

Campbelltown Hospital Redevelopment (CHR)



Clinical Services Building and Associated Works

Rev E

Preliminary Construction Management Plan

Issue date: August 2018



REVISION RECORD

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1 Introduction

Campbelltown Hospital is currently a major metropolitan group B1 hospital, co-located with a mental health in-patient service and is also a teaching campus for the Western Sydney University Clinical School. It provides a range of emergency, medical, surgical, maternity, intensive care, renal and other health services to the Macarthur region of South Western Sydney.

In June 2017, the NSW Government announced it will deliver a \$632 million upgrade of Campbelltown Hospital to augment the completed Stage 1 redevelopment. The Stage 2 redevelopment will include the construction of new buildings as well as the refurbishment of existing buildings to provide major enhancement of the emergency department, additional operating theatres, medical and surgical inpatient beds, an expansion of the intensive care unit and of out-patients, additional renal dialysis facilities as well as new and expanded mental health facilities, an expansion and enhancement of paediatric services, and improvements to supporting services and infrastructure.

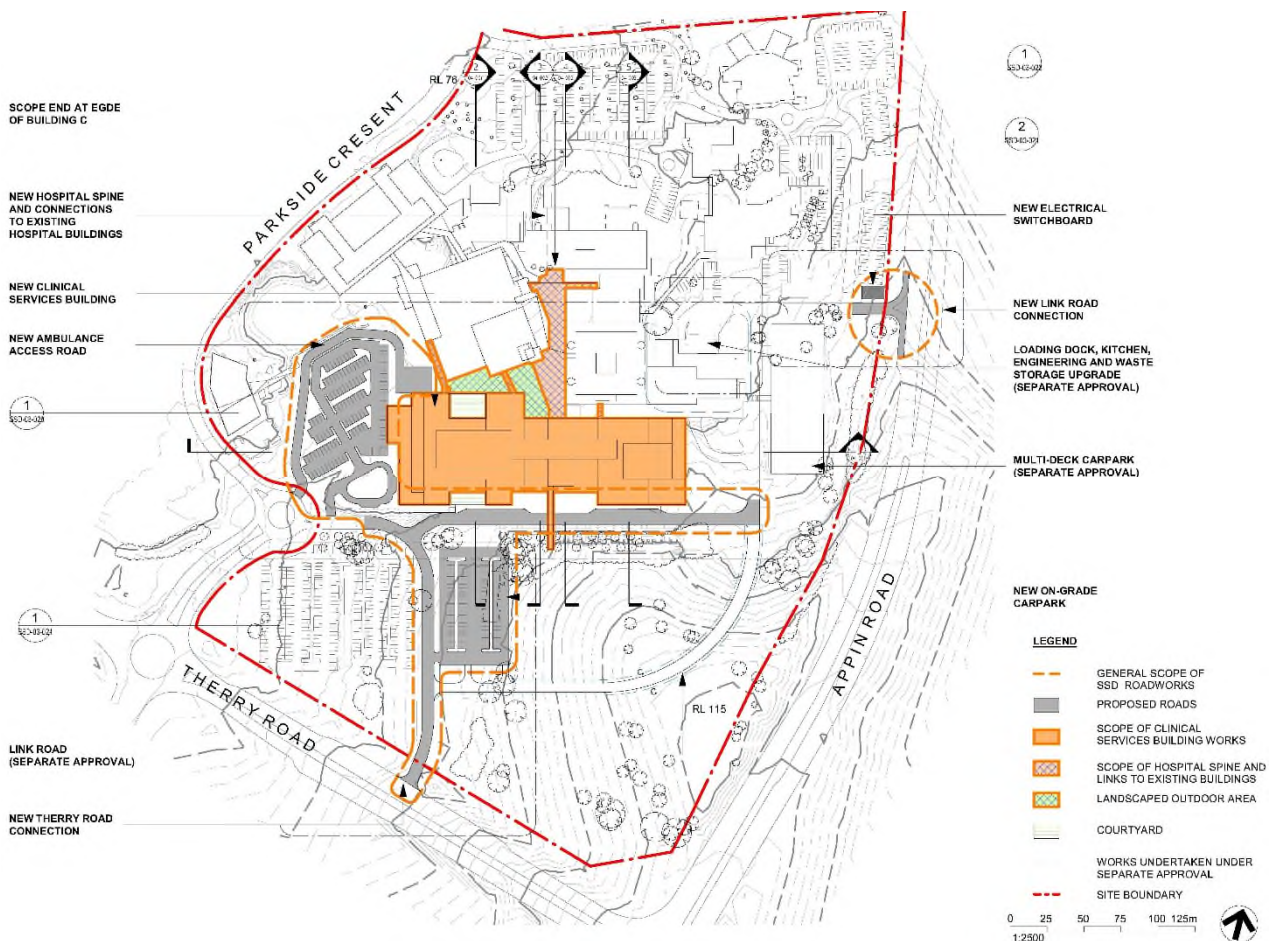


Figure 1 - Proposed Site Plan

2 The Works

2.1 Proposed Works

The works covered by this Preliminary Construction Management Plan has been prepared for the proposed new Clinical Services Building as part of the Campbelltown Hospital Redevelopment to support the project's Environmental Impact Statement Application being submitted to the Department of Planning and Environment.

