS

CENTRES OF GRAVITY

Liverpool town centre currently has a number of zones with key anchors defining a particular use.

Macquarie Street Mall and Westfields define a retail zone that has good connectivity with the primary business zone to the south of these areas. New high-rise commercial development is currently shifting the business centre of gravity further towards the train station. Education is primarily currently scattered throughout these two zones, as well as the TAFE site opposite Bigge Park.

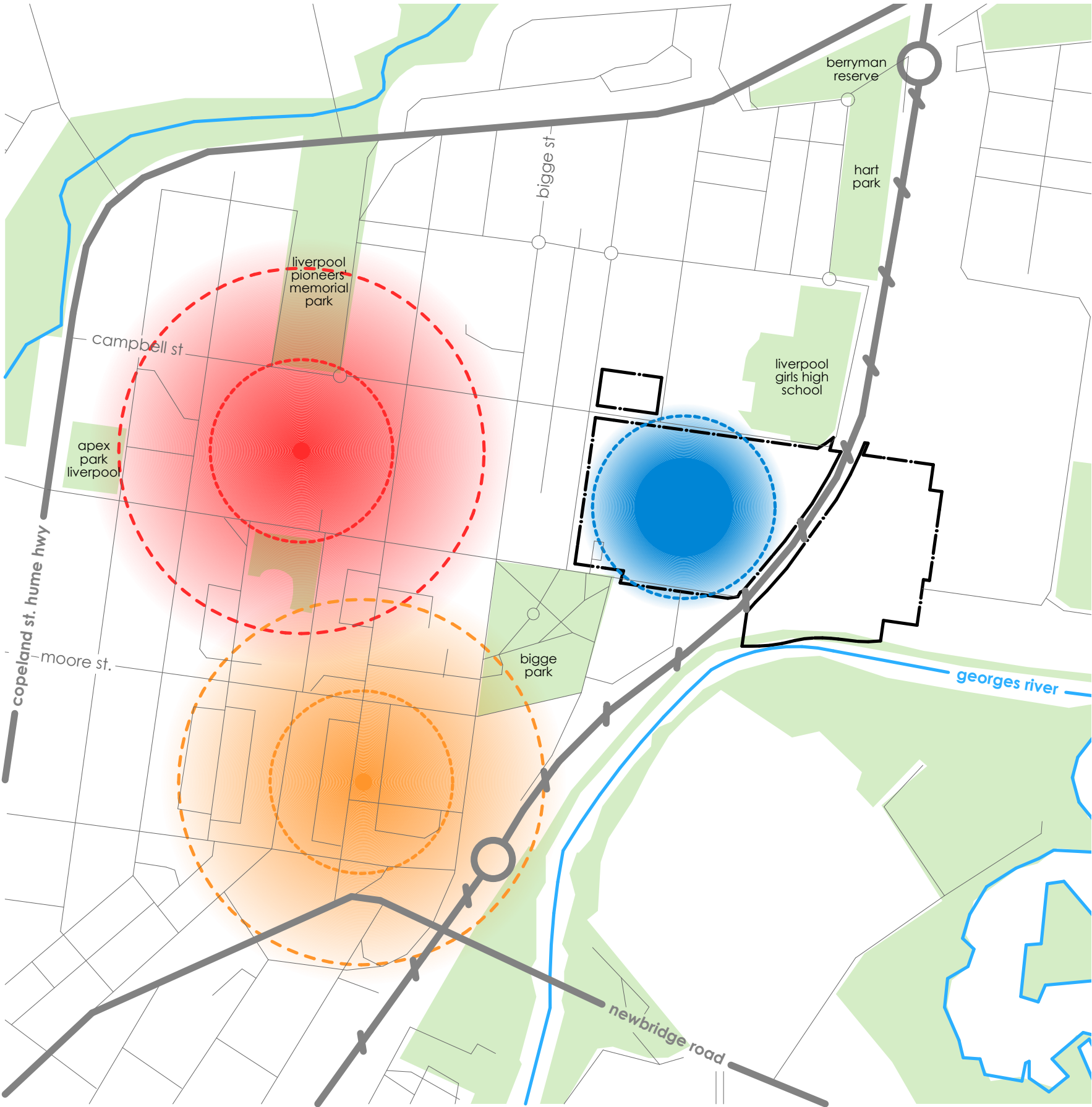
Residential zones surround the town centre to the north of Campbell Street, west of Bathurst Street and south of Newbridge Road. Recent high-rise residential development is concentrated to the north with good connectivity to the retail zone.

The health zone currently comprises Liverpool Hospital, the Ingham Institute, Sydney Southwest Private Hospital and some surrounding public and private services. The primary anchor for this zone is the Hospital, which is currently a relatively insular campus with little permeability from surrounding streets. Connectivity to other centres of gravity in the town centre is poor.

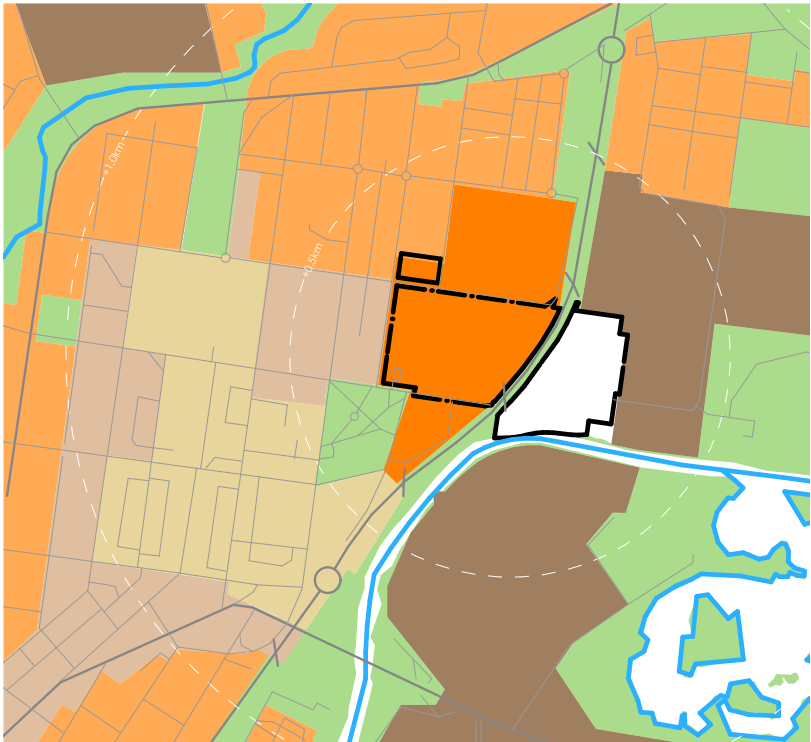
There is great potential for improved connectivity between the hospital, retail and business centres to establish mixed use environments and encourage day and night activation of the precinct.

This project gives consideration to the role the Hospital plays within the town centre beyond its primary clinical functions. It is a major source of investment, employment, education, research, retail and activation. As such, the project has been strategically planned to provide the foundation for the development of a larger Health & Academic Precinct that merges with the other core zones of the town centre.

- 150m ring
- 300m ring
- heart of commercial
- heart of retail
- heart of liverpool hospital
- site boundary

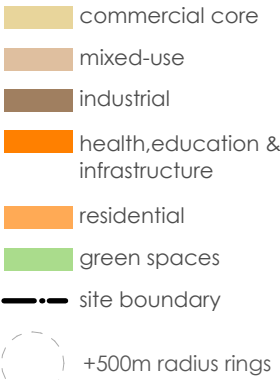


PRECINCT SITE ANALYSIS

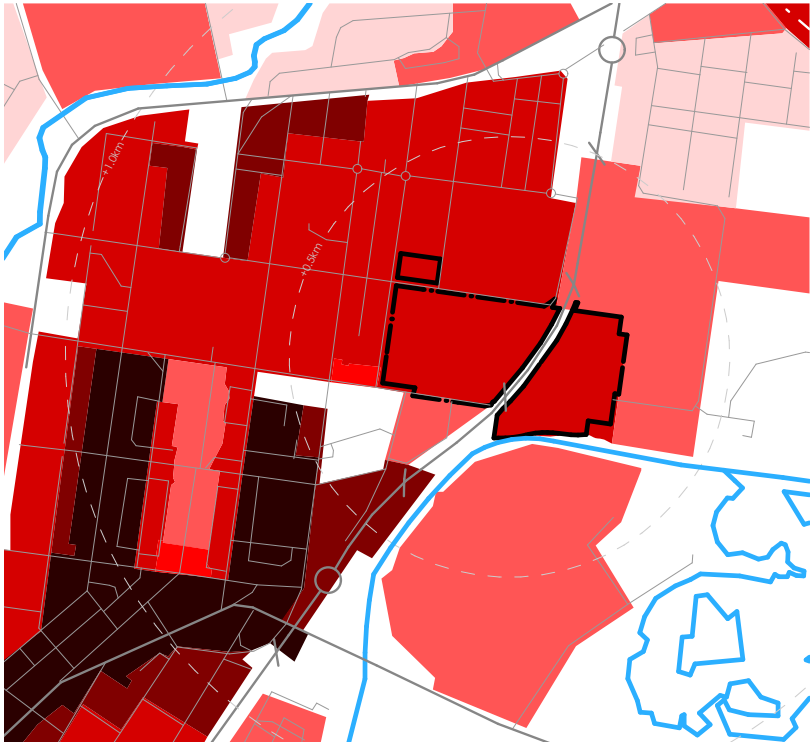


ZONING

Liverpool Hospital is encompassed within the Liverpool City LGA. The site is zoned SP2 Health Services Facility and Educational Establishment, with permissible uses being Health Services Facility and Educational Establishment including any development that is ordinarily incidental or ancillary to development for that purpose.



\*DATA TAKEN FROM LIVERPOOL LEP 2008



HEIGHT

Under the Liverpool Development Control Plan 2008 both the western and eastern campuses of the Liverpool Hospital have a height limit of 35 metres. The existing helipad on the roof of the new Clinical Services Building sits just below this height limit and acts as a datum across a large part of the site within which any new buildings must sit below to preserve safe flight paths for helicopters.



\*DATA TAKEN FROM LIVERPOOL LEP 2008

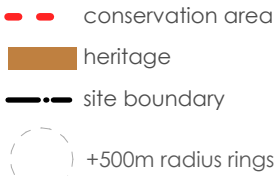


HERITAGE

The Liverpool Hospital site is not identified as an item of heritage significance though it is partially located within the Bigge Park Conservation Area. The eastern campus zone of the Hospital is not affected by heritage issues.

- The site is located close to a number of local heritage items in the area, including:
- The local street network identified as 'Plan of Town of Liverpool (early town centre street layout-Hoddle 1827)
  - Liverpool College (TAFE) site, including Blocks A-G, chimneystack, fences, gatehouses and archaeological features (formerly Liverpool Hospital and Benevolent Asylum)
  - Bigge Park

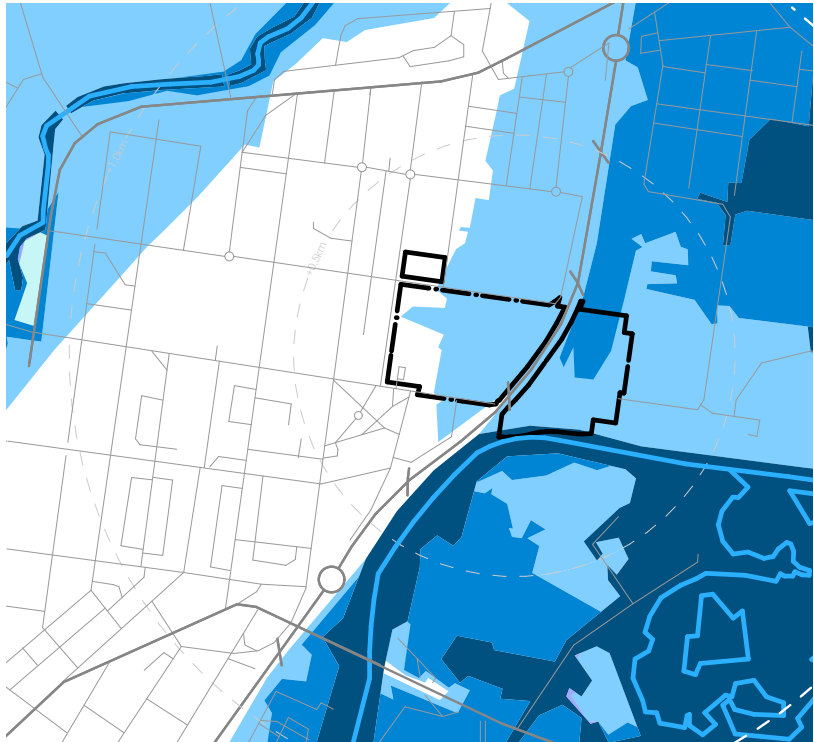
In addition to these items, the site contains areas of landscaping that are of community interest and potential heritage significance. This includes elements of the entry forecourt including seating structures, planters and a number of established palm trees. It also includes a row of palm trees along Elizabeth Street on the eastern campus.



\*DATA TAKEN FROM LIVERPOOL LEP 2008



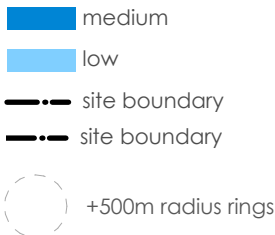
PRECINCT SITE ANALYSIS



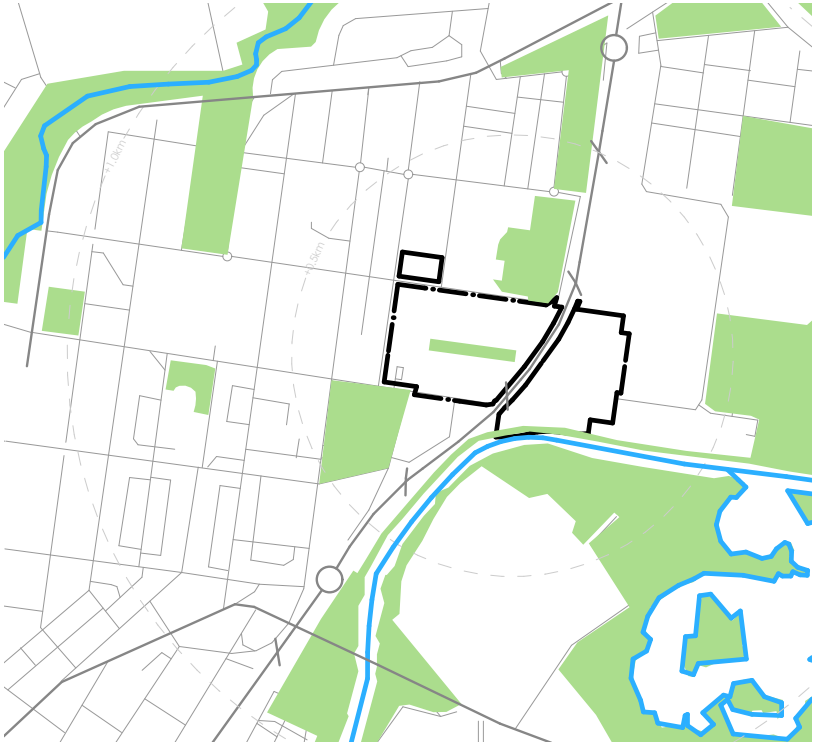
FLOODING

The overall site area has site levels varying from approximately RL8.5 (AHD) to parts of the eastern campus through to approximately RL12 in areas of the western campus. The site's proximity to the Georges River and its overall low topography makes it susceptible to flooding with the probable maximum flood level being RL10.9 (AHD) with the 1 in 100 year flood level being RL8.8.

The western campus is not at risk from the 1 in 100 year flood level. The site is also subject to localised overland flooding from surrounding streets (refer to the Civil Engineering section within this report).



\*DATA TAKEN FROM LIVERPOOL LEP 2008

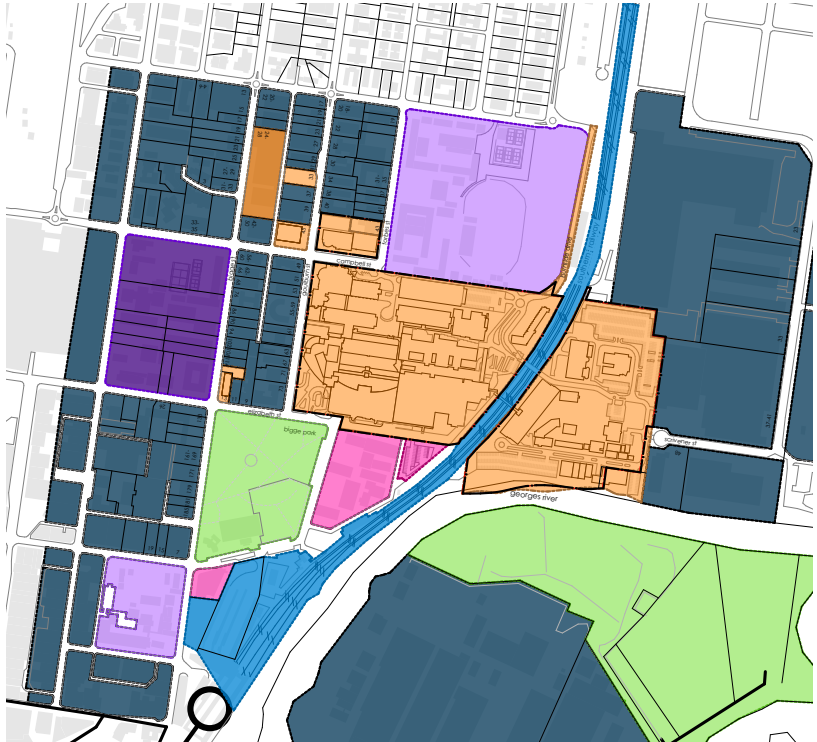
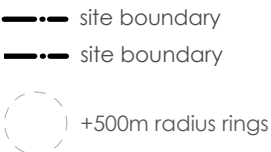


GREEN SPACES

There have been numerous evidence based studies linking the natural environment contribution to prevention through increasing physical and mental wellbeing and providing patients therapeutic benefits for recovery from illness. Incorporating gardens and open spaces into hospitals can enhance the healing process and provide a place where people can be relieved of some of the stress that can come with hospital experiences.

Liverpool Hospital is advantaged in that there is a degree of usable open space within the campus in the form of a central courtyard bound by the Clinical Services Building and Caroline Chisholm and numerous smaller green areas surrounding the site's built infrastructure.

In addition the precinct surrounding the Hospital has a number of open spaces in the form of Bigge Park to the south of the Hospital and the playing field of Liverpool Girls High School. The future development of the Georges River precinct will include various public open spaces overlooking the river.



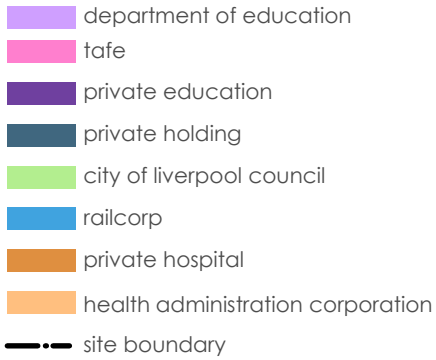
LAND OWNERSHIP

The following sites form the cluster of facilities within and around the Liverpool Hospital and are under the ownership of the Health Administration Corporation:

- The western and eastern hospital campuses
- The Health Services Building and Ingham Institute on Campbell Street
- Liverpool Ambulance Station at 45 Forbes Street
- Liverpool Specialist Medical Centre 45-47 Goulburn Street
- Liverpool Living Skills Activity Centre 19 Flowerdale Road
- Liverpool Karitane Family Day Care Centre 10 Murphy Ave
- Mental Health Group Home 16 Carboni Street

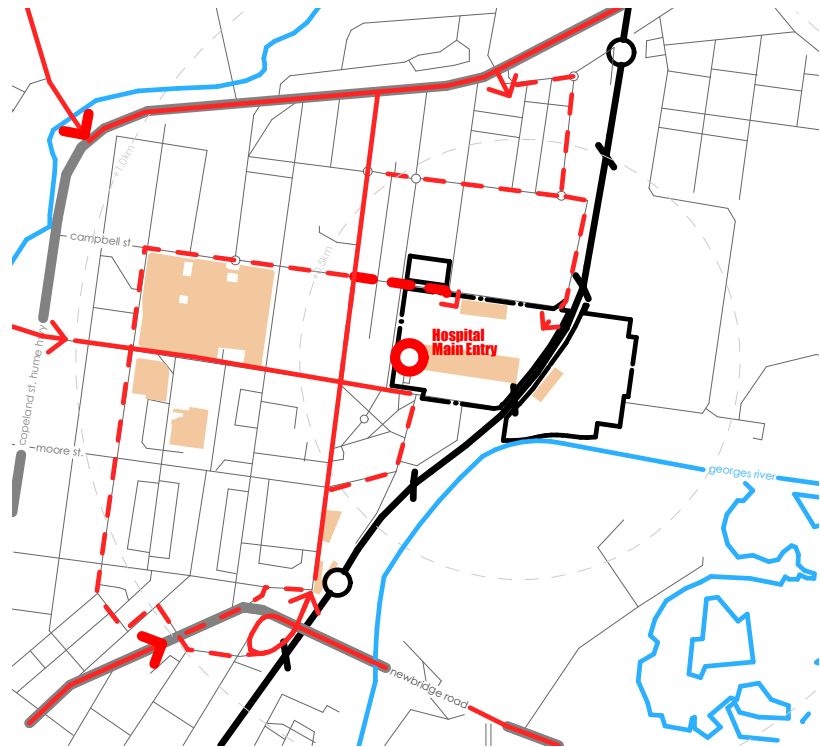
The following site is under the ownership of SWS Area Health Service:

