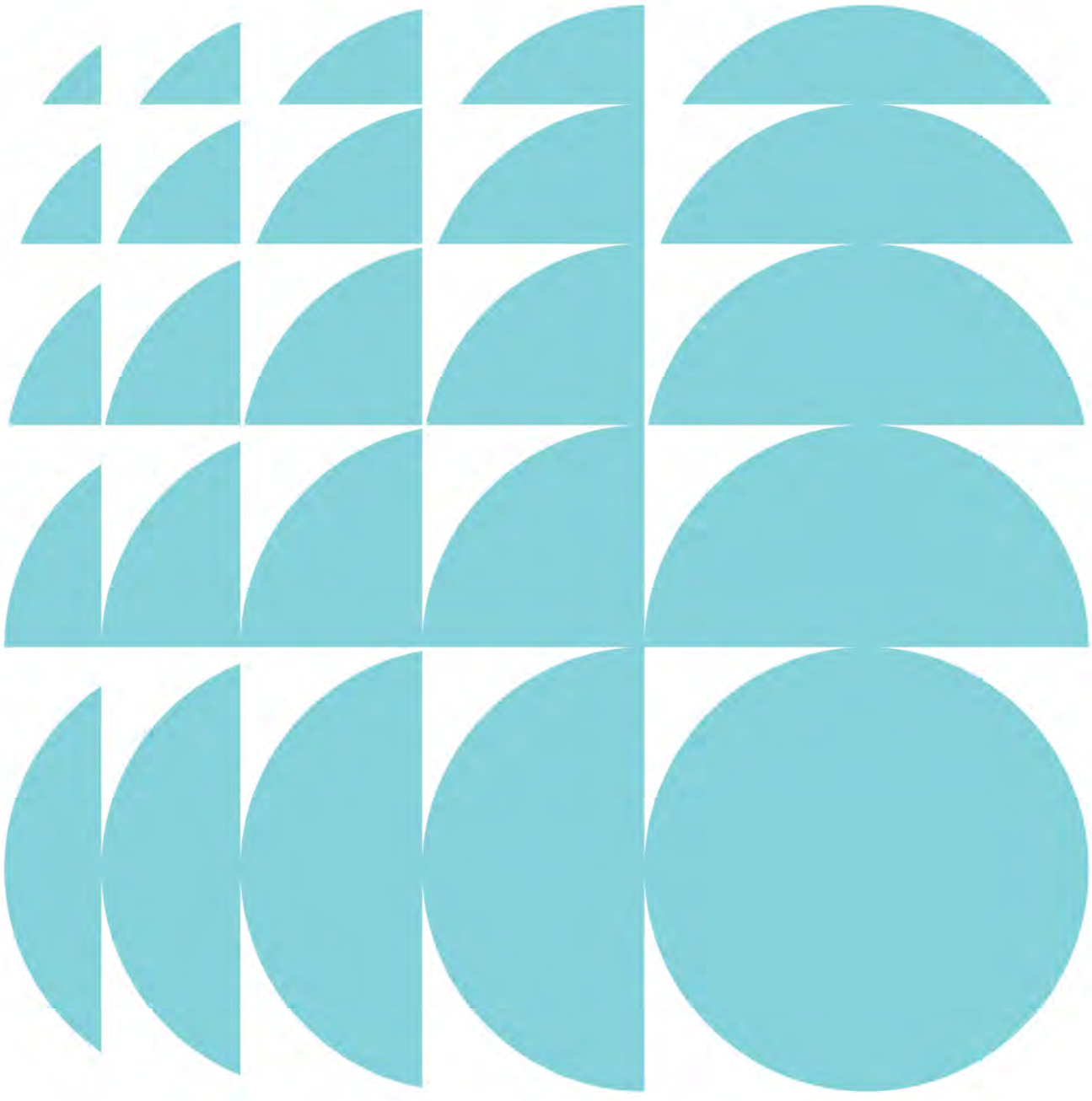
ETHOS URBAN

Environmental Impact Statement

Liverpool Hospital - Multi Storey Car Park
Campbell Street, Liverpool

Submitted to Department of Planning, Industry and Environment

On behalf of Health Infrastructure NSW
08 May 2020 | 218264



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Statement of Validity

Development Application Details	
Applicant name	Health Administration Corporation
Applicant address	Level 14, 77 Pacific Highway, North Sydney, NSW 2060
Land to be developed	Liverpool Hospital, corner of Elizabeth and Goulburn Street, Liverpool
Proposed development	Construction and operation of a new multi storey carpark as described in Section 4.0 of this Environmental Impact Statement
Prepared by	
Name	Chris McGillick
Qualifications	BPlan (Hons) MPIA
Address	173 Sussex Street, Sydney
In respect of	State Significant Development - Development Application
Certification	
	I certify that I have prepared the content of this EIS and to the best of my knowledge: it is in accordance with Schedule 2 of the Environmental Planning and Assessment Regulation 2000; all available information that is relevant to the environmental assessment of the development to which the statement relates; and the information contained in the statement is neither false nor misleading.
Signature	
Name	Chris McGillick
Date	8/05/2020

1.0 Executive Summary

Purpose of this Report

This submission to the Department of Planning, Industry and Environment (the Department) comprises an Environmental Impact Statement (EIS) for a Development Application under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). It relates to the construction and operation of a new multi storey carpark (MSCP) at Liverpool Hospital.

The proposed development is identified as State Significant Development (SSD) in accordance with Schedule 1 of *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP). Development for the purpose of a health services facility with a capital investment value of more than $30 million is SSD for the purposes of the EP&A Act. As the proposed development has a capital investment value greater than $30million and the proposed development is for the purposes of a car par to service a hospital as a health services facility it is SSD.

A request for the issue of Secretary's Environmental Assessment Requirements (SEARs) was sought on 28 October 2019. Accordingly, the SEARs were issued on 27 November 2019. This submission is in accordance with the Department's guidelines for SSD applications lodged under Part 4 of the EP&A Act, and addresses the issues raised in the SEARs.

Background to the Development

Liverpool has been identified by the Greater Sydney Commission as a designated 'collaboration area' to ensure continued growth in health, education, research and innovation. The centre of Liverpool is to be the foundation for growing a health and education precinct that will support the growing Western City over the next 20 years centred around the NSW Government's investment in hospitals to facilitate the emergence of a health and education precinct.

In June 2018, the NSW Government announced $740 million of funding for the development of a world class health, research and academic precinct in Liverpool. The redevelopment will increase inpatient bed numbers, as well as expanding tertiary and quaternary services.

Liverpool Hospital anchors the precinct as a health and research hub, with industry and academic partners providing world class translational research, health care and training. With 15,000 health and knowledge workers already in the Liverpool local government area, that number is set to more than double to over 30,000 workers by 2036. Accordingly, a review of the Hospital's car parking needs has been undertaken which this application seeks to address.

Overview of the Project

The SSD seeks approval for the following development:

- Demolition and site preparation works;
- Construction of a 6-storey car park including:
  - 1,097 car parking spaces;
  - 55 motorcycle parking spaces;
  - Management office; and
  - Accessible restroom.
- Connections to the existing road network; and
- Associated landscape works.

The Site

The site is located in the north-eastern portion of the Liverpool Hospital western campus which is legally described as Lot 501 in DP 1165217. The new MSCP is located between Burnside Drive and Forbes Street within the Liverpool Central Business District (CBD), approximately 26 kilometres west of Sydney CBD. It is within the Liverpool local government area (LGA).

Planning Context

Section 6.0 of the EIS considers all applicable legislation in detail. The proposal is consistent with the requirements of all relevant SEPPs. The site is zoned SP2 – Infrastructure (Health Services Facilities) under the *Liverpool Local Environmental Plan 2008* (LLEP 2008). The proposal is permissible with consent and meets the objectives of the zone.

Environmental Impacts and Mitigation Measures

This EIS provides an assessment of the environmental impacts of the project in accordance with the SEARs and sets out the undertakings made by Health Infrastructure NSW (Health Infrastructure) to manage and minimise potential impacts arising from the development.

Consultation

Section 5.0 of the EIS details the consultation that has been undertaken with various project stakeholders including Liverpool City Council, Government Architect NSW, Transport for NSW, user groups and the public. The outcomes of the consultation process have been considered in the design of the project.

Conclusion and Justification

The EIS addresses the SEARs, and the proposal provides for the construction and operation of a new MSCP. The potential impacts of the development are acceptable and can be managed. Given the planning merits of the proposal, the proposed development warrants approval by the Minister for Planning and Public Spaces.

2.0 Introduction

This EIS is submitted to the Department of Planning, Industry and Environment (Department) pursuant to Part 4 of the EP&A Act in support of an application for the construction and operation of a new MSCP at Liverpool Hospital.

Development for the purposes of a hospital with a capital investment value of more than $30 million is identified in Schedule 1 of *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP) and is therefore declared to be SSD for the purposes of the EP&A Act. A CIV Statement has been prepared by C2R Consulting that confirms the project has a CIV of greater than $30 million and is provided under a separate cover.

This report has been prepared by Ethos Urban on behalf of Health Infrastructure and is based on the Architectural Plans prepared by Fitzpatrick and Partners (see **Appendix B**) and other supporting technical information appended to the report (see Table of Contents).

The EIS has been prepared in accordance with the requirements of Part 4 of the EP&A Act, Schedule 2 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation), and the SEARs for the preparation of the EIS, which are included in **Appendix A**. This EIS should be read in conjunction with the supporting information and plans appended to and accompanying this report.

2.1 Overview of Proposed Development

The SSD application seeks approval for the following development:

- Demolition and site preparation works;
- Construction of a 6-storey car park including:
  - 1,097 car parking spaces;
  - 55 motorcycle parking spaces;
  - Management office; and
  - Accessible restroom.
- Connections to the existing road network; and
- Associated landscape works.

An artist impression of the proposed development is provided at **Figure 1**.

2.2 Background to the Development

Liverpool Hospital is the district hospital for the local catchments of Liverpool and Fairfield and is a tertiary referral hospital for all of South Western Sydney Local Health District (SWSLHD). Within NSW, Liverpool Hospital has the highest number of emergency department presentations, is one of seven major trauma units in NSW for adults and one of three adult Brain Injury Rehabilitation Units in Sydney. It has tertiary affiliations with the University of NSW, University of Wollongong and Western Sydney University, and also provides practical education programs for medical practitioners, nurses and other health professionals.

In June 2018, the NSW Government announced $740 million of funding for the development of a world class health, research and academic precinct in Liverpool. The redevelopment will increase the inpatient bed numbers, as well as expanding tertiary and quaternary services.

Development at Liverpool Hospital is occurring across a number of separate applications and approval processes. These are described at **Section 2.2.1** and **2.2.2** below. The MSCP seeks to accommodate the needs of the broader hospital campus to 2025/2026.

Figure 1 **Artist Impression of the proposed development as viewed from Burnside Drive**

Source: *Fitzpatrick and Partners*

2.2.1 Integrated Services Building and Refurbishment of Liverpool Hospital

On 28 October 2019 a request for SEARs was made to the Department for the construction and operation of a new Integrated Services Building (ISB) and refurbishment to certain existing hospital buildings and facilities. The SEARs for the Main Works SSD were issued on 27 November 2019 and a separate SSD application will be submitted to the Department for these works. The relationship of the new MSCP and the ISB is shown at **Figure 2** below.

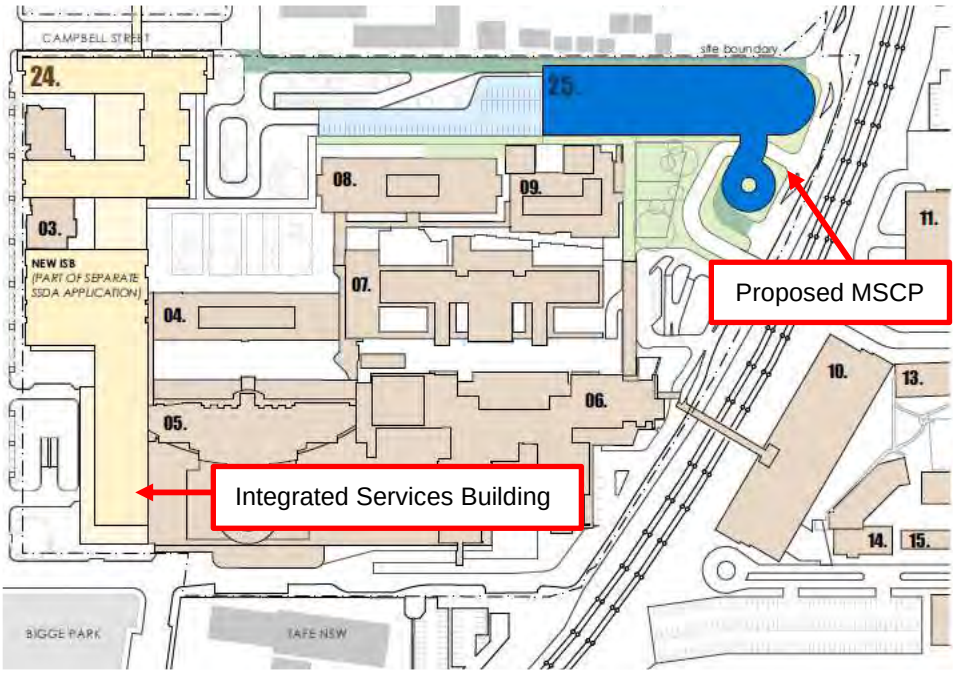

Figure 2 **Location of proposed Integrated Services Building (subject to a separate application)**

Source: *Fitzpatrick and Partners*

Figure 3 Aerial view - massing relationship of the Multi-storey car park and ISB (subject to a separate concurrent application)

Source: Fitzpatrick and Partners

2.2.2 Hospital Infrastructure Works

A range of infrastructure improvement works are occurring across the broader Hospital campus under a separate application via Part 5 of the EP&A Act and as Complying Development under *State Environmental Planning Policy (Infrastructure) 2007* (ISEPP). The infrastructure improvement works are required to ensure the ongoing operation of the Hospital and are separate to the subject SSD works, including:

- Demolition of buildings;
- Installation and augmentation of services;
- Alterations and additions to health service facilities;
- Tree removal;
- Realignment of internal roads;
- Relocation of short stay car parking; and
- Landscape works.

2.3 Objectives of the Development

The overall objective of the proposal is to develop a new multi storey carpark. It is intended that this development will in turn:

- Improve the provision of hospital infrastructure to meet the expected population growth and demand;
- Improve service access and patient flows, providing access to the right care for the right people at the right location; and
- Improve the operational efficiency and functionality of the hospital to serve the South Western Sydney Local Health District.

2.4 Analysis of Alternatives

2.4.1 Strategic need for the proposal

Liverpool Hospital currently has 713 inpatient beds and provides a range of tertiary and quaternary services. The Liverpool Hospital Clinical Services Plan 2031 (CSP) predicts substantial growth in services demand to 2025/26 as a result of population increase, major infrastructure in South Western Sydney and the poor health status of people within the LGA and surrounding areas. These increases result in demand well beyond the Hospital's present infrastructure capacities.

Population projections indicate that the population of SWSLHD will increase from 966,450 people in 2016 to 1.285 million people in 2031. This is an increase of 33% over the fifteen years. The Liverpool LGA population will grow by 41% by 2031, with an additional 86,950 people, a growth rate twice that expected for the rest of NSW. The Hospital also plays a role as a tertiary referral hospital for all of SWSLHD. It provides critical care for rural retrieval catchments and regional catchment for quaternary services.

Accordingly, there is urgent need to upgrade and expand the existing service offering of Liverpool Hospital to better meet the needs of the South Western District and to address future demand for services from a growing and ageing population.

The CSP identifies future models of care to best meet the increasing and dynamic health care needs of the community. These new models of care will be provided via integrated services that allow staff efficiencies and optimal patient flows. The redevelopment of the Hospital to deliver an integrated services facility along with an expansion of facilities will ensure the Hospital can increase the inpatient bed numbers, as well as expanding tertiary and quaternary services. Accordingly, the proposed new MSCP will support the overall redevelopment of the hospital campus and the future population growth on the site.

2.4.2 Alternative Options

Three options are available to Health Infrastructure NSW (HI NSW) in responding to the identified need for the redevelopment of Liverpool Hospital.

Option 1 - Do Nothing

Under the 'do nothing' scenario, the existing infrastructure at Liverpool Hospital and the local health district would need to continue to provide services to cater for the increasing health needs of the region. This would not adequately respond to strong population growth in the region and would potentially lead to a decline in health outcomes. Not undertaking the work would be an inappropriate outcome for a project of this nature, as it is needed to support the overall hospital redevelopment and the growth of the Liverpool Health and Education Precinct.

Option 2 – Alternative Designs

HI NSW has explored three different options for the development of the MSCP. These options were explored through the master planning phase of the project, with each being tested against design principles, safety issues, accessibility and proximity to existing hospital services and infrastructure (refer to **Figure 4** below). Considering all of the analysis undertaken, the preferred proposal is believed to have mitigated any associated implications that may arise under another redevelopment scenario, and the proposed development is the most effective to meet the objectives of the project. A full analysis of the options is provided in the Design Report prepared by Fitzpatrick and Partners at **Appendix C**.

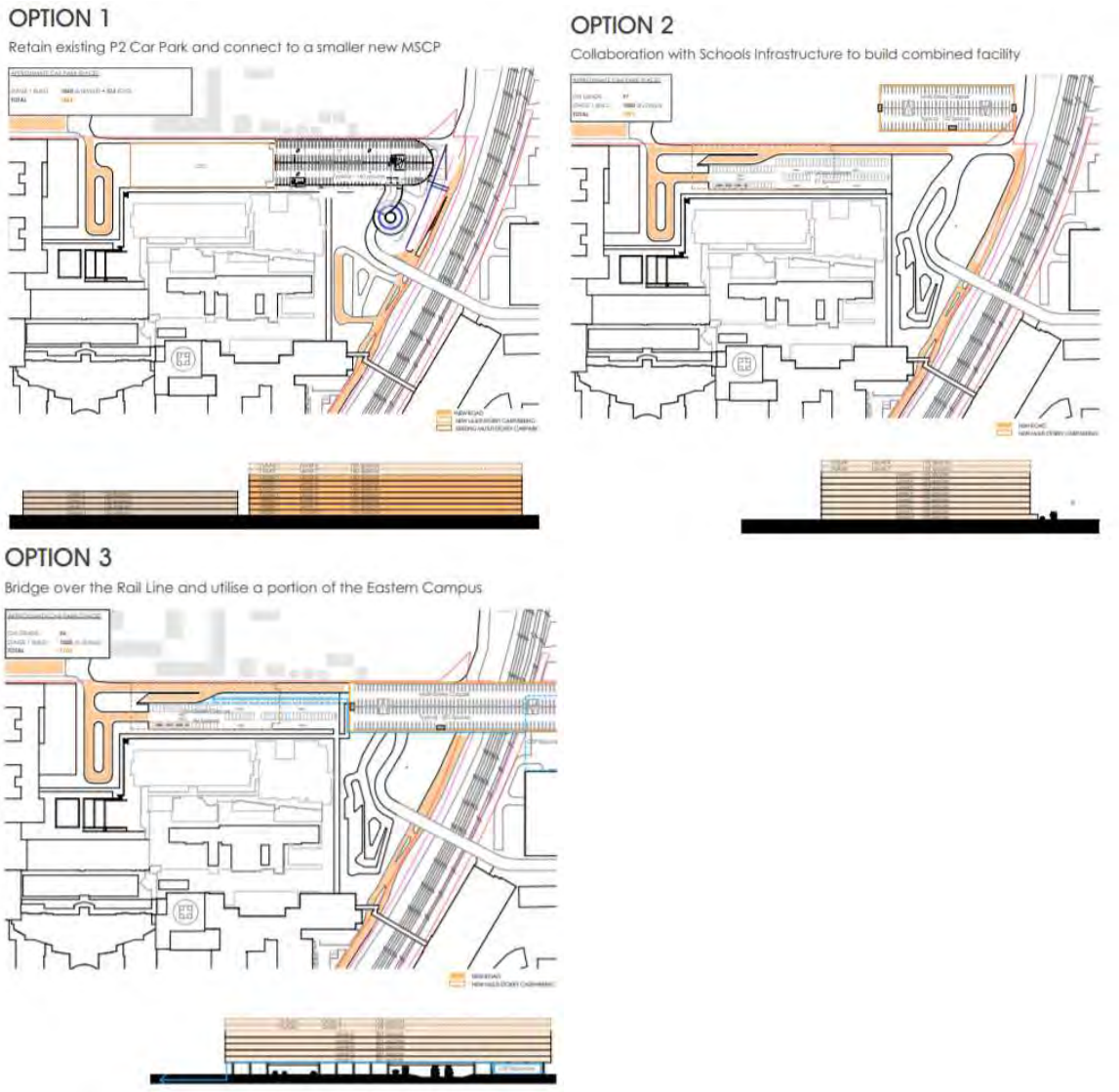

Figure 4 Options analysis

Source: Fitzpatrick and Partners

Option 3 – The Proposal

The proposed design involves undertaking the proposed redevelopment as outlined in this SSD DA (as described in **Section 4.0**). The SSD responds to the larger hospital layout, including integration with the hospital campus and development to the north of the site. The new MSCP in the north-eastern corner of the campus will provide improved pedestrian way-finding and amenity, open space, landscape upgrades and removal of outdated buildings on the site. A massing diagram of the proposed development is shown in **Figure 5**.

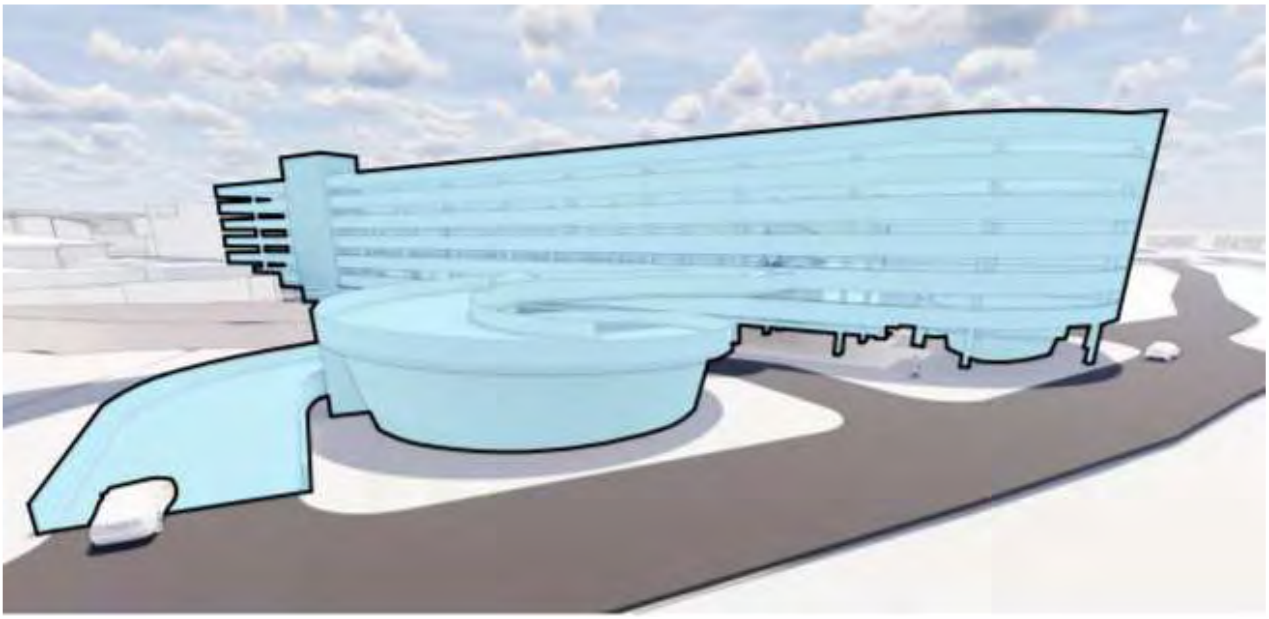

Figure 5 **Liverpool Hospital MSCP – massing diagram**

Source: *Fitzpatrick and Partners*

Future Expansion

The proposed design has regard to planning for future expansion, specifically to meet the demands of the hospital to 2026/27. This includes capacity for the proposed Main Works SSD (subject to a separate concurrent application). To facilitate future hospital expansion beyond this, the MSCP structure, services and lifting capacity have all been designed with the capacity to allow future construction of up to two levels (noting that any future works that include additional levels would be subject to a separate application). The indicative future massing and expansion scenario is shown at **Figure 6**.