The works for the Campbelltown Hospital Redevelopment include the following areas:

- Demolition of existing minor structures;
- Partial excavation of the site (due to the sloping topography) to accommodate two floor levels;
- The construction of a new 13 storey (two of these levels are partially below ground) Clinical Services Building containing:
 - An Emergency Department;
 - Operating Theatres;
 - Intensive Care Unit;
 - Mental Health;
 - Birthing and Speciality Care Nursery;
 - Surgical and Medical Beds;
 - Helipad facilities; and
 - An Ambulance Bay.
- Construction of a new Hospital Spine and connections to existing hospital buildings;
- Construction of augmented and new internal hospital access roads and links, including a connection to Appin Road;
- Associated Building Services; and
- Signage Zones.

2.2 Contractual Structure

The following contractual structure will be applied for the delivery of the construction works:

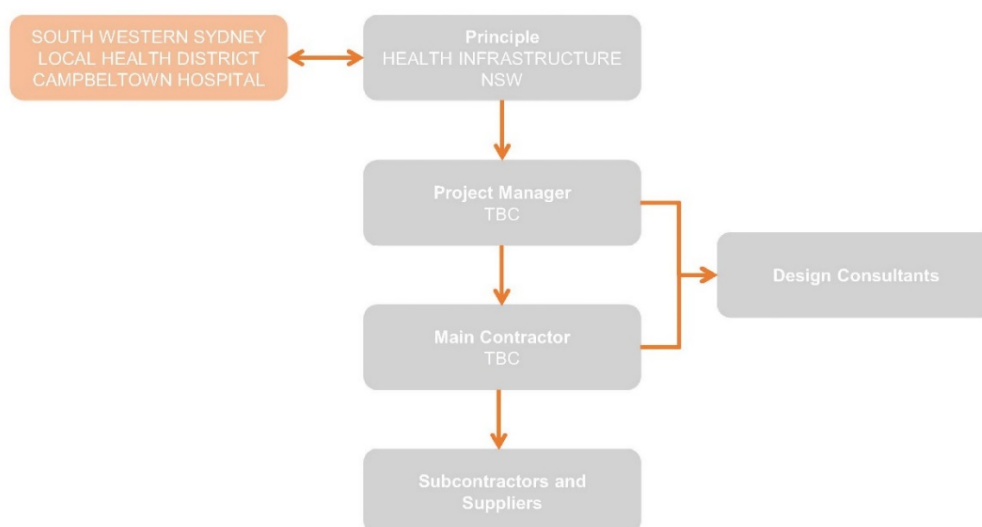


Figure 2 - Potential contractual structure diagram

The final procurement model to be implemented for the main works is dependent on the extent of design resolution (Schematic Design and Clinical DD) and scope definition at the proposed time of tendering the

works. The current master program for planning and design will accommodate the preferred delivery model. The master program relies on the main contractor commencing construction works in mid-2019 and the procurement models will need to align with this program constraint.