- Bigge Park Centre 13 Elizabeth Street



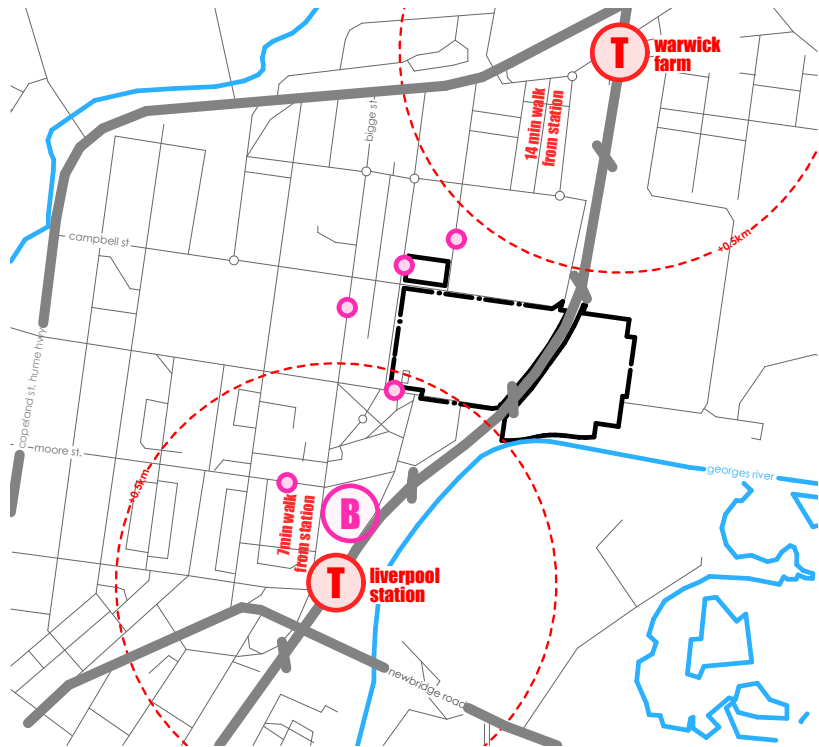
\*DATA TAKEN FROM LIVERPOOL HOSPITAL & AUXILLARY SITES

PRECINCT SITE ANALYSIS



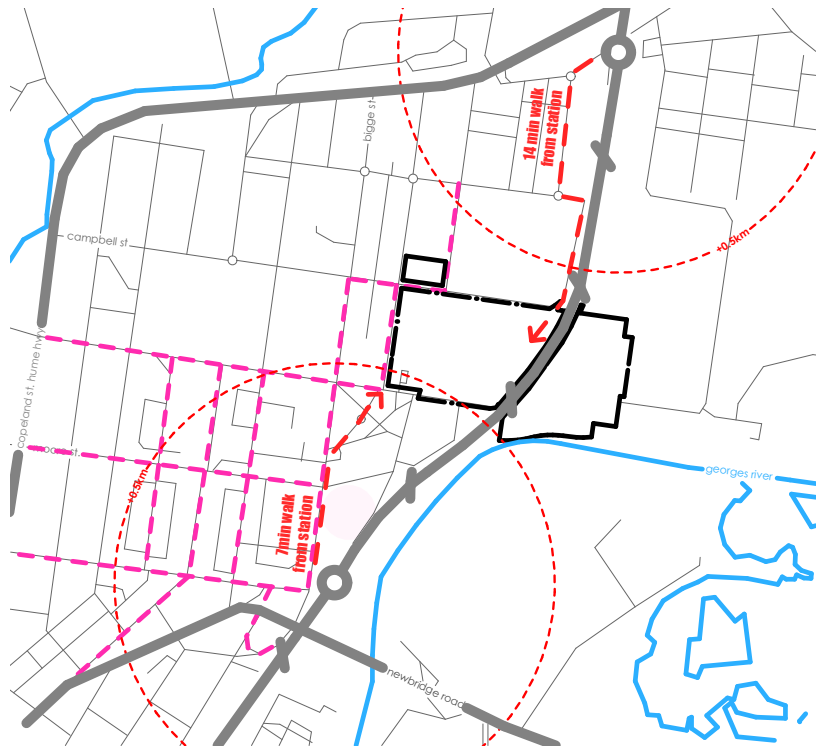
VEHICULAR APPROACH PATHS

- secondary & ring roads
- main vehicular approach
- car parking
- site boundary
- +500m radius rings



PUBLIC TRANSPORTATION

- bus stops adjacent to hospital
- bus interchange
- train station
- site boundary
- +500m radius rings



PEDESTRIAN MOVEMENT

- pedestrian routes from key transport hub
- DCP: high pedestrian priority routes
- site boundary
- +500m radius rings



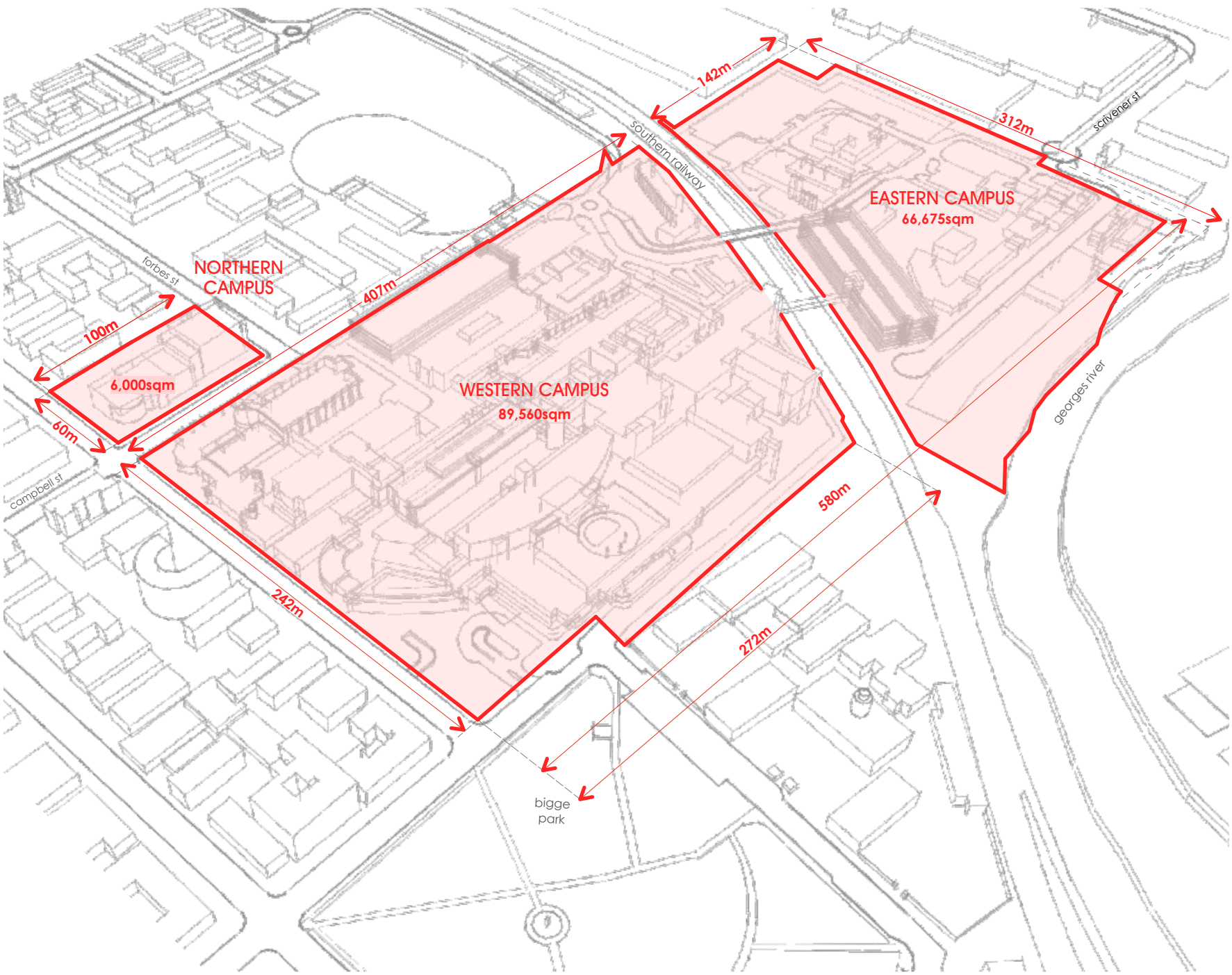
SITE ANALYSIS

SITE DIMENSIONS

The total approximate hospital campus area including both the eastern and western campuses is:

156,235 m<sup>2</sup> (15.6 ha)

Note the northern campus has been excluded from the overall site area for the purposes of FSR calculations as this site, whilst owned by the SWSLHD, is subject to separate land titles, lease agreements and planning controls.





# SITE ANALYSIS

## KEY CLINICAL ANCHORS

In analysing the site for the Master Plan, key clinical relationships were identified between the highly acute services on the site and the primary non-acute streams in addition to non-clinical support services.

As part of this analysis the core clinical services which formed anchors to the Hospital's functionality as a major tertiary and quaternary health service provider were ascertained.

These anchors, due to their critical nature of interdependence with other clinical services, or their extensive infrastructure, would have significant ramifications if dislocated from their current precinct.

Three core clinical anchors embed the clinical functionality of the Hospital:

### INTERVENTIONAL SERVICES (BLUE)

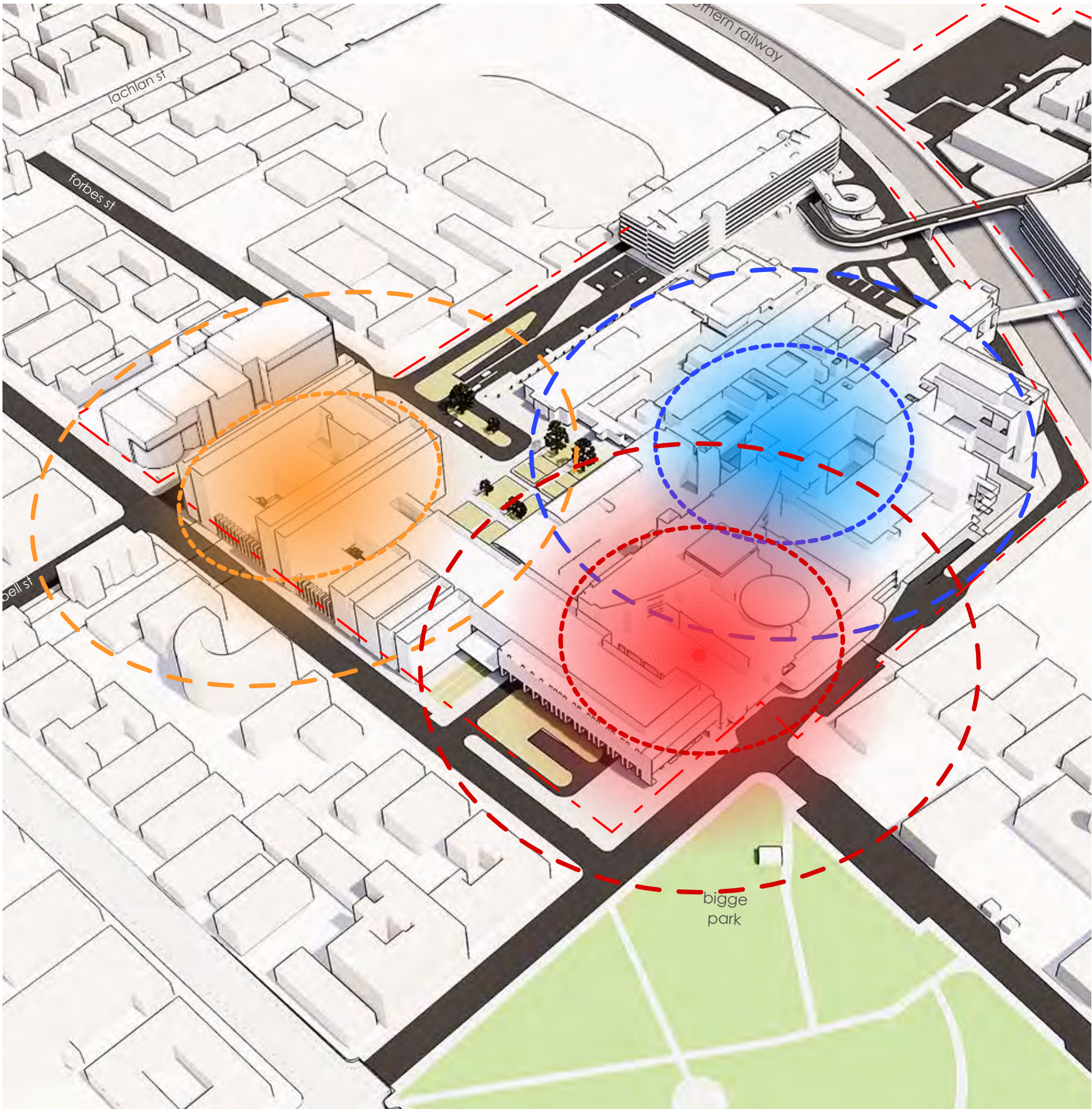
This includes the main operating theatres, interventional radiology, pre and postoperative services. The adjacency to ED, diagnostics services, intensive and specialist care services and the majority of inpatient accommodation (inc the Women and Children's unit) is critical to the clinical flows of the Hospital.

### EMERGENCY DEPARTMENT (RED)

The Emergency Department at Liverpool Hospital is located at the ground floor of the original 1997 Clinical Services Building adjacent to the main entry of the Hospital. The department has direct adjacencies to medical imaging and direct lift access to the interventional services. The unit manages the highest number of ED presentations in NSW and is one of seven major trauma units within the state for adults. Its current location facilitates the delivery of effective emergency medicine for the Hospital.

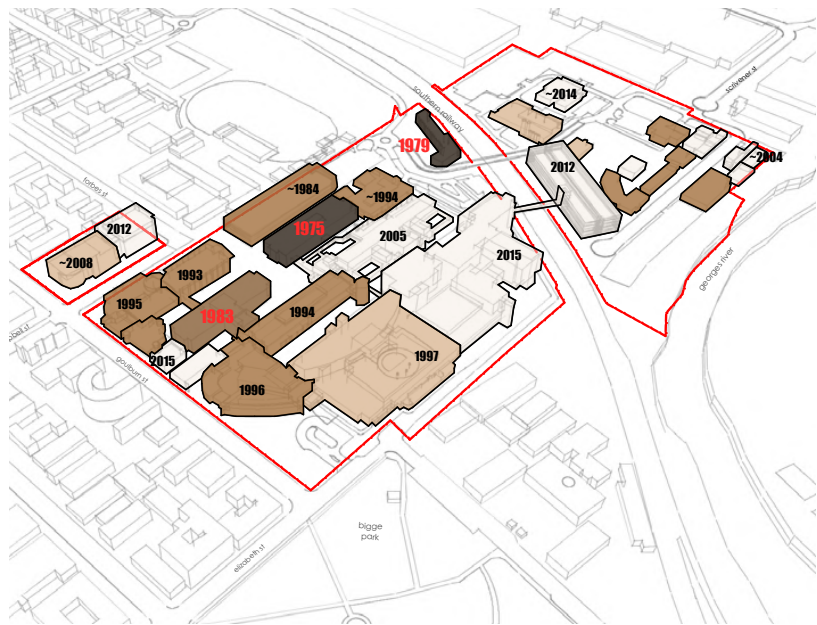
### CANCER (YELLOW)

Liverpool Hospital is recognised as a designated centre of excellence for cancer, translational health technology and innovation for South Western Sydney. The current Cancer Centre was established in 1995 and delivers radiation, medical oncology and patient support services. A recent expansion of services by The Ingham Institute has incorporated an MRI Linac as part of the existing cluster of bunkers at the Hospital. It is one of only four similar projects in the world and anchors cancer services for the Hospital. The location of cancer services provides collocation with the Ingham Institute, reinforcing the role of education, world class research and innovation.

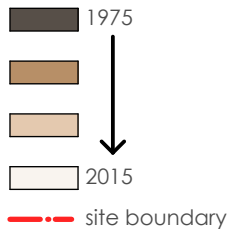




SITE ANALYSIS



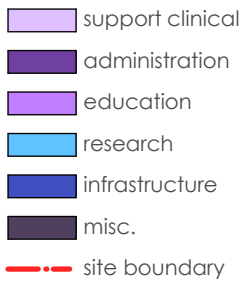
AGE OF BUILDINGS



HEIGHT OF BUILDINGS

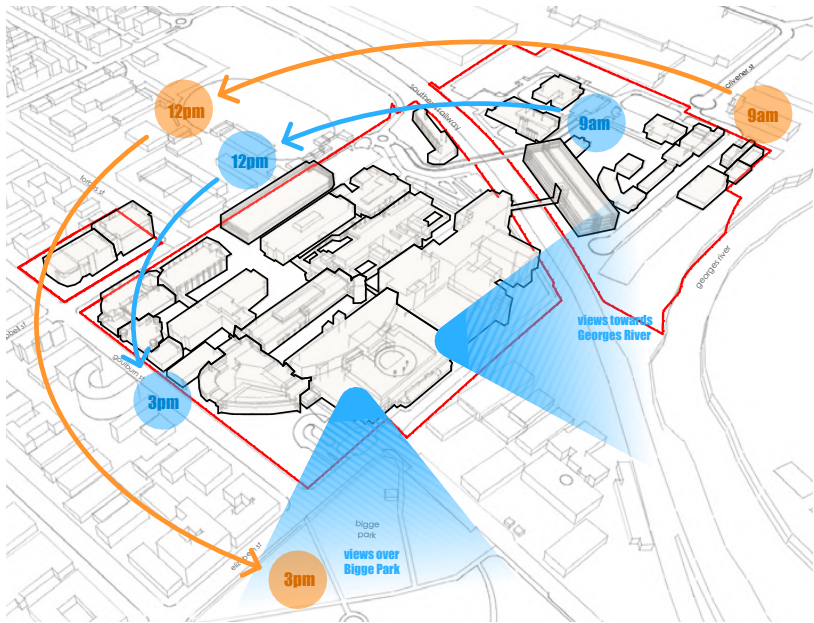


USE OF BUILDINGS



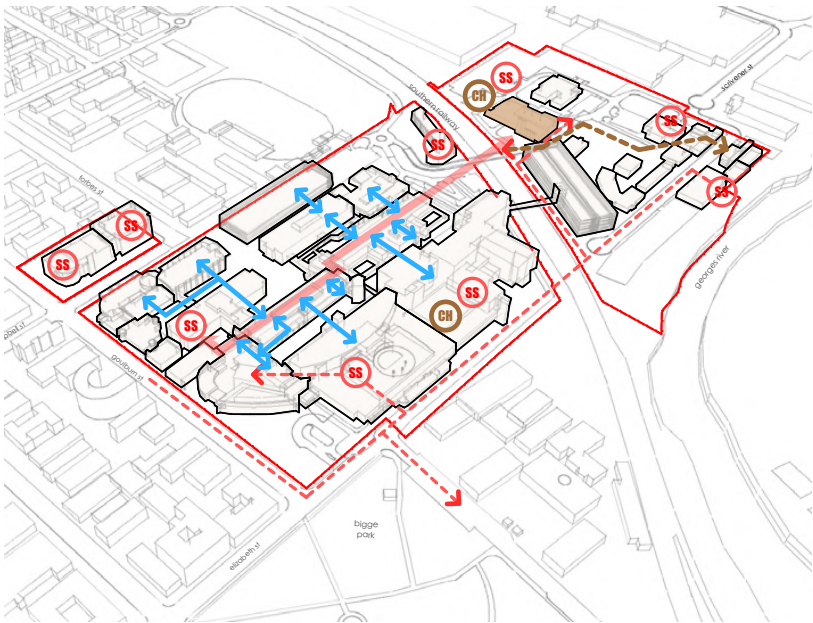


SITE ANALYSIS



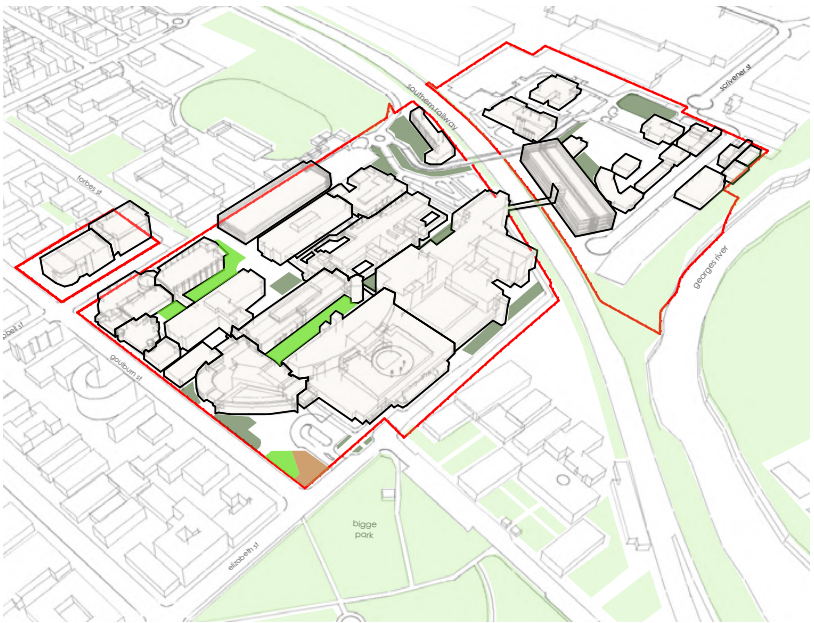
SUN & VIEWS

- winter sun path
- summer sun path
- site boundary



EXISTING INFRASTRUCTURE

- comms line
- endeavour energy hv
- major underground service tunnel containing
  - hot water pipes
  - chilled water pipes
  - hospital hv electrical cables
  - gas pipes
  - comms lines
- CH chilled water system
- SS substation
- central energy building
  - 6 x cooled chillers
  - 6 x cooling towers
  - 6 x off gas boilers
  - 3 x off compressors
  - water pumps & water distribution systems
- site boundary

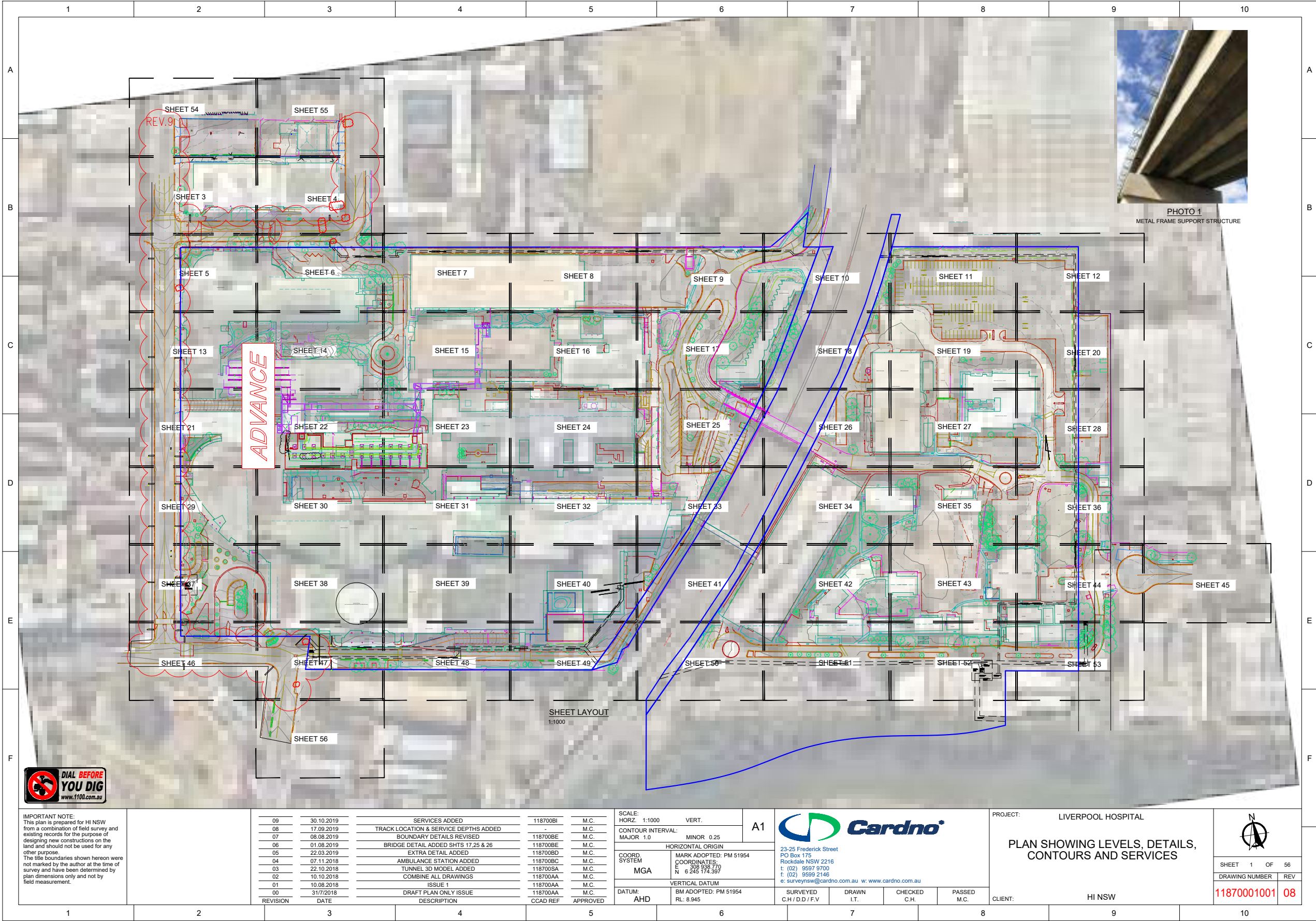


GREEN SPACES

- usable open space
- usable green space
- non usable green space
- off-site green space
- site boundary