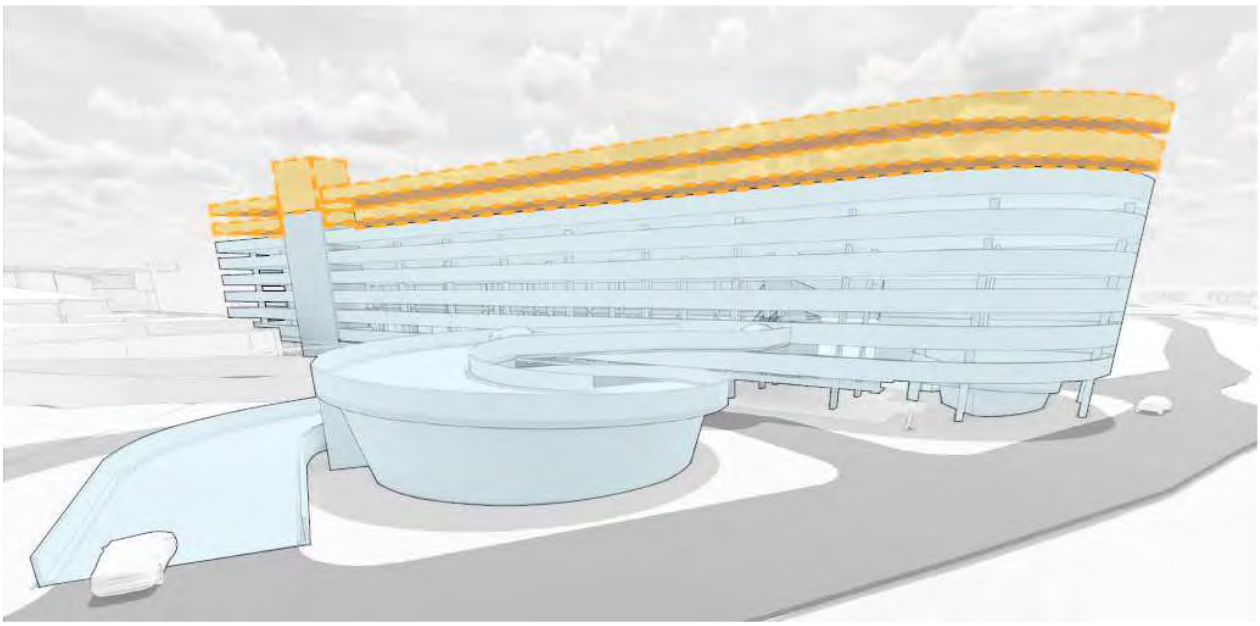

Figure 6 **Future expansion and flexibility**

Source: *Fitzpatrick and Partners*

2.5 Secretary's Requirements

In accordance with section 4.39 of the EP&A Act, the Secretary of the Department issued the requirements for the preparation of the EIS on 27 November 2019. A copy of the Secretary's Environmental Assessment Requirements (SEARs) is included at **Appendix A**.

Table 1 provides a detailed summary of the individual matters listed in the SEARs and identifies where each of these requirements has been addressed in this report and the accompanying technical studies.

Table 1 Secretary's Requirements

Requirement	**Location in Environmental Assessment**	
General		
The Environmental Impact Statement (EIS) must address the *Environmental Planning and Assessment Act 1979* and meet the minimum form and content requirements in clauses 6 and 7 of Schedule 2 the Environmental Planning and Assessment Regulation 2000.	**Environmental Impact Statement**	
Notwithstanding the key issues specified below, the EIS must include an environmental risk assessment to identify the potential and cumulative environmental impacts associated with the development.	**Section 6.0**	
Where relevant, the assessment of the key issues below, and any other significant issues identified in the risk assessment, must include: • Adequate baseline data • Consideration of potential cumulative impacts due to other development in the vicinity (completed, underway or proposed) • Measures to avoid, minimise and if necessary, offset the predicted impacts, including detailed contingency plans for managing any significant risks to the environment.	**Section 6.0** **Section 7.0** **Section 8.0**	
The EIS must be accompanied by a report from a qualified quantity surveyor providing: • a detailed calculation of the capital investment value (CIV) (as defined in clause 3 of the Regulation) of the proposal, including details of all assumptions and components from which the CIV calculation is derived • an estimate of the jobs that will be created by the future development during the construction and operational phases of the development • certification that the information provided is accurate at the date of preparation.	**Section 4.16**	
Key Issues	**Report / EIS**	**Technical Study**
The EIS must address the following specific matters:	-	-
1. Statutory and Strategic Context Address the statutory provisions contained in all relevant environmental planning instruments, including:	**-**	**-**
State Environmental Planning Policy (State & Regional Development) 2011	**Section 6.1**	-
State Environmental Planning Policy (Infrastructure 2007)	**Section 6.1**	**-**
State Environmental Planning Policy No. 64 – Advertising and Signage	**Section 6.1**	-
State Environmental Planning Policy No.55 – Remediation of Land	**Section 6.1** **Section 6.16**	**Appendix N**
Draft State Environmental Planning Policy (Remediation of Land)	**Section 6.1**	**-**
Draft State Environmental Planning Policy (Environment)	**Section 6.1**	-
Liverpool Local Environmental Plan 2008	**Section 6.1**	**-**
Permissibility Detail the nature and extent of any prohibitions that apply to the development.	**Section 6.1**	**-**
Development Standards Identify compliance with the development standards applying to the site and provide justification for any contravention of the development standards.	**Section 6.1**	**-**
Provisions Adequately demonstrate and document in the EIS how each of the provisions in the	**Section 6.1**	**-**

Requirement	Location in Environmental Assessment	
listed instruments are addressed, including reference to necessary technical documents.		
2. Policies Address the relevant planning provisions, goals and strategic planning objectives in the following:	**-**	**-**
NSW State Priorities	**Section 6.1**	**-**
The Greater Sydney Regional Plan, A Metropolis of three cities	**Section 6.1**	**-**
Future Transport Strategy 2056 and supporting plans	**Section 6.1**	**-**
State Infrastructure Strategy 2018 – 2038 Building the Momentum	**Section 6.1**	**-**
Crime Prevention Through Environmental Design (CPTED) Principles	**Section 6.1**	**Appendix C**
Better Placed: An integrated design policy for the built environment of New South Wales (Government Architect NSW (GANSW), 2017)	**Section 6.1**	**Appendix C**
Healthy Urban Development Checklist (NSW Health, 2009)	**Section 6.1**	**-**
Draft Greener Places Policy	**Section 6.1**	**-**
Western City District Plan	**Section 6.1**	-
Liverpool Development Control Plan 2008.	**Section 6.1**	-
3. Operation Provide details of the existing and proposed hospital and car parking operations.	**Section 3.3** **Section 3.3.10** **Section 3.3.11** **Section 4.0**	**Appendix C** **Appendix F**
4. Built Form and Urban Design Address the height, density, bulk and scale, setbacks and interface of the proposal in relation to the surrounding development, topography, streetscape and any public open spaces.	**Section 4.1** **Section 4.2** **Section 4.4** **Section 4.9** **Section 6.2**	**Appendix B** **Appendix C** **Appendix D**
Address design quality and built form, with specific consideration of the overall site layout, streetscape, open spaces, façade, rooftop, massing, setbacks, building articulation, materials and colours.	**Section 4.1** **Section 4.2** **Section 4.4** **Section 4.9** **Section 6.2**	**Appendix B** **Appendix C** **Appendix D**
Provide details of any digital signage boards, including size, location and finishes.	**Section 6.1**	**Appendix B** **Appendix C**
Detail how services, including but not limited to waste management, loading zones, and mechanical plant are integrated into the design of the development.	**Section 6.6** **Section 6.10**	**Appendix B** **Appendix C** **Appendix F** **Appendix V** **Appendix W**
Provide detailed site and context analysis to justify the proposed site planning and design approach including massing options and preferred strategy for future development.	**Section 2.3** **Section 2.4**	**Appendix C**
Provide a detailed site-wide landscape strategy, including details of the number of trees to be removed and the number of trees to be planted on the site.	**Section 4.10** **Section 6.14**	**Appendix D** **Appendix E**
Provide a visual impact assessment that identifies any potential impacts on the surrounding built environment and landscape including views to and from the site and any adjoining heritage items.	**Section 6.5**	**Appendix C**
Address CPTED Principles.	**Section 6.1** **Section 6.8**	**Appendix C**
5. Environmental Amenity Assess amenity impacts on the surrounding locality, including solar access, visual privacy, visual amenity, overshadowing and acoustic impacts.	**Section 6.3** **Section 6.4** **Section 6.5**	**Appendix B** **Appendix C** **Appendix D** **Appendix E** **Appendix M**
Conduct a view analysis to the site from key vantage points and streetscape locations (photomontages or perspectives should be provided showing the building and likely future development).	**Section 6.4** **Section 6.5**	**Appendix C**

Requirement	Location in Environmental Assessment	
Include a lighting strategy and measures to reduce spill into the surrounding sensitive receivers.	**Section 4.11**	**Appendix C**
Detail amenity impacts including solar access, acoustic impacts, visual privacy, view loss, overshadowing and wind impacts. A high level of environmental amenity for any surrounding residential land uses must be demonstrated.	**Section 6.3.1** **Section 6.4** **Section 6.5** **Section 6.7** **Section 6.9**	**Appendix B** **Appendix C** **Appendix I**
6. Staging Provide details regarding the staging of the proposed development (if any).	**Section 4.15**	**Appendix G**
7. Transport and Accessibility Include a transport and accessibility impact assessment, which details, but not limited to the following:	**Section 6.6**	**Appendix F**
Details of estimated total daily and peak hour trips generated by the proposal, including vehicle, public transport, pedestrian and bicycle trips, including details of assumptions made to determine/justify the amount of spaces sought to service the future hospital redevelopment, including estimated trip generation, car modal split, duration of stay, etc.		
The impact of trips generated by the development on the following intersections, including consideration of the cumulative impacts from other approved or proposed developments in the vicinity (including SSD10389 Liverpool Hospital Redevelopment), with full counts including pedestrian (at minimum) and number of buses: • Burnside Drive / Campbell Street • Campbell Street / Bigge Street • Elizabeth Street / Bigge Street • Elizabeth Street / Goulburn Street • Elizabeth Street / Moore Street • Moore Street / Bigge Street • Remembrance Avenue / Hume Highway • Bigge Street / Hume Highway • Newbridge Road / Speed Street • Campbell Street / Goulburn Street		
The identification of infrastructure required to ameliorate any impacts on traffic efficiency and road safety impacts associated with the proposed development.		
Proposed number of on-site car parking spaces for staff and visitors and corresponding compliance with existing parking codes and justification for the level of car parking provided on-site.		
An assessment of road and pedestrian safety adjacent to the proposed development and the details of required road safety measures and personal safety in line with CPTED.		
Emergency vehicle access, service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times).		
The preparation of a preliminary Construction Traffic and Pedestrian Management Plan to demonstrate the proposed management of the impact in relation to construction traffic addressing the following: • assessment of cumulative impacts associated with other construction activities (if any). • an assessment of road safety at key intersection and locations subject to heavy vehicle construction traffic movements and high pedestrian activity. • details of construction program detailing the anticipated construction duration and highlighting significant and milestone stages and events during the construction process. • details of anticipated peak hour and daily construction vehicle movements to and from the site. • details of on-site car parking and access arrangements of construction vehicles, construction workers to and from the site, emergency vehicles and service vehicle.		

Requirement	Location in Environmental Assessment	
• details of temporary cycling and pedestrian access during construction.		
Relevant Policies and Guidelines: Guide to Traffic Generating Developments (Roads and Maritime Services, 2002)		
EIS Guidelines - Road and Related Facilities (Department of Urban Affairs and Planning (DUAP), 1996)		
Cycling Aspects of Austroads Guides		
Austroads Guide to Traffic Management Part 12: Traffic Impacts of Development		
Standards Australia AS2890.3 (Bicycle Parking Facilities).		
8. Ecologically Sustainable Development Detail how ESD principles (as defined in clause 7(4) of Schedule 2 of the Regulation) will be incorporated in the design and ongoing operation phases of the development.	**Section 4.12** **Section 6.21**	**Appendix H**
Include preliminary consideration of building performance and mitigation of climate change, including consideration of Green Star Performance.		
Include an assessment against an accredited ESD rating system or an equivalent program of ESD performance. This should include a minimum rating scheme target level.		
Include details in relation to energy efficiency, including practical opportunities to minimise energy consumption from non-renewable sources.		
Include details in relation to water conservation, including practical opportunities to implement water sensitive urban design principles.		
Relevant Policies and Guidelines NSW and ACT Government Regional Climate Modelling (NARCliM) climate change projections.		
9. Water-related infrastructure requirements The EIS should determine service demands following service investigations and demonstrate that satisfactory arrangements for drinking water, wastewater and recycled water services (if required) have been made.	**Section 6.12**	**Appendix J**
The EIS must seek endorsement/approval from Sydney Water to ensure that the proposed development does not adversely impact on any existing water, wastewater or stormwater main, or other Sydney Water assets, including any easement or property.		
The EIS must outline any sustainability initiatives that will be implemented on the site to minimise/reduce the demand for drinking water, including any alternative water supply and end uses of drinking and non-drinking water that may be proposed.		
10. Heritage Provide a statement of significance and an assessment of the impact on the heritage significance of the heritage items on the site in accordance with the guidelines in the NSW Heritage Manual (Heritage Office and DUAP, 1996).	**Section 6.18**	**Appendix K**
Address any archaeological potential and significance on the site and the impacts the development may have on this significance.		
11. Aboriginal heritage Identify and describe the Aboriginal cultural heritage values that exist across the site and document these in an Aboriginal Cultural Heritage Assessment Report (ACHAR). This may include the need for surface survey and test excavation.	**Section 6.19**	**Appendix L**
Identify and address the Aboriginal cultural heritage values in accordance with the Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (Office of Environment and Heritage (OEH), 2011) and Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW (OEH, 2010).		
Undertake consultation with Aboriginal people and document in accordance with Aboriginal cultural heritage consultation requirements for proponents 2010 (Department of Environment, Climate Change and Water). The significance of cultural heritage values of Aboriginal people who have a cultural association with the land are to be documented in the ACHAR.		
Identify, assess and document all impacts on the Aboriginal cultural heritage values in the ACHAR.		

Requirement	Location in Environmental Assessment	
The EIS and the supporting ACHAR must demonstrate attempts to avoid any impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the ACHAR and EIS must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to the Environment, Energy and Science Group of the Department of Planning, Industry and Environment.		
12. Noise and Vibration Identify and provide a quantitative assessment of the main noise and vibration generating sources during demolition, site preparation, bulk excavation, construction. Outline measures to minimise and mitigate the potential noise impacts on surrounding occupiers of land.	**Section 6.9**	**Appendix M**
Identify and provide a quantitative assessment of the potential noise and vibration impacts on the identified sensitive receivers due to the operations of the carpark.		
Relevant Policies and Guidelines Fact Sheets A and B to the NSW Noise Policy for Industry 2017 (NSW Environment Protection Authority (EPA))		
Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009)		
Assessing Vibration: A Technical Guideline 2006 (Department of Environment and Conservation, 2006)		
Development Near Rail Corridors and Busy Roads - Interim Guideline (Department of Planning, 2008)		
13. Contamination Assess and quantify any soil and groundwater contamination and demonstrate that the site is suitable for the proposed use in accordance with SEPP 55.	**Section 6.16**	**Appendix N**
Undertake a hazardous materials survey of all existing structures and infrastructure prior to any demolition or site preparation works.		
Identify any hazardous materials that are likely to be encountered during site preparation and bulk excavation.		
Identify run-off and air quality impacts during site preparation, bulk excavation, construction and construction related work.		
Relevant Policies and Guidelines Managing Land Contamination: Planning Guidelines - SEPP 55 Remediation of Land (DUAP, 1998)		
Sampling Design Guidelines (EPA, 1995)		
Guidelines for Consultants Reporting on Contaminated Sites (OEH, 2011)		
National Environment Protection (Assessment of Site Contamination) Measure (National Environment Protection Council, as amended 2013)		
14. Utilities Prepare an Infrastructure Management Plan in consultation with relevant agencies, detailing information on the existing capacity and any augmentation and easement requirements of the development for the provision of utilities including staging of infrastructure.	**Section 4.13**	**Appendix P**
15. Contributions Address Council's 'Section 7.12 Contribution Plan' Liverpool Contributions Plan 2018 – Liverpool City Centre and/or details of any Voluntary Planning Agreement, which may be required to be amended because of the proposed development.	**Section 6.23**	**-**
16. Drainage Detail measures to minimise operational water quality impacts on surface waters and groundwater.	**Section 6.13**	**Appendix Q**
Stormwater plans detailing the proposed methods of drainage without impacting on the downstream properties.		
Relevant Policies and Guidelines Guidelines for developments adjoining land managed by the Office of Environment and Heritage (OEH, 2013).		

Requirement	Location in Environmental Assessment	
17. Flooding The EIS must identify flood risk on-site (detailing the most recent flood studies for the project area) through the mapping of the following feature relevant to flooding, as described in the NSW Floodplain Development Manual (DIPNR, 2005), including: • Flood prone land. • Flood planning area, the area below the flood planning level. • Hydraulic categorisation (flood ways and flood storage areas). • Flood Hazard.	**Section 6.11**	**Appendix Q**
The EIS must assess the impacts of the proposed development on flood behaviour, including: • Whether there will be detrimental increases in the potential flood affectation of other properties, assets and infrastructure • Consistency with Council floodplain risk management plans • Consistency with any Rural Floodplain Management Plans • Compatibility with the hydraulic functions of flow conveyance in floodways and storage in flood storage areas of the land		
18. Biodiversity Assessment Biodiversity impacts related to the proposed development (SSD-10388) are to be assessed in accordance with the Biodiversity Assessment Method and documented in a Biodiversity Development Assessment Report (BDAR). The BDAR must include information in the form detailed in the Biodiversity Conservation Act 2016 (s6.12), Biodiversity Conservation Regulation 2017 (s6.8) and Biodiversity Assessment Method.	**Section 6.14**	**Appendix R**
The BDAR must document the application of the avoid, minimise and offset framework including assessing all direct, indirect and prescribed impacts in accordance with the Biodiversity Assessment Method.		
The BDAR must include details of the measures proposed to address the offset obligation as follows: • the total number and classes of biodiversity credits required to be retired for the development/project • the number and classes of like-for-like biodiversity credits proposed to be retired • the number and classes of biodiversity credits proposed to be retired in accordance with the variation rules • any proposal to fund a biodiversity conservation action • any proposal to make a payment to the Biodiversity Conservation Fund.		
If seeking approval to use the variation rules, the BDAR must contain details of the reasonable steps that have been taken to obtain requisite like-for-like biodiversity credits.		
The BDAR must be submitted with all spatial data associated with the survey and assessment as per the BAM.		
The BDAR must be prepared by a person accredited in accordance with the Accreditation Scheme for the Application of the Biodiversity Assessment Method Order 2017 under s6.10 of the Biodiversity Conservation Act 2016.		
Where a Biodiversity Assessment Report is not required, engage a suitably qualified person to assess and document the flora and fauna impacts related to the proposal. *Note: Notwithstanding these requirements, the Biodiversity Conservation Act 2016 requires that State Significant Development Applications be accompanied b y a Biodiversity Development Assessment Report unless otherwise specified under the Act.*		
19. Water and Soils The EIS must map the following features relevant to water and soils, including: • Acid sulfate soils (Class 1,2,3 or 4 on the Acid Sulfate Soil Planning Map • Groundwater • Groundwater dependant ecosystems • Proposed intake and discharge locations	**Section 6.1** **Section 6.15**	**Appendix S**

Requirement	Location in Environmental Assessment	
20. Sediment, Erosion and Dust Controls Detail measures and procedures to minimise and manage the generation and off-site transmission of sediment, dust and fine particles.	**Section 6.13**	**Appendix Q**
Relevant Policies and Guidelines Managing Urban Stormwater - Soils & Construction Volume 1 2004 (Landcom)		
Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA)		
Guidelines for development adjoining land managed by the Office of Environment and Heritage (OEH, 2013)		
21. Waste Identify, quantify and classify the likely waste streams to be generated during construction and operation and describe the measures to be implemented to manage, reuse, recycle and safely dispose of this waste. Identify appropriate servicing arrangements (including but not limited to, waste management, loading zones, mechanical plant) for the site.	**Section 6.10**	**Appendix V** **Appendix W**
Relevant Policies and Guidelines Waste Classification Guidelines (EPA, 2014)		
22. Construction Hours Identify proposed construction hours and provide details of the instances where it is expected that works will be required to be carried out outside the standard construction hours.	**Section 4.17** **Section 6.9**	**Appendix G** **Appendix M**
Plans and Documents	**Report**	**Technical Study**
The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the Regulation. Provide these as part of the EIS rather than as separate documents.	**-**	**-**
A section 10.7(2) and (5) Planning Certificates (previously Section 149(2) and (5) Planning Certificate).	-	**Appendix Y**
Architectural drawings showing key dimensions, RLs, scale bar and north point, including: • plans, sections and elevation of the proposal at no less than 1:200 • illustrated materials schedule including physical or digital samples board with correct proportional representation of materials, nominated colours and finishes • details of proposed signage, including size, location and finishes • detailed annotated wall sections at 1:20 scale that demonstrate typical cladding, • window and floor details, including materials and general construction quality • site plans and operations statement	**-**	**Appendix B**
Site Survey Plan, showing existing levels, location and height of existing and adjacent structures / buildings and site boundaries	**-**	**Appendix C**
Site Analysis and Context Plans, including: • any future development and expansion zones • open space network • active transport linkages with existing, proposed and potential footpaths and bicycle • paths and public transport links	**-**	**Appendix B** **Appendix C**
Sediment and Erosion Control Plan	**-**	**Appendix Q**
Shadow Diagrams	**-**	**Appendix C**
View analysis, photomontages and architectural renders, including from those from public vantage points	**-**	**Appendix C**
Landscape architectural drawings showing key dimensions, RLs, scale bar and north point, including: • integrated landscape plans at appropriate scale, with detail of new and retained planting, shade structures, materials and finishes proposed • plans identifying significant trees or other vegetation to be removed or retained on the site	**-**	**Appendix D** **Appendix E**

Requirement	Location in Environmental Assessment	
• details on the native vegetation community (or communities) and native plant species that once occurred in this location • specification that any landscaping will use a diversity of local provenance native species (trees, shrubs and groundcovers) from the native vegetation community (or communities) that once occurred in this location to improve biodiversity • Identification of any trees proposed to be removed and replaced		
Design report to demonstrate how design quality will be achieved in accordance with the above Key Issues including: • architectural design statement • diagrams, structure plan, illustrations and drawings to clarify the design intent of the proposal • detailed site and context analysis • analysis of options considered to justify the proposed site planning and design approach • demonstration that Aboriginal culture and heritage is considered and incorporated holistically in the design • a precinct scale masterplan showing relationship of the proposal to any proposed development on surrounding land • visual impact assessment identifying potential impacts on the surrounding built environment and adjoining heritage items • summary of feedback provided by GANSW and NSW State Design Review Panel (SDRP) and responses to this advice • summary report of consultation with the community and response to any • feedback provided	-	**Appendix C**
Geotechnical and Structural Report	**-**	**Appendix S** **Appendix T**
Accessibility Report	**-**	**Appendix U**
Arborist Report	**-**	**-**
Schedule of materials and finishes	**-**	**Appendix B**
Consultation		
During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups, special interest groups, including local Aboriginal land councils and registered Aboriginal stakeholders, and affected landowners. In particular, you must consult with: • Liverpool City Council • Government Architect NSW (through the NSW SDRP process) (GA NSW) • Transport for NSW (TfNSW) • Transport for NSW (Roads and Maritime Services) (TfNSW RMS). Consultation with GA NSW, TfNSW and TfNSW (RMS) should commence as soon as practicable to agree the scope of investigation. The EIS must describe the consultation process and the issues raised and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.	**Section 5.0**	**Appendix X**

3.0 Site Analysis

3.1 Site Location and Context

Liverpool Hospital is located within the Liverpool Central Business District (CBD), on the corner of Elizabeth Street and Goulburn Street, Liverpool, within the Liverpool LGA. The hospital site is approximately 27km south west of the Sydney CBD and has an area of approximately 14.5ha, including land east and west of the Main Southern Railway, which forms the eastern and western campus.

Liverpool Hospital is within proximity of transport services and key road links including Liverpool Train Station approximately 700m to the south, the Hume Highway to the north and the M5 South Western Motorway to the south. It is located opposite Bigge Park, which is a large public park and is adjacent to Liverpool Girls High School to the north and Liverpool TAFE to the south.

The hospital is located in a cluster of health and education uses within the north-east of the Liverpool CBD. It comprises a number of buildings associated with the Hospital campus situated around an internal road network. The hospital has a maximum capacity of 713 beds, 23 operating rooms, 60 critical care beds and provides a range of state-wide services in areas such as critical care and trauma, neonatal intensive care and brain injury rehabilitation.

The hospital's locational context is shown at **Figure 7** and an aerial of the existing hospital campus is shown at **Figure 9**.