3 Phasing Program and Key Milestones

The indicative program and key milestones are outlined as follows:

- | | |
|--|---------------|
| • Commence Stage 2A – Enabling and Early Works | October 2018 |
| • Complete Stage 2A – Enabling and Early Works | August 2019 |
| • Commence Stage 2B – Main Works Preparation | December 2018 |
| • Complete Stage 2B – Main Works Preparation | August 2019 |
| • Commence Stage 2C – Main Works | August 2019 |
| • Complete Stage 2C – Main Works | June 2022 |

The following phases, which are not included in this package of works, have the following milestones:

- Stage 1A – On-Grade Carpark to commence in May 2018 and be completed by August 2018
- Stage 1B – Multi Storey Carpark to commence in July 2018 and be completed in October 2019
- Stage 1C – Enabling Works to Existing Buildings to commence in October 2018 and be completed in June 2019.

Initial staging (enabling) works is seeking approval via a REF and will include the relocation of Drug Health Services, relocating patient transport, augmenting the existing northern ring mains, relocating the Engineering Department (including a kitchen expansion) and construction of a new south-east link road. Upon approval, these works must commence immediately to ensure the construction program for the CSB is not affected. This will then enable the commencement of the early-works bulk earthworks package prior to the commencement of the Clinical Services Building main works.

4 Construction Management Plan Components

The plan has been compiled for an EIS submission to provide a high-level overview of the delivery of the works. The plan will be further developed by the Principal Contractor to respond to detailed site planning prior to the issuing of a construction certificate by the PCA. The CMP will then remain a 'live' document reflecting the site delivery parameters for the duration of the project.

The Plan covers the following areas of management:

- a) The operations of site management when undertaking the works:
 - Legislative and Regulatory Requirements
 - Hours of Operation
 - Site Operations and Major Plant
 - Site Fencing, Public and Property Protection
 - Disruption Notices
 - Site Amenities
- b) Mitigation to minimise amenity and environmental impacts:
 - Environmental and Hazardous Materials Management
 - Noise and Vibration Management
 - Dust, Sediment and Erosion Control
 - Odour control
 - Protection of trees
 - Stormwater Management

- c) Traffic/pedestrian management for the duration of the works;
 - Traffic and Pedestrian Management Plan
 - Pedestrian Protection
- d) Waste management:
 - Storage of dangerous goods
- e) Services disconnections
- f) Dilapidation

5 Operations of Site Management

The works will be undertaken by a Principal Contractor. All statements and proposals documented in this Preliminary Construction Management Plan will be further detailed at the time of contract award for the Works to ensure alignment with the proposed methodologies and construction staging of the Contractor.

5.1 Legislative and Regulatory Requirements

The Works will be undertaken in accordance with the following legislative requirements and any others that must be complied with, as required:

- National Construction Code 2011 comprising the Building Code of Australia;
- Applicable Australian Standards;
- Protection of the Environment Operations Act and Regulations;
- Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA);
- Environmentally Hazardous Chemicals Materials Act 1985;
- Protection of the Environment Administration Act and Regulations;
- Work, Health and Safety Act 2011 and relevant codes of practice and Standards;
- Work Health and Safety Regulation 2017;
- Australian Standard 2601-2001: Demolition of Structures;
- Code of Practice for the Safe Removal of Asbestos (NOHSC:2002(1998));
- Guide to the Control of Asbestos Hazards in Buildings and Structures (NOHSC:3002(1998));
- Resource and Recovery Act 2001;
- Environmental Planning and Assessment Act 1987;
- Heritage Act 1997;
- Local Government Act 1993;
- Soil Conservation Act 1938;
- Threatened Species Conservation Act 1995 and Regulation;
- Biodiversity Conservation Act 2016;
- Native Vegetation Conservation Act 1997; and
- Australian Standard 4970-2009: Protection of Trees on Development Sites.

5.2 Hours of Operation

The following hours of operation apply to the Works:

- Monday to Friday 7:00am to 6:00pm with works preparation activities permitted from 6:30am
- Saturday 7:00am to 3:00pm
- Sunday No Work

The intention of allowing work preparation activities to begin at 6:30am is to minimise potential conflicts with early hospital shift staff and vehicle movements.