SITE SURVEY

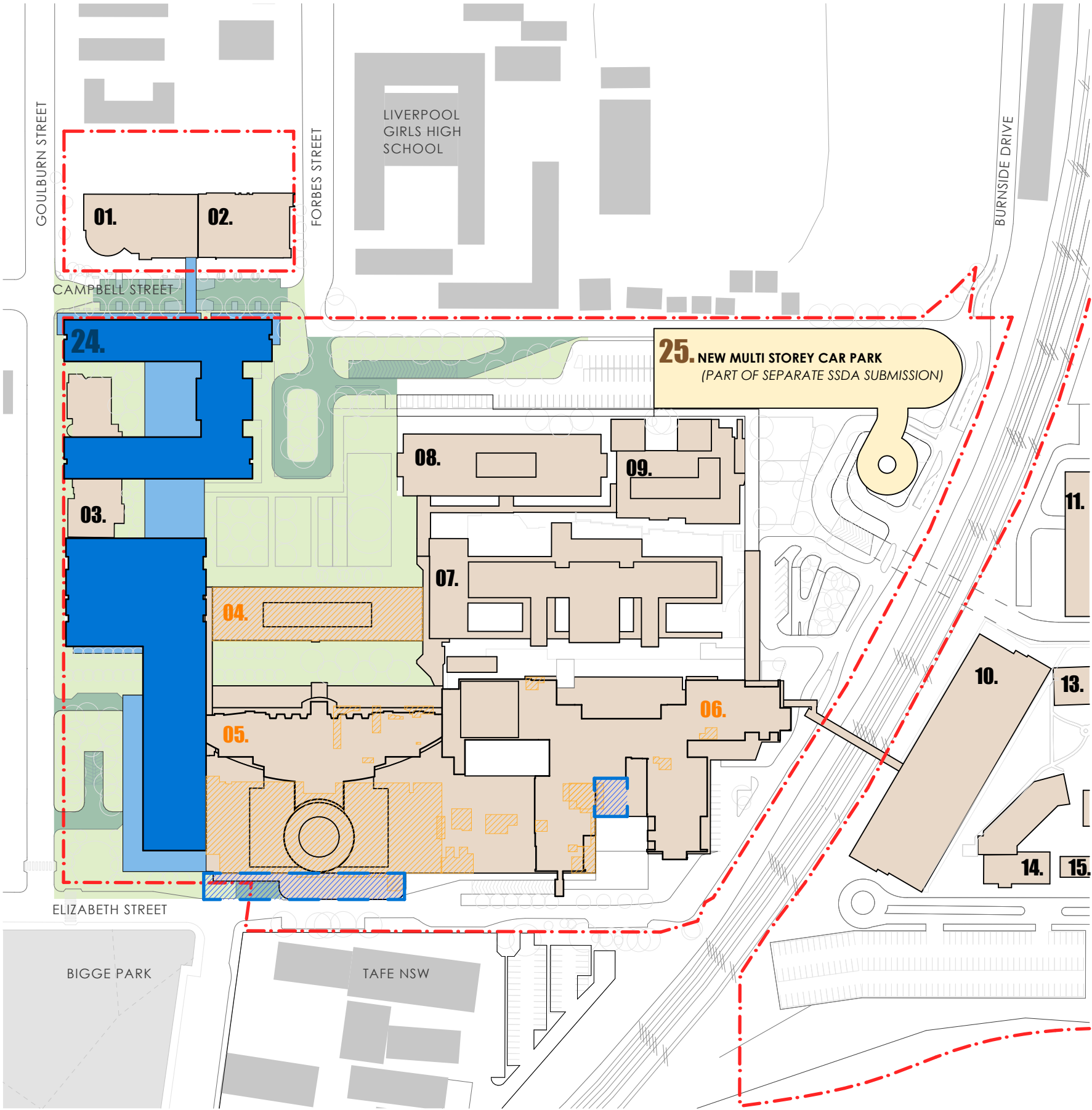


SITE PLAN

LEGEND

- 01. health services building
- 02. ingham building
- 03. oncology bunkers
- 04. caroline chisholm
- 05. old clinical services building
- 06. new clinical services bld
- 07. mental health centre
- 08. don everett building
- 09. brain injury unit
- 10. P4 multi-storey car park
- 11. central energy building
- 12. ngara health education
- 13. bungala building
- 14. child care centre
- 15. staff education training
- 16. physical recources
- 17. admin building
- 18. multicultural health services
- 19. biu admin
- 20. biu nursing area
- 21. interpret building
- 22. store shed
- 23. isd swsahs
- 24. new integrated services building (ISB)
- 25. new multi storey car park (separate SSDA submission)

- landscape works
- new integrated services building (ISB)
- site boundary
- existing buildings

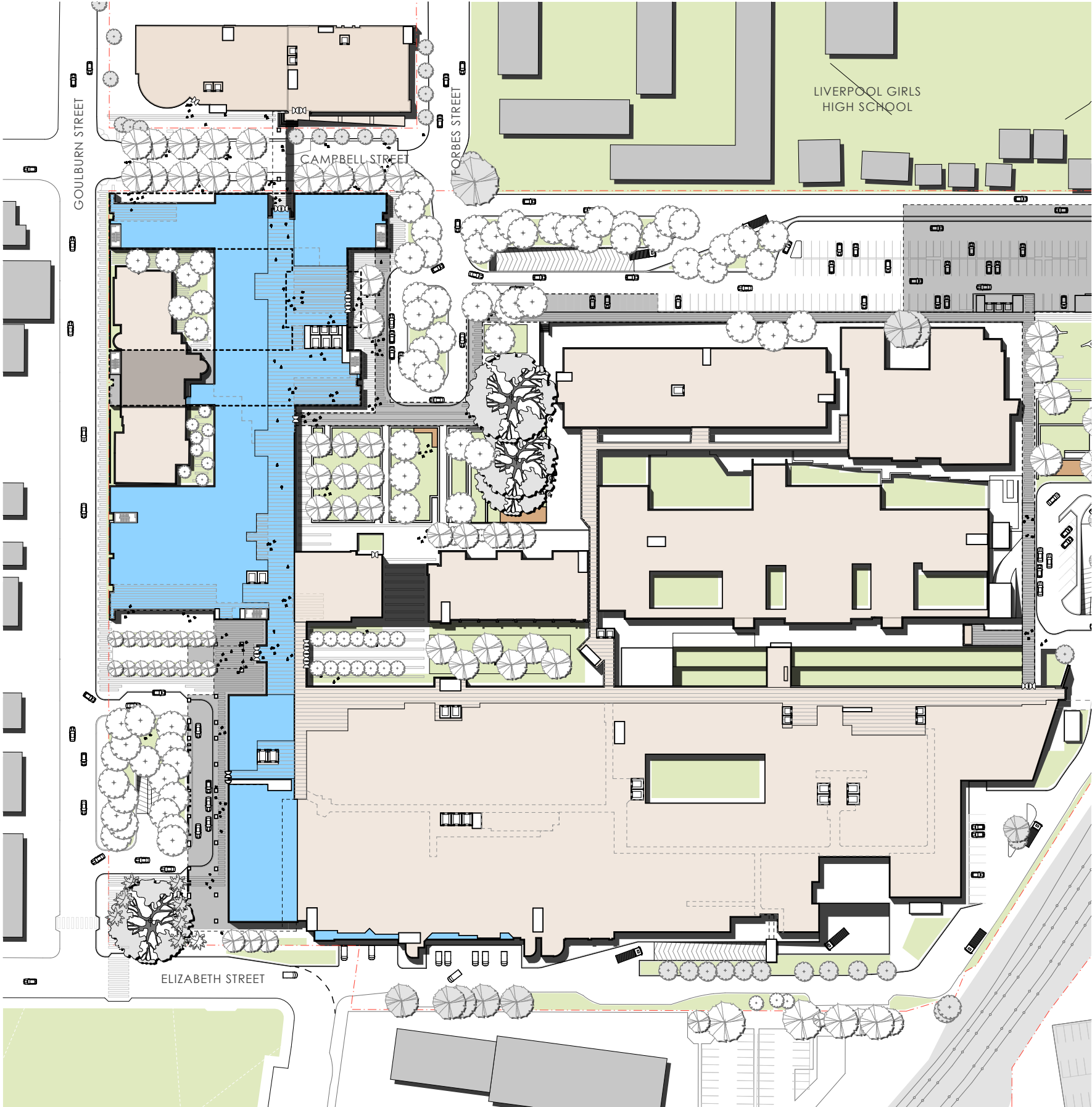




GROUND PLANE

The new ISB is situated within the Liverpool Hospital campus and provides improved pedestrian way-finding and amenity, open space, landscape upgrades and the removal of outdated buildings on site.

The combination of the LHAP project with the broader vision for the LIP will deliver an integrated Health, Academic and Research precinct that will provide significant public benefit in terms of placemaking, access & amenity, economic growth, learning and teaching opportunities as well as access to world-leading health care.



OPTIONS ASSESSMENT

The following were some of the options explored throughout the Master Planning phase of the project.

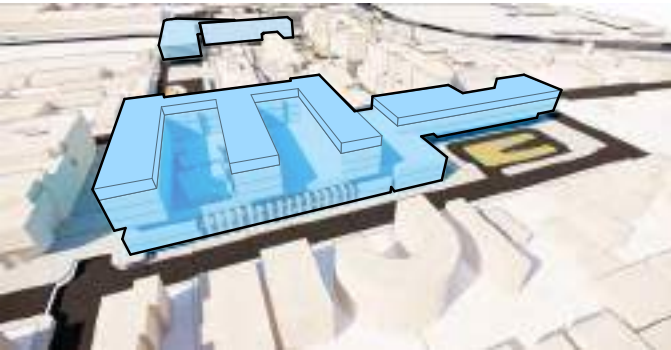
Each of these was tested against the DESIGN PRINCIPLES as well as clinical criteria, construction cost, staging and programme implications and ongoing operational costs and efficiencies.

Some of the initial pro's and con's are listed here to provide some background to each option.

OPTION 4 was assessed as the best performing option against the assessment criteria and was further developed during the Concept and Schematic Design phases of the project.

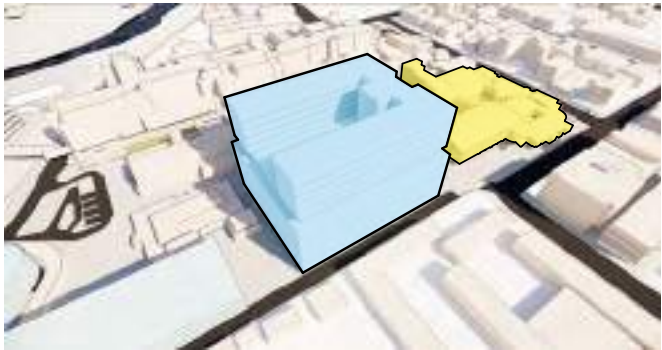
Development of OPTION 4 has mitigated the con's initially listed within this early comparative study.

OPTION 1



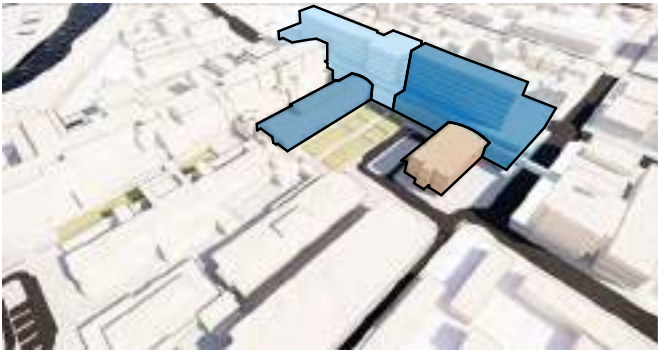
- PROS**
  - Meets clinical services plan
  - Supports hospital integration
  - Meets overall Liverpool Precinct Planning parameters
  - Supports site development beyond 2026
  - Supports Campus wayfinding and access
  - Planning supports urban context
  - Building form responds to ESD principles
- CONS**
  - Project extends over 4 stages
  - Pathology as separate building and on critical path
  - Building over bunkers
  - Construction of ERH as separate building
  - High degree of decanting and staging
  - Project completion may exceed 2026 milestone
  - Escalation cost impacted
  - Extensive impact of hospital operations during construction

OPTION 2



- PROS**
  - Primarily single stage project
  - Minimizes decanting and staging
  - Minimal impact of hospital operations during construction
  - Simplified construction process
  - Project will meet overall 2026 milestone completion
- CONS**
  - Compromises integration of hospital
  - Does not support logical expansion beyond 2026
  - Increases redundant buildings on site
  - Increased building area due to bunkers relocation in Option 2A
  - Fragments cancer services in Options 2B and 2C
  - Dislocates pathology services in Option 2C from primary new clinical services
  - Does not support logical site entry and circulation
  - P2 has to be demolished and MSCP is on the critical path for early stage prior to construction of main building
  - Don Everett requires demolition and decanting of approx 4,000 m2
  - Clinical connectivity to existing CSB compromised

OPTION 3

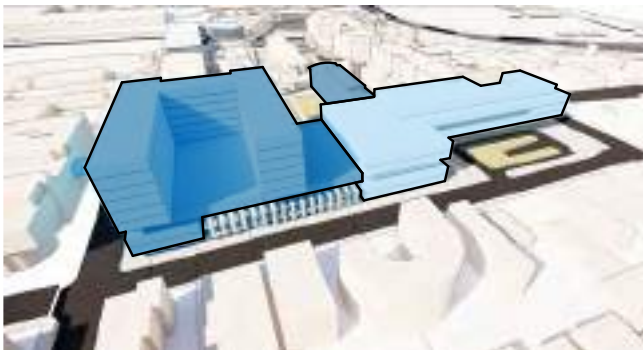


- PROS**
  - Maintain pathology building, reducing overall project cost
  - 2 stage project
  - Meets overall Liverpool Precinct Planning parameters
  - Pathology services not on critical path
  - Maximises stage 1
  - Meets clinical services plan
  - Supports hospital integration
  - Reduces construction over bunkers
  - Supports logical expansion beyond 2026
- CONS**
  - Does not support logical site entry and circulation
  - Building form does not respond to ESD principles
  - High degree of decanting and staging
  - High degree of interruption to existing clinical services during construction
  - Compromises service entry to new loading dock
  - Further displacement of Anatomical Pathology from the existing pathology building (Anatomical Pathology built in stage 1 building)
  - Project completion may exceed 2026 milestone
  - Escalation cost impacted
  - Stage 1 construction will impact on current helicopter flight path



OPTIONS ASSESSMENT

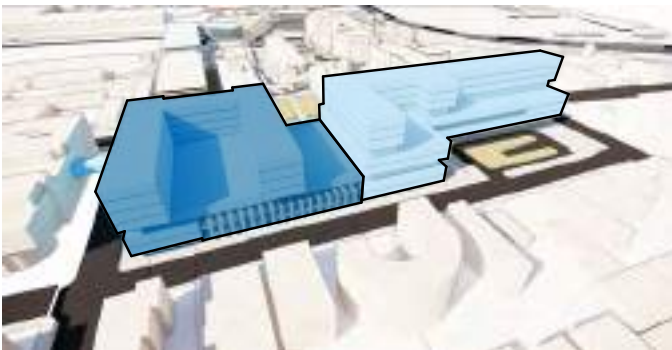
OPTION 4



- PROS**
- 2 stage project
  - Maximises integration of hospital clinical and education facilities
  - Supports logical expansion beyond 2026
  - Optimal connectivity to existing Clinical Services Building
  - Maximises stage 1 construction compared to option 1
  - Reduces construction over bunkers
  - Pathology is integrated into key clinical zones of the hospital
  - Building form responds to ESD principles
  - Planning supports urban context
- CONS**
- Inclusion of Pathology will have impact on project budget
  - High degree of decanting and staging
  - High degree of interruption to existing clinical services during construction
  - Project completion may exceed 2026 milestone
  - Escalation cost impacted

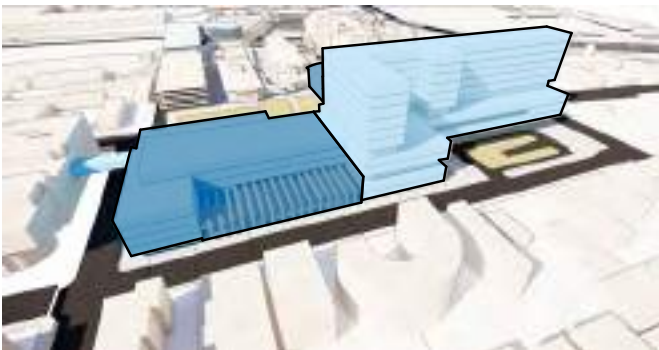
PREFERRED OPTION

OPTION 5



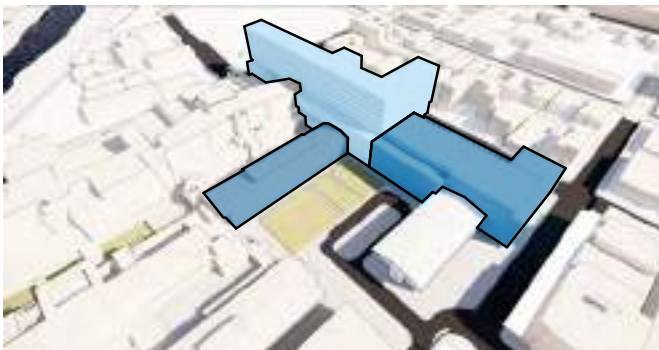
- PROS**
- 2 stage project
  - Maximises integration of hospital clinical and education facilities
  - Supports logical expansion beyond 2026
  - Optimal connectivity to existing Clinical Services Building
  - Further maximises stage 1 construction over Option 4
  - Reduces construction over bunkers
  - Pathology is integrated into key clinical zones of the hospital
  - Optimises connectivity between W+C IPUs with operating theatres and imaging services
  - Logically splits IPUs to align with respective clinical services eg. cancer IPU over cancer treatment services
  - Planning supports urban context
  - Building form responds partially to ESD principles
- CONS**
- Inclusion of Pathology will have impact of project budget
  - High degree of decanting and staging
  - High degree of interruption to existing clinical services during construction
  - Project completion may exceed 2026 milestone
  - Escalation cost impacted
  - Stage 1 construction will impact on current helicopter flight path

OPTION 6A



- PROS**
- 2 stage project
  - Maximises integration of hospital clinical and education facilities
  - Supports logical expansion beyond 2026
  - Optimal connectivity to existing Clinical Services Building
  - Further maximises stage 1 construction over Option 5
  - No construction over bunkers
  - Pathology is integrated into key clinical zones of the hospital
  - Optimises connectivity between W+C IPUs with operating theatres and imaging services
  - Building form responds partially to ESD principles
- CONS**
- Inclusion of Pathology will have impact of project budget
  - High degree of decanting and staging
  - High degree of interruption to existing clinical services during construction
  - May have amenity impact on Bigge Street park due to overshadowing
  - Integration of IPUs into stage 1 does not align the services with respective clinical zones except for W+C
  - Project completion may exceed 2026 milestone
  - Escalation cost impacted
  - Urban context of planning context not optimum
  - Stage 1 construction will impact on current helicopter flight path

OPTION 6B



- PROS**
- Maintain pathology building, reducing overall project cost
  - 2 stage project
  - Maximises integration of hospital clinical and education facilities
  - Optimal connectivity to existing Clinical Services Building
  - Further maximises stage 1 construction over Option 5
  - No construction over bunkers
  - Optimises connectivity between W+C IPUs with operating theatres and imaging services
  - Building form responds partially to ESD principles
- CONS**
- High degree of decanting and staging
  - High degree of interruption to existing clinical services during construction
  - May have amenity impact on Bigge Street park due to overshadowing
  - Further displacement of Anatomical Pathology from the existing pathology building (Anatomical Pathology built in stage 1 building)
  - Integration of IPUs into stage 1 does not align the services with respective clinical zones except for W+C
  - Does not support logical expansion beyond 2026
  - Does not support logical site entry and circulation
  - Project completion may exceed 2026 milestone
  - Escalation cost impacted
  - Compromises service entry to new loading dock
  - Urban context of planning context not optimum
  - Stage 1 construction will impact on current helicopter flight path

MASSING & BUILT FORM

OVERVIEW

The new six-storey ISB is situated on the western-edge of the campus and is fully integrated with the existing Clinical Buildings on the site including the old and new Clinical Services Buildings and the Caroline Chisholm Building.

The massing of the ISB has been developed to present the building as a series of vertical towers that meet the ground and break up the visual bulk of the overall development.

Three primary moves have been made to define the building massing and built form.

THE PODIUM

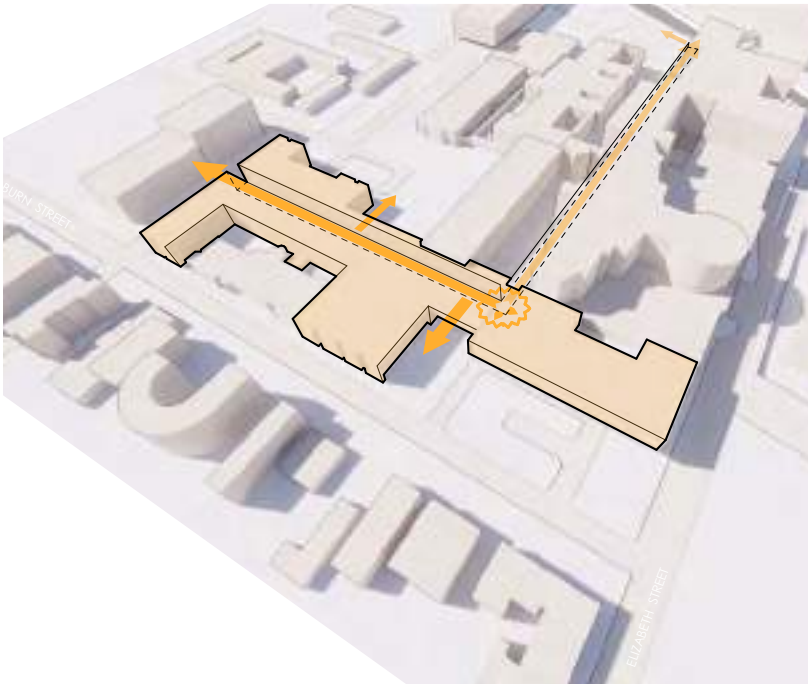
A three-storey podium mediates a number of differing interfaces including the presentation to the surround streets, the new Forbes Street forecourt and integration with the existing clinical buildings on the campus.