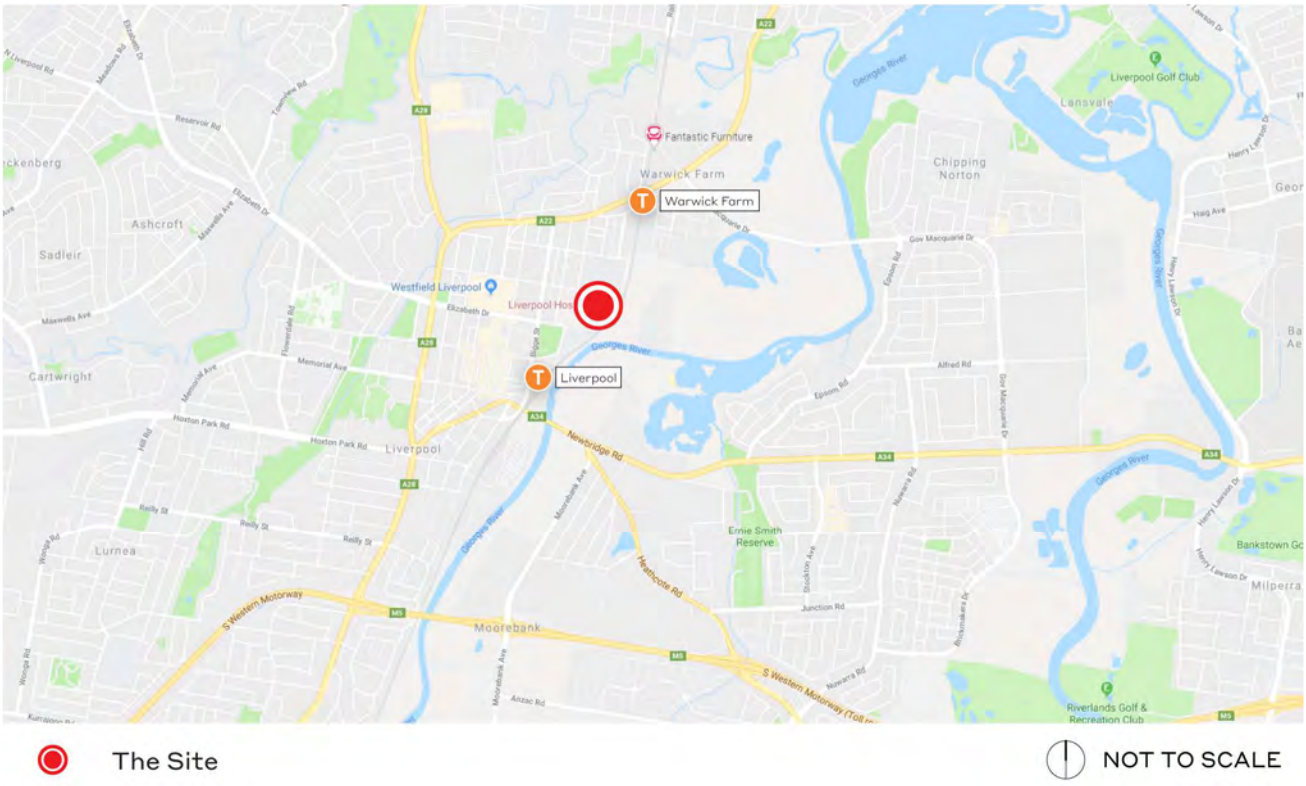

Figure 7 **Locational context**

Source: *Ethos Urban*

3.2 Land Ownership

The site is irregular in shape and is legally described as Lot 501 in DP1165217. The land is owned by NSW Health Administration Corporation.

3.3 Liverpool Hospital Campus

The proposed works are located in the north eastern portion of the western hospital campus (see **Figure 8**) (generally between Burnside Drive and Forbes Street). The western hospital campus is bound by Elizabeth Street, Campbell Street and Goulburn Street and is located to the north of the Liverpool CBD.

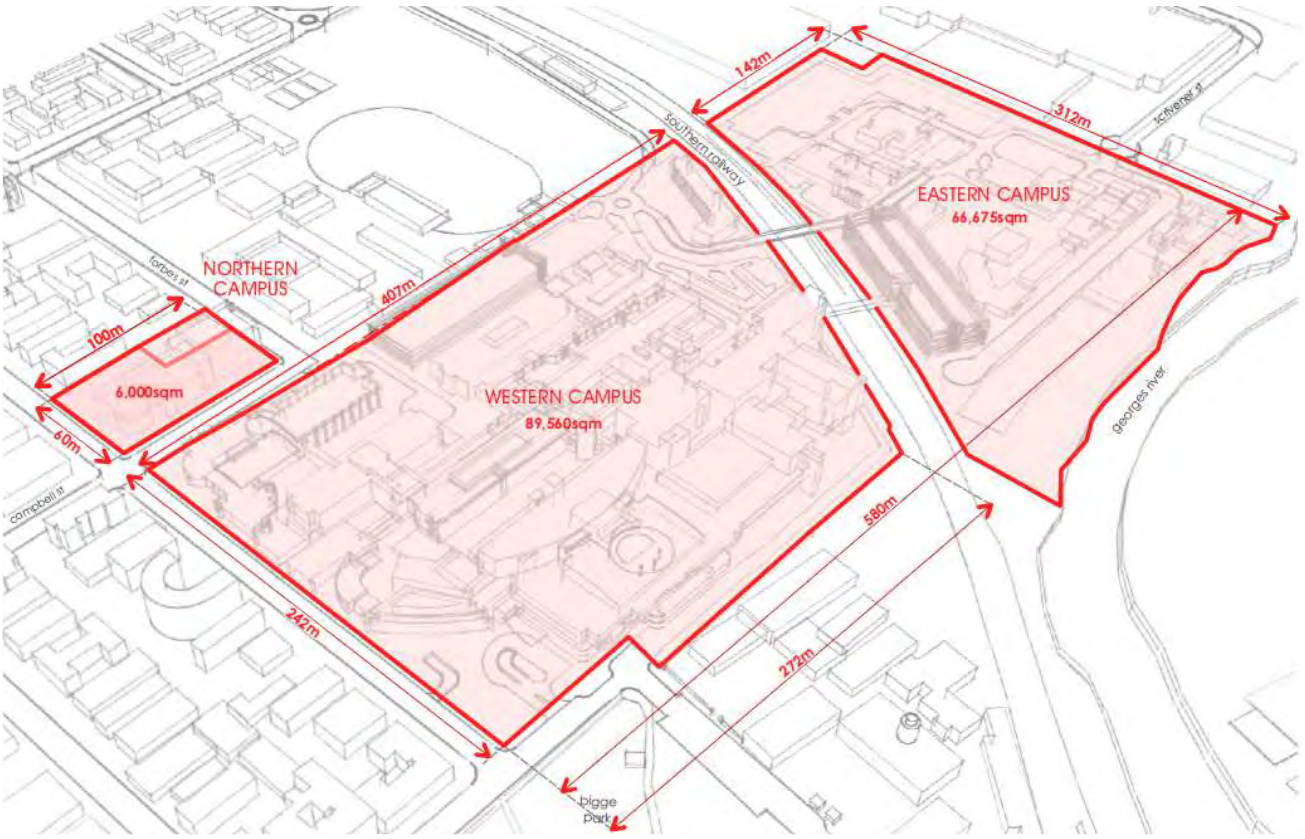

Figure 8 Liverpool Hospital Campus Arrangement

Source: Fitzpatrick and Partners

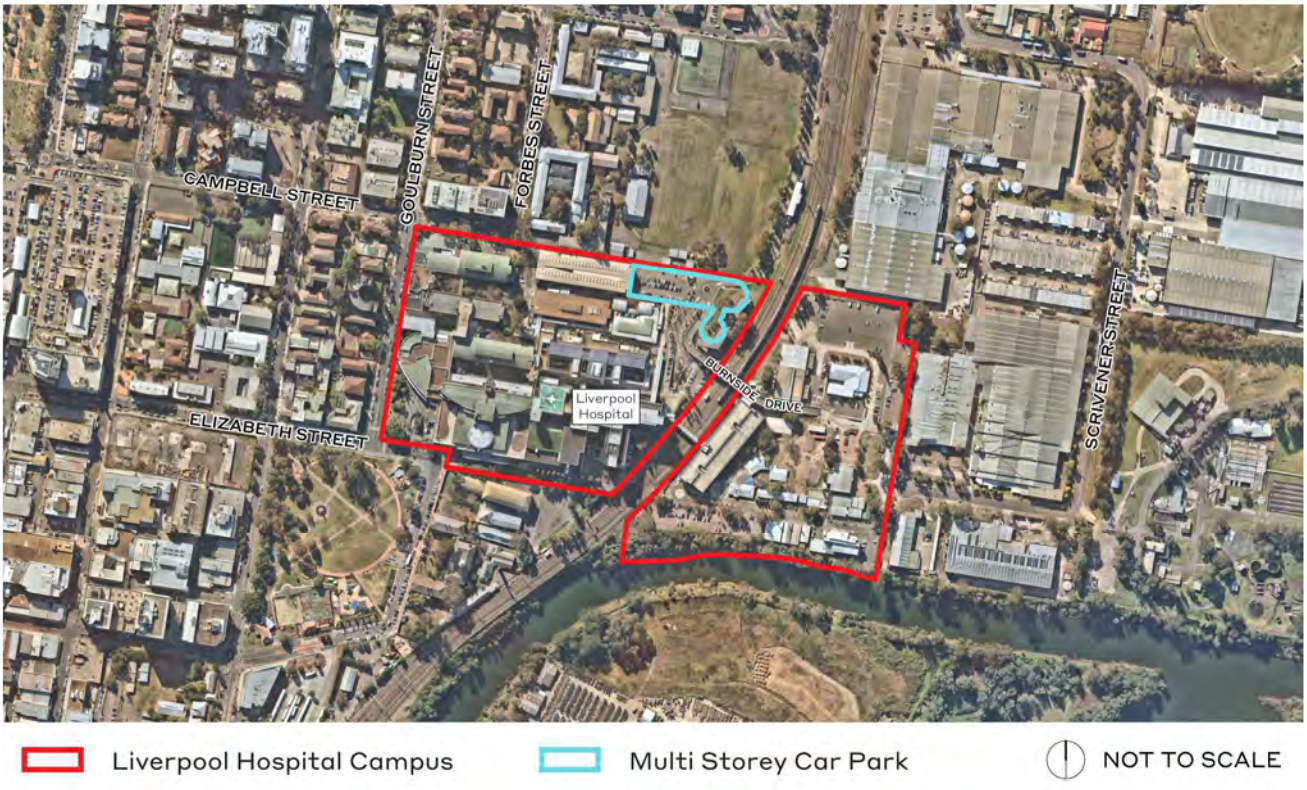

Figure 9 Aerial photo of Liverpool Hospital Campus

Source: Ethos Urban

3.3.1 Existing Development

The subject site is located in the north eastern portion of the western hospital campus. It is currently occupied by the internal road network off Burnside Drive and the existing P2 at-grade and multi storey car park. It is noted that the site also comprises the Ron Dunbier Building however, demolition of this building has been approved under a separate application (refer to **Section 2.2.2**).

The site also accommodates some landscape works and pedestrianised spaces that provide access to the recently completed New Clinical Services Building to the south.

A general arrangement plan of the existing hospital is shown in **Figure 10** and photos of the existing development are shown in **Figure 11** to **Figure 14.**

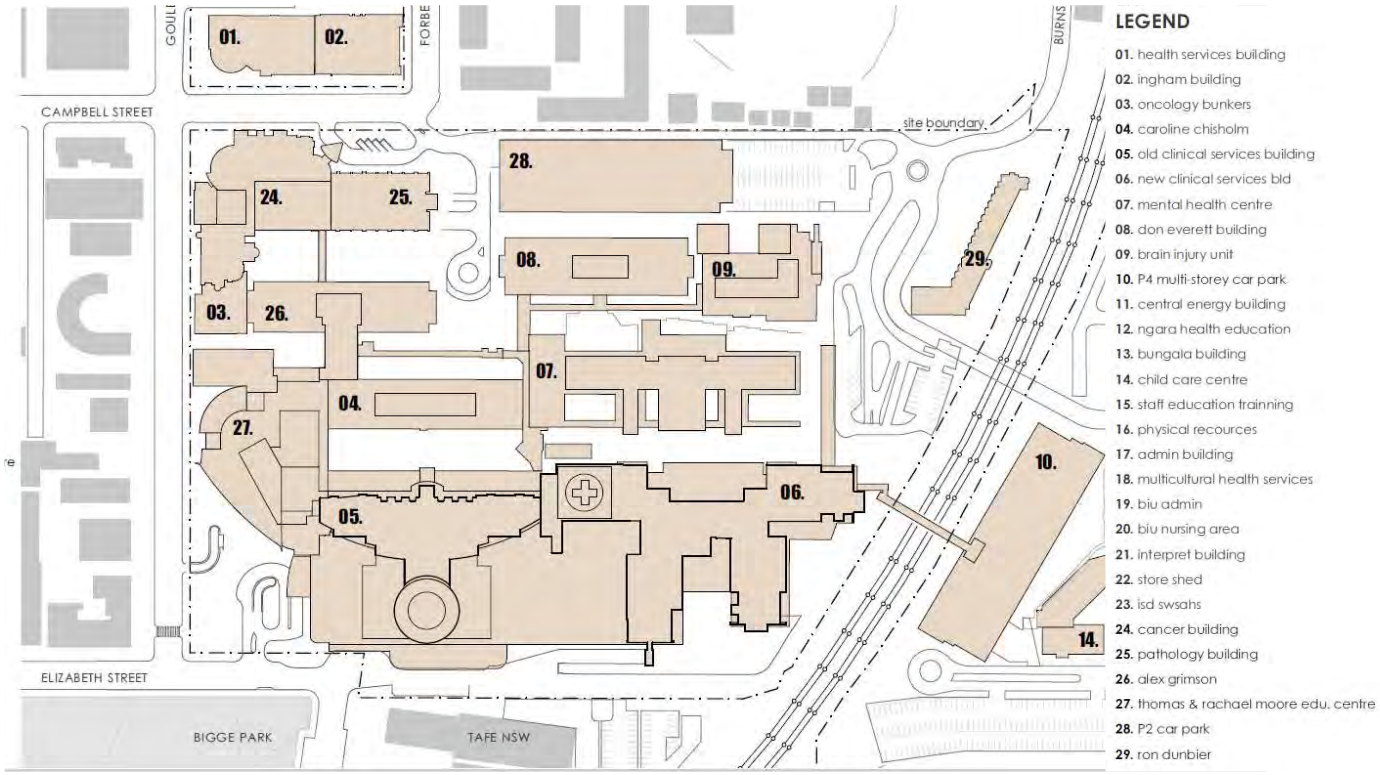

Figure 10 **Liverpool Hospital - existing development**

Source: *Fitzpatrick and Partners*

Figure 11 Existing P2 multi storey car park as viewed from the at-grade car park off Burnside Drive

Source: Ethos Urban

Figure 12 Existing P2 multi storey car park as viewed from Forbes Street

Source: Ethos Urban

Figure 13 Existing Ron Dunbier building (demolition approved under a separate application)

Source: Ethos Urban

Figure 14 Burnside Drive roundabout and entrance to the existing P2 multi storey car park

Source: Ethos Urban

3.3.2 Topography

The subject site is generally level and has been graded to accommodate the existing hospital campus and vehicular access from Burnside Drive (in the north eastern corner of the site) and along Elizabeth Street.

The levels vary from approximately RL8.5 (AHD) in parts of the eastern campus through to approximately RL12 (AHD) in areas of the western campus.

3.3.3 Vegetation

There is limited formal landscaping works on the site, located in patches at several locations on the boundaries of the hospital campus. The existing vegetation primarily comprises scattered native and exotic trees, and low lying gardens and lawn areas. It is noted that vegetation removal has occurred as part of separate Infrastructure works occurring across the Hospital as outlined at **Section 2.2.2**. Following these works, the MSCP site will not contain any trees.

3.3.4 Heritage

The Liverpool Hospital campus is not identified as an item of heritage significance, however, it is partially located within the Bigge Park Heritage Conservation Area. The site is also located in close proximity to a number of other local heritages items, including:

- Bigge Park and Conservation Area;
- The local street network identified as ‘Plan of the Town of Liverpool’;

- Liverpool TAFE; and
- Section 170 Heritage and Conservation Register Avenue Planting on Elizabeth Street.

3.3.5 Flooding

The hospital site is affected by mainstream flooding from Georges River from the south east of the site and localised overland flow from the Liverpool CBD catchment to the south and west of the site. The peak mainstream flood level occurs during the 48-hour storm, while the peak overland flood level occurs during the 1.5hour storm. The natural topography of the local catchment falls directly toward the low point in Goulburn Street, to the west of the hospital site.

3.3.6 Bushfire

The site is not identified as being located on land that is bushfire prone.

3.3.7 Acid Sulfate Soils

The site is mapped as Class 5 Acid Sulfate Soils.

3.3.8 Contamination

As part of this application, a contamination assessment has been carried out by JK Environments at **Appendix N**. The assessment identified the following on the subject site:

- Fill material (imported from unknown sources);
- Historical agricultural use (razing, market gards and a piggery);
- Hazardous building materials from demolition activities);
- Former on-site and off-site fuel storage;
- Mechanical workshops;
- Dry cleaning; and
- Printing.

Following a detailed review of the proposed development and results from the contamination assessment, JK Environments found that the risk to human and ecological receptors is low and the site is capable of being made suitable for the proposed development.

Refer to the Contamination Assessment at **Appendix N** and **Section 6.14** below.

3.3.9 Geotechnical

The site is located on a relatively flat topography, in the north eastern corner of the western hospital campus. A maximum relief of 1.5m exists across the site. Based on the results of previous site investigations, the subsurface conditions generally comprise asphalt concrete pavement, variable alluvial soils and siltstone (shale bedrock) at depths in excess of 11.8m. Groundwater seepage was observed at depths between 5.8m and 12.5m.

3.3.10 Road Network, Accessibility and Parking

The hospital campus is bound by Elizabeth Street to the south, Goulburn Street to the west, Campbell Street to the north and the railway and Scrivener Street to the east. Burnside Drive runs over and adjacent to the railway corridor and provides a key route from the Hume Highway via Remembrance Avenue and Hart Street for staff accessing the existing multistorey car park and as well as access to visitor car parking on the site. The Hume Highway is aligned to the north and west of Liverpool which provides connections to south western Sydney and towards the north east.

There are currently a number of staff and visitor car parks across the campus with a total of 2,295 car spaces distributed as outlined in **Table 2** and in **Figure 15** below.

Table 2 Carparking supply

Location	Staff and Fleet	Public	Total
CP1	0	143	143
CP2	358	239	597
CP3	85	56	141
CP4	780	0	780
CP5	575	0	575
Health Services Building	35	0	35
Western Campus Fleet Vehicles Carpark	24	0	24
Total	**1,857**	**438**	**2,295**

Source: GTA Consultants

Figure 15 Car parking locations

Source: GTA Consultants

Liverpool Hospital is well serviced by walking infrastructure, with pedestrian footpaths provided on both side of most surrounding streets. Campbell Street, Goulburn Street and Elizabeth Street currently act as a key pedestrian route for Liverpool Girls High School and Liverpool Station. They also provide a safe pedestrian network for staff and visitors accessing the main hospital entrance.

3.3.11 Public Transport

The hospital campus is well serviced by public transport, with an extensive bus network providing bus stops on Elizabeth Street. These bus stops provide services to Liverpool Westfield, Westfield Burwood and Liverpool / Fairfield / Holsworthy Stations. Liverpool and Warwick Farm Stations are also located within walking distance of the hospital providing services to the Inner West and Leppington Line, T3 Bankstown Line and T5 Cumberland Line.

3.3.12 Surrounding Development

The western hospital campus is located in a cluster of health and education uses, within the north east of the Liverpool CBD.

- To the north is the Liverpool Girls High School and grounds extending from the railway, with a mixture of medium density residential housing and buildings for medical uses, including the Sydney Southwest Private Hospital;
- To the immediate east is the Main Southern Railway and the Liverpool Hospital eastern campus, including the CP5 car park. Further east is the Liverpool Water Recycling Plant;
- To the west is the remainder of the existing western hospital campus (which is subject to a separate concurrent SSD application). Further west is medium density dwellings ranging from 4-5 storeys in height. Liverpool CBD and Westfield Shopping Centre are located further west; and
- To the south is Georges River, Bigge Park, a large public park, and Liverpool TAFE.

The surrounding development is shown in **Figure 16** to **Figure 19**.

Figure 16 Liverpool Girls High School to the north

Source: Ethos Urban

Figure 17 Existing railway line and CP4 carpark to the east

Source: Ethos Urban

Figure 18 Medium density residential dwellings to the west

Source: Ethos Urban

Figure 19 Entry to CP3 car park from Burnside Drive

Source: Ethos Urban

4.0 Description of the Development

This chapter of the report provides a detailed description of the proposed development. Architectural drawings are included at **Appendix B**.

The SSD Application seeks approval for the following development:

- Demolition and site preparation works;
- Construction of a 6-storey car park including:
  - 1,097 car parking spaces;
  - 55 motorcycle parking spaces;
  - Management office; and
  - Accessible restroom.
- Connections to the existing road network; and
- Associated landscape works.

An artist impression of the proposed development is shown at **Figure 20** and the proposed MSCP site plan is shown at **Figure 21**. Fitzpatrick and Partners have prepared Architectural Plans included at **Appendix B**.

Figure 20 Photomontage of the proposed development as viewed from Burnside Drive

Source: Fitzpatrick and Partners

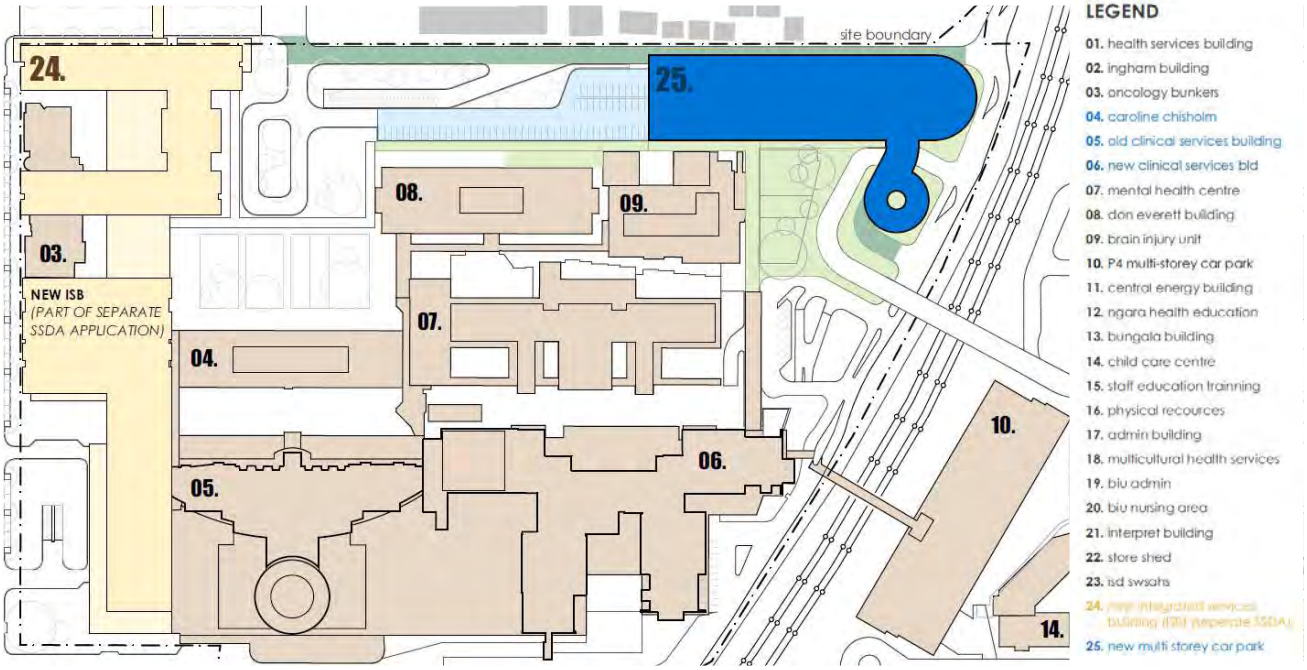

Figure 21 Liverpool Hospital – MSCP site plan

Source: Fitzpatrick and Partners

4.1 Design Principles

The planning and design principles adopted for the proposed development of the site are as follows:

- Enhance the amenity, treatment and overall experience for patients and visitors;
- Establish a centre of innovation for treatment, translational research, health technology and cancer;
- Outline a strategy for the long term expansion of the hospital beyond 2026;
- Facilitate collaboration, knowledge & resource sharing and a seamless transition of health services;
- Lay the foundation for the Liverpool Innovation Precinct to build upon;
- Enable innovation and collaboration across precinct partners & the community;
- Dissolve the boundaries of the hospital to enable integration with precinct partners, the CBD & the community;
- Minimise where possible staging & decanting during construction to avoid disruption to existing services & minimise cost;
- Improve connectivity to core clinical services;
- Reduce congestion, improve campus connectivity and wayfinding for vehicles and pedestrians;
- Provide for efficiencies and flexibility for operation, function and longer-term expansion; and
- Maximise return on investment through efficiency in design and clear prioritisation of project objectives.