Some work may need to be completed outside of the above hours, such as connecting and disconnecting services to avoid disrupting hospital operations. If required, these activities will be planned in consultation

with stakeholders and the City Council to ensure all aspects of the works are clearly understood by all parties and minimise disruption to hospital operations. This may also include works which, for critical hospital operational reasons, are most appropriately carried out outside of main working hours.

Deliveries will be scheduled and distributed to ensure avoidance of congestion to surrounding roads networks and within the hospital precinct. All materials handling will be conducted within the construction site perimeter reducing any impacts on traffic flows within the hospital area.

5.3 Site Fencing, Public and Property Protection

The general principle is to separate construction areas of work from hospital staff and visitors. Where there is a cross-over, this will be managed to ensure safety of all persons and equipment.

Appropriate hoarding/fencing (as specified in Australian Standards and SafeWork NSW requirements) will be installed to prevent public and staff access and to maintain security for the various areas of the works.

Site Notices will be erected at the boundary of the site. The site notices will include details of; Principal Contractor details, name of Site Manager and 24-hour contact number, approved hours of work, and details of the Principal and other appropriate stakeholders. Safety related statutory signage will also be erected on the boundary of the site in accordance with WorkCover requirements.

Site, precinct information and traffic signage and any temporary traffic measures required will be installed and maintained for the duration of the Works.

These public and property protection measures will be reviewed at the time of contract award and during monthly PCG meetings, to ensure alignment with proposed preferred methodologies and construction stage and to ensure that the safety of the public and staff is maintained at all times during the works.

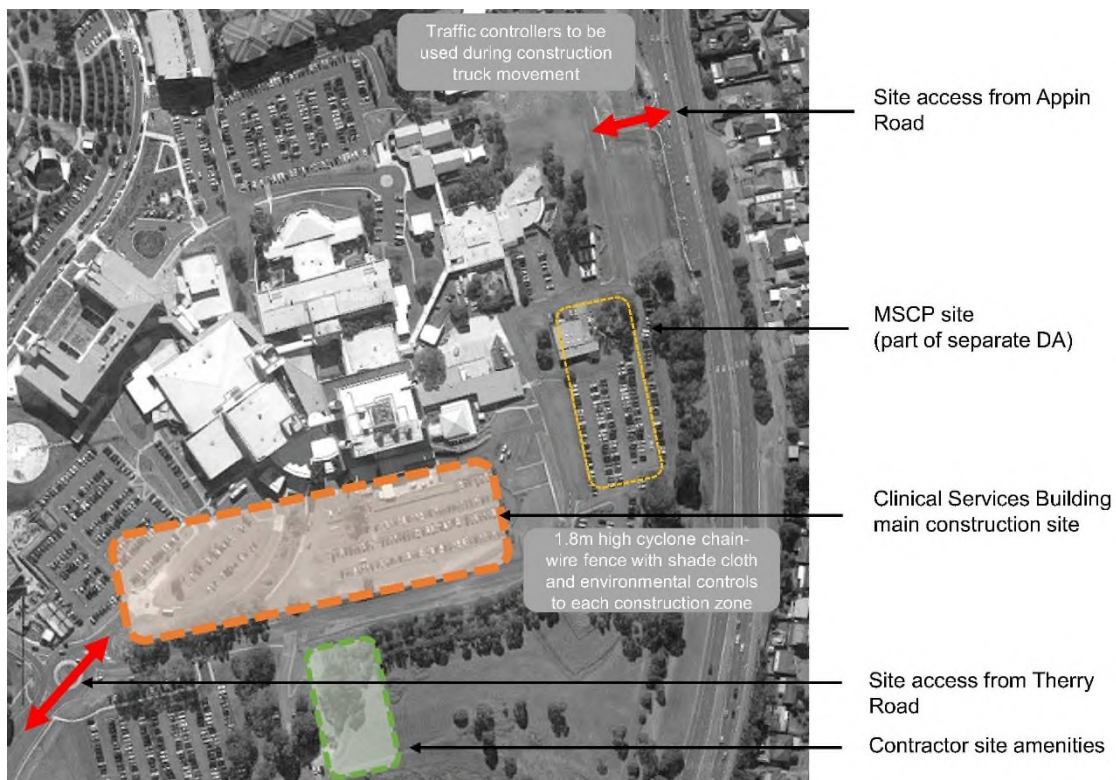


Figure 3 - Construction Site Plan

5.4 Disruption Notices

Any planned disruptions to hospital operations will be managed through the process of Disruption Notices (DNs). For such stoppages, the DN will describe the applicable works, timetable, issues and risk management plans.