The podium anchors the building to the site and incorporates multiple entry points and outward-facing retail offerings.

It also incorporates a new major internal pedestrian street. This three-storey atrium runs north-south along the site and connects to the existing east-west circulation spine as well as the Ingham Institute to the north via a bridge on Level 2.

The high podium has a scale (12m height) and materiality that respects its relationship to the apartment buildings along Goulburn Street and the heritage listed TAFE site to the south.

Conceptually, the podium is presented as a nod to the past.



The Podium

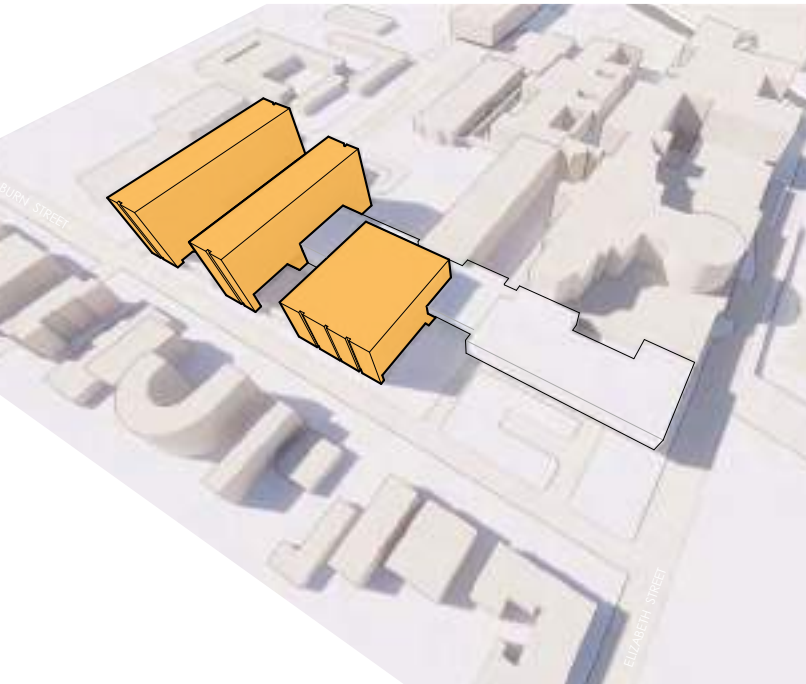
THE TOWERS

The tower elements adopt a vertical expression that intersect the podium and present as a series of distinct and separate forms. This helps to reduce the visual bulk of the overall development.

The two six-storey towers primarily house the in-patient units in a standard layout that repeats over the top three levels. The more square-shaped, four-storey tower element integrates with the podium and primarily comprises outpatient functions.

Vertical slots have been carved into each of the tower elements to further accentuate the vertical expression and reduce the visual bulk.

Conceptually, the towers are presented as a nod to the future.



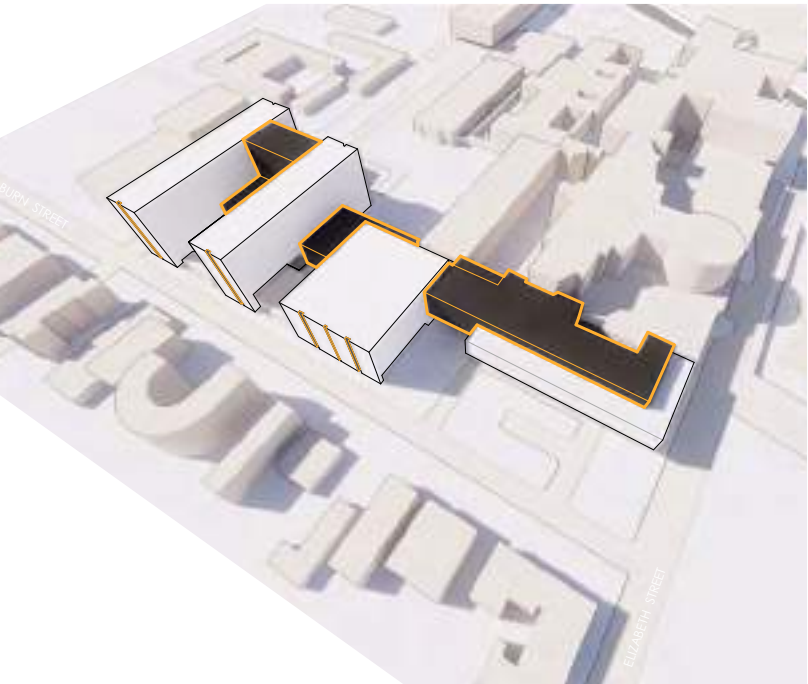
The Towers

THE IN-FILL

Mitigating the podium and the tower elements are the in-fill components.

They are subtle by design and presented in a dark and receding material palette so as to not compete with the Podium and Tower elements.

The in-fill components house clinical areas that merge seamlessly with the Podium and Tower as well as areas of roof plant and building services.



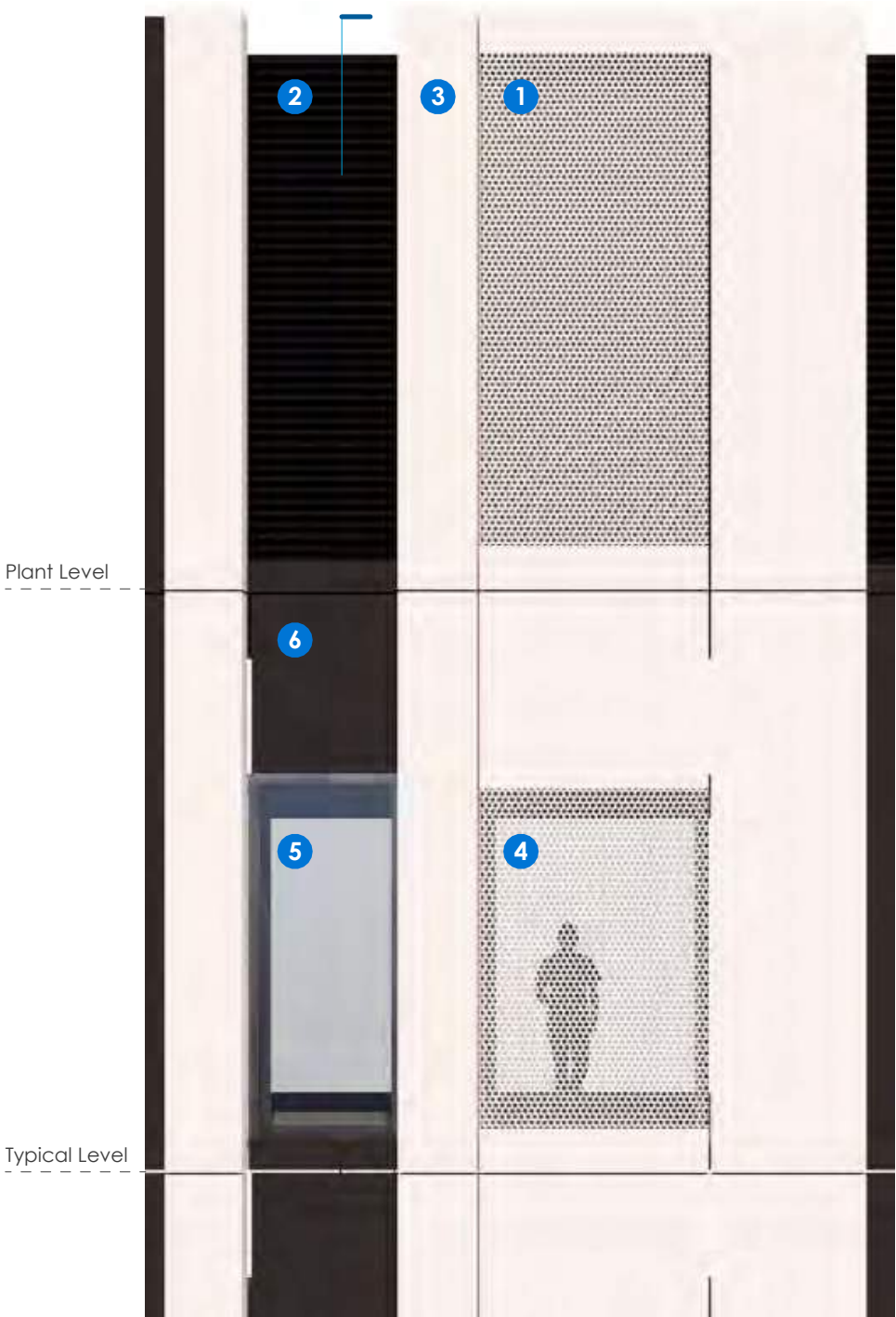
The In-Fill



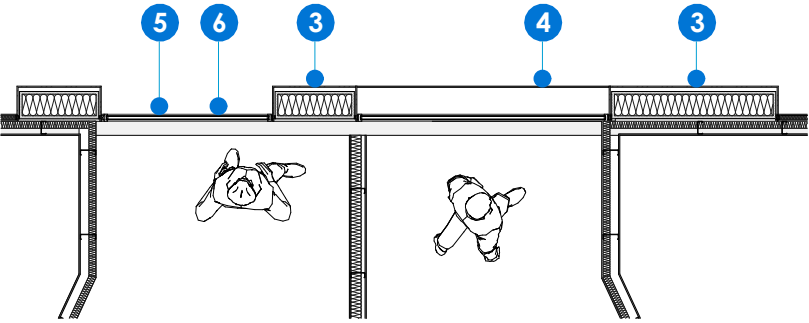
ENVELOPE & FACADE

FACADE TYPE 1 - TOWER

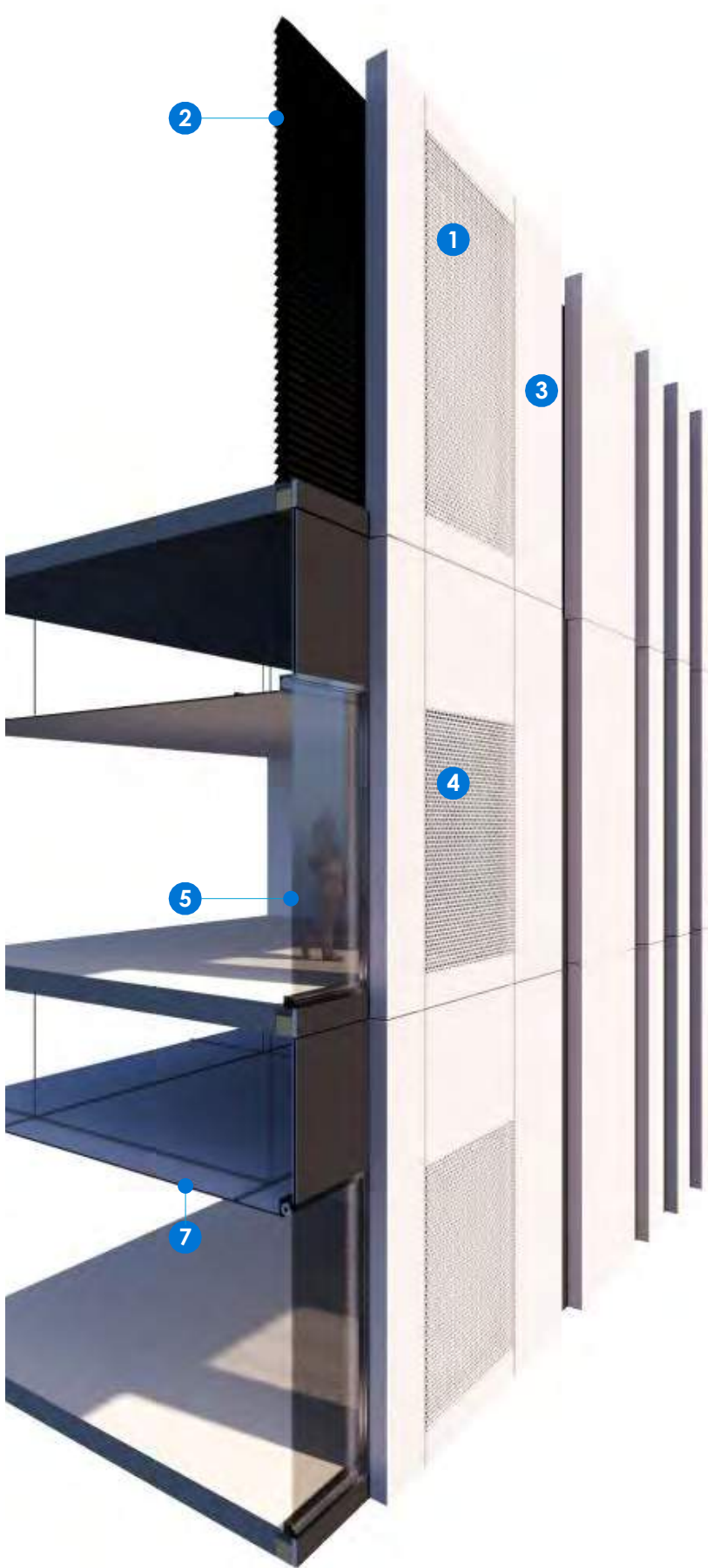
- 1 White perforated aluminium panel over black horizontal metal louvres
- 2 Black horizontal metal louvres
- 3 White aluminium panel
- 4 White perforated aluminium panel over glazing panel
- 5 Glazing panel
- 6 Charcoal pre-finished fibre cement sheet
- 7 Suspended ceiling



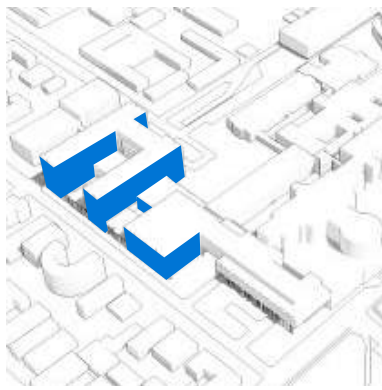
TYPICAL ELEVATION



TYPICAL PLAN



SECTION DETAIL

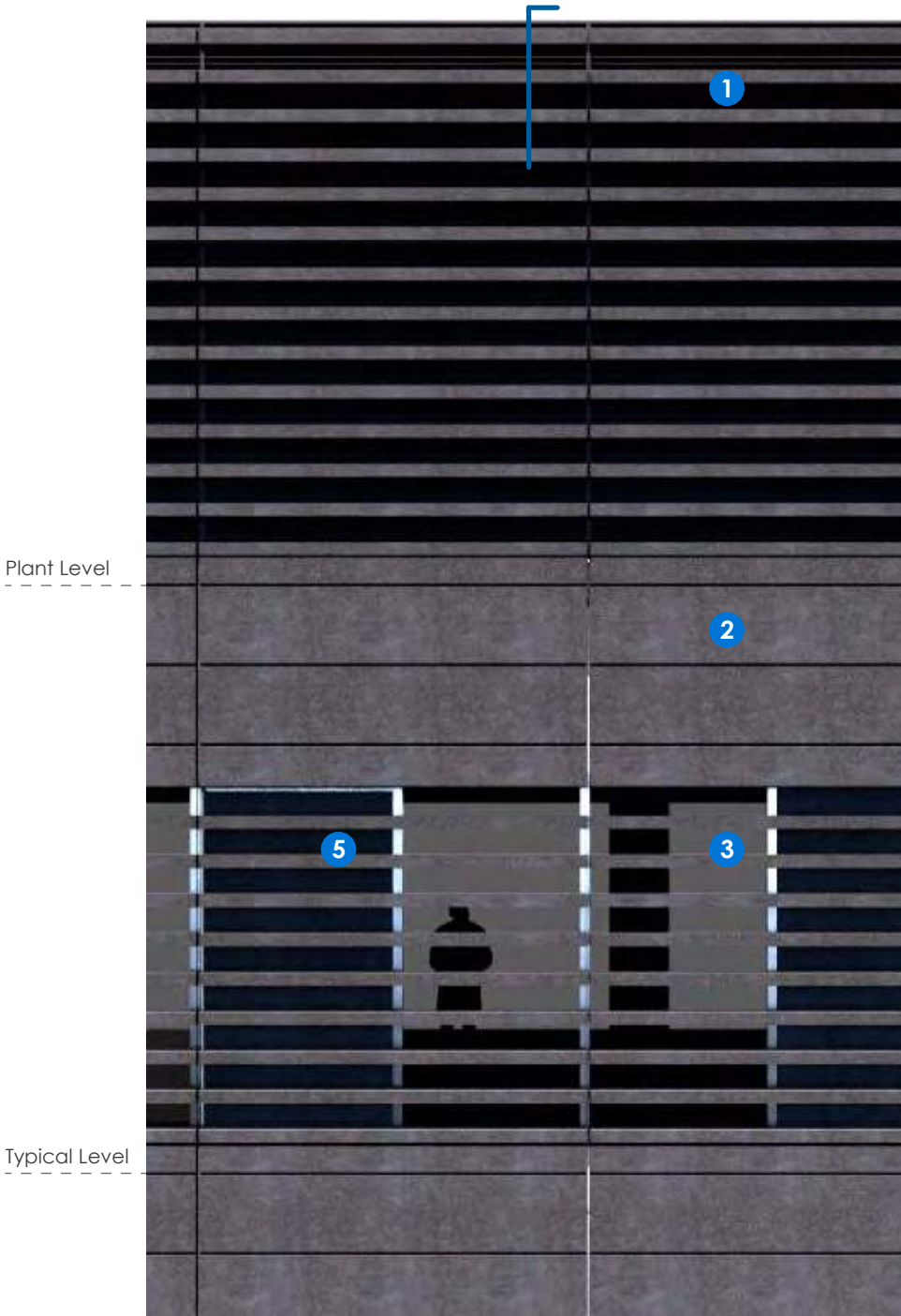


KEY

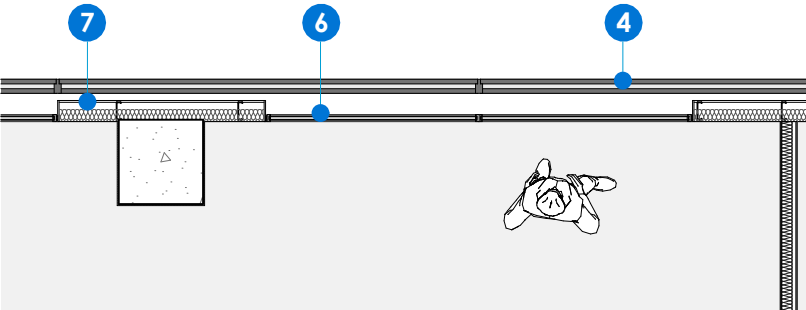
ENVELOPE & FACADE

FACADE TYPE 2 - THE INFILL

- 1 Charcoal terracotta louvres over black two-stage louvre
- 2 Charcoal terracotta panel
- 3 Charcoal terracotta louvres over glazing panel
- 4 Charcoal terracotta louvres
- 5 Charcoal terracotta louvres over black aluminium metal panel
- 6 Glazing panel
- 7 Black aluminium metal panel
- 8 Suspended ceiling



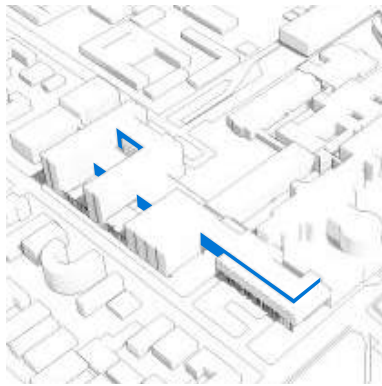
TYPICAL ELEVATION



TYPICAL PLAN



SECTION DETAIL



KEY



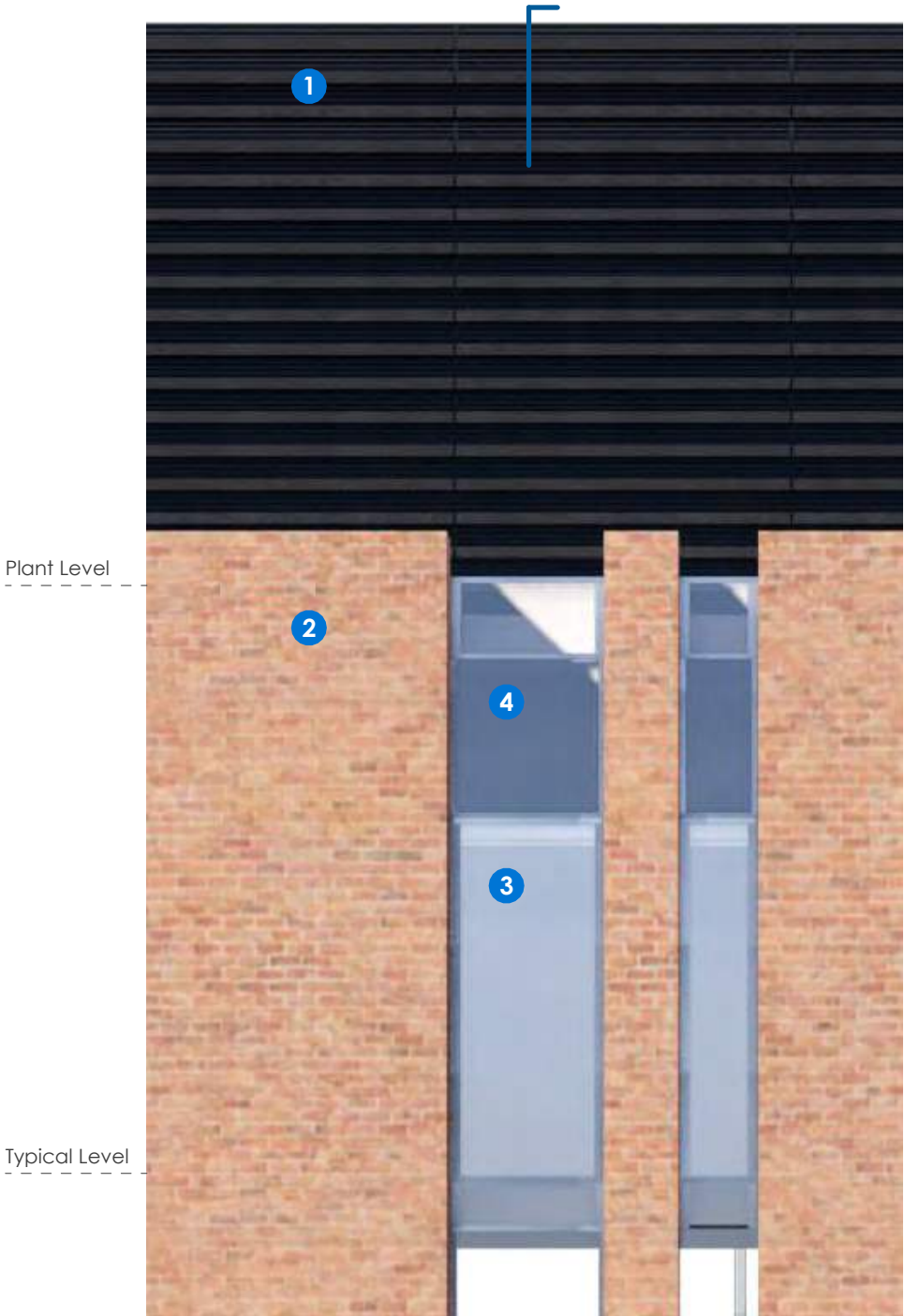
ENVELOPE & FACADE

FACADE TYPE 3 - SOUTH PODIUM

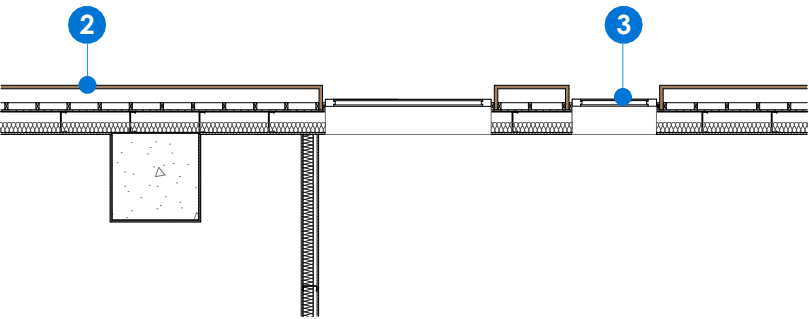
- 1 Black horizontal louvres
- 2 Brick work
- 3 Glazing panel
- 4 White colourback spandrel panel
- 5 Suspended ceiling