4.2 Numerical Overview

The key numeric development information is summarised at **Table 3**.

Table 3 Key development information

Component	Proposal
Campus Area	156,235m^2 (east and west campus)
GFA	37m^2
FSR	0.75:1
Maximum height	RL 32.8m (22.3 metres)
Car Parking Spaces (including accessible parking)	1,097 (80/20 staff - visitor split)
Motorcycle Parking	55

4.3 Site Preparation

The proposal includes the demolition of existing structures, including at-grade parking, internals roads and the P2 multi storey car park. Minor site grading including construction of a retaining wall to the Don Everett Building is also proposed.

While some vegetation is to be removed, no trees are proposed to be removed as part of this application.

A demolition plan is provided at **Appendix B** and the extent of demolition works are shown in **Figure 22** below.

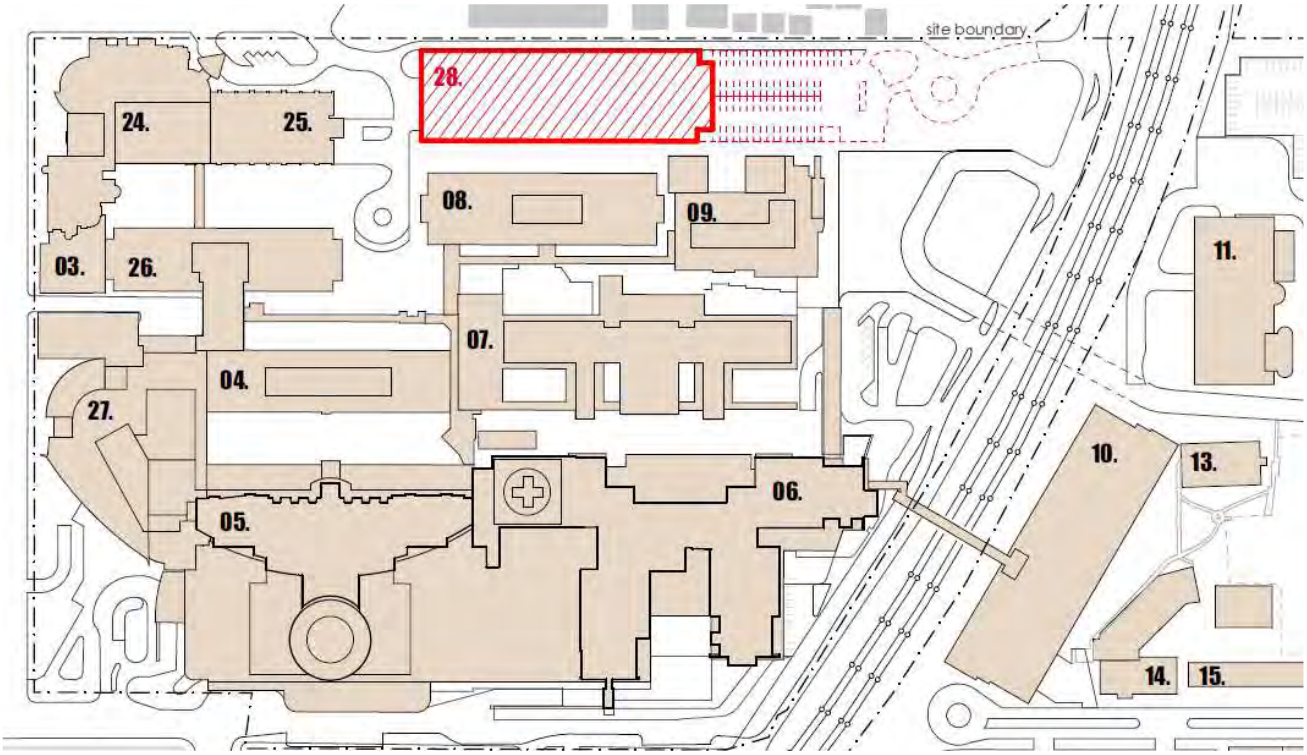

Figure 22 Demolition Plan

Source: Fitzpatrick and Partners

4.4 New Multistorey Carpark

Operating Hours

6:00am – 10:00pm

Parking Fees

The Hospital will provide paid parking. The availability and turnover of car parking is a key consideration for hospitals. The equitable availability of parking is also an important consideration for the proposed development.

The proposed parking scheme includes the implementation of paid parking, in accordance with NSW Government policy (Hospital Car Parking Fees Policy PD2013_031), which includes the NSW Government's Guiding Principles for pricing for hospital car parks. Pricing for car parking incorporates the following guiding principles:

- Support a sustainable model for the procurement, funding and operation of new hospital car parks.
- Support equitable, transparent and sustainable accessibility to health campuses for all users including patients, visitors and staff, including those with special needs.
- Recognise that the parking needs of many patients and visitors need to be met on-site.
- Ensure economic viability towards the development of new car park infrastructure.
- Improve traffic management around health campuses.
- Ensure the fees policy complements the Government's State Plan to encourage greater public transport usage, particularly increasing the proportion of total journeys to work by public.

Building Height and Massing

The new multi storey car park is located over 6 storeys of split-level parking in addition to ground floor under croft and on grade parking. The multi storey car park will have a maximum height of RL 28.95 (18.45m) from ground level to Level 6B. The lift overrun roof will reach RL32.35 (21.85m). Level 1B of the multi storey car park will cantilever over the new hospital road on the northern boundary at a height of 4.5m to allow loading vehicles to pass through.

The floor plate is stacked vertically with two internal ramps on either ends for efficient traffic circulation and movement. While the minimum clearance to the underside of Level 1B is 4.5m, the typical levels between Level 1 and Level 6B has been designed at 2.8 floor to floor height.

The built form elements of the new multi storey car park are shown in the massing diagrams prepared by Fitzpatrick and Partners at **Figure 23** and **Appendix C**. The MSCP in the context of the wider campus is also shown at **Figure 24.**

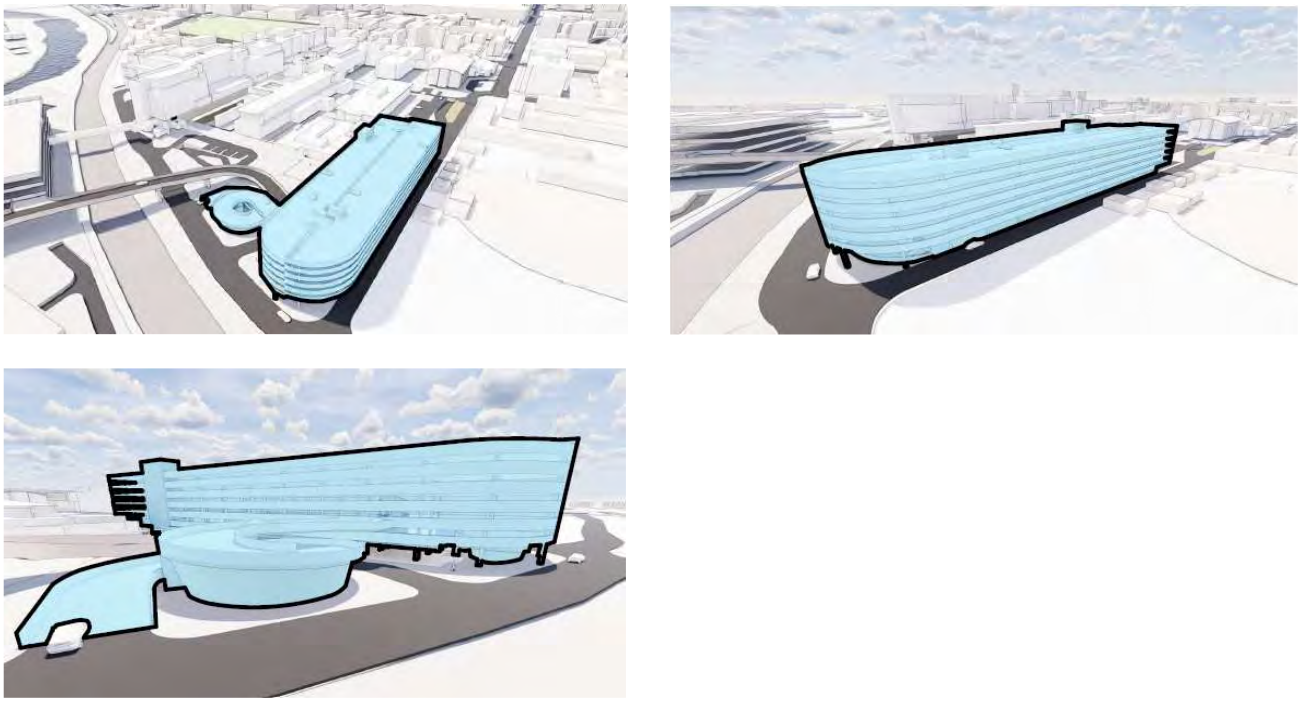

Figure 23 Massing elements of the new MSCP

Source: Fitzpatrick and Partners

Figure 24 Context of MSCP and the wider campus

Source: Fitzpatrick and Partners

4.5 At-Grade Parking

The proposed development includes at-grade parking in the western portion of the MSCP site off Campbell and Forbes Street to the north. The at-grade car parking will provide 65 car spaces including 10 accessible spaces. The parking area will be accessible off the Forbes Street entry drop-off loop (subject to a separate concurrent application). The proposed at-grade parking is shown in **Figure 26** below.

4.6 Vehicular Access and Parking

The proposed development will comprise two controlled entry / exit points from the Forbes Street drop-off loop (subject to a separate concurrent SSD application) and the primary access point from Burnside Drive. The Forbes Street drop off loop will provide access to the at-grade car park and Level 1 of the MSCP. The Burnside Drive access point will provide access to Level 2 of the MSCP.

Service vehicles will access the hospital from Burnside Drive, with only larger vehicles (12.5m HRVs) entering and / or exiting via the southern internal road which connects with Elizabeth Street. The access arrangements to the multi-storey car park from Burnside Drive and Forbes Street have been assesses and considered in the Transport and Accessibility Impact Assessment prepared by GTA Consultants (**Appendix F**).

Figure 25 Proposed vehicle entry and circulation

Source: Fitzpatrick and Partners

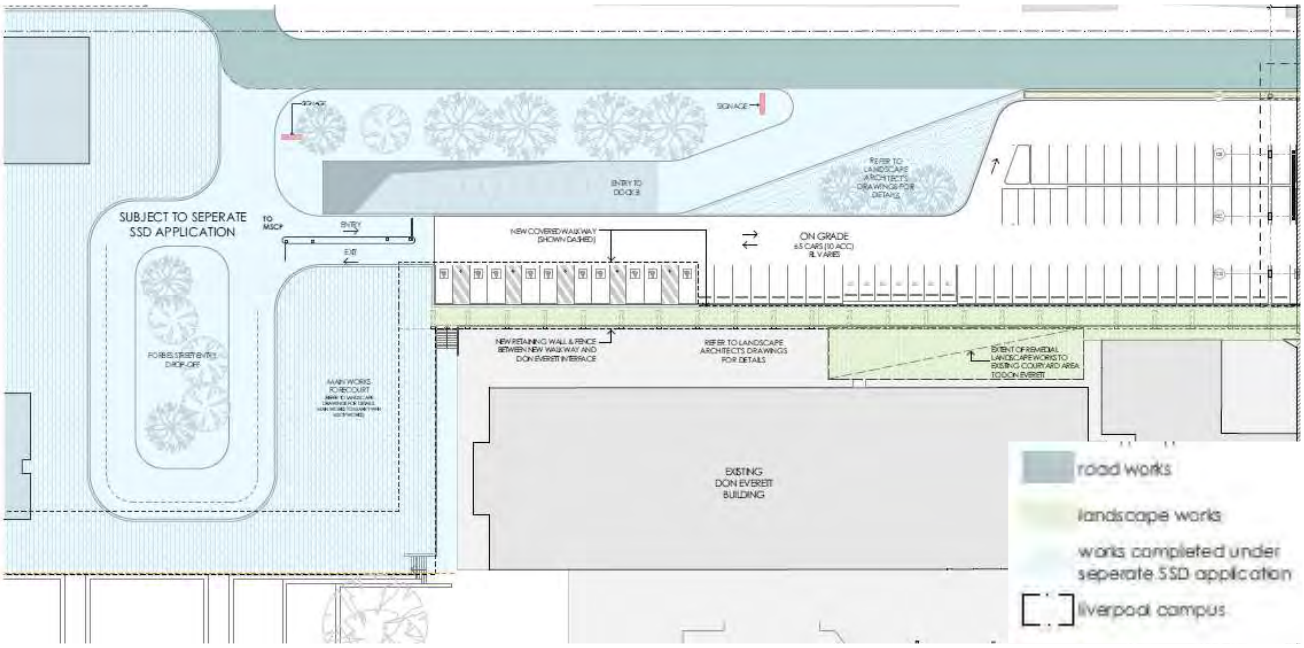

Figure 26 Proposed at-grade parking

Source: Fitzpatrick and Partners

4.7 Pedestrian Access

As part of the overall Liverpool Hospital redevelopment, pedestrian circulation and wayfinding will be improved, with a new hierarchy of key entry points and routes throughout the hospital.

4.8 Road Works

The proposed development includes road works along Campbell Street, to form the New Hospital Road. This road will be accessible for visitors and staff as well as small and medium rigid vehicles. The first level of the new MSCP cantilevers over the road leaving a suitable 4.5m clearance for loading vehicles.

4.9 External Materials and Finishes

Fitzpatrick and Partners have selected a range of materials and finishes that reflect the existing hospital campus and that maintain a consistent aesthetic throughout the precinct. Key considerations in the selection of finishes include:

- Ventilation requirements for open deck car park design;
- Durability and longevity;
- Environmental sustainability; and
- General health and well-being.

All finishes and products selected will be of commercial grade quality and will meet Health Infrastructure's Hospital Car Park Design Guidelines May 19_v12. Materials include aluminium panels, tensil wire mesh and concrete. The open nature of the façade will enable free air circulation which will reduce the need for mechanical ventilation, providing a more sustainable outcome. The external materials and finishes are shown in **Figure 27** below.

Figure 27 Proposed schedule of materials and finishes

Source: Fitzpatrick and Partners

4.10 Landscape Works and Public Domain

Landscape drawings have been prepared by Clouston and are included at **Appendix D**. The ground plane landscape works incorporate elements that provide an indoor-outdoor connections, to link with the wider hospital campus Specifically, the proposed development will include:

- Turfed lawns;
- Mass tree planting;
- Shrubs and groundcovers / grasses;
- Climbers; and
- Timber seating areas.

Adjacent to the Burnside Drive roundabout and hospital entry, the proposal will include more formal landscaping in the form of synthetic turf and terraced / raised lawns. Mass planting will delineate these pedestrian areas from the internal road network and concrete terraced seating walls / timber seats will provide seating areas for visitors, staff and patients.

The proposal does not require the removal of any trees. It will include the planting of 25 new trees.

The proposed landscape works are shown in **Figure 28** to **Figure 29** below.

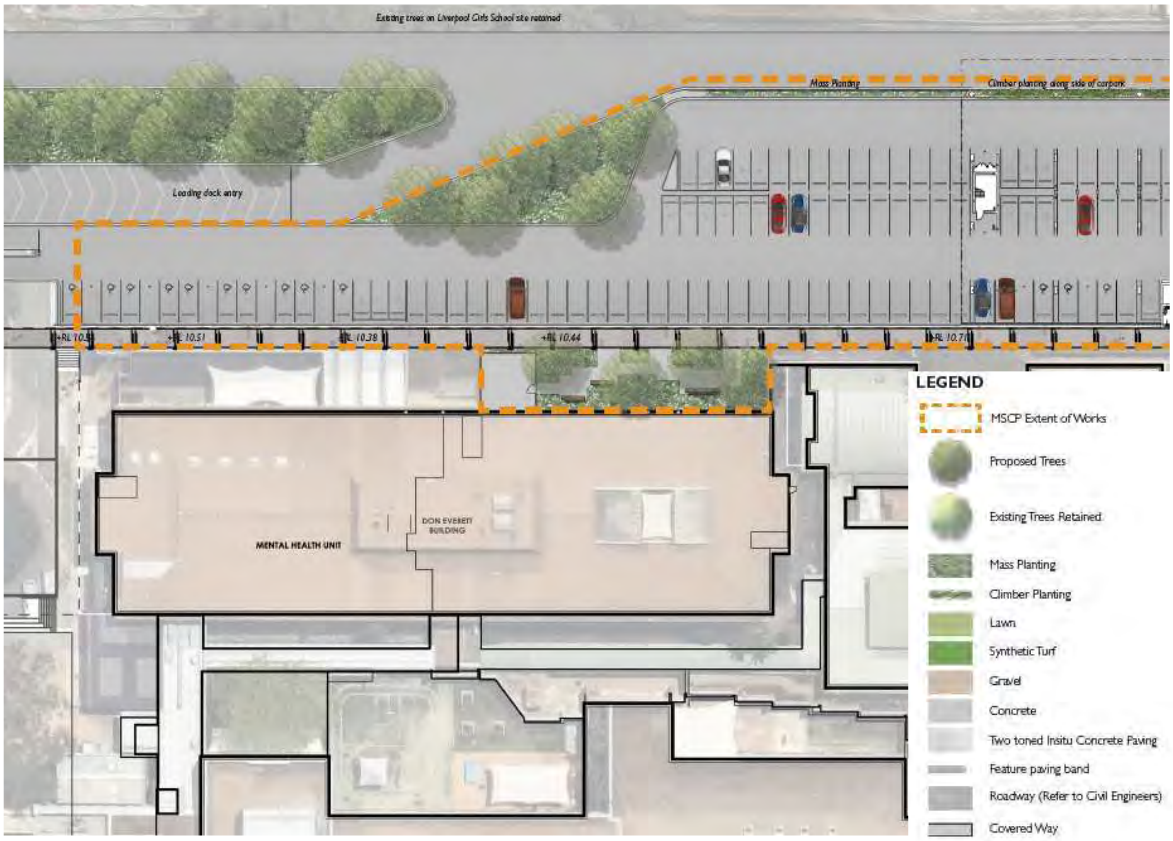

Figure 28 MSCP Ground Level – west

Source: Clouston Associates

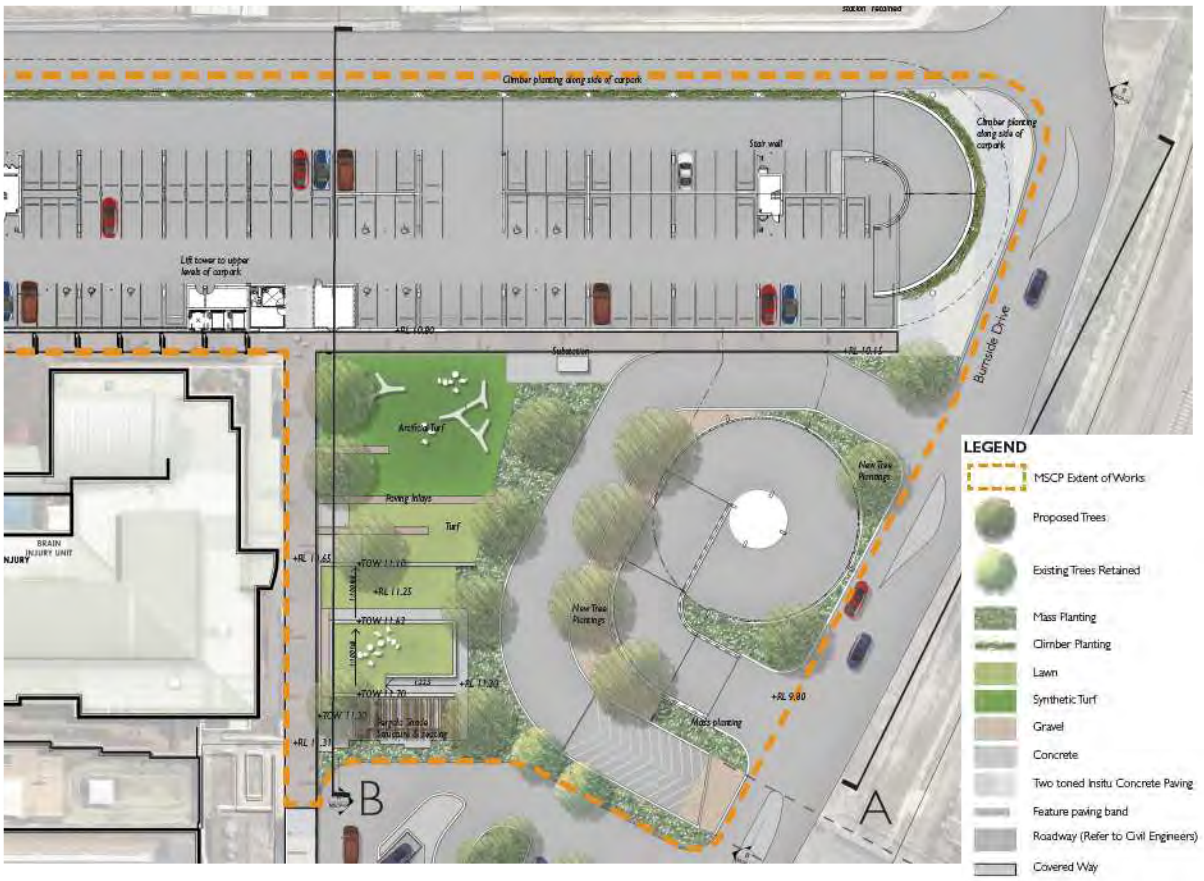

Figure 29 MSCP Ground Level plan – east

Source: Clouston Associates

4.11 Lighting Strategy

All lighting will be designed and documented in accordance with AS/NZ standards 1680 and 4282-1997 Control of the obtrusive effects of outdoor lighting.

4.12 Environmentally Sustainable Development

The proposed development will incorporate Environmentally Sustainable Development (ESD) strategies and principles. In particular, the following initiatives will be incorporated into the proposed development:

- Passive building design to provide natural ventilation via the façade and high strength tensile mesh for air movement throughout the car park and daylight penetration;
- Promotion of stair use through the design (to reduce lift usage) by including bright colours and natural daylight;
- Energy efficient air conditioning systems for the Comms Room and lift shaft;
- Occupancy sensors to turn lights on only when there are occupants and the lighting design to ensure compliance with minimum illumination levels;
- Metering and data gathering to evaluate energy usage of systems and facilitate further energy usage optimisation and reduction;
- Inclusion of end of trip facilities and electrical car charging stations; and
- Inclusion of water sensitive urban design (WSUD) features to control flows, filter stormwater to remove pollutants and integrate water cycle management from stormwater harvesting to treatment.

4.13 Infrastructure and Services

4.13.1 Electricity

As part of the MSCP development, Jacobs has confirmed that a new kiosk substation will be required and the power supply from the demolition of the Ron Dunbier Building will be transferred and reused. A new switchboard main room will be established within the new MSCP and will reticulate low voltage supplies throughout the building. All electrical infrastructure will be derived from the existing hospital site. Further discussion is provided in **Appendix P**.

4.13.2 Telecommunications

The telecommunications infrastructure will comprise a new ICT backbone cabling from the existing hospital campus via new in ground conduits and the existing services tunnel. All ICT infrastructure will be derived from the existing hospital site. Further discussion is provided in **Appendix P**.

4.14 Signage

This application does not seek formal approval for signage. A signage and wayfinding strategy is outlined by Fitzpatrick and Partners in the Design Report at **Appendix C** and approval for signage will be obtained separately.

4.15 Construction Staging

The application does not seek approval for staging. Construction is expected to commence in September 2020 and conclude in May 2022.

4.16 Job Creation

The proposed development will generate approximately 360 jobs during the construction phase and approximately 2 FTE (full time equivalent) jobs will be created at the completion of the project during the operational phase.

4.17 Construction Hours

The proposed hours of construction are as follows:

- Monday to Friday 7:00am to 6:00pm;
- Saturday 8:00am to 3:00pm; and
- No work on Sundays and Public Holidays.

The general construction hours are proposed to be extended from 1.00pm – 3.00pm on Saturdays.