DNs are submitted by the contractor to the project manager and hospital stakeholders for approval. Depending on the nature of the works these may be required between 48hrs and 6 weeks prior to commencement of works.

5.5 Site Amenities

The site amenities and compounds erected will accommodate lunch, ablution and change facilities for the duration of the project. Contractor and sub-contractors will be advised during their site inductions that there is no parking within the Campbelltown Hospital site, or within the adjacent streets. To minimise impact on street parking, contractors and sub-contractors will be encouraged to use public transport or car share.

6 Environment and Amenity

6.1 Environmental and Hazardous Materials Management

An Environmental Management Plan (EMP) that complies with environmental legislation will be developed by the Principal Contractor. The EMP will describe the environmental strategy, methods, controls, and requirements for the execution of the Works. It will stand alone as the master document for site environmental activities. The primary aim and objective of the EMP will be to provide a framework of procedures to minimise the impacts of the construction of the project on the environment.

The environmental performance of the contractor will be monitored throughout the Works.

6.2 Noise and Vibration Management

Note: This section is to be read in conjunction with the SSDA Report appended to the Environmental Impact Statement prepared by Arup.

Noise from the construction site shall not exceed the limits set out in the Interim Construction Noise Guidelines, EPA and Australian Standards. No machine work will occur outside the approved working hours set unless approval has been given through the DN process and as per the conditions of consent.

The noise and vibration from the use of any plant equipment and/or building services associated with the premises shall not give rise to an offensive noise as defined under the provisions of the Interim Construction Noise Guidelines, EPA and Australian Standards.

As part of noise mitigation for the project, the contractor will be responsible for the management, checking of compliant maintenance regimes and statutory supervision of all equipment, such as making sure all trucks and machinery involved in the Works will be checked for defective exhaust systems and general servicing.

Guidelines for operational limits, identification of at risk receivers and implementation of mitigation measures will be provided in a project Noise and Vibration Management Plan. The objectives of the Construction Noise and Vibration Management Plan will be to:

- Ensure that construction works do not significantly impact background noise levels around the hospital precinct, and that applicable guidelines and regulations are met;
- Ensure all equipment operates within the applicable noise levels;

- Ensure that construction works do not cause sufficient vibration to damage surrounding buildings, and comply with the applicable guidelines and regulations;
- Vibration does not affect occupiers of the adjoining buildings; and
- Ensure construction methodologies adopted minimise the impact of noise, dust and vibration.

6.3 Dust, Sediment and Erosion Controls

Note: This section is to be read in conjunction with the Civil Statement appended to the Environmental Impact Statement prepared by Enstruct.

As a minimum, the erosion and sediment controls for the Works shall be designed, installed and maintained in accordance with the requirements of Managing Urban Stormwater: Soils and Construction “The Blue Book” 2004 (4th edition) and/or details provided by the project engineering consultants.

To control dust generation water will be sprayed where necessary at the source of origin and surrounding areas to prevent airborne dust particles migrating into the surrounding environment. Management of dust prevention is to be developed by the contractor and agreed by the project stakeholders.

Additional precautions that will be implemented during the Works include the covering of all haulage trucks and stockpiles with tarpaulins and monitoring of weather conditions (including wind). Management and contingency plans will be developed to prevent any foreseeable impacts from dust.

The appointed Principal Contractor will develop a strategy for dust control, and a comprehensive Soil and Water Management Plan, both of which will be included in the EMP. This strategy will include control measures and document how these measures are to be implemented and monitored

6.4 Odour Control

Odours associated with demolition for the site will be assessed and minimised. All plant and machinery involved in the Works will be regularly serviced and checked for exhaust emissions and catalytic converters are to be utilised.