KEY



TYPICAL ELEVATION



TYPICAL PLAN



SECTION DETAIL



BUILDING MATERIALITY

- 1. white perforated aluminium panel over black metal louvres
- 2. black metal louvres
- 3. white aluminium panel
- 4. white perforated aluminium panel over glazing panel
- 5. glazing panel
- 6. grey fibre cement panel
- 7. charcoal terracotta panels
- 8. charcoal terracotta battens
- 9. brick work
- 10. metal panel match to brick color









# ACCESS & CIRCULATION

## VEHICULAR CIRCULATION

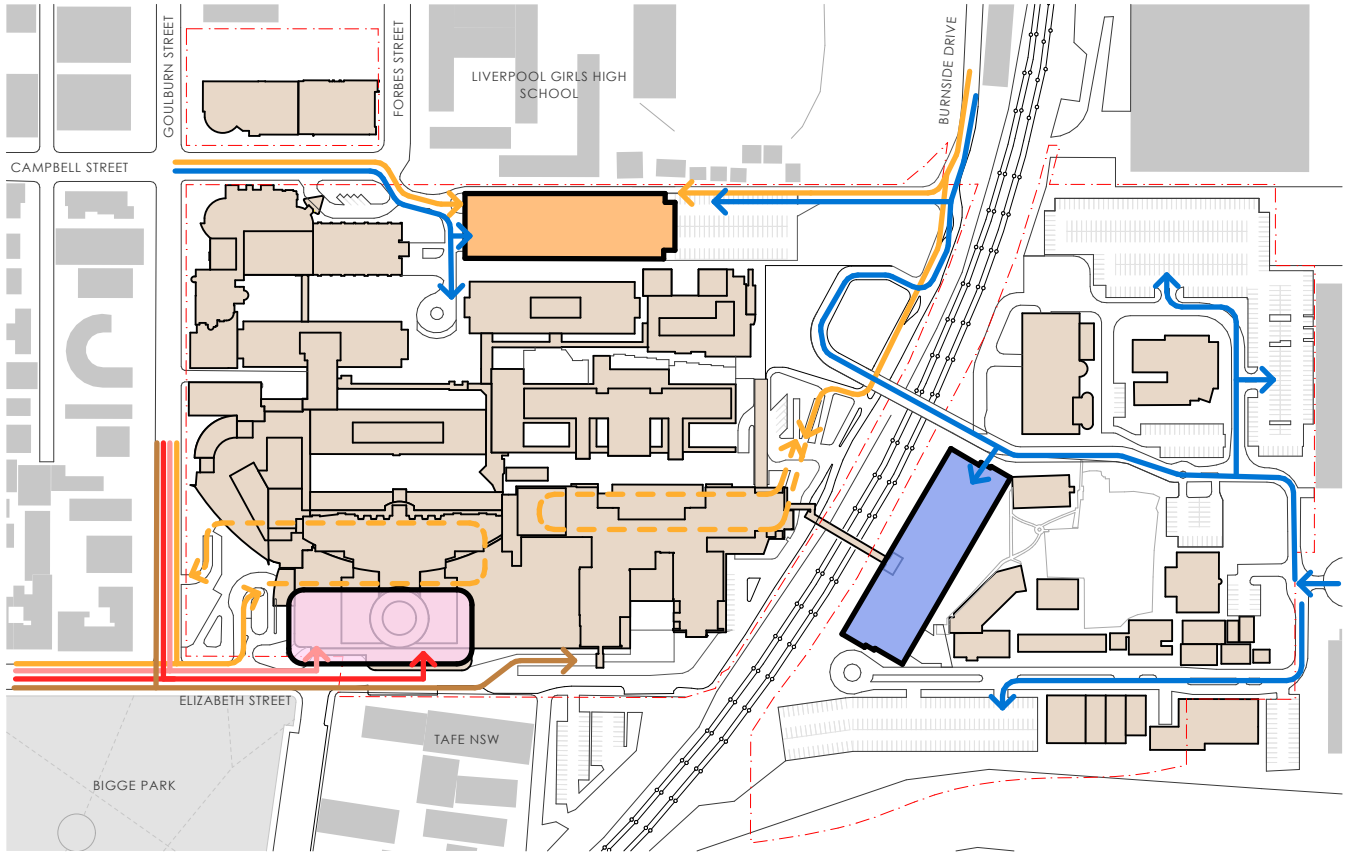
The LHAP project seeks to reduce vehicular congestion at critical areas around the hospital, in particular at the intersection of Goulburn and Elizabeth Streets and around the new expanded Emergency Department.

- 1. ED traffic congestion; public, ED and loading dock all use same vehicular separation
- 2. Limited public ED parking
- 3. Disjointed basement parking
- 4. Complicated public drop off / parking
- 5. Inefficient multistory car parking facility

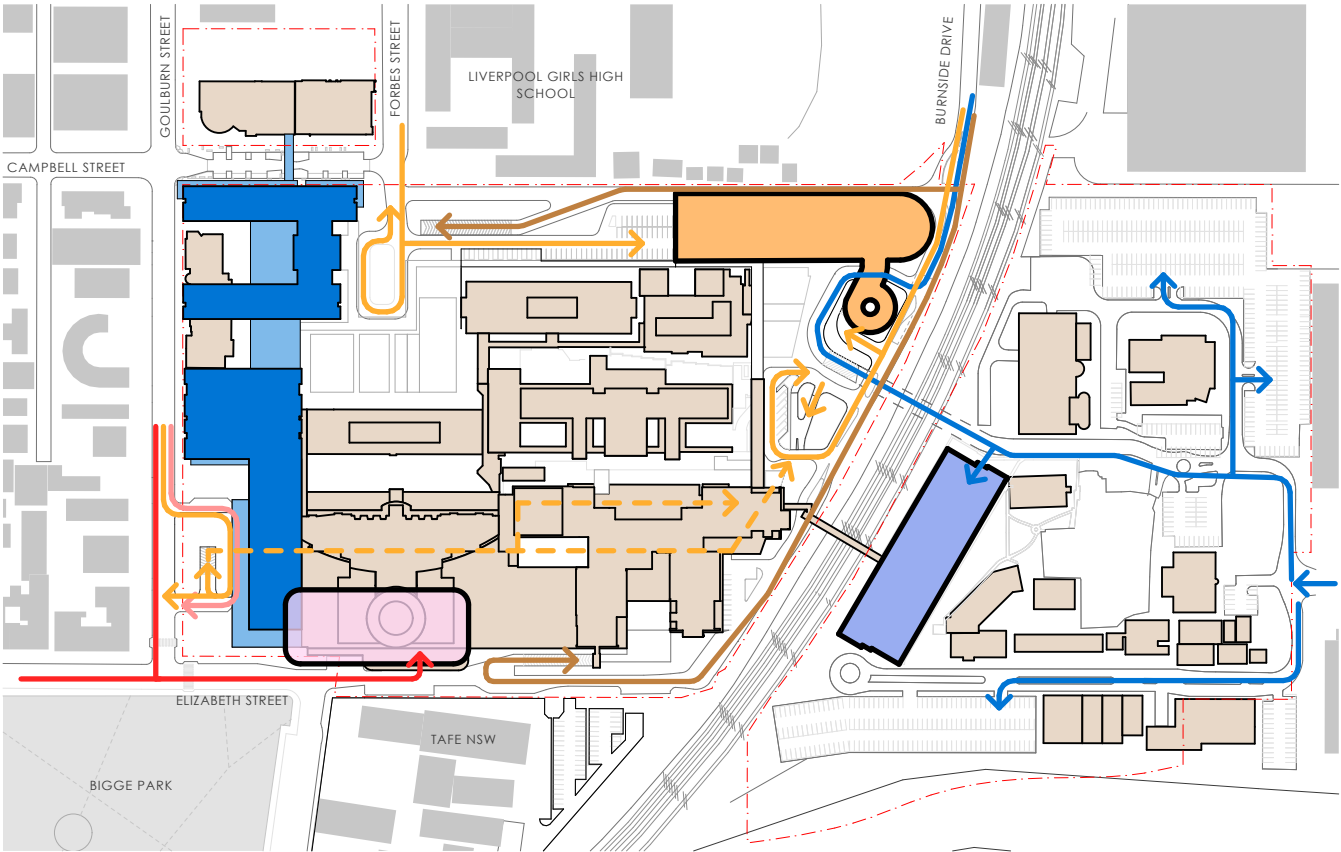
- 1. ED traffic congestion alleviated; new ED entrance with separated ambulance and public access. Loading dock access re-routed and separated from ED access
- 2. Public ED drop-off parking increased
- 3. Basement parking connected
- 4. New public hospital drop off and simplified / efficient car parking facilities off Campbell Street

- site boundary
- ambulance flow
- staff
- public
- public basement flow
- public emergency
- loading
- emergency department
- predominantly staff cp
- predominantly public cp

### EXISTING



### PROPOSED





# ACCESS & CIRCULATION

## WAY-FINDING & ENTRY POINTS

The ground plane has been designed to provide clear way-finding both within and outside of the hospital campus, including:

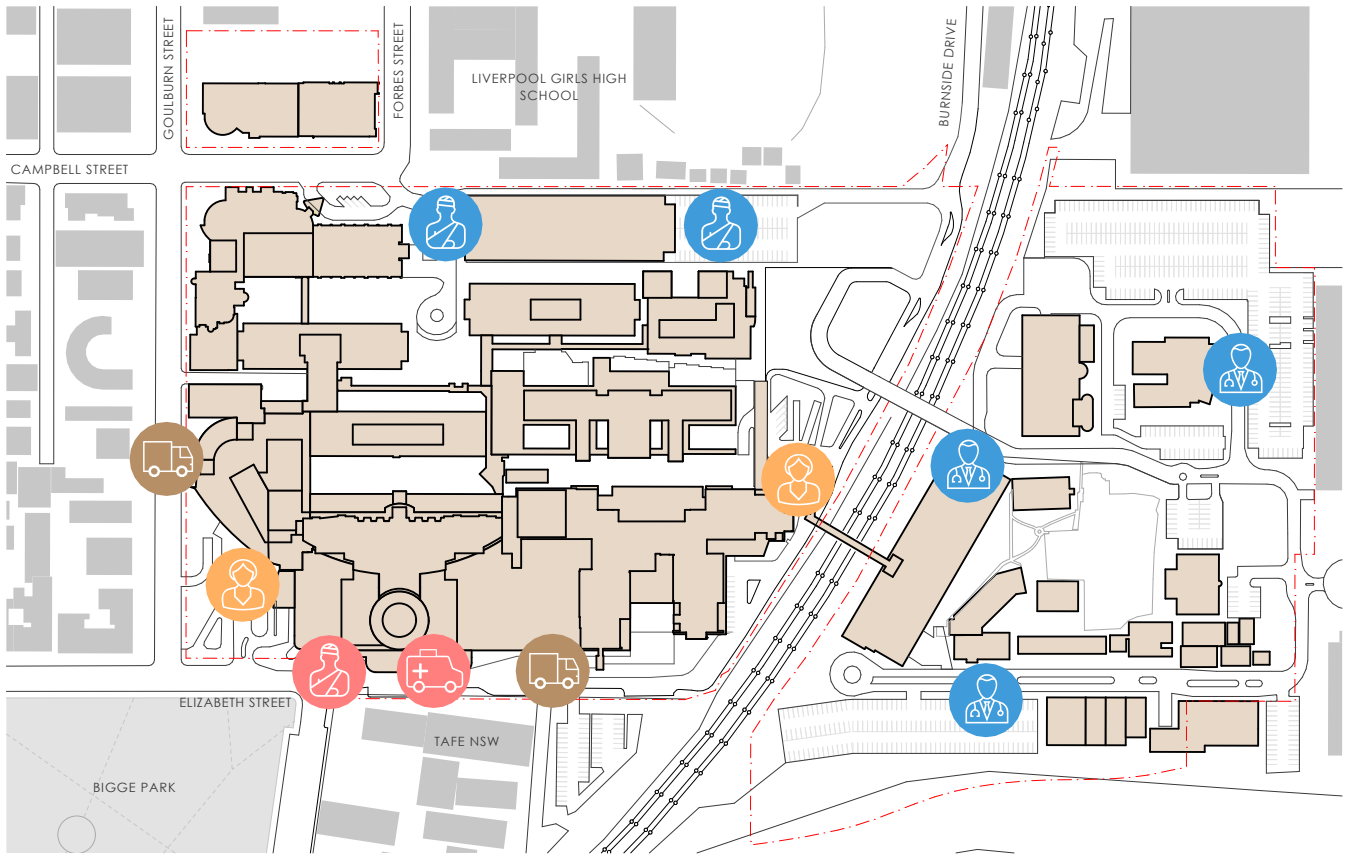
- A new major internal hospital street (north-south) intersecting the existing primary east-west street
- Introduction of a shared zone to Campbell Street to provide seamless connection to the sites to the north including the Ingham Institute and the potential future growth of the Innovation Precinct (LIP)
- A new bridge connection over Campbell St to the Ingham Institute
- Improved vehicular connectivity around the campus
- Improved pedestrian circulation throughout the campus including covered access to new and existing parking facilities
- A major repositioning of the campus to improve permeability, access and to allow connectivity to future health-related development on adjacent sites

1. Main public non critical drop-off located at rear of hospital site; remotely located from majority of services
2. Unassuming entry from Elizabeth Street
3. Unclear hospital entry from Campbell Street

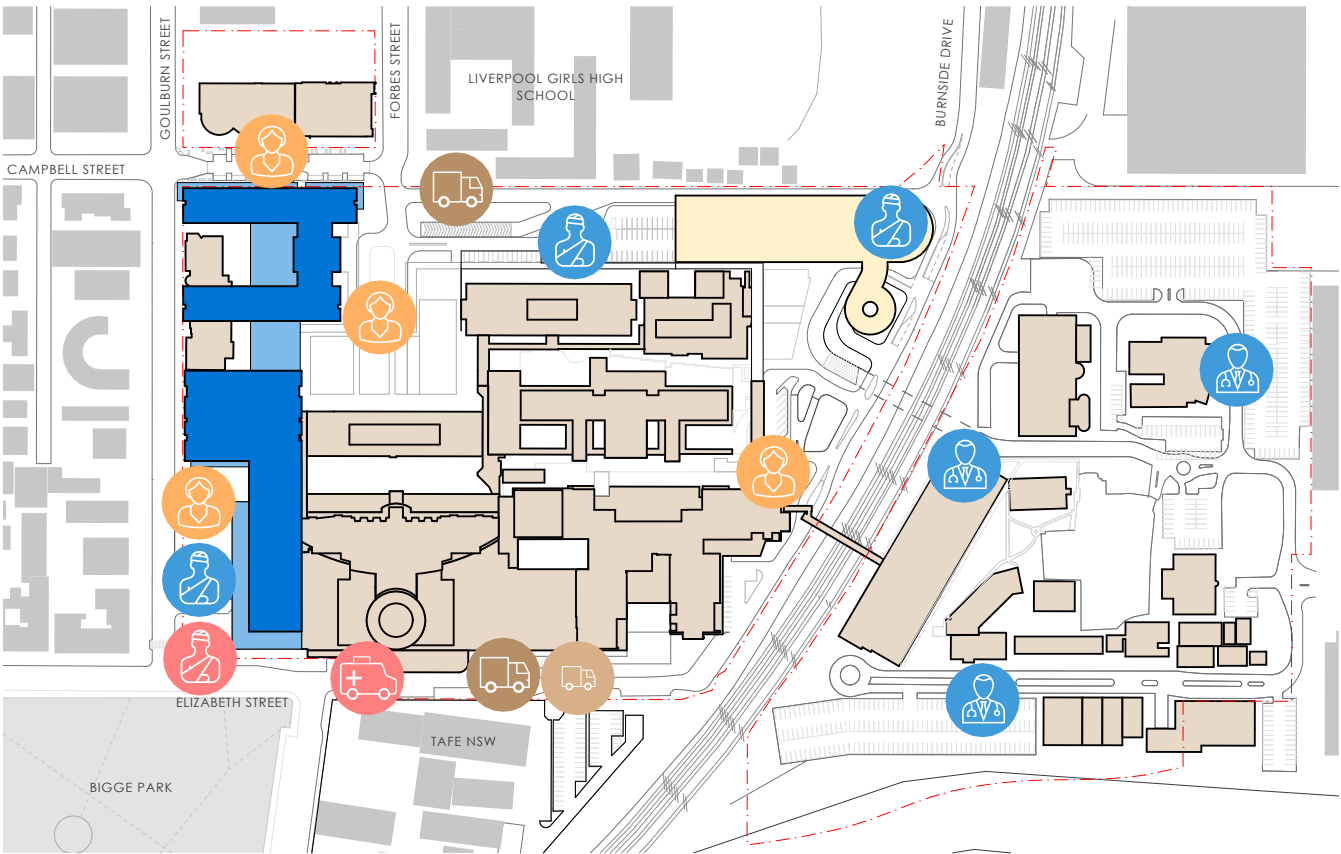
1. Public entry points focused around new integrated services building
2. Loading entry re-orientated to suit new road network
3. Secondary loading entry pointed added to service new integrated service building

- site boundary
-  main public entry
-  public emergency entry
-  ambulance entry
-  public parking entry
-  staff parking entry
-  heavy vehicle loading
-  light vehicle loading

## EXISTING



## PROPOSED



# ACCESS & CIRCULATION

## PEDESTRIAN CIRCULATION

The LHAP project seeks to improve pedestrian circulation around the hospital campus with the establishment of a new major internal pedestrian street and an improved hierarchy of entry points and circulation routes through the hospital.

1. Disjointed and confusing pedestrian access around hospital site

- 1. Major pedestrian "street" created within new integrated services building, connecting to major hospital entry points, education hub and Clinical Services Building, resulting in a clear and cohesive way finding solution
- 2. Simplified pedestrian flows established through the rest of the hospital site that have orientation viewpoints out into the landscape
- 3. Provide visual links between major destinations where possible.
- 4. Provide a series of place making nodes, courtyards and identifiable landmarks to improve wayfinding and orientation.