Special construction hours will be required to for the construction of the project on selected evenings and weekends so as to maintain operation of the existing hospital and in consideration of Council restricted hours of operation on Campbell street during weekdays. The weekends and timings are as follows:

- Monday to Friday: 6:00pm to 7:30pm (ability to finalise large concrete curing activities including wetting, levelling).
- Friday: 6:00 pm to 10:00 pm (limited to site establishment activities in preparation for weekend works).
- Saturday: 5:00 pm to 10:00 pm (general construction activities **excluding** excavation, sawing of rock, jack hammers, pile drivers, vibratory rollers/compactors of the like).
- Sunday: 8:00 am to 5:00 pm (general construction activities **including** excavation, sawing of rock, jack hammers, pile drivers, vibratory rollers/compactors of the like).
- Sunday: 5:00 pm to 10:00 pm (general construction activities **excluding** excavation, sawing of rock, jack hammers, pile drivers, vibratory rollers/compactors of the like).

Acoustic assessment and noise mitigation are detailed at **Section 6.9**.

5.0 Consultation

In accordance with the SEARs issued for this project, consultation was undertaken with the following stakeholders:

- Government Architect NSW:
- Liverpool City Council;
- Transport for NSW (TfNSW):
- Roads and Maritime Services (RMS);
- Sydney Water;
- Local Aboriginal land Council;
- Fire and Rescue;
- Liverpool Innovation Precinct;
- Schools Infrastructure NSW;
- Hospital user groups; and
- The local community.

A summary of the consultation undertaken to-date with Council, the community and relevant agencies is provided below and is outlined at **Appendix X**. Several consultants have undertaken additional consultation with relevant parties during the preparation of their reports.

NSW Government Architect

Representatives from HI NSW and Fitzpatrick and Partners met with the Office of the Government Architect NSW on 9 September 2019 to review the design of the proposed development in line with 'Better Placed – An integrated design policy for the built environment of NSW 2017.' The meeting minutes are provided at **Appendix X** and a summary of the key topics are provided in **Table 4**.

Table 4 NSW Government Architect comments

Comment
Meeting 1 – 4 September 2019
The design and approach of the 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 the surrounding context • The integration of wayfinding and landscaping
Response: The following aspects of the design were developed following the initial GA NSW Review in response to the commentary received: • Further refinement of the façade expression to better relate to the Liverpool Girls High School open space to the north • Development of the design of the pedestrian journey from the car park to the existing and proposed hospital facilities including additional weather protection
Meeting 2 – 23 October 2019
The Master Plan analysis and rationale of the project were generally supported. The focus of the presentation was primarily on the main works (subject to a separate concurrent SSD application), with no issue or items raised for further discussion relating to the MSCP.
Meeting 3 – 4 December 2019
The GA NSW was complimentary of the project teams response to the commentary from Meeting 1 and generally supported the façade and landscape design approach. The focus of the presentation was primarily on the main works (subject to a separate concurrent SSD application), with no issues or items raised for further discussion relating to the MSCP.

Agency and Council Consultation

HI NSW has undertaken ongoing consultation with relevant agencies and Council regarding the proposed development and other works currently being carried out on the hospital campus. **Table 5** below provides a summary of the meetings held with Liverpool City Council.

Table 5 Liverpool City Council comments

Council Comments	Outcome
Meeting 1 – 30 April 2019	
An overview of the draft Liverpool Council Public Domain Masterplan was presented. Feedback received was generally supportive.	The project continued to develop the design in consultation with Council.
Meeting 2 – 18 October 2019	
A presentation of the main works proposal was provided. The feedback received from Council is summarised below: • Council was generally supportive of the redevelopment • Council requested the project to review the impact on trees on Campbell Street and palms at the main entrance • Council requested a separate meeting to discuss their public domain and interface with the hospital landscaping • A separate meeting to be organised to discuss traffic and shared zones on Campbell Street • Council requires more details on the shared zone for the drop off area in Stage 2	Impact on vegetation has been reduced as much as possible in balance of the demand for clinical space within a constrained site. The project has managed to retain Palm trees at the main entrance on Goulburn Street (part of the separate SSD). A separate meeting was held to present and discuss public domain and landscaping on 6 December 2019.
Meeting 3 – 6 December 2019	
Meeting held to address public domain and landscaping. Council requested to review the tree removal plans and more information on traffic studies.	These issues focused on the ISB building (separate SSD)
Meeting 4 – 5 March 2020	
Meeting held to present the latest Traffic and Public Domain Design.	Agreement on tree removal. Feedback has informed the design of the Shared zone and public domain.
Meeting 5 – 9 March 2020	
Meeting held to present the design to LCC councillors.	Councillors were generally supportive, and no further actions were required.

The project team have met with service providers including Sydney Water on 7 May 2018, to establish the capacity of their water main and advise if any potential upgrades are required. Sydney Water responded to the Section 73 Feasibility on 19 October 2018 and advised that there is adequate capacity in the 300mm water main for connection.

Transport for NSW

HI NSW and the project have undertaken ongoing consultation with Transport for NSW in relation to the proposed development. The table below provides a summary of the meetings held and feedback received.

Table 6 TfNSW comments

TfNSW Comments
Meeting 1 – 12 December 2018
An initial briefing was held and general feedback was received.
Meeting 2 – 22 March 2019
A meeting was held to discuss the construction works adjacent to the rial corridor. General feedback was received.
Meeting 3 – 27 June 2019
A meeting was held to discuss the overall project. HI NSW provided an updated on the planning for the LHAP precinct and TfNSW provided a briefing on transport planning for the Liverpool region. TfNSW requested information on the program, however, they were generally supportive of the development.
Meeting 4 – 5 August 2019

TfNSW Comments
A workshop was held on the Strategy and Implement of transportation. General feedback was received on the wider precinct transport strategy.
Meeting 5 – 3 September 2019
A meeting was held to discuss the strategy. Comments received included: • Noting that Elizabeth Street would not be a good location for a bus route due to the emergency department • The importance of Campbell and Goulburn Street as pedestrian friendly zones, ideally free of non-hospital vehicular traffic. This could then link Liverpool and Warwick Farm Stations with a continuous pedestrian pathway
Meeting 6 – 30 October 2019
Meeting held to discuss works adjacent to the railway corridor. TfNSW will liaise with Sydney Buses and there were no further comments on the MSCP.
Meeting 7 – 25 November 2019
Meeting held with TfNSW and Schools Infrastructure NSW. Schools Infrastructure provided an update on their redevelopment plans with a focus on end state and potential masterplan options for the road / transport network immediately around the site. No further comments on the MSCP.

Local Aboriginal Land Council

The hospital held meetings with the Gandangara Local Aboriginal Land Council (Gandangara LALC) on 14 June 2019 and 27 November 2018. A brief outlining the LHAP redevelopment (including the MSCP) progress was also issued to Gandangara LALC in February 2019.

The project team held an archaeological survey of the LHAP project area with the Gandangara LALC on 25 November 2019.

As part of the Aboriginal Cultural Heritage Assessment process, Aboriginal stakeholders were provided with information about the proposal and the cultural heritage assessment process, including the methodology for collecting information on cultural heritage significance.
Responses were received from Murra Bidgee Mullangari Aboriginal Corporation, A1 Indigenous Services, Gandangara LALC, Darug Custodian Aboriginal Corporation, Kamilaroi Yankuntjatjara Working Group (Phil Khan), Darug Aboriginal Land Care (Des Dyer), and Kawul Cultural Services. All responses received were supportive of the proposed ACHAR methodology.

Schools Infrastructure NSW

A number of consultation sessions have been undertaken with Schools Infrastructure NSW in relation to the proposed development and the Liverpool Education Precinct projects. Consultation has also bene undertaken with Liverpool Girls and Liverpool Boys High Schools which are adjacent to the hospital campus. The table below provides a summary of the meetings held and feedback received. Further discussion is also provided in **Appendix X**.

Table 7 Schools Infrastructure NSW comments

Schools Infrastructure NSW comments
Meeting 1 – 19 September 2019
Meeting held with Liverpool Education precinct. A project overview and indicative timing was provided and the meeting discussed the opportunities to collaborate in relation to infrastructure and services and the feedback as generally positive.
Meeting 2 – 30 October 2019
Meeting with Schools Infrastructure NSW to discuss masterplans highly any overlapping concerns regarding traffic flow and potential closure of Campbell Street. It was advised that the closure of Campbell Street be further considered.
Meeting 3 – 25 November 2019
Meeting with Schools Infrastructure NSW and TfNSW. The meeting discussed the opportunities for future masterplanning of the precincts. These opportunities reviewed the scope beyond the current project scope. Both parties agreed the masterplan would be beneficial for the LHAP and Liverpool Education Precinct. No comments were made on the MSCP.
Meeting 4 – 6 November 2019

Schools Infrastructure NSW comments
Consultation with Liverpool Boys High School to provide a general project overview. The feedback received was generally positive. No comments were made on the MSCP.
Meeting 5 – 15 November 2019
Consultation with Liverpool Girls High School to provide a general project overview. The feedback received was generally positive. No comments were made on the MSCP.

Hospital User Groups

The project team has completed schematic design of the MSCP which has been endorsed by the Planning and Development Committee (PDC) as part of the LHAP governance structure. The PDC includes members from HI NSW, Liverpool Hospital, South-West Sydney Local Health District and Johnstaff Projects.

Community Consultation

HI SNW has undertaken ongoing consultation and engagement with the relevant stakeholders during the design development phase of the project. A number of meeting and stalls were held during the initial phases of the project and additional consultation sessions are intended to be held during the assessment and exhibition of the SSDA. These sessions are intended to provide project updates and news on the redevelopment as well as providing avenues to receive ongoing information. A summary of issues and responses is provided below.

Issue	Response
Car parking walkability and access	Review of connections between carpark and entries has resulted in the inclusion of undercover walkways with rest points.
Concerns with paid parking	Paid parking is part of the NSW Health policy, implemented state-wide with concessions available.
Carparking proximity to residential areas	Light pollution controls will be provided, and the works will be undertaken to minimise disruption to residents.
Cancer therapy – dedicated and convenient parking is required	There is a dedicated carpark for cancer. It is part of the operational policy to maintain dedicated cancer parking.

The community consultation sessions comprised of:

- Open day stalls for the community and Liverpool Hospital Staff;
- Open community meetings;
- Hospital information stands;
- Presentation to district Chief Executive of the South West Sydney Local Health District;
- Media releases and social media updates; and
- Flyer distributions.

Further discussion on the meetings held and outcomes is provided at **Appendix X**.

The proposed development will be placed on public exhibition in accordance with clause 83 of the *Environmental Planning and Assessment Regulation 2000.* During the public exhibition period Council, State agencies and the public will have an opportunity to make submissions on the project.

6.0 Environmental Assessment

This section of the report assesses and responds to the environmental impacts of the proposed DA. It addresses the matters for consideration set out in the SEARs (see **Section 1.5**). The Mitigation Measures at **Section 7.0** complement the findings of this section.

6.1 Relevant EPIs, Policies and Guidelines

The relevant strategies, environmental planning instruments, policies and guidelines as set out in the SEARs are addressed in **Table 8**.

Table 8 Summary of consistency with relevant Strategies, EPIs, Policies and Guidelines

Instrument/Strategy	Comments
Strategic Plans	
NSW State Priorities	The NSW State Priorities are twelve high-level priorities for the State, being: • Creating jobs; • Delivering infrastructure; • Driving public sector diversity; • Improving education results; • Improving government services; • Improving service levels for hospitals; • Keeping our environment clean; • Making houses more affordable; • Protecting our kids; • Reducing domestic violence reoffending; • Reducing youth homelessness; and • Tackling childhood obesity. The proposal seeks to redevelop an existing hospital to improve service levels for health. The proposal will therefore meet a number of the key NSW priorities, whilst also creating jobs and delivering infrastructure in the South District.
Greater Sydney Region Plan: A Metropolis of three cities	The Greater Sydney Regional Plan (the Regional Plan) is the overarching strategic plan that seeks to shape future development for the Sydney metropolitan area over the next 40 years. Under the Regional Plan, Sydney will be made of three cities, with Liverpool forming part of the Western Parkland City along with Greater Penrith and Campbelltown-Macarthur. Liverpool is designated as part of the 'Metropolitan' cluster (centre) of the Western City in the centres hierarchy. The centre of Liverpool is to be the foundation for growing a health and education precinct that will support the growing Western City over the next 20 years. The Plan seeks to anchor university presence in Liverpool around the Government's investment in hospitals to facilitate the emergence of a health and education precinct. Liverpool is to be better connected to the rail network to help drive the education and commercial strengths of the CBD. Of relevance to the proposed SSD application is Objective 21 which contemplates the development of health, education, research and innovation precincts. Specifically, the proposal will support an improved service offering on the existing hospital campus and create greater efficiencies through an improved campus layout and provision of state of the art facilities.
Western City District Plan	The Western City District Plan sets out the planning priorities and actions to manage growth and change in the Western City District. It is a guide for implementing the Region Plan, at a district level, and is a bridge between regional and local planning. The District Plan informs local strategic planning statements, preparation of Local Environmental Plans and assessment of Planning Proposals, community strategic plans and policies. Planning Priority W9 specifically refers to the growth and strengthening of the Liverpool 'Metropolitan Cluster'. Liverpool is identified as a 'Collaboration Area' where the key aims include developing smart jobs around the health and education precinct.
Liverpool Collaboration Area Place Strategy	The Liverpool Collaboration Area Place Strategy was prepared by the Greater Sydney Commission to establish a vision and set out actions and priorities for the Collaboration Area. The Place Strategy recognises the Liverpool Health and Academic Precinct and the importance of the upgrades to Liverpool Hospital to establish it as the destination hospital for the South Western Sydney Local Health District. Accordingly, the proposed development will directly align with:

Instrument/Strategy	Comments	
	• ***Planning Priority P6 – Support the growth of critical employment hubs in the Collaboration Area; and*** • ***Action 16 - Leverage the Investment Attraction Fund where appropriate to support the growth of Liverpool*** The MSCP supports the ISB works under Separate SSD application that will a new health and academic precinct in accordance with the future directions for the area. The proposed development will directly support the growth of employment in the district and contribute to the metropolitan economy.	
Draft Liverpool City Centre Public Domain Masterplan	The proposal is largely located within the Hospital campus and will not impact the ability for Council to implement the vision of the Masterplan.	
State Infrastructure Strategy 2018 – 2038 Building the Momentum	The proposal is consistent with the State Infrastructure Strategy by: • Delivering hospital infrastructure to respond to existing capacity constraints and expected population growth; and • Providing state of the art facilities to create greater efficiencies and improved operation. Importantly, the proposed development forms part of a coordinated investment in the growth of the Liverpool Hospital Health and Education Precinct, to support population growth and change.	
Healthy Urban Development Checklist	The Healthy Urban Development Checklist has been prepared by NSW Health to assist professional in the industry in providing advice on urban development and ensure that considerations are made with regard to health effects of urban development on policies and proposal and how they can be improved to provide better health outcomes. While the proposed development is for a new multi storey car park, it completements the redevelopment of the overall hospital campus, where there will be the introduction of new pedestrian circulation routes, open space and substantial tree planting. These elements will allow for an improved public domain and urban form, making it more accessible for pedestrians and cyclists, while providing sufficient car parking for staff and visitors to respond to existing capacity constraints and population growth into the future.	
Draft Greener Places Policy	The draft Greener Places Policy has been prepared by the GANSW to guide the design, planning and delivery of green infrastructure across NSW. The aim is to create healthier and more liveable cities and towns by improving community access to recreation and exercise, walking and cycling connections and the resilience of urban areas. While the proposed development is for a new multi storey car park, it complements the redevelopment of the overall hospital campus, where there will be the introduction of new open space areas and substantial tree planting.	
Future Transport Strategy 2056 and supporting documents	The Future Transport Strategy 2056 sets the 40-year vision, directions and outcomes framework for customer mobility in NSW, which will guide future transport investment over the long term. The supporting plans provide further detail on customer outcomes or place-based planning documents to guide the Strategy's implementation. The proposal includes improvements to the internal road system of the hospital that will provide improved access for vehicles as well as pedestrians and reduce vehicular congestion in critical areas. Importantly, these changes will facilitate and encourage safe, convenient access for all. A review of the proposed improvements to transport infrastructure near Liverpool Hospital indicates that there will be no adverse implications from the proposed development. The most significant nearby project is the development of the Western Sydney Aerotropolis and the introduction of rapid bus services for Western Sydney in 2026.	
Crime Prevention through Environmental Design (CPTED) Principles	Refer to **Section 6.8**.	
Better Placed: An integrated design policy for the built environment of New South Wales	The Better Placed Policy includes seven key objectives in the design of the built environment prepared by the Government Architect. A review of the proposal's consistency with the principles of Better Placed is provided below.	
	Objective 1. Better Fit – contextual, local and of its place	The proposed development responds to the surrounding context and its location within Liverpool city centre and opposite Liverpool Girls High School. It provides an appropriate scale, responding to the existing built form and its local context. The new MSCP has been designed to present as a linear horizontal mass, with long façade panels to reduce any perceived bulk and scale. The massing is considered to be appropriate in the context of the overall development by recognising the human scale at ground level through the incorporation of undercover walkways and landscaping to contribute to a positive public domain.

Instrument/Strategy	Comments	
	Objective 2. Better Performance – sustainable, adaptable and durable	HI NSW has taken a responsible approach to ensuring the principles of ESD are incorporated into the MSCP ensuring effective and environmentally responsive ESD initiatives, including: • Passive building design to provide natural ventilation via the façade and high strength tensile mesh for air movement throughout the car park and daylight penetration; • Promotion of stair use through the design (to reduce lift usage) by including bright colours and natural daylight; • Energy efficient air conditioning systems for the Comms Room and lift shaft; • Occupancy sensors to turn lights on only when there are occupants and the lighting design to ensure compliance with minimum illumination levels; • Metering and data gathering to evaluate energy usage of systems and facilitate further energy usage optimisation and reduction; • Inclusion of end of trip facilities and electrical car charging stations; and • Inclusion of water sensitive urban design (WSUD) features to control flows, filter stormwater to remove pollutants and integrate water cycle management from stormwater harvesting to treatment.
	Objective 3. Better for Community – inclusive, connected and diverse	The proposed development incorporates accessible access to the cater to the varying needs of the public who will use the MSCP and wider hospital campus. In accordance with other redevelopment being undertaken on the campus (subject to separate concurrent applications), the site will have pedestrian paths that connect to the surrounding streetscape, allowing access by public transport to ensure suitable access arrangements for all members of the community.
	Objective 4. Better for People – safe, comfortable and liveable	The proposed development has sought to balance the operational needs of the hospital while providing a fit for purpose building that incorporates high quality design features for visitors and staff. The CPTED principles are addressed in **Section 6.8**.
	Objective 5. Better Working – functional, efficient and fit for purpose	The proposed development seeks to integrate and link in with the existing hospital campus to provide a facility that will improve the operational efficiency and meet the health care needs of the growing population.
	Objective 6. Better Value – creating and adding value	The proposed development responds to the overall hospital campus redevelopment, responding to existing capacity constraints while meeting the increased health demands of the community. The proposed development is in line with the NSW Government's budget for the works.
	Objective 7. Better Look and Feel – engaging, inviting and attractive	These design principles have informed the proposed development and are illustrated in the Design Statement prepared by Fitzpatrick and Partners and included at **Appendix C**.
State Legislation		
EP&A Act	The proposed development is consistent with the objects of the EP&A Act for the following reasons: • It allows for the orderly economic development of the land by providing improved health care infrastructure; • It allows for additional employment opportunities throughout the construction and operation phases; • It achieves a high-quality design outcome that will benefit patients, staff and visitors; and • It is a development for public purposes. The proposed development is consistent with Division 5.2 of the EP&A Act, particularly for the following reasons: • The development has been declared to be State significant development; • The development is not prohibited by an environmental planning instrument; and • The development has been evaluated and assessed against the relevant heads of consideration under section 4.15(1).	
EP&A Regulations	The EIS has addressed the specification criteria within clause 6 and clause 7 of Schedule 2 of the EP&A Regulation. Similarly, the EIS has addressed the principles of ecologically sustainable development through the precautionary principle (and other considerations), which assesses the threats of any serious or irreversible environmental damage (see **Section 6.21**).	

<table>
<tr><th>Instrument/Strategy</th><th>Comments</th></tr>
<tr><td></td><td>As required by clause 7(1)(d)(v) of Schedule 2, the following additional approvals will be required in order to permit the proposed development to occur.

<table>
<tr><th>Act</th><th>Approval Required</th></tr>
<tr><td colspan="2">Legislation that does not apply to State Significant Infrastructure</td></tr>
<tr><td>Fisheries Management Act 1994</td><td>N/A</td></tr>
<tr><td>Heritage Act 1977</td><td>N/A</td></tr>
<tr><td>National Parks and Wildlife Act 1974</td><td>N/A</td></tr>
<tr><td>Rural Fires Act 1997</td><td>N/A</td></tr>
<tr><td>Water Management Act 2000</td><td>N/A</td></tr>
<tr><td colspan="2">Legislation that must be applied consistently</td></tr>
<tr><td>Fisheries Management Act 1994</td><td>No</td></tr>
<tr><td>Mine Subsidence Compensation Act 1961</td><td>No</td></tr>
<tr><td>Mining Act 1992</td><td>No</td></tr>
<tr><td>Petroleum (Onshore) Act 1991</td><td>No</td></tr>
<tr><td>Protection of the Environment Operations Act 1997</td><td>No</td></tr>
<tr><td>Roads Act 1993</td><td>Yes</td></tr>
<tr><td>Pipelines Act 1967</td><td>No</td></tr>
</table></td></tr>
<tr><td>SEPP (Infrastructure)</td><td>The aim of this SEPP is to facilitate the effective delivery of infrastructure across the State, including providing for consultation with relevant public authorities about certain development during the assessment process.

Schedule 3 of the SEPP states the threshold for traffic generating development that is to be referred to RMS. As the proposed development is for a car park with more than 200 car parking space, the development will require referral to the RMS.</td></tr>
<tr><td>SEPP (State and Regional Development)</td><td>The aim of this policy is to identify development that is SSD. Pursuant to the SEPP SRD a project will be SSD if it falls into one of the classes of development listed in Schedule 1 of the SEPP. ‘Hospitals, medical centres and health research facilities’ with a CIV of $30 million or more are identified as SSD and are considered to be development of State significance.

As the proposed development has a capital investment value greater than $30million and is for the purposes of a car par to service a hospital as a health services facility it classifies as SSD. A CIV Statement has been prepared by C2R Consulting and is included under a separate cover.</td></tr>
<tr><td>SEPP 55 – Remediation of Land</td><td>JK Environments have completed a Contamination Assessment, which is available at Appendix N. The report concludes that the potential for contamination constraints at the site with respect to the proposed development is considered to be low and the site can be made suitable for the proposed development from a contamination perspective. Further information regarding contamination is provided at Appendix N.</td></tr>
<tr><td>SEPP (Koala Habitat Protection) 2019</td><td>This application does not seek removal of any vegetation. Accordingly, no further assessment of the Koala Habitat Protection SEPP is required.</td></tr>
<tr><td>SEPP 64 (Advertising and Signage)</td><td>This application does not seek approval for signage.</td></tr>
<tr><td>Draft SEPP (Remediation of Land)</td><td>An ongoing review of SEPPs by the Department has resulted in the proposed repeal of SEPP 55, retaining some of its elements and adding new provisions to establish a modern approach to the management of contaminated land. In addition to the provisions addressed in SEPP 55 above, new provisions will be added in the new SEPP to:
• Require all remediation work that is to be carried out without development consent to be reviewed and certified by a certified contaminated land consultant;
• Categorise remediation work based on the scale, risk and complexity of the work; and
• Require environmental management plans relating to post-remediation management of sites or ongoing operation, maintenance and management of on-site remediation measures (such as a containment cell) to be provided to Council.
The Contamination Assessment provided at Appendix N, confirms that the potential for contamination on the site is considered to be low and the site can be made suitable for the proposed development from a contamination perspective. Further discussion is provided in Section 6.16.</td></tr>
</table>

Instrument/Strategy	Comments	
Draft SEPP (Environment)	The site is not identified as being subject to the provisions for waterways, catchments, world heritage and urban bushland under the draft Environment SEPP.	
Local Planning Instruments and Controls		
Liverpool Local Environmental Plan 2008	Clause 2.1 – Zone	SP2 Infrastructure – Health Services Facility and Educational Establishment. As the works form part of a health services facility, the proposal is permissible with consent.
	Objectives of SP1 Zone	The proposal is consistent with the SP2 zone objectives as: • It provides health infrastructure that is a specific use supported by the Zone. • The proposed development is compatible with Liverpool Hospital, being a car park that is ancillary to a health services facility; and • Does not prevent the use of the land for provision of further infrastructure as required within the site.
	Clause 4.3 – Height of Buildings	The maximum building height on the site is 35m. The proposed development will have a maximum building height of RL 32.8 (22.3m). The proposed development complies with the height control.
	Clause 4.4 – Floor Space Ratio	The maximum FSR on the site is 2.5:1. The existing total GFA on the site is 117,045m^2 and the corresponding FSR is 0.75:1. The proposed MSCP will result in an additional GFA of 37m^2.The resulting GFA is 117,082m^2 which equates to a FSR of 0.75:1. The proposed development therefore complies with the floor space ratio.
	Clause 5.10 – Heritage	Whilst the Hospital site itself is not identified as an item of heritage significance it is partially located within the Bigge Park Conservation Area on the Heritage map. 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; and • Cast-iron letterbox (close to the corner of College and Elizabeth St). A Heritage Impact Statement has been prepared by RPS and is included in **Appendix K**. Further discussion is provided in **Section 6.18**.
	Land Reservation	The site is not identified by the land reservation acquisition map.
	Key Sites	The hospital campus is identified on the Key Sites map which seeks to protect the hospital helicopter airspace by restricting development that intrudes into the Hospital OLS contour - RL42.71. The proposed car park development is located in the far north-eastern portion of the western hospital campus and is not considered to affect the airspace operations.
	Sun access in Liverpool City Centre	Sun access to Bigge Park is protected by the following clause: • Land within 9m of the public right of way on the northern side of Elizabeth Street, opposite Bigge Park, between Bigge Street and College Street is limited by a maximum height of 20 metres. While the hospital campus is located within proximity to Bigge Park, the proposed development is in the north eastern corner of the western campus. All shadows cast between 9am and 3pm during the winter solstice are contained within the hospital campus itself or the adjacent rail line.
	Clause 7.7 – Acid Sulfate Soils	The site is identified as being located on land with Class 5 Acid Sulfate Soil. A detailed site investigation has been prepared that confirms an acid sulfate soils management plan (ASSMP) is required. An ASSMP is provided at **Appendix N** (see **Section 6.16**).
	Clause 7.8 – Flood planning	The western campus is identified as being Flood Prone however, it is not identified as being within a flood planning area. Further discussion is provided at **Section 6.11** and in the Flooding and Stormwater Report at **Appendix Q**.
	Clause 7.17 Airspace Operations	The hospital campus is identified on the Key Sites map which seeks to protect the hospital helicopter airspace by restricting development that

Instrument/Strategy	Comments	
	Clause 7.17A Hospital Helicopter Airspace	intrudes into the Hospital OLS contour - RL42.71. The proposed car park development is located in the far north-eastern portion of the western hospital campus and does not intrude into the OLS contour and will not affect the airspace operations.
	Design excellence in Liverpool City Centre	In accordance with Clause 7.5 of the LEP, the car park exhibits design excellence as: • A high standard of architectural design and materiality is achieved; • The external appearance is appropriate and enhanced through design measures that will soften the appearance of the structure when viewed from distance; • Does not detrimentally impact on identified view corridors. The proposal enhances the western hospital campus and provides a new high quality building which enhances the setting of surrounding buildings. • Provides a built form that will contribute to the interest and vibrancy of the health precinct, while respecting Biggs Park with an appropriate scale and setback. • Has an appropriate bulk and form. • Is capable of addressing potential environmental impacts, such as sustainable design, overshadowing, visual and acoustic privacy and noise. The proposed development has undergone design iterations in consultation with the GA NSW and other relevant agencies and authorities. Additionally, the proposed development has been designed with regard to the Better Placed NSW requirements to ensure design excellence is achieved.
Liverpool Development Control Plan 2008	It is noted that development control plans are not a matter for consideration in the assessment of SSD DAs by virtue of Clause 11 of SEPP SRD, which states that '*Development Control plans… do not apply to… State significant development*'. Notwithstanding this, the Liverpool DCP provides guidance for development. This guidance has been considered by the relevant consultants, where relevant (for example stormwater engineering requirements and parking rates).	

6.2 Built Form and Urban Design

6.2.1 Bulk, Scale and Urban Design

The proposed built form and massing is a result of extensive design analysis undertaken by Fitzpatrick and Partners, aimed at achieving optimal urban design outcomes for the existing hospital campus and its local context.

The new multi storey car park is located over 6 storeys of split-level parking in addition to ground floor under croft and on grade parking. The multi storey car park will have a maximum height of RL 28.95 (18.45m) from ground level to Level 6B. The lift overrun roof will reach RL32.35 (21.85m).

The ground level undercroft from the New Hospital Road to the north, will allow for a 4.5m height clearance for service and emergency vehicles, and will include planting and green climbers along the ground level to ameliorate the visual effect and reduce the perceived bulk and scale when viewed from the north. On the southern side, a circular ramp will provide vehicular access to allow entry and exit from Level 2. This will be a standalone structure and distinct from the primary car park form.

The car park has been designed with a scale and expression that primarily relates to the streetscape and hospital campus. Accordingly, through the inclusion of façade treatments and the curvature of the form along the eastern boundary, the proposed MSCP massing is considered acceptable and appropriate to facilitate the required parking demand for the hospital. It is commensurate with the surrounding context and provides appropriate capacity for the future anticipated growth within the hospital campus precinct.

6.2.2 Setbacks

The proposed development is located in the far north eastern corner of the hospital's western campus and includes appropriate setbacks to the surrounding local context. The following setbacks have been incorporated:

- 11.9m setback from the eastern side boundary;
- 5m setback from the existing Brain Injury Building (to the south); and
- 4.6m setback from the northern boundary line.

These setbacks have had local context and the existing hospital campus. While the siting of the MSCP differs from that which currently exists, it is considered that this built form provides an improved urban design outcome and recognises the scale of other surrounding development through appropriate materiality and landscaped entries.

6.3 Environmental Amenity

6.3.1 Solar Access and Overshadowing

Shadow diagrams are included in **Appendix B** illustrating the extent of overshadowing generated by the proposed development. The diagrams show the greatest impact of overshadowing throughout the year, being the winter solstice on June 21 at 9am, 12pm and 3pm.

The shadow diagrams show that the proposed development will result in minor shadowing of the hospital campus only and along the rail corridor to the east.

Within the hospital campus, the diagrams show that there is additional overshadowing than currently exists. The design and orientation of the MSCP is largely restricted by the functional needs of the car park and accordingly the open space landscape area to the south will be in shadow during winter. The landscape design has accounted for this with synthetic turf and tree rows aligned north south to maximise sunlight in winter months. Notwithstanding, the campus features many open spaces with sunlight to ensure staff and patients can enjoy open space across the day.

Figure 30 to **Figure 32** illustrates the existing overshadowing and additional shadows as a result of the proposed development.

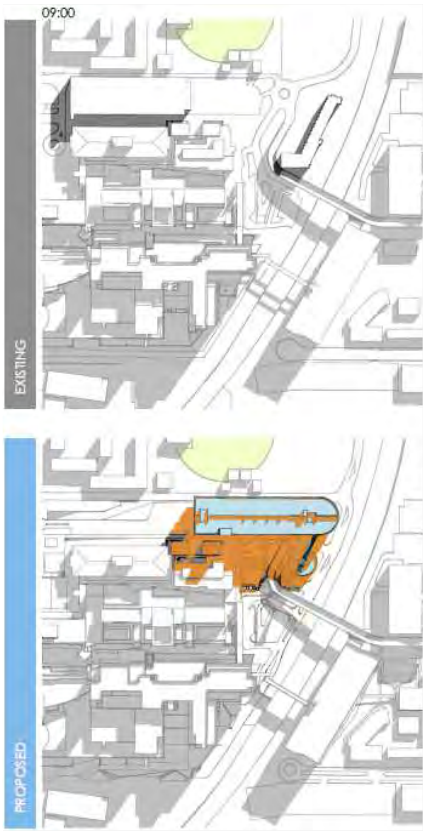

Figure 30 9:00am (21 June)

Source: Fitzpatrick and Partners

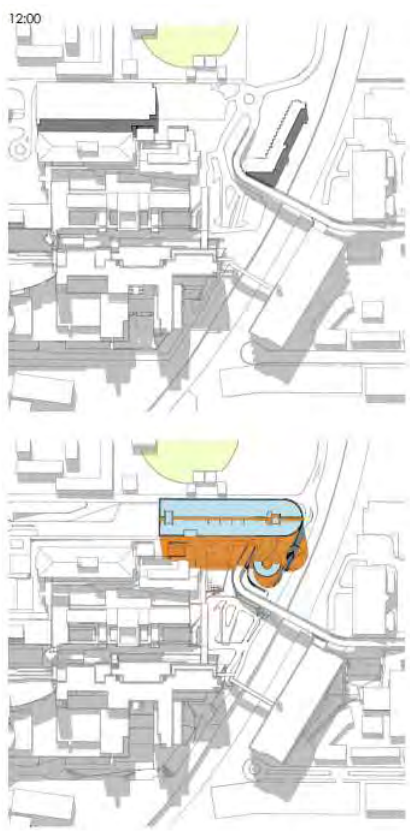

Figure 31 12:00pm (21 June)

Source: Fitzpatrick and Partners

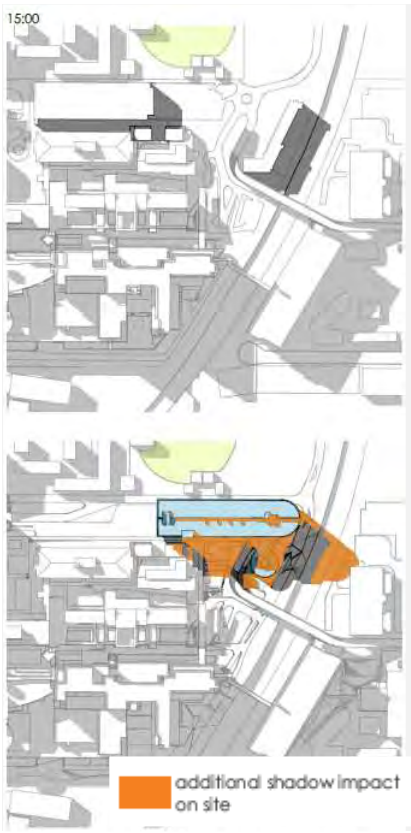

Figure 32 3:00pm (21 June)

Source: Fitzpatrick and Partners

6.4 Visual Privacy

The proposed development is located within a historic and well-established health and education precinct within the context of Liverpool CBD. The new MSCP is located wholly within the existing hospital campus and has been designed to provide appropriate setbacks to the boundary and surrounding development context. The MSCP does not overlook any sensitive land uses. It is noted that the Liverpool Girls High School buildings are located a significant distance (greater than 50 metres) to the north-west. In addition, to further mitigate any concerns of overlooking, the MSCP includes aluminium screening panels and mesh that will limit any privacy concerns.

6.5 View Impacts

Being located within the hospital campus and adjacent to the Main Sothern Railway, the MSCP is not located in an area sensitive to visual change. A photomontage of the proposal have been prepared by Fitzpatrick and Partners and is shown in **Figure 33** and at **Appendix C.**

While the proposal will change the view of the hospital from Burnside Drive and Campbell Street, the changes proposed are considered to provide an improved urban design outcome and are consistent with the evolution of the hospital campus and surrounding context. Further, it is considered that existing view corridors are not of high significance whereby their retention should be required. Rather the proposal provides for a more inviting built form when viewed from the public domain, recognising the human scale without interrupting any significant regional views.

Figure 33 Campbell Street and Goulburn Street

Source: Fitzpatrick and Partners

6.6 Traffic, Access and Parking

A Transport and Accessibility Impact Assessment has been prepared by GTA Consultants and is included at **Appendix F**. The assessment includes details around traffic movements, carparking and access arrangements. Further, the report outlines the existing surrounding road network arrangements and conditions and provides an assessment of the traffic and parking impacts associated with the proposed development.

As discussed in **Section 2.2.1** and **Section 2.2.2**, a separate SSD application has been prepared for the construction of a new ISB in the western portion of the western campus. Therefore, this assessment provides an assessment inclusive of other works occurring within the hospital that the new MSCP will service.

6.6.1 Operational Parking

A parking demand study (PTC 31 January 2019) was prepared in 2019 to forecast future parking demand. Based on existing parking demand, travel characteristics and forecast increase in staff and patient activity, this modelling identified that an additional 469 spaces would be required by 2025/26 assuming no change in travel mode share; or an additional 268 parking spaces if assuming a reduction of 10 per cent driving mode share.

The hospital is targeting a minimum five per cent reduction in driving mode share through implementation of travel planning initiatives which results in a nett increase parking requirement of 368 parking spaces to meet demand in 2025/26.

The existing hospital campus currently provides 2,295 car parking spaces for staff and visitors. As outlined at **Section 2.2.1** and **2.2.2** there are works occurring across the campus and these will involve removal of parking at CP1, CP3 and Western Campus Fleet car park. Essentially these parking spaces are being relocated to the new MSCP and the overall supply of parking will increase by 368 spaces, with a total of 2,681 parking spaces which will satisfy demand to 2025/2026.

Table 9 Change in car parking supply

Building location	Existing	Future	Change
CP1	143	137	-34*
CP2	597	1,097	+500
CP3	141	79	-56*
CP4	780	780	0
CP5	575	575	0
Health Services Building	35	0	0
Western Campus Fleet Vehicles Carpark	24	0	-24*
Total	**2,295**	**2,681**	**+386**

**The removal of these spaces form part of separate applications*

Figure 34 Future car parking locations

Source: GTA Consultants

6.6.2 Traffic Generation

As discussed in the Transport and Traffic Impact Assessment at **Appendix F**, the traffic generation for hospitals is influenced by car parking supply. To understand the traffic generation of the hospital, GTA has assessed the traffic generated from the existing CP2 multi storey and at-grade car park (which will be replaced by the new multi storey car park). They found that it generates approximately 320 and 225 trips in the AM and PM peak hours respectively. Based on 597 car parking spaces in the existing CP2 multi storey and at-grade car park, this would result in a traffic generation rate of 0.54 and 0.38 trips per car space in the AM and PM peak hours respectively.

Accordingly, these rates have been adopted for the proposed redevelopment in determining traffic generation by the new multi storey and at-grade car park development, which will result in a net increase in parking of 500 spaces in CP2. **Table 10** below provides the estimated traffic generation.

Table 10 Post development traffic generation rates

Peak Hour	Net increase in parking	Traffic generation rate (trips / hour)	Traffic generation estimates (trips/hour)		
			In	Out	Total
AM	500 spaces	0.54	243	27	270
PM		0.38	38	152	190

Source: GTA Consultants

Table 10 illustrates that the site will generate an additional 270 and 190 vehicle trips in the AM and PM peak hours respectively.

It is noted that proposed development at Westfield Liverpool and 26 Elizabeth Street will have an impact on traffic generation in the Hospital locality. GTA has outlined the operation of key intersections as a result of these developments at Table 8.3 of the Traffic Assessment at **Appendix E**.

Intersection Performance

Based on the trip generation rates and trip distribution analysis, the hospital campus will continue to operate satisfactorily in the AM and PM peak periods, with minor increases to delays and queues. Importantly, the new hospital main entry on Goulburn Street (subject to a separate concurrent SSD application) is expected to operate satisfactorily, with minimal queuing when vehicles are waiting to turn right into the site.

Further, boom hates are proposed to be implemented at the access points to the proposed new MSCP. A queuing analysis undertaken by GTA and included in **Appendix F**, details that approximately 182 vehicles will arrive in the AM peak and 29 vehicles in the PM peak periods. Based on the standard ticket machine services rates of 300 vehicles per hour per boom gate, and with the two boom gates proposed at the Burnside Drive entrance, this would result in a 95th percentile queue of two vehicles per lane. As such, the proposed design allows for vehicles to be stored on the ramp leading into the MSCP without affecting through traffic on Burnside Drive.

Table 11 below presents the existing operational performance and the proposed operational performance of key intersections inclusive of cumulative development at Westfield and 26 Elizabeth Street.

Table 11 Post development operating conditions

Intersection	Peak	Degree of Saturation		Average Delay		95th Percentile Queue (m)		Level of Service	
		Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
Lachlan Street/ Hart Street	AM	0.27	0.36	7	7	12	17	A	A
	PM	0.32	0.40	9	9	14	20	A	A
Forbes Street / Campbell Street Hospital Access	AM	0.15	0.16	7	7	7	7	A	A
	PM	0.07	0.11	6	6	1	4	A	A
Goulburn Street / Hospital Access	AM	0.13	0.12	7	7	0	0	A	A
	PM	0.19	0.19	7	7	0	0	A	A
Hume Highway / Bigge Street	AM	0.68	0.93	20	31	79	106	B	C
	PM	0.77	0.81	198	20	99	113	B	B
Burnside Drive/ northern access road	AM	0.03	0.01	9	12	1	1	A	A
	PM	0.06	0.01	10	9	2	1	A	A
Burnside Drive / Burnside Drive Bridge	AM		0.02		11		1		A
	PM		0.25		7		8		A

Intersection	Peak	Degree of Saturation		Average Delay		95th Percentile Queue (m)		Level of Service	
		Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
Burnside Drive / Multi storey car park access	AM	0.03	0.02	9	6	1	0	A	A
	PM	0.06	0.03	10	6	2	0	A	A
Bigge Street / Campbell Street	AM	0.66	0.70	13	15	68	74	A	A
	PM	0.47	0.49	15	15	47	52	A	B
Bigge Street / Elizabeth Street	AM	0.55	0.61	19	19	101	110	B	B
	PM	0.52	0.52	16	16	65	65	B	B
Campbell Street / Goulburn Street	AM	0.47	0.40	16	16	46	35	B	B
	PM	0.24	0.20	15	14	25	22	B	A
Elizabeth Street / Goulburn Street	AM	0.20	0.21	6	6	6	6	A	A
	PM	0.32	0.33	6	6	9	10	A	A
Hume Highway / Remembrance Avenue	AM	0.96	0.91	24	27	189	244	B	B
	PM	0.83	0.75	26	27	182	187	B	B
Elizabeth Street / College Street	AM	0.11	0.11	4	4	5	6	A	A
	PM	0.16	0.16	4	4	6	10	A	A
Bigge Street / Moore Street	AM	0.68	0.69	22	22	148	150	B	B
	PM	0.53	0.54	23	23	126	127	B	B
Speed Street / Newbridge Road	AM	0.80	0.68	22	22	286	288	B	B
	PM	0.87	0.82	24	24	362	374	B	B

Source: GTA Consultants

Table 11 shows that the key intersections surrounding the hospital will continue to operate satisfactorily in the AM and PM peak periods, with minor increases to delays and queues.

It is noted that the Hume Highway / Bigge Street intersection currently experiences significant queuing in the AM and PM peak periods and during the post development scenario, this is expected to experience a very minor increase in the average queuing of approximately 12m (equivalent to 2 cars), and a minor increase in average delay of up to four seconds compared to SIDRA results assessing the Westfield and 26 Elizabeth Street development (see Table 8.3 of **Appendix E**). Overall, the intersection will operate at level of service B and C.

The new intersection on Burnside Drive (subject to a separate concurrent SSD application, refer to (**Section 2.2.2**) which provides access to the northern link road, Burnside Drive bridge and multistorey car park are also expected to operate efficiently with minimal delays and queues overall. The queues for the right turns are expected to be accommodated in the provided turning bays.

Notwithstanding, as shown in **Table 11**, the modelling indicates that all intersections will operate at a satisfactory LOS being mostly Level A, B or C in the post development scenario.

Future Council Works

It is understood that Council is investigating the opportunity to improve the operation of the Bigge Street/ Elizabeth Street intersection through implementation of right turn traffic signal arrows on the Bigge Street approaches and the addition of a dedicated right turn phase. It is noted that the anticipated increase in traffic at this location from the Hospital redevelopment itself is considered minor in comparison to the traffic generated by the surrounding proposed developments. Notwithstanding, SIDRA modelling indicates that the additional traffic generated by the Hospital redevelopment and surrounding developments could be accommodated at the intersection under its current arrangement. Further to this, preliminary modelling indicates that the additional phase would not improve the intersection operation from its current arrangement. It is recommended that TfNSW advise further on any potential upgrades to this intersection.

Overall, SIDRA modelling considering the surrounding developments and the Hospital redevelopment indicates that the anticipated increase in traffic can be accommodated on the surrounding road network, with minor increases to average delay and queuing expected at the key intersections.

Accessible Parking

The new multi storey car park will provide a total of 1,097 new car parking spaces and 22 accessible car parking spaces. This complies with the BCA requirements of one space per 50 car parking spaces for the first 1,000 spaces and 1 space per 100 car parking spaces or part thereof in excess of 1,000 car parking spaces.

Motorcycle Parking

The new multi storey car park will provide a total of 55 motorcycle spaces, consistent with Liverpool DCP rate of 1 per 20 car spaces

Bicycle Parking and End of Trip Facilities

The MSCP does not include uses that will generate a demand for bicycle parking and therefore no bicycle parking is proposed by this application. However, bicycle parking for staff and visitors and provision of end of trip facilities is being provided as part of the new ISB development (subject to a separate concurrent SSD application) as outlined at **Section 2.2.1**

6.6.3 Emergency Services

The proposed MSCP will not impact the existing or proposed emergency vehicle access arrangements. Emergency vehicles will continue to park on Elizabeth Street, adjacent to the Emergency Department.

6.6.4 Construction Traffic

It is expected that peak vehicle activity will occur between January 2021 and December 2021 during construction of both the multi-storey car park and new ISB, with up to 100 vehicles per day or approximately 10 vehicles per hour between the two work areas. The location and separation of these work areas across the hospital will allow distribution of construction traffic between surrounding roads near the hospital, with vehicles associated with the MSCP approaching via Burnside Drive and exiting via either Burnside Drive or Forbes Street while the ISB traffic will approach via Goulburn Street (north) and existing via Goulburn Street (south). As such, the construction program and strategy will ensure construction traffic impact on the operation of the surrounding road network is minimised as much as possible. A preliminary Construction Traffic Management Plan has been prepared by GTA and is provided at **Appendix F**.

All construction vehicles will be restricted to the State and Regional Road network where practicable. Construction vehicles will generally approach from the Hume Highway and use local roads to access the hospital as shown at **Figure 35**.

Any construction worker arrivals and departures by vehicle would typically be outside of road network peak hours and as such is unlikely to impact the surrounding road network.

Figure 35 Construction vehicle approach and departure routes

Source: GTA Consultants

6.6.5 Construction Parking

Liverpool Hospital is highly constrained with limited space to provide on-site parking for all construction workers and construction worker vehicles will not be permitted to park on local streets. Health Infrastructure is exploring options to enable workers to park in a location that is accessible to the works site. A Construction Worker Transport Parking Management Plan will be developed with partners during design development that will outline worker parking arrangements during construction.

6.7 Wind Impacts

An Environmental Wind Assessment has been prepared by Windtech and is included at **Appendix I**. The Assessment has assessed the local wind environmental at outdoor areas within and around the site. The results of the assessment indicate that the proposed development is relatively exposed to four prevailing winds from the Bankstown region; namely the north-easterly, southerly to south easterly and westerly winds. As a result, there is a possible slight impact on the wind comfort within certain areas of the development.

The Assessment states that the wind effects identified can be ameliorated with the consideration of the following treatments and strategies:

- The retention of the covered walkway awning to the north of the Don Everett Building and to the north and east of the Brain Injury Building
- The retention of all proposed landscaping, including the line of trees that wraps around the ramp, the trees to the east of the Dock B Entry, the trees to the north of the Dock B entry and the trees at the centre of the Forbes Street Entry drop-off.
- The inclusion of Callistemon planting and bamboo screening along the eastern boundary of the site;
- Retention of the proposed tree planting along the eastern side of the covered walkway of the Brain Injury Building; and
- The inclusion of densely foliating vegetation to be planted at the south-eastern boundary of the new carpark.

These amelioration measures have been adopted and incorporated into the design of the building and landscape.

6.8 Crime Prevention through Environmental Design

The development implements the principles of Crime Prevention through Environmental Design (CPTED), as identified in the Department of Planning's guidelines titled Crime Prevention and the Assessment of Development Applications 2001 are discussed below and in the Design Report at **Appendix C**.

Principle 1 – Natural Surveillance

Good surveillance means that people can see what others are doing. People feel safe in public spaces when they can easily see and interact with others. Would-be offenders are often deterred from committing crime in areas with high levels of surveillance. The development provides adequate natural surveillance in accordance with this principle.

The development has been designed to incorporate natural surveillance through the incorporation of design features that maximise visibility of people using public spaces. This will promote the reality and / or perception that open spaces are under casual surveillance during both the day and night. The well-lit nature of the hospital environment will also enhance passive and provide continuous activation throughout the site.

The following principles and strategies will be adopted to enhance natural surveillance, including:

- Promotion of passive surveillance by activating spaces for longer periods;
- Providing unrestricted sight lines between spaces and avoiding blind spots;
- Providing appropriate sensor lighting to ensure safe use and effective surveillance of the space after hours; and
- Providing an improved pedestrian environment and connection of spaces with appropriate wayfinding signage.

Principle 2 – Access Control

Access controls use physical and symbolic barriers to attract, channel or restrict the movement of pedestrians. As noted in Crime Prevention and the Assessment of Development Applications, effective access controls make it clear where people are permitted to go or not go and makes it difficult for potential offenders to reach and victimise people and damage property.