---

site boundary

→

primary pedestrian flow "street"

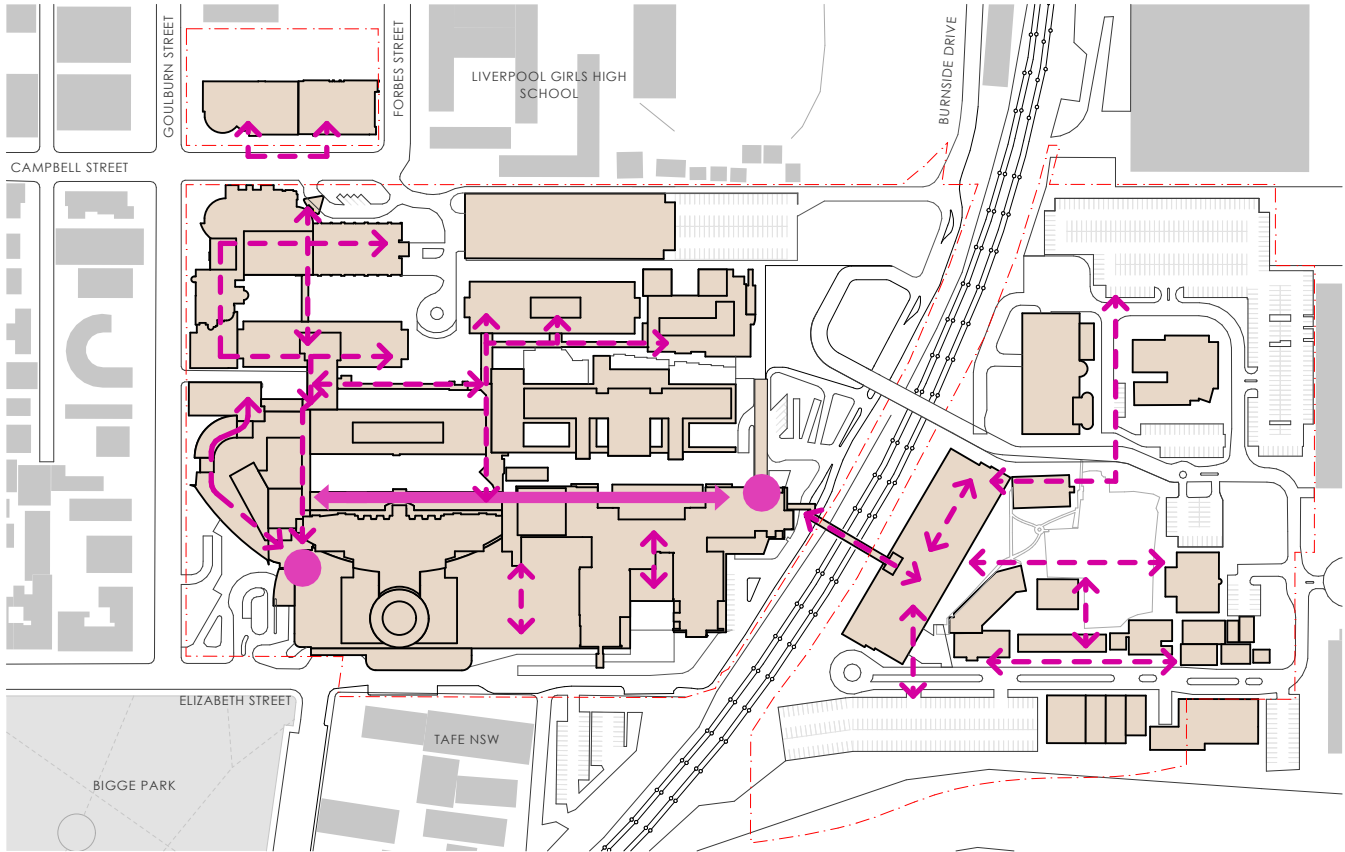
- - ->

secondary pedestrian flow

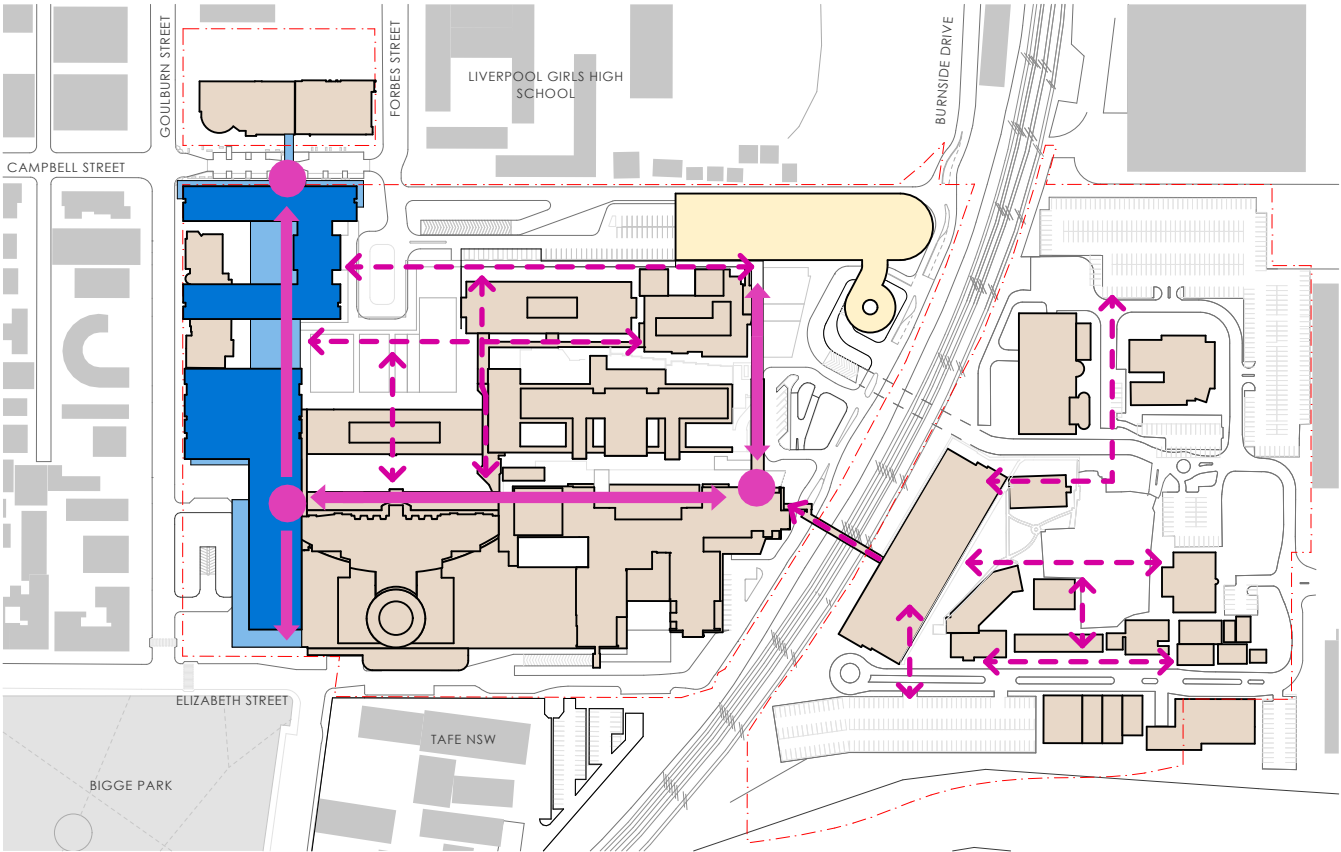
●

hospital entry point

### EXISTING



### PROPOSED





ACCESS & CIRCULATION

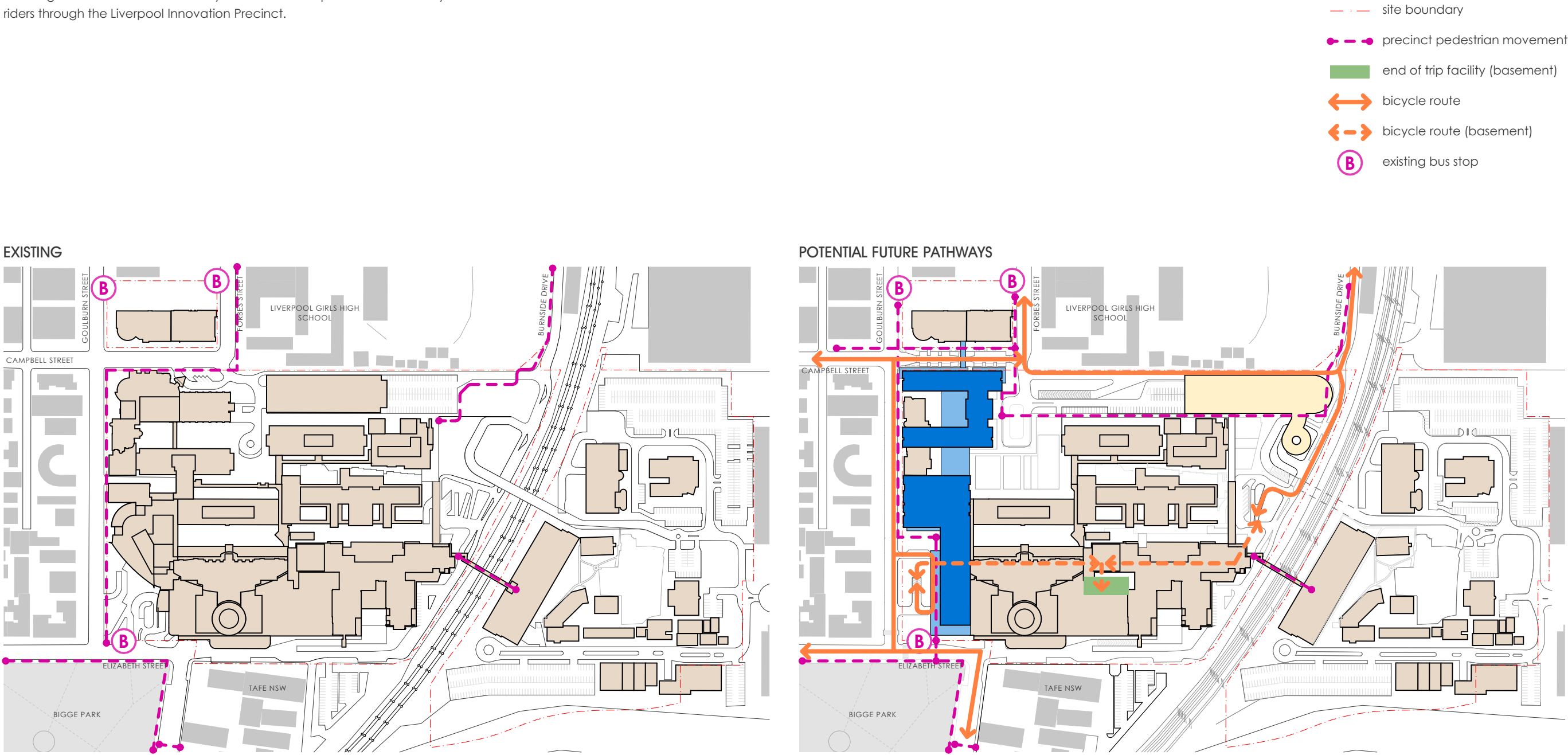
BICYCLE ROUTES & PUBLIC TRANSPORT

The LHAP project seeks to lay the foundation for improved connectivity between the hospital campus and the surrounding public transport nodes, in particular Liverpool and Warwick Farm train stations.

This has been addressed through the layout of the overall Master Plan as well as improvements to the scale, legibility and quality of the main entry on Goulburn Street as well as the rear entry off Burnside Drive.

We understand council is in the process of developing plans for public domain and streetscape upgrades including bicycle routes. Consultation with Council is ongoing to ensure the LHAP project aligns with these plans and aspirations.

The diagram below outlines the likely future routes for pedestrians and bicycle riders through the Liverpool Innovation Precinct.



SERVICING, WASTE & LOADING

SERVICING & LOADING

The LHAP project proposes a revised servicing strategy for the campus to reduce vehicular congestion at critical points and deal with the current and future growth of the hospital.

The primary objective is to remove the majority of service vehicles approaching the campus through the town centre from the south-west via Goulburn and Elizabeth Streets. This will reduce congestion at the primary entry to both the general hospital and the emergency department and potentially take service vehicle traffic out of the Town Centre generally.

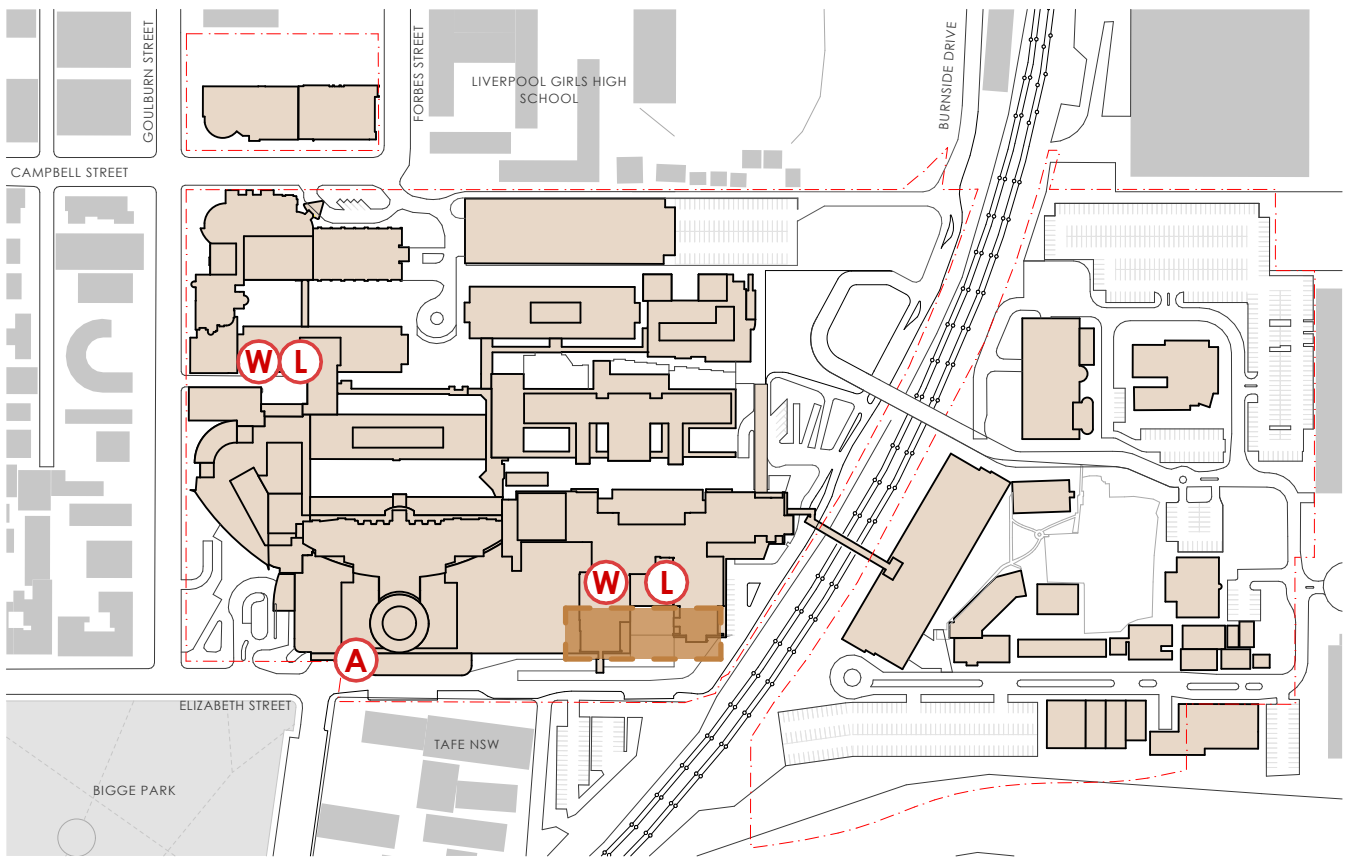
Crucially, this will also free up the expanded ambulance parking bays along Elizabeth Street, giving priority to emergency vehicles to service what will be one of the largest and busiest emergency departments in the state.

The proposed arrangement directs waste, small and medium rigid service vehicles via Burnside Drive from which they can continue around the rear of the hospital to the existing loading dock, or travel via the new hospital road to the new ISB loading and waste facility.

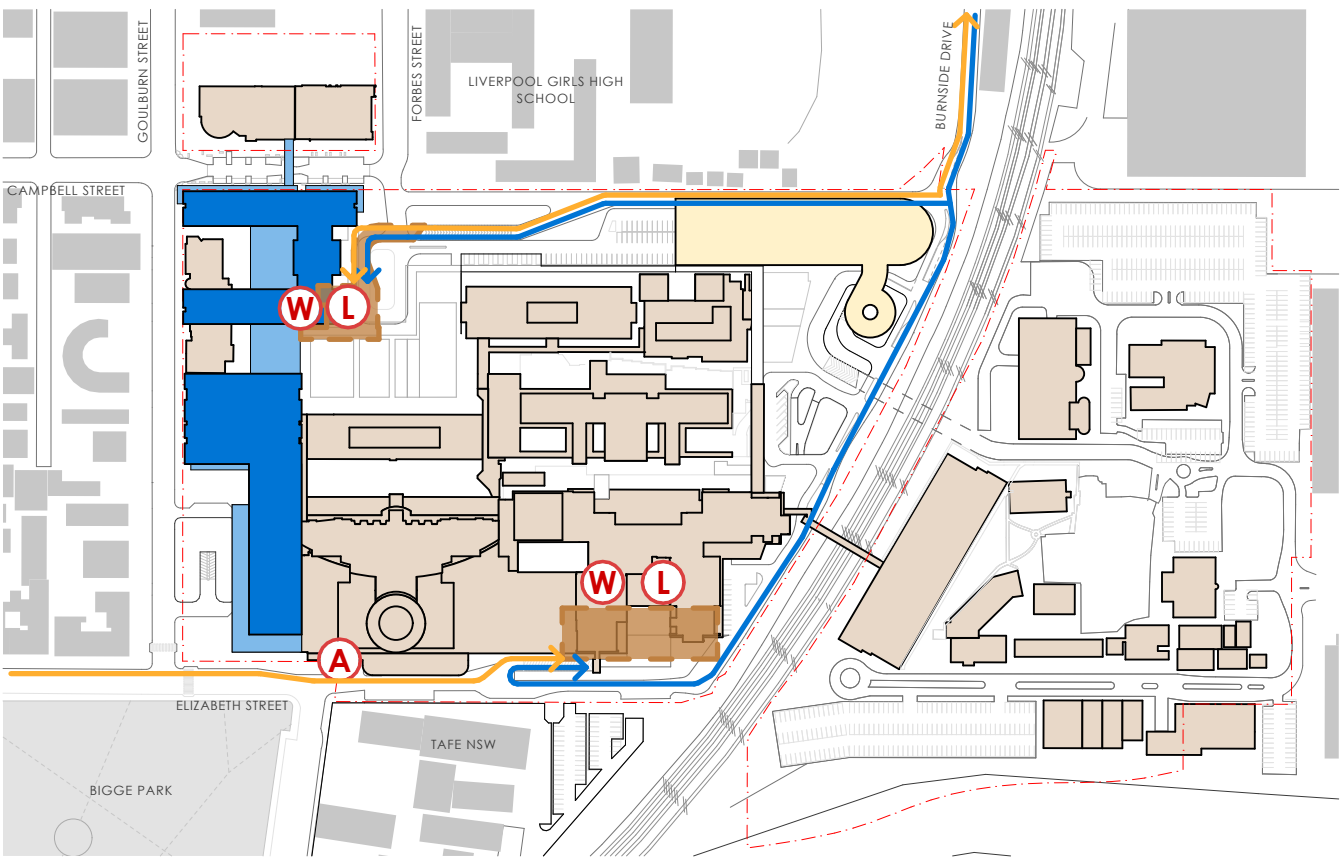
This strategy also supports the future growth of the hospital campus beyond the scope of this project.



EXISTING



PROPOSED





BUILDING PLANT STRATEGY

OVERVIEW

The hospital is to be constructed in two stages with two main plant floors serving each stage.

Stage 1 - Level 4 Plant room (Southern Podium)  
Major mechanical plant indlues AHU Plant, Cooling Towers, Chiller Plant and Hot Water Plant. Major Electrical plant includes the Main Switch Room, Sub Stations and Diesel Generator.

Stage 2 - Level 6 Plant room (IPU Towers)  
Major mechanical plant includes AHU and Hot Water Plant. Major electrical plant includes ICT Campus Distributor and the Standby Diesel Generator.

MECHANICAL PLANT

SOUTHERN PODIUM (STAGE 1)  
Ground to Level 3 is served from the Level 4 Plant floor with two main AHU plant rooms to the north and the south. A series of local on floor AHU plant rooms serve the basement with air intake and return air risers from ground level courtyards.

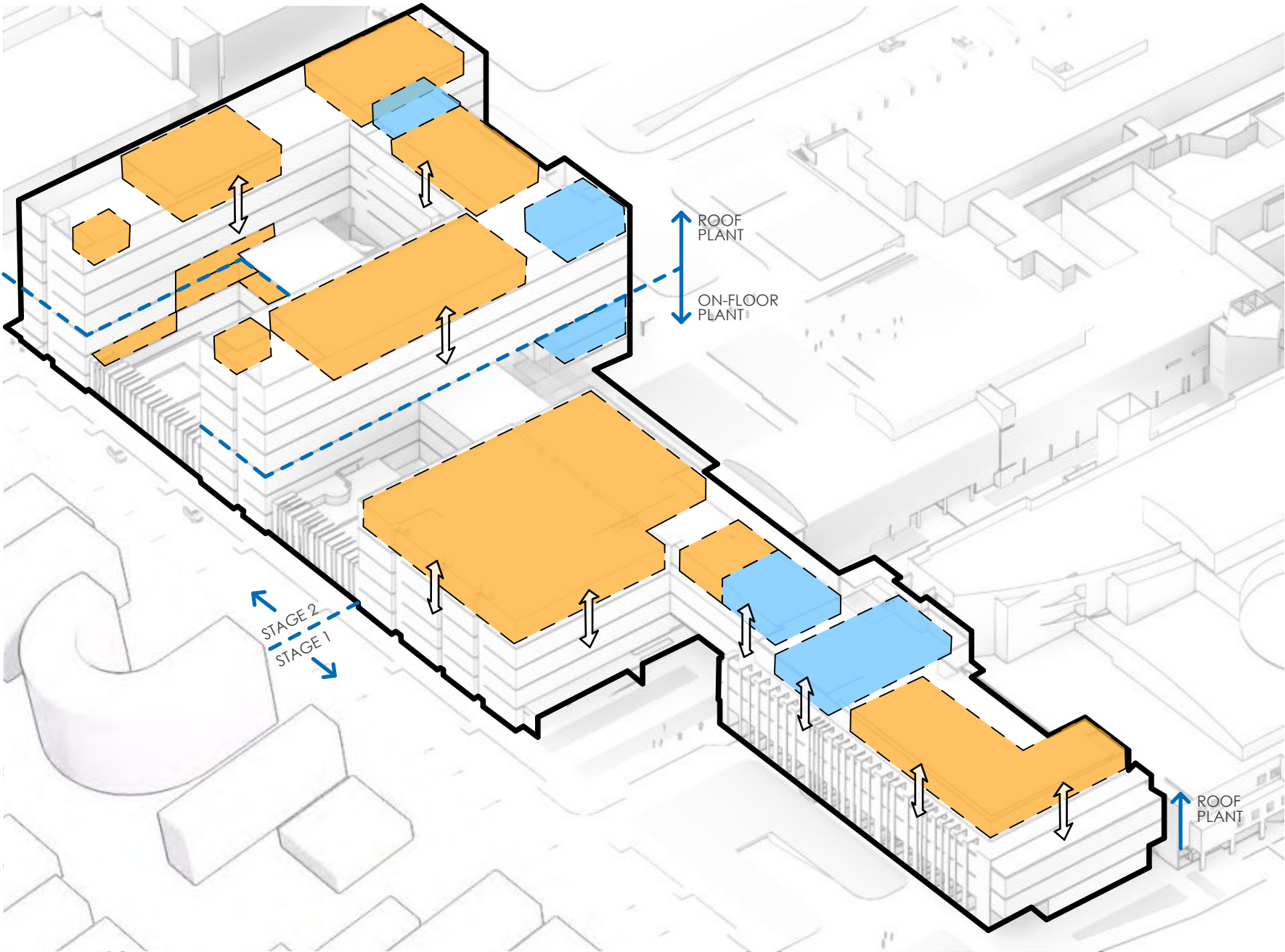
TOWERS (STAGE 2)  
The IPU floors (Level 3 to 5) are served from the Level 6 Plant floor with 4 main AHU plant rooms and Hot Water plant.

PODIUM (STAGE 2)  
The Podium levels (Ground to Level 2) are served by local on floor AHU plant rooms with air intake and return via perforated mesh over louvres in the façade. The north-south internal atrium is served from the L6 Plant Room and risers located around the main core. Retail spaces within the Podium are served by ceiling mounted Fan Coil units. A series of local on floor AHU plant rooms serve the basement with air intake and return air risers from ground level courtyards.

ELECTRICAL PLANT

SOUTHERN PODIUM (STAGE 1)  
Ground to Level 3 is served by a Main Switch room, Substation, Diesel Generator and UPS located in the central zone of the Level 4 plant.

TOWERS & PODIUM (STAGE 2)  
Ground to Level 6 is served by a Main Switch room located on Level 1 and Substation on Level 2. The Level 6 plant floor will house the Campus Distributor and backup Diesel generator and UPS.



- Major Mechanical Plant
- Major Electrical Plant

LANDSCAPE STRATEGY

There is a significant body of evidence showing the value of green spaces and landscaping in the health, wellbeing and recovery time of patients, carers and hospital staff.

This project seeks to significantly increase the amount of green space within the hospital campus with the introduction of a new entry forecourt and landscaped garden off Forbes Street, enlarged entry forecourt off Goulburn Street and a pocket park to the east adjacent the proposed new Multi-Storey Car Park (subject to separate SSDA submission).

In addition to these new landscaped areas is extensive tree planting throughout the campus and the bounding public domain.

The primary landscaping considerations are:

- Patient focussed, stress free and enjoyable
- Circulation and way-finding through the landscape
- The micro-climate and amount of sun and shade
- The function, purpose and use of open spaces
- User amenity
- Maintenance and durability

For more information refer to the detailed Landscape Report prepared by CLOUSTON Associates included within the SSDA.