The development has been designed to incorporate natural barriers such as roadways and landscaping, electronic and physical barriers through the use of the following:

- Limiting the number of public entries to the wider hospital campus and securing these after hours;
- Provision of CCTV monitoring of public areas backed to a security monitored point;
- Providing electronic access points of entry and intercoms;
- Providing access control to clinical departments after hours; and
- Providing 24-hour access control to engineering service areas and other sensitive sections of the hospital.

Principle 3 – Territorial Reinforcement

Territorial reinforcement refers to the clear identification of public spaces, and the creation of a sense of community ownership over such spaces. As noted in the Crime Prevention and the Assessment of Development Applications, people feel comfortable in, and are most likely to visit places which feel owned and cared for. Well used places also reduce opportunities for crime and increase risk to criminals.

Through the definition of space, territorial reinforcement provides social regulation. The proposed development has been designed with the integration of the following principles:

- Ensure that circulation spaces are unambiguous and do not create confusion in offering too many options for travel; and
- Reinforcing public areas by introducing amenities such as seating and other elements of activation to attract desired users of the space, therefore deterring undesirable activity.

Principle 4 – Space Management

Space management refers to providing attractive, well maintained and well used spaces. As noted in Crime

Prevention and the Assessment of Development Applications, space management strategies include site cleanliness, rapid repair of vandalism and graffiti and the removal of damaged physical elements.

To achieve effective place management and maintenance, the proposed development will incorporate the following:

- External spaces to be designed with robust finishes, requiring minimal maintenance;
- Ensuring clear observation lines to open areas that would be of high risk such, particularly within the car park and the pedestrian routes that surround it;
- Providing effective lighting of spaces both natural (through façade design) and artificial;
- Clearly defining zones for public areas and non-public (office / comms room) to allow staff security.

6.9 Noise and Vibration

An Acoustic Assessment has been prepared by Acoustic Logic and is included at **Appendix M**. The report includes an assessment of the potential noise and vibration impacts during the redevelopment and construction of the multi-storey car parking and the proposed operation including vehicle movements and mechanical plant.

The surrounding land uses include the existing hospital campus, residential, commercial and educational receivers. The site monitoring and receiver locations are shown in **Figure 36** below.

Figure 36 Noise monitor locations

Source: Acoustic Logic

6.9.1 Construction Noise

Acoustic Logic has assessed construction noise and vibration impacts in accordance with the following plans and policies:

- Liverpool Development Control Plan 2008;
- NSW Environmental Protection Authority, '*Interim Construction Noise Guideline'*;
- Australian Standard AS2107:2016;
- Australian Standards AS2436:2010 Guide to Noise Control on Construction, Maintenance and Demolition Sites;

- NSW Environmental Protection Authority, '*Assessing Vibration: A technical Guideline'*;
- DIN 4150, '*Vibration in Buildings (1999-02)*';
- ASHRAE Handbook 2007;
- NSW Environmental Protection Authority, '*Noise Policy for Industry'* 2017; and
- NSW Road Noise Policy.

Noise sensitive developments in the vicinity of the site include education, commercial, residential and medical receivers.

EPA Guidelines adopt different strategies for noise control depending on the predicated noise levels at the nearest residences. For the nearest sensitive receivers, the noise effected levels occur when the construction noise exceeds ambient noise levels by:

- More than 10dB($L_{eq(15min)}$ for work during standard construction hours; and
- More than 75dB(a)$L_{eq(15min)}$ at nearby residences.

Construction Hours

The "recommended standard hours" for "normal construction", as proposed in the Interim Construction Noise Guideline (ICNG), are:

- *Monday to Friday 7:00am to 6:00pm;*
- *Saturday 8:00am to 1:00pm; and*
- *No work on Sundays and Public Holidays.*

Section 0 outlines the proposed general hours of work for construction and the special construction hours required on selected weekends. The reasons for the extended general construction hours on Saturday afternoons, plus the additional selected "weekend work" outside of the "recommended standard hours", are to ensure continuity of excellence in the provision of health services and patient care in accordance with the requirements of Liverpool Hospital. Currently Liverpool City Council impose restricted hours of operation on Campbell Street during weekdays to reduce impacts to the adjacent high schools and therefore the additional hours allow for health services and patient care to continue during weekday periods.

Having regard to the above, it is considered that the proposed hours of work are a "reasonable" variation or departure from the "recommended standard hours". The basis for this conclusion is to be found in:

- the definition of "reasonable" in the ICNG having regard to the nature and purpose of the proposed development.
- the analysis of the source/type of construction work noise likely to be generated by the MSCP.
- the proposed construction management and recommended mitigation measures.

Construction Noise Impacts

A summary of the noise emission management levels for the proposed hours of construction are detailed in **Table 12** below.

Table 12 Construction noise management levels

Location	Management Level – dB(A) $L_{eq(15min)}$
Residential receivers (Receivers 5)	"Noise Affected" Level – 52 "Highly Noise Affected" Level - 75
Commercial (Receivers 4 and 6)	70
Educational receivers (Receivers 2 and 3)	45 (internal)
Bedroom wards (Receiver 1)	
Consulting Rooms (Receiver 1)	

Location	Management Level – dB(A) $L_{eq(15min)}$
Treatment Rooms (Receiver 1)	
Office Areas (Receiver 1)	
Operating Theatres (Receiver 1)	
X-Ray Areas (Receiver 1)	50 (internal)

Source: Acoustic Logic

Intrusive noise emissions are associated with equipment typically having sound levels of approximately 95 to 120 dB(A). However, the level of construction noise will depend on the construction activity and where the activity is taking place. Noise from the loudest typical construction activities have been predicted to the nearest most affected sensitive receivers. Noise from the loudest typical construction activities have been predicted to the nearest most affected sensitive receivers and are identified by Acoustic Logical at Section 8.4 of the Acoustic Impact Assessment and is summarised below at **Table 13**.

Table 13 Predicted noise generation to surrounding sensitive receivers

Activity	Receiver 1- Remaining Liverpool Hospital Development	Receiver 2 - TAFE NSW Liverpool	Receiver 3 - Liverpool Girls High School	Receiver 4 - Health Hub / Ingham Institute	Receiver 5 - 41 Forbes Street	Receiver 6 - South Western Sydney Local Health District
External noise goal dB(A) $L_{eq\ (15min)}$ - Criteria	**45dB(A) (rooms) 50dB(A) (x-ray areas)**	**45dB(A)**	**45dB(A)**	**45dB(A)**	**Standard Hours 52dB(A) Outside Standard Hours 47dB(a)**	**70dB(A)**
Handheld jackhammer	21-65	19-27	32-59	32-40	53-58	61-72
Excavator with bucket	6-50	4-12	17-44	17-25	38-43	46-57
Excavator with hydraulic hammer	21-65	19-27	32-59	32-40	53-58	61-72
Semi-trailer	6-50	4-12	17-44	17-25	38-43	46-57
Grader	15-59	13-21	26-53	26-34	47-52	55-66
Demolition saw	14-58	12-20	25-52	25-33	46-51	54-65
Vibrating roller	9-53	7-15	20-47	20-28	38-43	49-60
Excavator with compacting wheel attachment	6-50	4-12	17-44	17-25	38-43	46-57
Bobcat with Broom Attachment	6-50	4-12	17-44	17-25	38-43	46-57
Slipform paver	6-50	4-12	17-44	17-25	38-43	46-57
Plate compactor	6-50	4-12	17-44	17-25	38-43	46-57
Bobcat	6-50	4-12	17-44	17-25	38-43	46-57
Concrete pump	6-50	4-12	17-44	17-25	38-43	46-57
Cement mixing truck	6-50	4-12	17-44	17-25	38-43	46-57

Activity	Receiver 1- Remaining Liverpool Hospital Development	Receiver 2 - TAFE NSW Liverpool	Receiver 3 - Liverpool Girls High School	Receiver 4 - Health Hub / Ingham Institute	Receiver 5 - 41 Forbes Street	Receiver 6 - South Western Sydney Local Health District
Powered hand tools	0-40	0-2	7-34	7-15	28-33	36-47
CFA Piling	14-48	12-20	15-42	15-23	46-51	36-47

As outlined in **Table 13**, while marginal exceedance may occur surrounding the site boundary and in particular to Receiver Location 1, it is expected that due to the nature of the activities that the period of exceedance will be intermittent. Further, the assessment confirms that the predicted construction noise levels are variable in nature to take into account the change in noise impact depending on where on the site work is being undertaken.

The assessment confirms that noise impacts from special construction hours largely comply with noise management levels and impacts as a result of these works would be minimal.

As discussed in **Appendix M** appropriate amelioration methods and recommendations to be adopted during the construction phase, which are outlined below.

Construction Vibration

The proposed activities that have the potential to produce significant ground vibration include demolition work and excavation works. It is noted that the MSCP does not require any significant excavation works.

Construction vibration has been assessed based on the following standards:

- German Standard DIN 4150-3 *Structural Vibration: Effects of Vibration on Structures*; and
- EPA *"Assessing Vibration: A technical guideline";* and
- ASHRAE Handbook 2007.

The vibration impacts are expected to be variable in nature and the acoustic report will be updated and reviewed once the construction methodology is finalised. Acoustic Logic has provided appropriate mitigation measures to ameliorate vibration impacts on surrounding receivers, as outlined below.

Construction Mitigation Measures

The assessment has made a number of recommendations to mitigate acoustic and vibration impacts. If adopted, these measures can manage noise impacts to prevent any adverse impacts on residential receivers, including:

- Sample testing of vibration impacts from any demolition or excavation works to sensitive receiving spaces prior to commencement;
- Installation of barriers or screens at the source or receiver;
- Silencing devices in the form of engine shrouding or special industrial silencers fitted to exhausts;
- Installation of rubber matting over material handling areas to reduce the sound of impacts due to materials being dropped;
- Sound treatment of specific equipment to reduce sound levels emitted;
- Establishment of site practices including fixed plant items as far as possible from residents and construction vehicles not queuing in residential streets; and
- Fortnightly reports detailing any vibration exceedances.

These recommendations have been adopted and form part of the mitigation measures at **Section 8.0**.

6.9.2 Operational Impacts

Acoustic Logic have undertaken a preliminary assessment of the car park operational noise and mechanical plant (refer to **Appendix M)**.

Operational Noise

The major noise sources generated by the operation of the multi storey car park include:

- External noise emissions from vehicle movements within the on-grade and multi storey car park; and
- External noise emissions from the plant servicing the multi storey carpark.

The noise emissions from the carpark have been predicted at the worst AM peak hour with a maximum of 591 trips and the average sound power level per car when driving within the carpark being 84dB(A)L_{eq}. The results from the assessment are outlined in **Table 14** below.

Table 14 Car park noise emission assessment

Receiver location	Acoustic Criteria dB(A)L_{eq}	Predicted Noise Level dBAL_{eq}	Complies
Receiver 3: Outdoor play area (external)	55dB(A)L_{eq}	55dB(A)$L_{eq(15\ hour)}$	Yes
Receiver 3: Class room (internal)	35dB(A)L_{eq}	40dB(A)$L_{eq(1\ hour)}$	Yes

Source: Acoustic Logic

As shown in **Table 14**, noise emissions from the new MSCP will comply with the nominated criteria provided the mitigation measures recommended are implemented. Further, the proposed development has been assessed with reference to the EPA Sleep Disturbance Guidelines, with the following assumptions made:

- Car door slam / car start (night time peak noise event): 90dB(A)L_{max} sound power; and
- Car engine noise: 84dB(A)L_{max} sound power.

Further, Acoustic Logic note that while a detailed acoustic assessment is unable to be undertaken at this stage as the selection of mechanical plant has not been completed, the Assessment notes that the plant can be acoustically treated to prevent noise emissions. These include but are not limited to silencers, treatment ducting, time control, operational limitations and vibration isolation.

Accordingly, Acoustic Logic have confirmed that the proposed development can comply with the relevant criteria. Further discussion is provided in **Appendix M**.

6.10 Waste Management

A Construction and Operational Waste Management Plan (WMP) has been prepared by Waste Audit and is included at **Appendix V** and **Appendix W**. The Plans provide an assessment of potential waste impacts during the construction and operational phases. They identify the potential types and volumes of waste that are expected to be generated in these phases and suggest systems to be implemented to appropriately manage this waste.

6.10.1 Construction Waste Management

The Construction Waste Management Plan (**Appendix V**) has been prepared to assess the volumes and management of waste during the construction phase in accordance with the *Protection of the Environment Operations Act 1997* and the NSW EPA *Waste Classification Guidelines, Part 1: Classifying Waste.*

The Plan details the type, volume and disposal methods for all waste material during the construction phase. The WMP details the responsibilities of the principal contractor to lawfully dispose of waste and ensure that reports on the management and capacity of facilities to receive waste are recorded. Records will be kept of all wastes and recyclables generated and either used on the site or transported off-site during the demolition. Further discussion is provided in **Appendix W**.

6.10.2 Operational Waste Management

The Operational Waste Management Plan prepared by Waste Audit and included in **Appendix W**, addresses the appropriate segregation, containment and disposal of waste. The following table details the main waste streams that would be expected during the operational phase.

It is estimated that the development will generate a total of approximately 360 litres of waste and recyclables per day – a total of 2,520 litres per week. A separate waste and commingled recycling bin will be located on each level of the carpark adjacent to the lifts as well as the entrance area on the Ground level. Waste management will be incorporated into the existing Liverpool Hospital waste management system. The bins and/or contents will be collected by Hospital service staff and transported to the central waste storage areas as appropriate to the location where wastes are collected from.

6.11 Flooding

TTW has investigated the potential flood impact on the proposal (**Appendix Q**) in accordance with the relevant provisions of the NSW Floodplain Development Manual (DIPNR, 2005), including the potential effects of climate change, sea level rise and an increase in rainfall intensity.

The Liverpool Hospital campus is affected by mainstream flooding and local overland flooding. Mainstream flooding is from Georges River to the south east of the site and the overland flooding is from the CBD catchment to the south and west of the site. The natural topography of the local catchment falls directly toward the low point in Goulburn Street, to the west of the hospital site. The combined extent of Council's mainstream flood modelling is shown in **Figure 37** below.

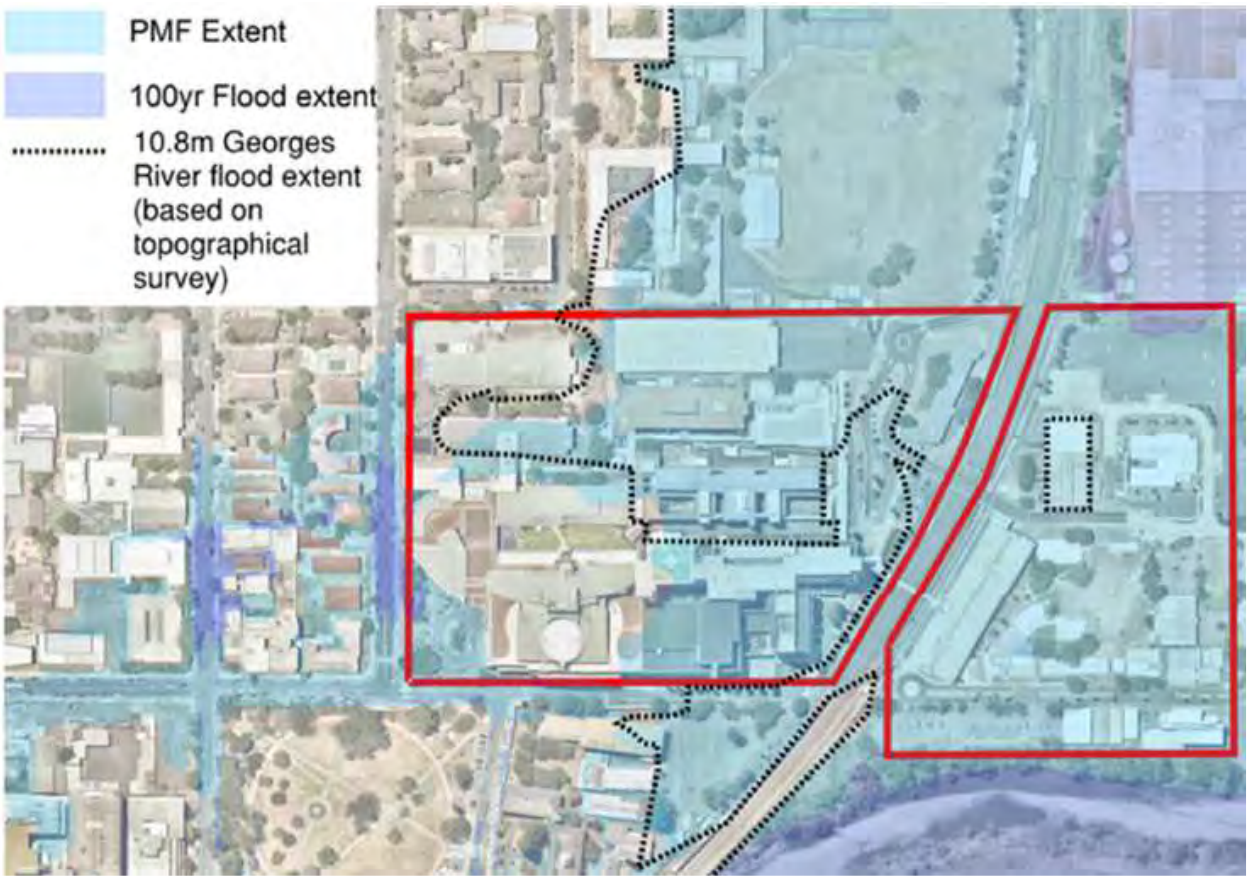

Figure 37 Flood extent for mainstream and overland flooding (hospital campus shown red)

Source: TTW; Georges River Floodplain Risk Management Study & Plan; Liverpool City Centre Overland Flow Path Mapping

Liverpool City Council identifies that mainstream flooding from Georges River affects most of the campus during the Probable Maximum Flood (PMF). The peak PMF level associated with mainstream flooding is 10.80m AHD. The western campus is not at risk from a 1 in 100 year (1% Annual Exceedance Probability - AEP) mainstream flood event. The peak 1% AEP flood level is 8.80m AHD.

It is noted that flood mitigation works in Goulburn Street and Campbell Street have already been approved under a separate application (refer to **Section 2.2.2**), with additional inlet pits and a new 900mm pipe collecting flows from the low point on Goulburn Street. This runs north then east along Campbell Street and connects to an existing

1200mm diameter pipe located adjacent to the north east corner of the existing P2 car park. These works will alleviate known flooding issues at the existing hospital and are due to start on site in early 2020.

The Georges River floodplain has two sets of controls; Mainstream Flooding Controls and Local Overland Flooding Controls. The design seeks to satisfy the controls that apply to Liverpool Hospital as outlined in detail at **Appendix Q**. The MSCP does not contain habitable spaces, however the lifts have been set to be as far as practicable above the PMF and are above the 1% AEP flood level plus 500mm freeboard. TTW confirm the proposal would not impact overland flow.

6.12 Water Cycle Management

TTW has assessed stormwater management and water quality targets for the proposed development (refer **Appendix Q**). Water quality for the project has been modelled in MUSIC modelling to ensure the pollutant reduction targets are met.

As per the Liverpool DCP, the post development water quality shall be reduced to the following targets when compared to the predevelopment water quality:

- 45% reduction in the mean annual load of total nitrogen;
- 45% reduction in the mean annual lodge of total phosphorous; and
- 80% reduction in the mean annual load of total suspended solids.

The results are summarised in **Table 15** below.

Table 15 Catchment MUSIC results

MUSIC Modelling Results	Reduction
Southern catchment (outlined green)	
Total nitrogen (kg/yr)	46%
Total phosphorous (kg/yr)	64%
Total suspended soils (kg/yr)	91.4%

As shown in **Table 15**, the post development water quality will meet or exceed the reduction in water quality targets specified by the Liverpool DCP. Further discussion is provided in **Appendix Q**.

TTW confirm the existing stormwater pipe system can cater for the increase in discharge as a result of the development. On Site Detention (OSD) is not proposed for the development as the site is near the Georges River where discharge will occur. Inclusion of OSD would potentially lead to a worsening of upstream flooding.

6.12.1 Water Sensitive Urban Design

A review of the Water Sensitive Urban Design (WSUD) measures has been undertaken by TTW (**Appendix J**). It is proposed that WSUD principles will be applied where possible across the site through the use of passive irrigation and water quality treatment. Passive irrigation will direct runoff from the MSCP roof to soft landscape areas. This will both reduce the potable water demand for irrigation and reduce the volume of water leaving the site. These are likely to take the form of a wicking bed with an overflow back to the main system and proprietary treatment (such as GPT, Jellyfish filter, OceanGuard basket or eqivilent treatment devices). All WSUD proposals are subject to detailed design and coordination.

6.12.2 Water and Wastewater Management

As identified in the Integrated Water Management Plan prepared by WSP and included at **Appendix J**, in order to reduce the demand on local water and wastewater infrastructure, the design of the proposed development will consider the following potable water demand reduction strategies, where possible:

- Provision of low flow taps and sanitary fixtures;
- Provision of water metres to monitor water demand and leaks; and

- Extension of the Sydney Water Rainwater Reuse main approximately 650m to serve the irrigation and cool towers on the site.

6.13 Sediment and Erosion Control

TTW has identified a number of erosion and sediment control measures at **Appendix Q**. These will be put in place during construction to ensure that stormwater runoff will be collected and diverted around the site with sediments removed prior to discharge to the existing stormwater system. The proposed controls will include:

- Silt fences at the downstream boundary of the construction zone;
- Wash down and diversions at temporary vehicle entrances / exists to the construction zone;
- Sedimentation trap / basin with outlet control and overflow;
- Diversions to prevent upstream runoff entering the construction zone; and
- Sandbag sediment traps and geotextile filters to protect existing stormwater pits and inlets.

Where required, the erosion and sediment collection devices will need to be modified and adjusted by the contractor to suit building work stages and programs as the project progresses. All erosion and sediment control measures will be constructed in accordance with “Managing Urban Stormwater – Soils and Construction Volume 1 2004 (Landcom)” and “Approved Methods for the Modelling and Assessment of air pollutants in NSW (EPA).” Further discussion is provided in **Appendix Q**.

6.14 Biodiversity

As noted at **Section 2.2.2** and **Section 3.3.3** a range of Infrastructure works has occurred across the Hospital and these works have included approval for the removal of trees. Accordingly, following completion of those works the MSCP site will not contain any trees.

For completeness, a Biodiversity Development Assessment Report has been prepared by Narla Environmental (**Appendix R**) which provides an assessment of the biodiversity values of the land in accordance with the *Biodiversity Conservation Act 2016* Biodiversity Assessment Methodology.

The Subject Land has been historically cleared and altered, and largely comprises existing buildings including the P2 carpark and Ron Dunbier Building, as well as bitumen roads, car parking spaces and footpaths. Some vegetation exists in the form of scattered native and exotic trees, established native and exotic gardens, and mowed lawn areas.

No trees are required to deliver the proposed MSCP, and therefore no assessment under the BAM is required. No candidate ecosystem or species credit species will require offsetting under the Biodiversity Offset Scheme as a result of the proposed development. No submission within the Biodiversity Assessment Method Calculator (BAMC) is required.

6.15 Geotechnical

A Geotechnical Report has been prepared by JK Geotechnics and is included at **Appendix S**. The Report identifies that the ground conditions on the western campus generally comprise asphalt concrete pavement and / or fill, alluvial soils, and siltstone bedrock at depths in excess of 11.8m.

Based on the results of the previous site investigations, the report provides advice on the proposed civil and structural design. These recommendations relate to further investigation on buried services, earthworks, excavation, batter slopes, seepage, basement retention runoff and footings and specific geotechnical input will be sought during the construction phase of the project. Further discussion is provided in **Appendix S**.

6.15.1 Groundwater

JK Geotechnics confirm the groundwater level is measured at a depth of 8.1 metres. The MSCP does not require significant excavation and impact on groundwater or groundwater eco systems is not anticipated.

6.16 Contamination

A Stage 2 Site Investigation has been undertaken by JK Environments (JKE) (**Appendix N**) in accordance with the *National Environmental Protection (Assessment of Site Contamination) Measure 1999* as amended (2013), *Contaminated Land Management Act (1997)*, *State Environmental Planning Policy No.55 – Remediation of Land*, *Site Investigations for Urban Salinity (2002)* and *National Acid Sulfate Soil Guidance (2018)* and *Acid Sulfate Soil Manual (1998).*

The assessment included a review of historical information and sampling from 40 locations and four groundwater monitoring wells (see **Figure 38**). The site has historically been used for agricultural purposes in the early 1900's after which the site has been used as a hospital.