LEGEND

Existing trees retained

Proposed Trees

Paving and banding

Mass Planting

Lawn

Gravel

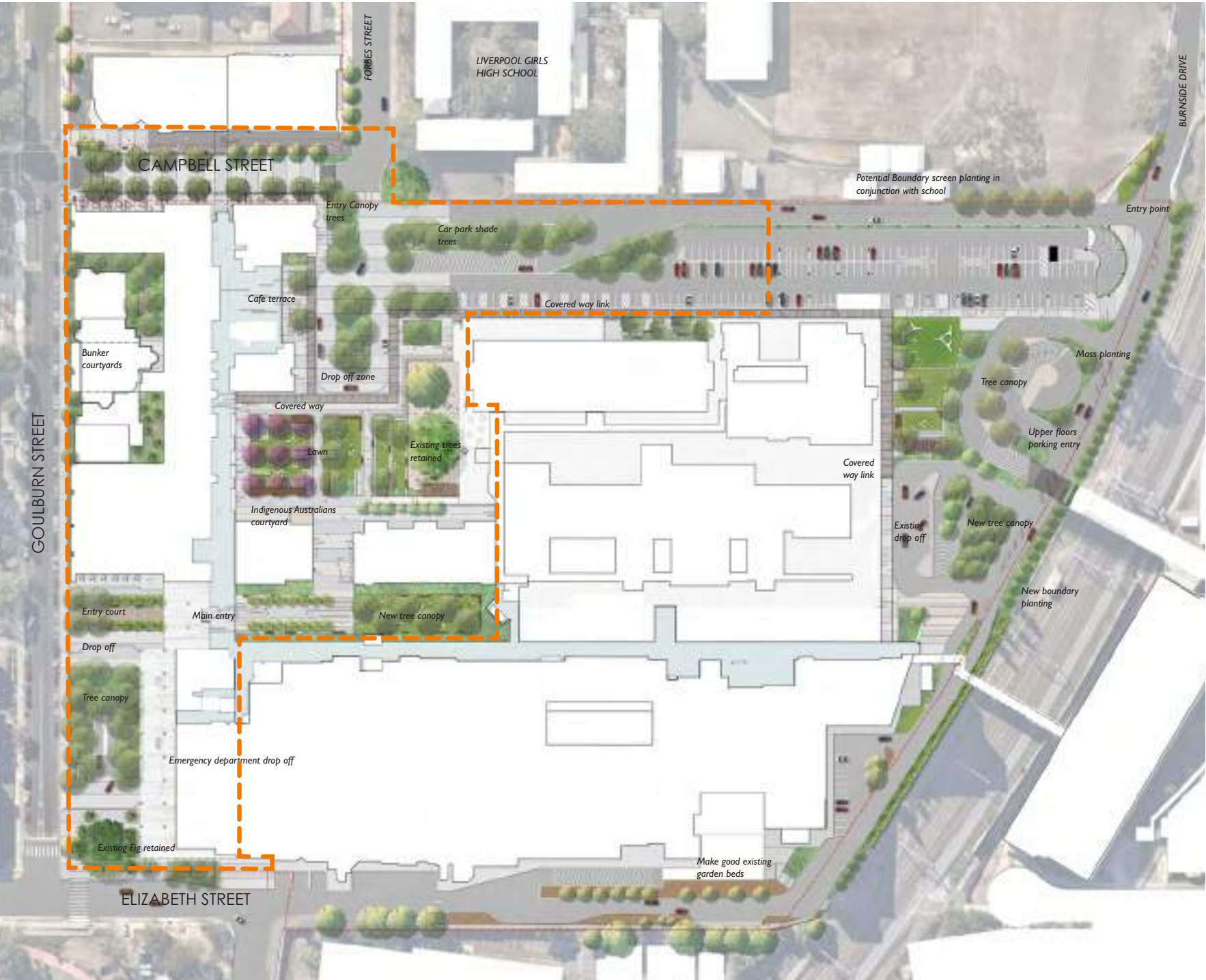
Mulch

Road

Internal Walkway

Covered Way

Main Works scope of works



Extract of the Landscape Plan prepared by CLOUSTON Associates



# WAY-FINDING STRATEGY

## WAY-FINDING SIGNAGE

Statutory signage will be provided throughout the precinct as required by NCC 2019, any applicable Australian Standards as well as any other relevant codes or regulations.

Way-finding signage will be included throughout to assist pedestrians, vehicles and the general public to manoeuvre around the precinct in a safe and efficient manner. This will include major signage locations at vehicle entry & exit points from Goulburn Street, Campbell/ Forbes Street and Burnside Drive, as well as directory board signage at each entry lobbies and general way-finding signage at all critical junctions and intersections.

Car park signage will be included to assist with navigation within the car park, as well as to-and-from key arrival points and destinations.

We note that a precinct-wide approach to way-finding signage is necessary to ensure the proper operation of the hospital and the seamless integration of the Education Research Hub with the Main Hospital and any other health-related infrastructure. As such, finalisation of the way-finding strategy, graphic design and typeface will be subject to further review with the LHD Main Works Project Team, NSW Health Infrastructure and key stakeholders.

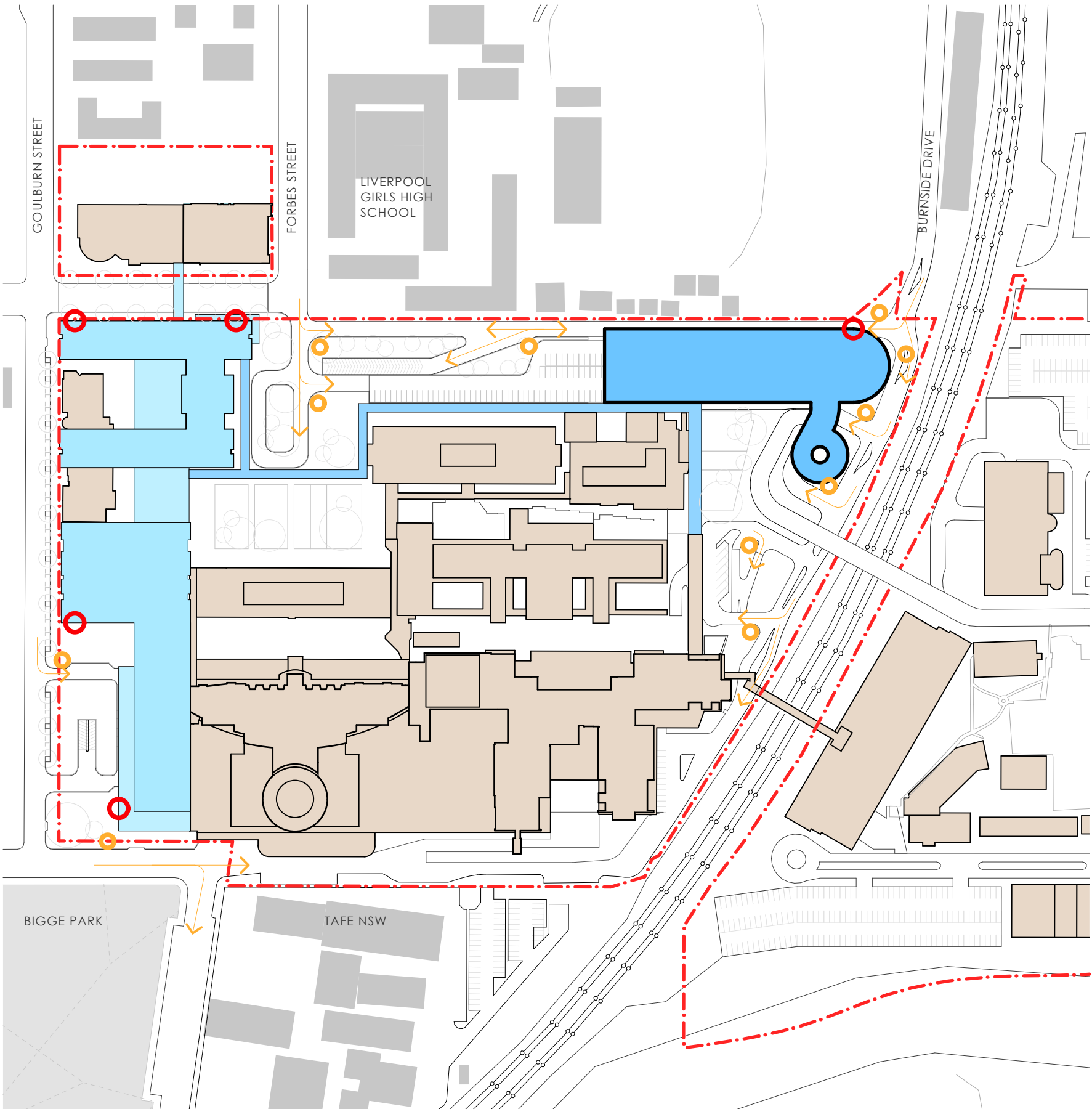
Key way-finding signage locations have been shown on the plan adjacent.

## BUILDING SIGNAGE

The hospital will incorporate building signage for information purposes.

Key building signage locations have been shown on the plan adjacent.

- intersection vantage points
- way-finding signage location
- building signage location
- new integrated services building
- new multi storey car park
- site boundary



FUTURE EXPANSION & FLEXIBILITY

OVERVIEW

The development of the master plan for Liverpool Hospital has been informed by the SWSLHD Clinical Services Plan (CSP) in developing a built form outcome for the site within the terms of reference to 2026/27.

At the same time it has recognised that there will be future development of the site that will address not only the 2031 component of the current CSP but further development to continue to anchor the role of the Hospital as the principal tertiary and quaternary referral hospital for SWSLHD.

The current phase of the masterplan address the 2026/27 parameters of the CSP. This encompasses development of the western sector of the campus extending from the 1997 Clinical Services Building through to the northern precinct along Goulburn Street.

This configuration of the masterplan has established a planning framework that allows for the future expansion of clinical and non-clinical services as per the following:

2031 SCOPE

A number of building zones have been identified to incorporate the 2031 components of the CSP. This includes the site currently occupied by the Don Everett, Brain Injury and the Caroline Chisholm buildings.

The diagram adjacent outlines a potential building envelope for these future stages. Planning for 2026/27 has incorporated a number of strategies to facilitate this future development including the placement of entry points, circulation paths and the planning of clinical areas to minimise the movement of departments within the hospital during future work.

BEYOND 2031

Future development beyond 2031 should address connectivity between the above development and the existing Clinical Services Blocks, investigating options for the relocation of the Mental Health Building currently within the centre of the campus.

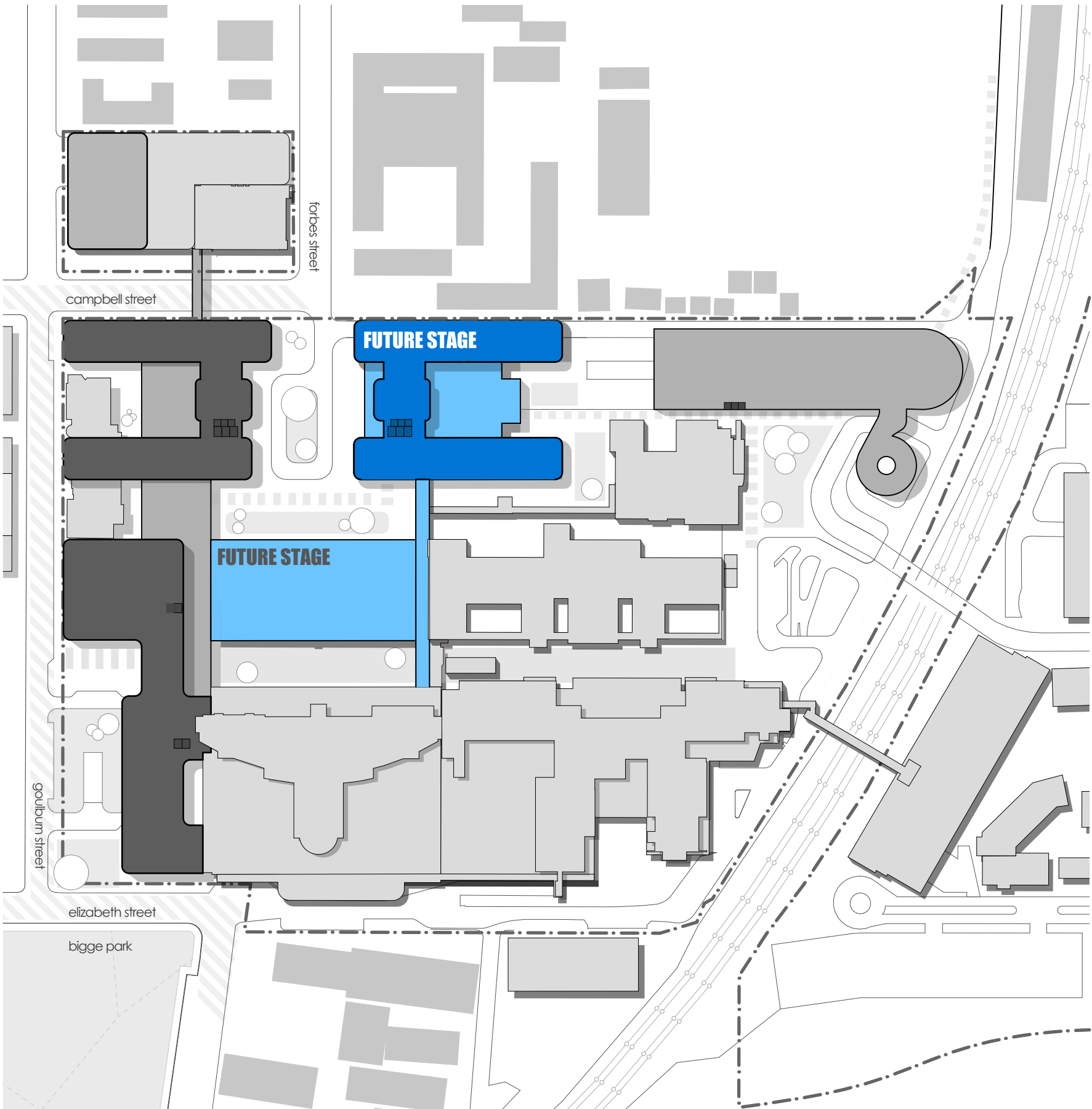
In addition, expansion of the Hospital through acquisition of the site currently accommodating Liverpool Girls High School MAY be considered. This expansion assumes amalgamation of the Liverpool Boy's and Girl's High Schools into a high-rise facility, which we understand is currently being assessed by Schools NSW.

This development phase would also facilitate linkages to the future expansion of research and education facilities to the north of the current Ingham Institute and Health Services Building on Campbell Street.

2026/27 FLEXIBILITY

In addition to the expansion options outlined above, the 2026/27 development has been designed to allow internal flexibility within the proposed building envelope.

This includes soft space (typically non-clinical spaces) adjacent to clinical areas allowing for future expansion and standardising layouts where possible to allow for the seamless movement of departments.





HEIGHT & DENSITY

HEIGHT

The overall building height of the proposed ISB is 32.9m and sits within both the LEP Height Control (35m height limit) and the aviation controls related to the two helipads on the campus.

The overall building height is also consistent with the most recent development on the campus, being the new Clinical Services Building completed in 2015.

The three-storey podium is approx 14m above natural ground level and complimentary in scale to the existing apartment building types along Goulburn Street, typically four-storey (approx 12 - 13m).

DENSITY

The existing density of the hospital campus is:  
0.75:1 FSR

The proposed density of the campus including the proposed new ISB is:  
0.90:1 FSR

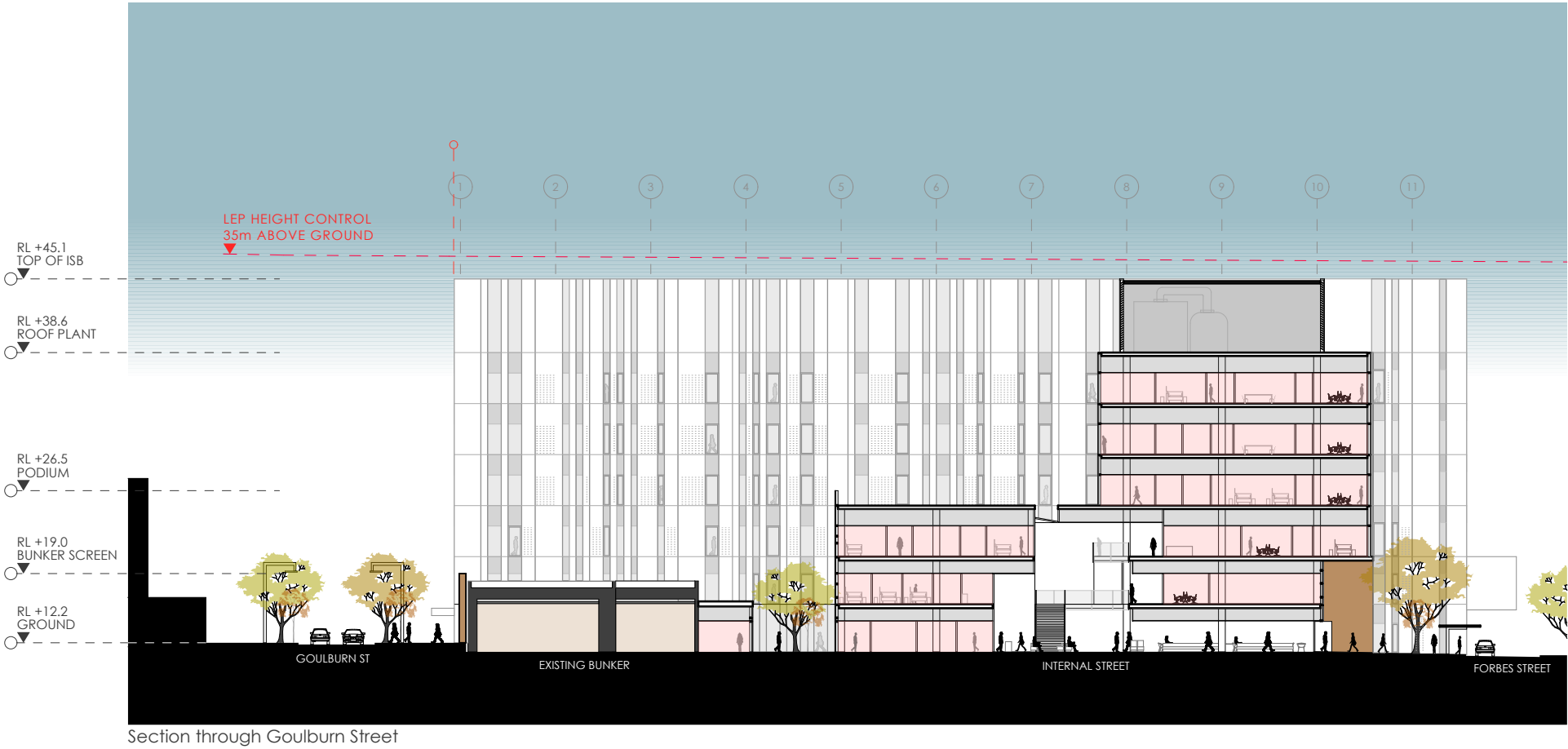
This represents a minor change to the density of the overall hospital campus.



Aerial CGI of the proposed overall LHAP campus



Aerial CGI of the proposed overall LHAP campus



BULK & SCALE

REDUCING VISUAL BULK

The massing of the ISB has been developed to present the building as a series of vertical towers that meet the ground and break up the visual bulk of the overall development.

This is further described on page 3 - 03 which outlines the strategy for the massing of the building. The visual impact assessment on pages 4 - 05 to 4 - 08 illustrates the proposed new building form and facade expression, both of which contribute to an appropriate massing and bulk.

AN APPROPRIATE SCALE

The design of the new ISB seeks to respond to a variety of scales from which the building will be seen. We have approached this by addressing three predominant scales:

HUMAN SCALE

The human scale is typically the ground floor where people are interacting directly with the building or walking on adjacent footpaths.

A key DESIGN PRINCIPLE has been to open the campus to the streetscape where possible, promoting activation of the surrounding public realm and a public interaction with the activity of the hospital.

Facades on the ground plane have a tactile materiality, typically brick to compliment to the local context. Awnings, street furniture and landscaping all contribute to a positive public domain and a comfortable and appropriate sense of scale.

STREETSCAPE SCALE

The streetscape scale is typically passers by on the opposite footpath, vehicular traffic or occupants within the lower levels of neighbouring buildings. The podium massing responds to this scale, with an appropriate level of visual detail and materiality.

On the northern elevation where the tower comes to ground, the streetscape scale has been addressed with a series of 'pop-outs' that create opportunities for balconies and large areas of glass that promote visual interaction and casual surveillance of Campbell Street. These contribute to an appropriate sense of scale that is complimented by the tower facade itself that transitions from a smaller, fine-grain pattern to a larger-scale pattern above the streetscape.

TOWER SCALE

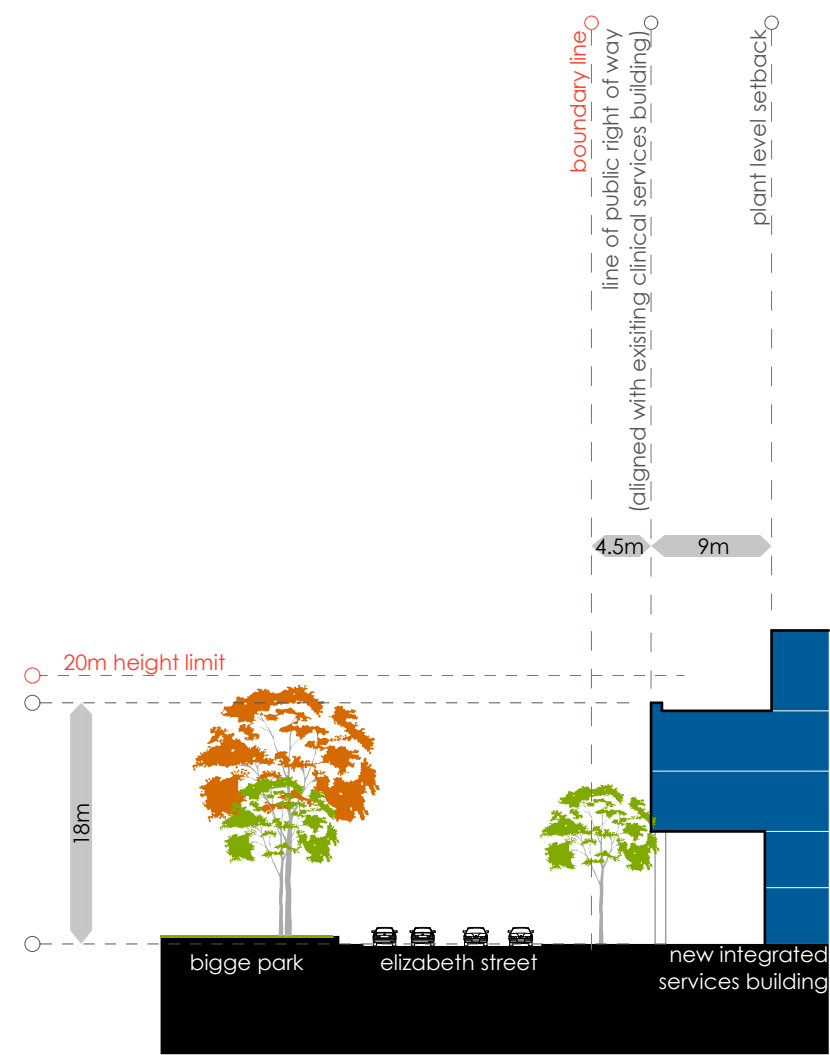
The tower scale is typically seen from a distance or higher vantage point. This is the most prominent part of the building as seen from many parts of Liverpool Town Centre.

The tower facade has been designed with a clear and refined expression that accentuates the verticality of the towers and provides a nod to the future of the Health & Academic Precinct.

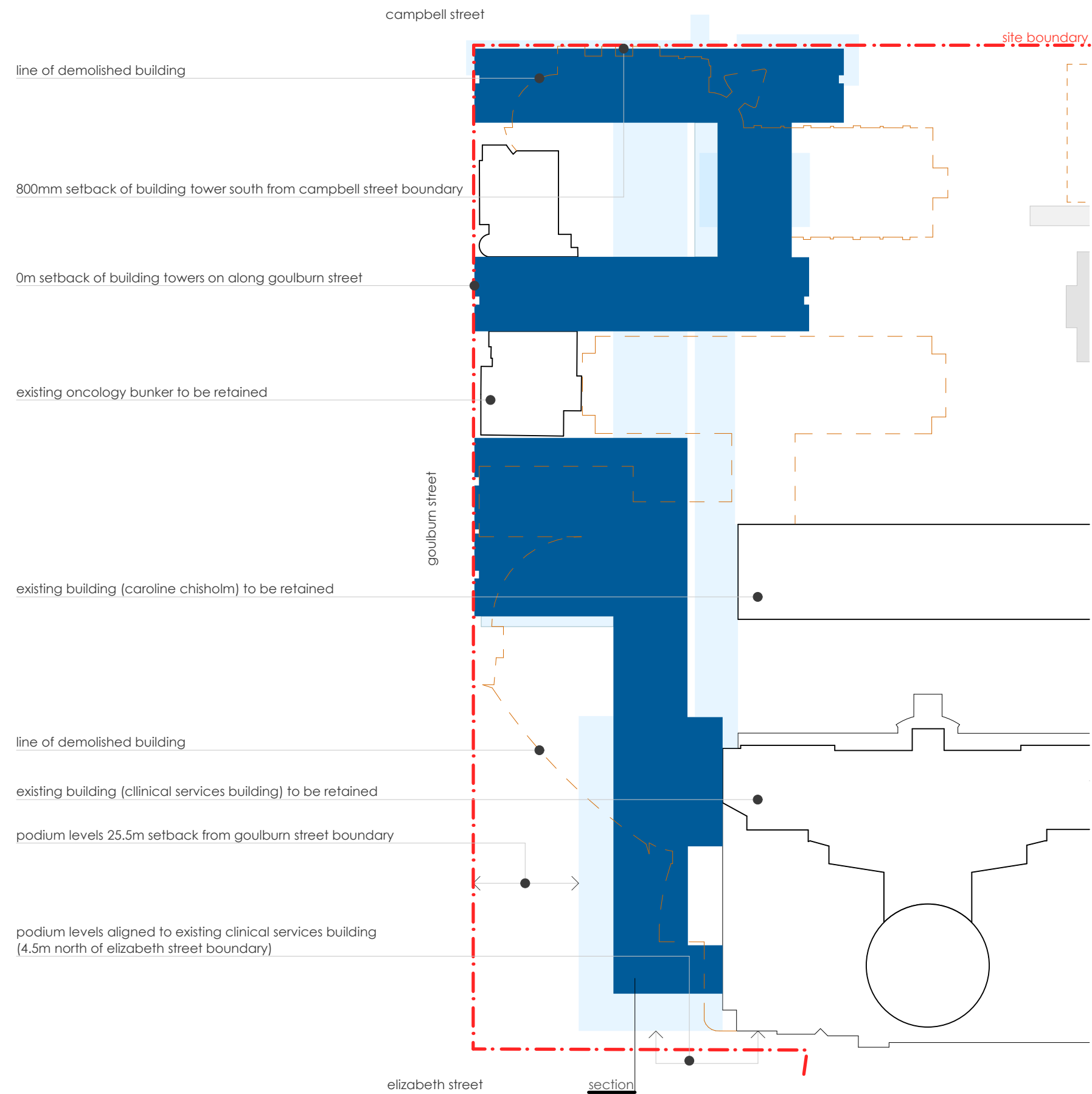




SETBACKS



SECTION THROUGH ELIZABETH STREET



ENVIRONMENTAL IMPACTS

ACOUSTIC IMPACT

A Noise and Vibration Assessment has been carried out and included in this SSDA submission.

The report provides an assessment of potential noise from excavation, construction and ongoing operation of the hospital and the potential impacts on surrounding areas, including the Boys & Girls High Schools to the north and the residential apartments to the west.

VIEW IMPACT

The proposed ISB results in minimal loss of views from neighbouring buildings.

The apartment buildings along Goulburn Street opposite the new ISB typically have internally oriented balconies and living spaces, with minimal views towards the hospital. Any east-facing windows currently have a poor outlook towards existing hospital buildings, rooftops and the existing loading dock.

The new ISB proposes an enlarged landscaped entry forecourt off Goulburn Street which will provide greatly improved outlook from neighbouring buildings. Similarly, the removal of the existing P2 car park and the new landscaped entry forecourt off Forbes Street will provide improved visual amenity and opportunities for outlook from existing and future buildings on the schools site and the Ingham Institute.

A View Impact Assessment has been carried out and included on page 4 - 05 of this report.

LIGHT SPILL

The lighting strategy for the Main Works will be developed during the detail design phases of the project and will consider the environmental impact of light pollution and glare on the surrounding precinct.

All lighting shall be designed and documented in accordance with AS/NZs1680 and AS/NZs 4282-1997 Control of the obtrusive effects of outdoor lighting.

It is anticipated that the impact of light spill on neighbouring properties will be minimal due to the following:

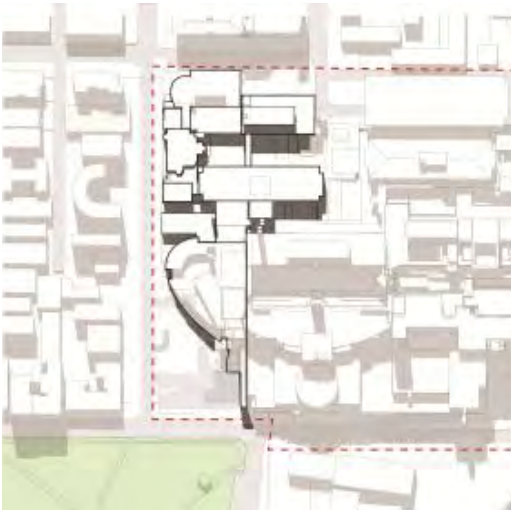
- the western facade of the ISB facing the residential properties on Goulburn St is largely solid, with minimal glazing that would allow light spill
- major landscaped open spaces that would incorporate external light fixtures are largely internal within the hospital campus
- lighting design would be sensitive to the negative effects of up-lighting and other forms of light pollution
- the school site to the north is not commonly in use during night-time hours

WIND IMPACT

A Wind Assessment has carried out and included in this SSDA submission.



Winter Solstice - 9am



Winter Solstice - 12pm



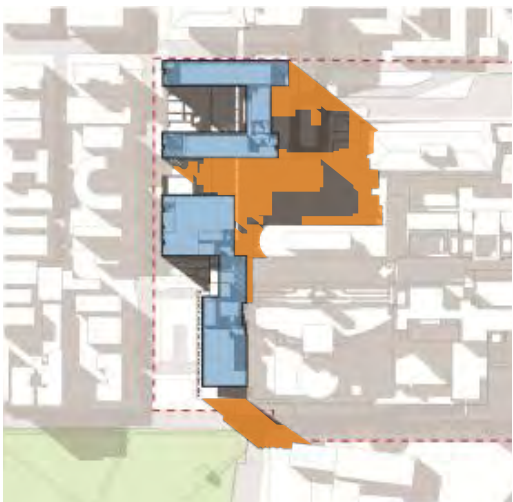
Winter Solstice - 3pm



Winter Solstice - 9am



Winter Solstice - 12pm



Winter Solstice - 3pm

SOLAR IMPACT

The proposed ISB has minimal over-shadowing impact on neighbouring properties throughout the year with the majority of shadows contained on the hospital campus itself.

Over-shadowing of the properties along Goulburn Street occurs only in mid-winter in the morning through to approximately 10am and is restricted to the eastern elevations and street-facing gardens only.

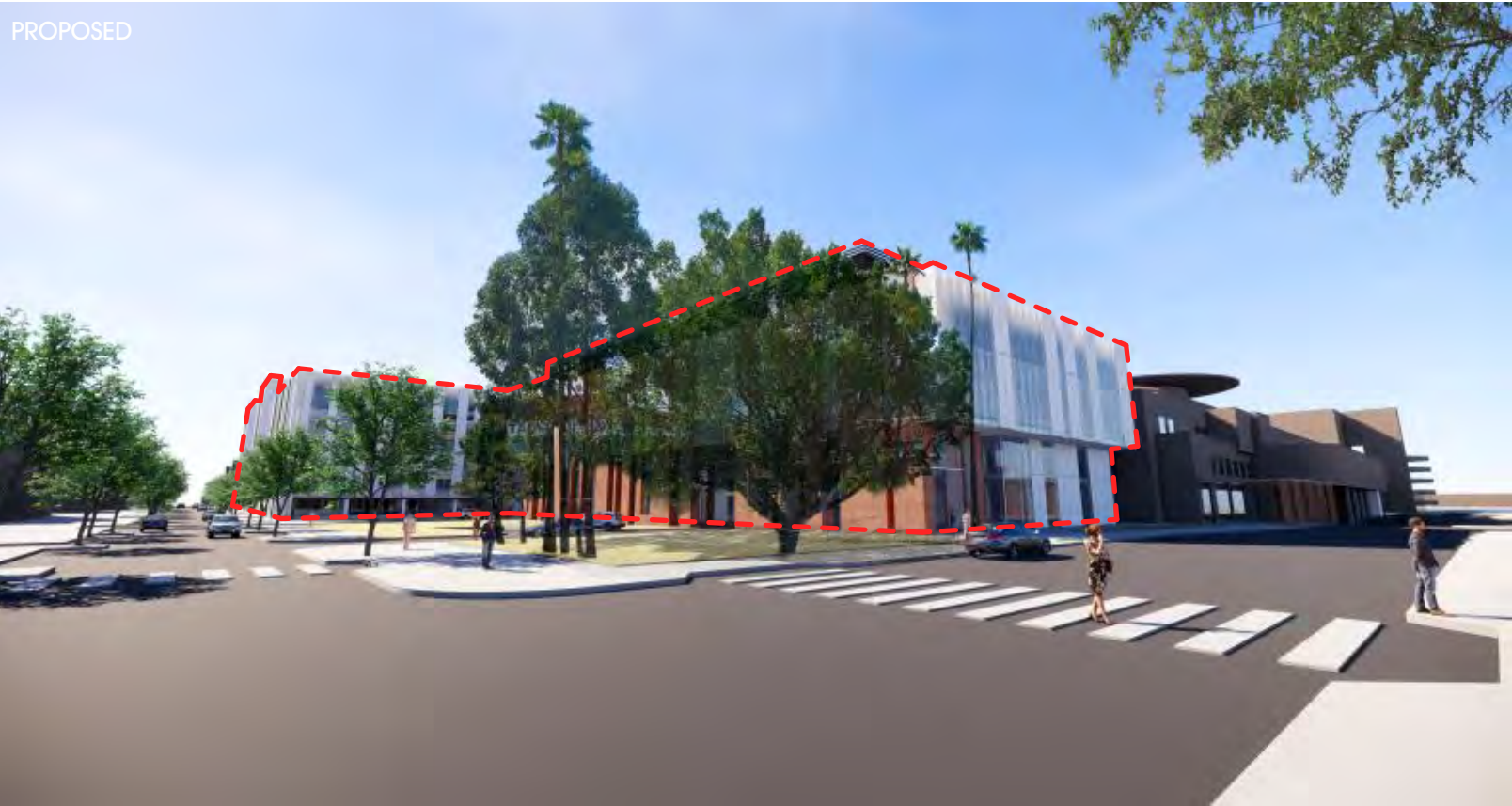
The impact on existing buildings within the hospital campus is minimal, contained mostly to the Caroline Chisholm building from 12pm onwards in the winter months.





 Outline of proposed works





 Outline of proposed works





 Outline of proposed works





 Outline of proposed works



# SUSTAINABILITY

The project seeks to maximise environmental initiatives to reduce the carbon footprint of the LHAP development, both during construction and operation.

The project team is committed to exceeding sustainability targets where possible and appropriate. An example of some of the initiatives being explored are listed adjacent.

The project is targeting an equivalent / self-certified 5 Star Green Star rating utilising the Green Building Council of Australia's (GBCA) Design and As-built rating tool (DAB) version 1.3.

Initiatives will be considered across all Green Star categories including:

- Management
- Indoor environment quality (IEQ)
- Energy
- Transport
- Water
- Materials
- Land use and ecology
- Emissions
- Innovation

The key sustainability objectives for the new building include:

- Provision of a comfortable and healthy indoor environment
- Minimisation of non-renewable resource consumption
- Cost-effectiveness of energy usage over the building life span
- Reliability and ease of maintenance of the building
- Minimisation of waste during the construction and operation of the building
- identification and appropriate remediation / disposal of in-ground hazardous materials



Concrete that has reduced portland cement content, a percentage of captured or reclaimed water and alternate aggregate materials



Facade system that minimises heat load and heat loss through the use of shading devices, performance glazing and high performance insulated wall panels



Energy efficient building systems for heating, cooling, lighting and building management through an integrated building management control system



Increased landscaped areas to reduce the urban heat island effect with durable, low-water use planting and water capture for irrigation where possible



Up-front planning, recycling and re-use of waste material to avoid waste to landfill during construction



Products and materials with a low-embodied energy and that are durable, long-lasting and require little maintenance or replacement



End-of-trip facilities, bicycle parking and change-management policies to promote the use of public transport and car-sharing



Sustainable water management with WELS rated tapware and exploration of options for water capture and re-use for irrigation and cooling towers



Improved health service that has significant public benefit including health outcomes, employment opportunities and strengthening community links to the health system



OVERVIEW

The Crime Prevention through Environmental Design (CPTED) guidelines under Section 79C of the EP&A Act 1979 are based on key principles for designing buildings and places that are safe, secure and deter criminal behaviour.

- These key principles include:
- Surveillance
  - Access Control
  - Territorial Reinforcement
  - Place Management & Maintenance
  - Vulnerability

LHAP has adopted the principles of CPTED in developing the site master plan and concept planning to establish a safe and secure environment for staff, patients, contractors and visitor. Details for each of the principles are outlined below.

SURVEILLANCE

- Passive surveillance will be encouraged through the incorporation of design features that maximise visibility of people using a public space. The following principles will be adopted and / or addressed to achieve this:
- Facilitation and promotion of passive surveillance into public spaces from new and existing buildings wherever possible
  - Promotion of passive surveillance from other users within the space by designing and encouraging a mixture of uses and users at different times of the day and night effectively activating the space for longer periods
  - Providing unrestricted sight lines between spaces and avoiding blind spots where possible
  - Providing lighting to ensure safe use and effective surveillance of the space after hours
  - Connection of spaces where possible to promote pedestrian movement

ACCESS CONTROL

- Access Control delineates spaces open to the public or where these spaces are restricted. The design will incorporate natural barriers such as roadways and landscaping, electronic and physical barriers through the use of the following:
- Limiting the number of public entries into the hospital and securing these after hours
  - Provision of CCTV monitoring of public areas to the hospital linked back to a security monitored point
  - Providing a 24-hour security station at the Emergency Department that can respond to other part of the hospital during occasions of duress
  - Providing electronic access points of entry and intercoms
  - Providing access control to clinical departments after hours
  - Providing 24 hour access control to engineering services areas and other sensitive sections of the hospital

TERRITRIAL REINFORCEMENT

- Territoriality provides social regulation through definition of space. The following principles will be adopted and / or addressed to achieve this:
- Clearly defining spaces into public and back-of-house through physical barriers or appropriate directional means
  - Not mixing public, patient and back-of-house activity in the same space and therefore causing confusion in the diverse users of the space
  - Clearly identify control points to clinical areas
  - Ensure that circulation patterns are unambiguous and do not create confusion in offering too many options for travel
  - Reinforcing public areas by introducing amenities such as seating and other elements of activation attracting desired users of the space therefore deterring undesirable activity
  - Clearly defining zones for public lifts and non-public (clinical) lifts allowing staff secure movement without the need to cross non-secure public zones

PLACE MANAGEMENT AND MAINTENANCE

- Maintenance is a reinforcement of ownership of property where as decline in space management and maintenance signifies reduced jurisdiction by the owners of the space and therefore less control in relation to access. The following principles will be adopted and / or addressed to achieve this:
- Fall protection from heights to include increased balustrade heights and or fully enclosing mesh
  - External spaces are to be designed with robust finishes requiring minimal maintenance
  - Ensuring clear observation lines to open areas that would be of high risk to the public such as loading docks and staff parking zones
  - Restricting access to sensitive areas such as goods lifts

VULNERABILITY

- The aspect of how vulnerable a person feels in a space will impact on the use of that space limiting its activation and attracting undesirable activity. The following principles will be adopted and / or addressed to achieve this:
- Effective lighting of spaces both natural and artificial
  - Provision of clear exit (escape) pathways allowing users of a space the option of more than one route out of the area
  - Avoiding blind spots in spaces and ensuring that distance visibility is available to all users of the space



Controlled entry points with reception and security



Connection of spaces, lighting, durable materials



Access control for restricted areas



GA NSW REVIEW PROCESS

2-05.1 OVERVIEW

The State Design Review Panel (SDRP) pilot program was established to deliver the principles and ambitions of Better Placed and to provide a consistent, state-wide approach to reviewing the design quality of State Significant projects.

The LHAP project team have had the opportunity to present to the GA NSW office on three occasions, once as an informal briefing with a focus on the MSCP and then two formal SDRP sessions regarding the Main Works.

Generally the feedback has been supportive and complimentary of the design approach and work undertaken to date. The project team has welcomed the process and developed the design to take into account commentary provided where possible.

The following is a brief summary of the sessions held and the design response to commentary provided.

2-05.2 INITIAL GA NSW REVIEW

Review of MSCP and overall LHAP Master Plan  
4th September 2019

The design and approach of the overall LHAP Master Plan was well received and supported, in particular:

- The concept and staging Master Plan
- The clarity of the movement diagram and connections to surrounding context
- The integration of wayfinding and landscaping

Further comments were provided relating to the MSCP which will be addressed in the MSCP SSDA Design Report to be submitted separately.

2-05.3 GA NSW SDRP SESSION #1

Review of Main Works and overall LHAP Master Plan  
23rd October 2019

The Master Plan analysis and rationale of the project were generally supported, in particular:

- The creation of public landscaped open spaces including retention of existing significant trees
- The creation of the internal street as the principal organising element of the new ISB
- Improvements to vehicle circulation and wayfinding, including traffic calming strategies

Following commentary provided by the SDRP, the following items were developed and incorporated into the final SSDA design submission:

- Reinforcing the idea of the landscape as a driver of the Master Plan by giving prominence to and privileging the proposed open spaces
- Further developing the open space to the north of the Caroline Chisholm building to minimise hard paving and create more areas of soft landscaping
- Further developing the landscaped walkway between the hospital entry and the visitor carpark structure to prioritise pedestrian amenity
- Introducing permeability and more transparency to the northern tower facade in particular and further developing sunshading and facade treatment to respond to orientation (the design strategy for the facade outlined on page 4 - 02 was developed in response to this commentary)

2-05.4 GA NSW SDRP SESSION #2

Review of Main Works Facade and Landscaping  
4th December 2019

The SDRP was complimentary of the project teams response to the commentary from SDRP #1 and generally supported the facade and landscape design approach. Following commentary provided by the SDRP, the following items were developed and incorporated into the final SSDA design submission:

- Further refinement of the tower facade to introduce further permeability, transparency and more detail around sunshading and facade treatment (the design strategy for the facade outlined on page 4 - 02 was developed in response to this commentary)
- Further refinement of the podium to clearly differentiate its scale, materiality and articulation from the tower elements
- The introduction of horizontal elements at podium level to provide relief from the vertical treatment of tower facades
- Further refinement of the 'pop-outs' along the northern elevation to provide deeper reveals and appropriate shading to glazed areas
- Further refinement of the brickwork on the podium to better integrate with the overall architectural expression of the buildings (the use of brickwork for the podium was supported)

Refer to CLOUSTON Associates Landscape Design Report for details of SDRP Session #2 commentary relating to the landscape design.

2-05.5 GA NSW SDRP SESSION #3

Review of Main Works Facade, Landscaping and MSCP  
25th March 2020

The SDRP was complimentary of the project teams response to the commentary from SDRP #2 and supported the EIS Submission for both the Main Works and MSCP.

2-05.6 ITEMS FOR FUTURE SDRP REVIEW

No further commentary or recommendations were made by the SDRP with respect to the project. The SDRP noted that no further reviews were necessary unless the project team requested SDRP input.

Partners  
James Fitzpatrick  
Paul Reidy  
Rod Pindar

Principals  
Brian Cunningham  
Sergio Azevedo

Senior Associates  
Jze Gan  
Kiran Jagdev  
Matthew Mar  
Joanna Murchison  
Elizabeth Need

Associates  
Emma Bond  
Pei-Lin Cheah  
Jessica Rodham  
Quincy Ye

Studio Manager  
Melissa Edwards

Nominated Architects in NSW  
James Fitzpatrick 9303  
Rod Pindar 9019

Architecture is a fine balance between innovative design solutions and the practical importance of fitting buildings to people, the environment and budget.

Since its foundation, we have created an inspiring architectural response to unique problems throughout Australia. Our work originates from a particular stream of architecture that is independent of the self-conscious style based approach and is more about technical problem solving.

Our approach is much closer to engineering than the high aesthetic ground, but is not unaware or unconcerned about the aesthetic outcome. Instead, we see this as more of a result of good thinking, than as a goal in and of itself.

We create solutions related to the immediate environment and the context of the project, resulting in buildings that are a pleasure in which to be live and work and be educated.

Our studio does not limit itself to a particular scale or typography of project, preferring to work across all scales and building uses, where we believe we can add value to the design and construction process.

A Level 6, 156 Clarence St  
Sydney NSW 2000

P +61 2 8274 8200

E [enquiries@fitzpatrickpartners.com](mailto:enquiries@fitzpatrickpartners.com)

W [fitzpatrickpartners.com](http://fitzpatrickpartners.com)

ABN 19 081 636 900