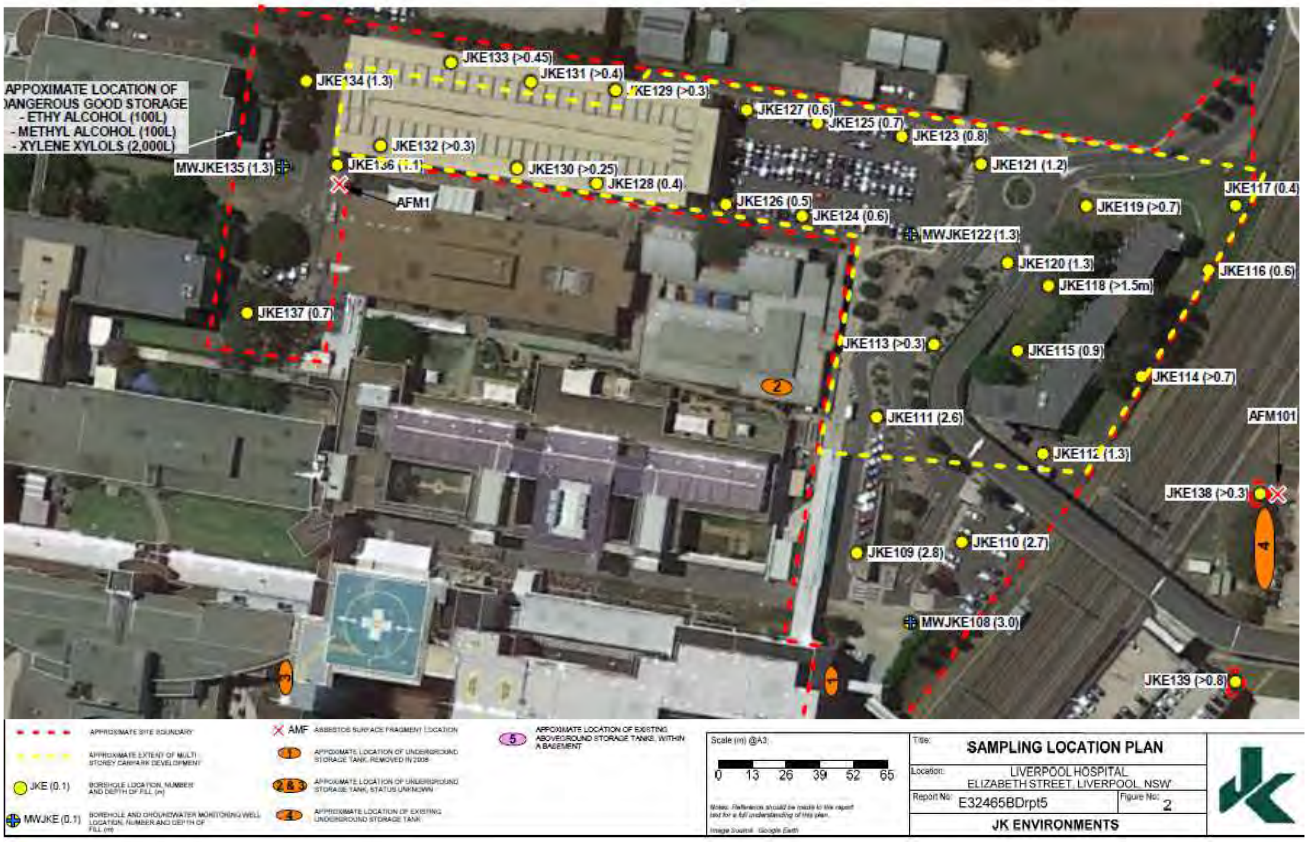

Figure 38 **Soil Sample Location Plan**

Source: *JK Environments*

Fill material was encountered at the surface or beneath the pavement in all boreholes. Selected soil samples were analysed for contaminants of potential concern, potential acid sulfate soils (ASS) and potential saline soils. Groundwater samples were analysed for contaminants of potential concern and salinity parameters. The results were compared against the selected site assessment criteria. A summary is provided below:

- Some of the total recoverable hydrocarbons results for fill soils samples were above the site assessment criteria;
- The copper and zinc results of all groundwater sample were above adopted the ecological criteria;
- The extent of friable asbestos impacted fill soil requires further assessment; and
- Asbestos assessment should be undertaken following demolition of the existing P2 MSCP (to allow access to suitable machinery for sampling purposes) and the assessment.

Based on review of the results, JKE confirm the risk to receptors is low and the MSCP site can be made suitable from a contamination view point for the proposed development, provided that the following recommendations are implemented:

- Following demolition of the existing P2 MSCP, an additional asbestos assessment is undertaken beneath the P2 MSCP building footprint;
- A Remediation Action Plan is prepared, if required and based on the results of the additional asbestos assessment;
- An Acid Sulfate Soil Management Plan (ASSMP) is to be prepared;
- A Salinity Management Plan (SMP) is to be prepared and implemented during the works; and
- Preparation of an unexpected finds procedure for contamination.

These mitigation measures are included at **Section 8.0**. A RAP and ASSMP is provided at **Appendix N**.

6.17 Structural

A Structural Statement has been prepared by TTW and is included at **Appendix T**. The Statement assesses the MSCP foundations likely to be encountered across the site in relation to the geotechnical conditions. The Statement confirms that the structural design will be in accordance with the latest revision of all relevant Australian Design Standards, the Building Code of Australia and other statutory requirements. As a minimum, the design will be based on, but not limited to:

- AS/NZS 1170.0 – Structural Design Actions Part 0: General Principles
- AS/NZS 1170.1 – Structural Design Actions Part 1: Permanent, imposed and other actions
- AS/NZS 1170.2 – Structural Design Actions Part 2: Wind Actions
- AS 1170.4 – Structural Design Actions Part 4: Earthquake loads
- AS 2159 – Piling – Design Installation
- As 3600 – Concrete Structures
- AS 3700 – Masonry Structures
- AS 4100 – Steel Structures

It is noted that the structural design has made allowance for future provision of two additional floors to be added into the future. TTW makes recommendations at **Appendix T** should further expansion be required.

6.18 Heritage

A Statement of Heritage Impact has been prepared by RPS and has been prepared in accordance with the NSW Heritage Manual and the Burra Charter. The Statement has assessed the proposed development's impact on surrounding heritage items including the:

- Bigge Park Heritage Conservation Area;
- Plan of the Town of Liverpool (item no. 89);
- Section 170 Heritage and Conservation Register Avenue Planting on Elizabeth Street; and
- Liverpool TAFE (item no. 80).

No works are proposed within heritage listed items or areas of listed heritage significance. The Statement confirms that due to the location of the proposal in the north eastern portion of the hospital, it is visually buffered by the existing hospital infrastructure and does not have a line of sight to the other nearby heritage listed items and the proposal would not affect the significance of the surrounding heritage listed items.

Further, given the results of the archaeological testing and monitoring associated with the 2009 hospital redevelopment, the archaeological potential of the project area is assessed as low to nil. Therefore, the Statement provides the following conclusions:

- The proposal would not affect an item or area of local or State significance. It is also within an area with low potential for archaeological relics as defined under the *Heritage Act 1977*. The proposal should proceed with caution.

- If a stone, capped, brick or other drain is encountered all work should cease in the affected area and be cordoned off. An archaeologist should then be contacted to record (photographic and scale drawn record) the drain and potentially associated historic items.
- In the event that unexpected archaeological resources are identified in the course of the proposal, all work in the affected area should cease, the area should be cordoned off and Heritage NSW notified in accordance with Section 146 of the *Heritage Act 1977*. Further discussion is provided in **Appendix K**.

Appropriate mitigation measures are included at **Section 8.0**.

6.19 Aboriginal Heritage

An Aboriginal Cultural Heritage Archaeological Survey Report has been prepared by RPS (**Appendix L**) in accordance with the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH [now DPIE] 2011), the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (the Code of Practice) (DECCW [now DPIE] 2010) and the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (the Consultation Requirements) (DECCW [now DPIE] 2010).

A search of the Aboriginal Heritage Information Management System (AHIMS) database was conducted by on 24 June 2019. The extensive search identified six registered Aboriginal objects within the searched area. There are no registered Aboriginal objects located within the Project Area or within 500 metres of the Project Area.

An archaeological survey of the Project Area was undertaken by RPS and a representative of the Gandangara Local Aboriginal Land Council (Gandangara LALC) on 25 November 2019. The survey determined that large portions of the Project Area are highly disturbed. No registered Aboriginal sites, unrecorded Aboriginal sites or areas of archaeological potential were identified. No additional cultural heritage values were identified by Gandangara LALC.

The following recommendations are made by RPS for the proposal:

- As no Aboriginal objects or areas of archaeological potential have been identified, the Proposal may proceed with caution.
- Personnel, contractors and subcontractors should be made aware of all statutory obligations for Aboriginal cultural heritage under the *National Parks and Wildlife Act 1974* and the *Heritage Act 1977*. This should be in the form of an induction prior to the commencement of work.
- If suspected Aboriginal objects are identified during construction, work should cease immediately and the area cordoned off. Health Infrastructure must be notified, and an archaeologist engaged to assess and record the Aboriginal object, and formulate an archaeological or cultural heritage management plan. The plan must be implemented prior to work recommencing.
- In the unlikely event that human remains are identified within the Project Area, all work in the area must cease and the area cordoned off. The proponent must contact the local police. If the remains are thought to be Aboriginal, Heritage NSW must be notified on Enviroline (131 555). If Heritage NSW confirm that the remains are Aboriginal, a management plan developed in consultation with the local Aboriginal community. Work must not recommence without approval from Heritage NSW.

These mitigation measures have been adopted and are included at **Section 8.0**.

6.20 Building Code Compliance and Accessibility

A BCA and DDA Compliance Capability Statement prepared by Blackett, Maguire and Goldsmith is provided at **Appendix U**. The report confirms that the proposed development is capable of satisfying the requirements of the BCA and other relevant standards.

6.21 Ecologically Sustainable Development

The environmental performance of the development has been assessed by using clause 7(4) of Schedule 2 of the EP&A Regulations and the EIS is accompanied by an ESD Statement prepared by Steensen Varming at **Appendix H**. ESD requirements are drawn from the following policies:

- Sustainable Hospital Car Park Investment Program (SHCPIP) Volume 3 – Hospital Car Park Design Guide;

- Health Infrastructure's Engineering Services Guidelines (ESG) (August 2016);
- National Construction Code (NCC) of Australia 2019 – Section J requirements; and
- Liverpool Development Control Plan 2008 Part 1.

Due to the nature of the project (car park), it is not considered relevant to assess the project against a green rating system. Furthermore, car parking is typically excluded from green rating systems.

ESD strategies have been included in the project to address issues associated with energy efficiency, water conservation and emissions reductions.

The design measures outlined in **Section 4.8** and as discussed in detail by Steensen Varming in the ESD Statement at **Appendix H**, demonstrates the ways in which ESD is entrenched into the design of the proposal.

Through the incorporation of ESD measures, the development will be designed in accordance with recognised best practice policies as relevant to a car park (see above), which are capable of being applied throughout the design and ongoing operation phases of the development.

Furthermore, the proposed development is consistent with the four accepted principles of ESD. The Regulation lists four principles of ecologically sustainable development to be considered in assessing a project. They are:

- The precautionary principle;
- Intergenerational equity;
- Conservation of biological diversity and ecological integrity; and
- Improved valuation and pricing of environmental resources.

An analysis of these principles follows.

Precautionary Principle

The precautionary principle is utilised when uncertainty exists about potential environmental impacts. It provides that if there are threats of serious or irreversible environmental change, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. The precautionary principle requires careful evaluation of potential environmental impacts in order to avoid, wherever practicable, serious or irreversible damage to the environment.

This EIS has not identified any serious threat of irreversible damage to the environment and therefore the precautionary principle is not relevant to the proposal.

Intergenerational Equity

Inter-generational equity is concerned with ensuring that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations. The proposal has been designed to benefit both the existing and future generations by:

- Implementing safeguards and management measures to protect environmental values;
- Facilitating job creation in close proximity to homes and public transport; and
- Facilitating improvements to the broader Liverpool Hospital precinct.

The proposal has integrated short and long term social, financial and environmental considerations so that any foreseeable impacts are not left to be addressed by future generations. Issues with potential long-term implications such as waste disposal would be avoided and/or minimised through construction planning and the application of safeguards and management measures described in this EIS and the appended technical reports.

Conservation of biological diversity and ecological integrity

The principle of biological diversity upholds that the conservation of biological diversity and ecological integrity should be a fundamental consideration.

The Biodiversity Assessment Report prepared by Narla Environmental and included in **Appendix R**, outlines the measures taken to avoid, minimise and mitigate impacts to the vegetation and species habitat present within the development site and methodologies to minimise impacts during construction and operation of the development. The proposed development is expected to result in the removal of 0.26ha of planted native vegetation.

No credit species will require offsetting as a result of the proposed development. Notwithstanding, various mitigation measures have been proposed in order to minimise any potential impacts of the proposed development on local biodiversity values, including assigning a Project Ecologist during the clearing of any vegetation.

Notwithstanding, considering the location of the proposed development in a highly urbanised and degraded area, there are unlikely to be any notable impacts on biodiversity values arising from the proposed development.

Improved valuation, pricing and incentive mechanisms

The principles of improved valuation and pricing of environmental resources requires consideration of all environmental resources which may be affected by a proposal, including air, water, land and living things. Mitigation measures for avoiding, reusing, recycling and managing waste during construction and operation would be implemented to ensure resources are used responsibly in the first instance.

Additional measures will be implemented to ensure no environmental resources in the locality are adversely impacted during the construction or operational phases.

6.22 Public Interest and Site Suitability

Social Impact

The social impacts and benefits associated with the proposed development include:

- The MSCP will support a development that will provide a significant piece of social infrastructure, increasing the number of hospital beds. The design and capacity increase of the redevelopment is anticipated to have positive impacts on the overall health outcomes of the region;
- Improves access to an extensive range of health services and facilities for people in Western Sydney;
- Improves community participation opportunities for a range of members of society, including migrants, minority groups and socially disadvantaged groups;
- Provides accessible access across the Hospital allowing equal ambulatory access;
- Provides additional social benefits for the region in terms of providing adequate employment in the area; and
- Liverpool Hospital is a major health facility in the South Western Sydney Local Health District. To not invest in the development would exacerbate the service offering and capacity constraints of the existing health infrastructure in the region and require patients to continue to travel significant distances to receive adequate health care.

Economic Impact

The economic impacts and benefits of the proposed development include:

- The proposed development is anticipated to create additional employment in consultancy, construction and operation of the broader Hospital.
- Will encourage the development of a well-integrated and economically vibrant City Centre by supporting the delivery of a high activation ISB facility in Liverpool CBD.
- Will be a stimulus to economic investment by delivering a key anchor development that will encourage and attract additional allied businesses and uses to Liverpool Hospital.
- Supports the 24 hour operation nature of the Hospital and will assist with achieving Council's vision for a night time economy in Liverpool CBD, extending the trading day to 18 hours. The Hospital is accessible between 6:00am – 8:00pm daily.
- Will build on the current health assets of the health precinct north of Bigge Park that will also contribute to the growth of the tertiary education sector in the CBD, by attracting tertiary medical education to the ISB.

6.23 Development Contributions

The relevant contributions plan is the Liverpool Contributions Plan 2018 – Liverpool City Centre. The purpose of the plan is to enable Council to require a contribution towards the provision, extension, or augmentation of public amenities and public services that will or are likely to be required as a consequence of development within the LGA.

The following planning policies support the best practice of exempting community infrastructure from paying contributions:

Circular D6 – Crown Development Application and Conditions of Consent

Exemption from contributions is supported by Planning Circular (Circular D6) relating to Crown Development Applications issued by the then Department of Urban Affairs and Planning. Circular D6 sets out the circumstances in which it is appropriate for a consent authority to seek the approval of the applicant or the Minister to impose conditions of consent. Circular D6 notes that where a consent authority intends to levy contributions on Crown Development, they must be justified, and consideration should be given to the Crown's role in providing a community service, the cost of which is accountable to all taxpayers in the State.

The currency of Circular D6 is confirmed in the Draft Development Contributions Practice Note – July 2005, which states "the current limitation on imposition of levies on Crown Developments as outlined in Circulate D6…remain in force." Health Infrastructure is a Government agency which relies on government grants to provide new facilities for the local community.

The levying of a development contribution would divert a portion of these public funds, which have been specifically provided to fund a hospital redevelopment, to local services without any direct nexus to the impact of those services.

The inherent public character of the proposed development contrasts with a strictly commercial development where a full levy might be considered reasonable. The nature of the development means that the infrastructure which Council typically seeks to levy for will largely be provided by the hospital for use by the staff and public.

7.0 Environmental Risk Assessment

The Environmental Risk Assessment (ERA) establishes a residual risk by reviewing the significance of environmental impacts and the ability to manage those impacts. The ERA for the new MSCP has been adapted from Australian Standard AS4369.1999 Risk Management and Environmental Risk Tools.

In accordance with the SEARs, the ERA addresses the following significant risk issues:

- The adequacy of baseline data;
- The potential cumulative impacts arising from other developments in the vicinity of the Site; and
- Measures to avoid, minimise, offset the predicted impacts where necessary involving the preparation of detailed contingency plans for managing any significant risk to the environment.

Figure 39 indicates the significance of environmental impacts and assigns a value between 1 and 10 based on:

- The receiving environment;
- The level of understanding of the type and extent of impacts; and
- The likely community response to the environmental consequence of the project;

The manageability of environmental impact is assigned a value between 1 and 5 based on:

- The complexity of mitigation measures;
- The known level of performance of the safeguards proposed; and
- The opportunity for adaptive management.

The sum of the values assigned provides an indicative ranking of potential residual impacts after the mitigation measures are implemented.

Significance of impact	Manageability of impact				
	5 Complex	4 Substantial	3 Elementary	2 Standard	1 Simple
1 – Low	6 (Medium)	5 (Low/Medium)	4 (Low/Medium)	3 (Low)	2 (Low)
2 – Minor	7 (High/Medium)	6 (Medium)	5 (Low/Medium)	4 (Low/Medium)	3 (Low)
3 – Moderate	8 (High/Medium)	7 (High/Medium)	6 (Medium)	5 (Low/Medium)	4 (Low/Medium)
4 – High	9 (High)	8 (High/Medium)	7 (High/Medium)	6 (Medium)	5 (Low/Medium)
5 – Extreme	10 (High)	9 (High)	8 (High/Medium)	7 (High/Medium)	6 (Medium)

Figure 39 Risk Assessment Matrix

				Risk Assessment		
Item	**Phase**	**Potential Environmental Impact**	**Proposed Mitigation Measures and / or Comment**	**Significance of Impact**	**Manageability of Impact**	**Residual Impact**
Key: C – Construction O – Occupation						
Traffic and Parking	C / O	• Increase in construction traffic on local roads • Increase in traffic and parking on local roads during operation • Increase in car parking on the site	• A preliminary Construction Traffic Management Plan has been prepared detailing measures to minimise any adverse impacts arising from construction traffic. • The new MSCP will accommodate additional car parking that will be generated by the overall redevelopment of the Liverpool Hospital campus. The existing road network has capacity to support any increase in traffic associated with the proposed development.	C = 3 O = 2	C = 2 O = 2	C = 5 (low / medium) O = 4 (low / medium)
Visual and Built Form	O	• Visual impact of the development when viewed from the public domain • Visual impact from sensitive land uses	• Measures have been incorporated to reduce the visual impact of the development when viewed from nearby areas within the hospital campus and the public domain.	O = 2	O = 1	O = 3 (low / medium)
Noise and Vibrations	C / O	• Increase in noise and vibrations levels during construction • Increase in noise levels during operation	• The proposed development will implement a Construction Noise and Vibration Management Plan which details specific measures to ameliorate any potential noise or vibration impacts to surrounding sensitive receivers. • Given that the site currently operates as a hospital, any potential noise impacts are considered to be manageable in the context of the overall development.	C = 3 O = 2	C = 2 O = 2	C = 5 (low / medium) O = 4 (low / medium)
Air and Water Quality	C	• Potential for reduced air and water quality during construction	• A detailed Construction Management Plan will be developed once a contractor has been appointed to implement appropriate measures and ensure that air and water quality is maintained.	C = 2	C = 2	C = 4 (low / medium)

8.0 Mitigation Measures

The collective measures required to mitigate the impacts associated with the proposed works are detailed in **Table 16** below. These measures have been derived from the previous assessment in **Section 6.0** and those detailed in appended consultants' reports.

Table 16 Mitigation Measures

Mitigation Measures
Construction Hours Construction, including the delivery of materials to and from the site, may only be carried out between the following hours: (a) between 7am and 6pm, Mondays to Fridays inclusive; and (b) between 8am and 3pm, Saturdays. No work may be carried out on Sundays or public holidays. Construction activities may be undertaken outside of the general construction hours, in accordance with the schedule of out of hours work nominated at section 4.17 of the EIS
Transport and Accessibility Construction and operational traffic will be in accordance with the recommendations of the Transport Impact Assessment prepared by GTA Consultants and dated 6 May 2020.
Aboriginal Heritage Aboriginal Heritage will be managed in accordance with the Aboriginal Cultural Heritage Assessment prepared by RPS and dated 16 January 2020. • Personnel, contractors and subcontractors should be made aware of all statutory obligations for Aboriginal cultural heritage under the National Parks and Wildlife Act 1974 and the Heritage Act 1977. This should be in the form of an induction prior to the commencement of work. • If suspected Aboriginal objects are identified during construction, work should cease immediately and the area cordoned off. Health Infrastructure must be notified, and an archaeologist engaged to assess and record the Aboriginal object, and formulate an archaeological or cultural heritage management plan. The plan must be implemented prior to work recommencing. • In the unlikely event that human remains are identified within the Project Area, all work in the area must cease and the area cordoned off. The proponent must contact the local police. If the remains are thought to be Aboriginal, Heritage NSW must be notified on Enviroline (131 555). If Heritage NSW confirm that the remains are Aboriginal, a management plan developed in consultation with the local Aboriginal community. Work must not recommence without approval from Heritage NSW.
Waste Waste will be managed in accordance with the recommendations of the Operational and Construction Waste Management Plans prepared by Waste Audit and dated January 2020.
Stormwater The proposal will be in accordance with the recommendations of the Civil Report prepared by TTW and dated 3 March 2020.
Noise and Vibration The proposal will be in accordance with the Noise and Vibration Impact Assessment prepared by Acoustic Logic
Construction Impacts A Construction Environmental Management Plan (CEMP) will be prepared by the appointed contractor prior to the commencement of works. The CEMP will establish site management principles generally in accordance with the Preliminary Construction Management Plan prepared Johnstaff and dated 29 March 2020.
Contamination The proposal will be in accordance with the Stage 2 Site Environmental Assessment prepared by JK Environments and dated 29 January 2020, Remediation Action Plan dated 30 April 2020 and Acid Sulfate Soils Management Plan dated 4 May 2020.
Environmentally Sustainable Development The detailed design of the development will incorporate all ESD principles and measures set out in the ESD Statement prepared by Steensen Varming.
Heritage The construction of the development will proceed in line with the following heritage recommendations: • The proposal would not affect an item or area of local or State significance. It is also within an area with low potential for archaeological relics as defined under the Heritage Act 1977. The proposal should proceed with caution. • If a stone, capped, brick or other drain is encountered all work should cease in the affected area and be cordoned off. An archaeologist should then be contacted to record (photographic and scale drawn record) the drain and potentially associated historic items.

Mitigation Measures

- In the event that unexpected archaeological resources are identified in the course of the proposal, all work in the affected area should cease, the area should be cordoned off and Heritage NSW notified in accordance with Section 146 of the Heritage Act 1977.

9.0 Conclusion and Justification

The Environmental Impact Statement (EIS) has been prepared to consider the environmental, social and economic impacts of the proposed new multi storey carpark at Liverpool Hospital. The EIS has addressed the issues outlined in the SEARs (**Appendix A**) and accords with Schedule 2 of the EP&A Regulation with regards to consideration of relevant planning instruments, built form, social and environmental impact including traffic, noise, construction impacts, biodiversity and stormwater.

Having regard to the biophysical, economic and social considerations, including the principles of ecologically sustainable development, the carrying out of the project is justified for the following reasons:

- The proposal will facilitate the development of a new multi storey car park, that responds to the overall anticipated growth of the precinct and will support and strengthen the provision of health care services for the South Western Local Health District;
- The proposal will respond to the existing demand and future car parking supply to cater for an increase in staff, patients and visitors to Liverpool Hospital;
- The existing site allows for the provision of new health facilities that meet the special design requirements for the future proposed uses, whilst not resulting in significant adverse impacts on surrounding uses;
- The assessment of the proposal has demonstrated that the development will not result in any environmental impacts that cannot be appropriately managed and consistent with the relevant planning controls for the site; and
- The proposal is consistent with the principles of ecological sustainable development as defined by Schedule 2(7)(4) of the EP&A Regulation.

Given the merits described above it is requested that the application be approved.