6.5 Protection of Trees

Note: This section is to be read in conjunction with the Biodiversity Assessment Report and the Arboricultural Assessment Report appended to the Environmental Impact Statement prepared by Eco Logical.

The contractor undertaking the Works will be required to comply with Australian Standard 4970-2009: Protection of Trees on Development Sites for the proper care and protection of trees retained and integrated into the construction project.

The contractor will be required to put in place procedures to protect trees at every stage of the development process.

The contractor undertaking the Works will be required to submit for approval to the Principal a comprehensive plan regarding guidance on how to protect retained trees during construction work. This plan will need to define how to calculate the tree and crown area requiring protection and isolation from construction activities and the use of tree protection measures such as barriers and protectors.

6.6 Stormwater Management Plan

Note: This section is to be read in conjunction with the Stormwater Management Plan appended to the Environmental Impact Statement prepared by Enstruct group.

Measures will be employed at each stage, and on the site overall, to control soil erosion during construction. These measures will be in accordance with currently accepted principles, as described in Managing Urban Stormwater: Soils & Construction (4th edition, Landcom, 2004).

Appropriate elements of the existing drainage system on the hospital campus will be cleaned out to remove sediments prior to commencing the Works on site.

The site will be continually cleaned of rubble to minimise possible sediment flow during rainfall periods.

Stormwater kerbs and drainage lines will have sediment controls in the form of hay bales, sedimentation socks or similar (to be approved by the project civil engineer).

Stormwater grate inlets surrounding works areas will be covered with geotextile fabric to allow water to enter into drains whilst retaining sediments.

Should external surface run-off flow into works areas, it may need to be diverted to reduce sediment transportation by the use of using hay bales or similar (to be approved by the project civil engineer).

All drainage control devices will be regularly checked particularly during heavy rainfall periods.

All trucks exiting the construction site will be washed down prior to entering the hospital and public road networks.

7 Vehicle Access and Traffic Management

Note: This section is to be read in conjunction with the Construction Traffic Management Plan appended to the Environmental Impact Statement prepared by ptc consultants.

Traffic flows resulting from the construction works have been assessed by the Traffic Engineering consultant for impacts on the local road network and internal hospital roads. Identified impacts and appropriate mitigation are included in the Construction Traffic Management Plan. All works access to the site for construction vehicles will be strictly in accordance with the Construction Traffic Management Plan. For any major site operations, pre-planning, consultation with all local stakeholders and implementation of dedicated traffic management responses will be required.

7.1 Traffic and Pedestrian Management Plan

Prior to construction works commencing, the Principal Contractor will develop a Traffic and Pedestrian Management Plan which will detail how traffic, pedestrian and cyclist access will be managed during the construction works.

Traffic flows and vehicle/pedestrian separation are a major consideration in a working live hospital environment, and all internal traffic and pedestrian routes are to be maintained throughout all stages of construction.

Key issues for traffic, pedestrian and cyclist management during construction to be considered in the Traffic and Pedestrian Management Plan include, but is not limited to:

- All loading and unloading of vehicles is expected to occur within the site, either by forklift or truck mounted crane;
- Provide safe and uninterrupted access for pedestrians and vehicles accessing the construction site and hospital site;
- Ensure maximum safety of site personnel, pedestrians, cyclists, commuters, and drivers;
- Minimise environmental nuisance and impact as a result of construction traffic;
- Ensure construction traffic does not unduly interrupt existing traffic flows on the local road network;
- Safe operation of buses and other transport services during construction in adjacent roads;
- Establish strict scheduling of vehicle movements to ensure there are no vehicles waiting off the site;
- Have no vehicles arrive at the site, without prior arrangement, outside the approved working hours;
- Encourage site workers to utilise local public transport system and car sharing wherever possible;
- Timely and effective implementation of traffic management measures;
- Maintain access at all times for hospital and stakeholder's deliveries; and
- Fulfilling the Council and the Roads and Maritime Services requirements.

7.2 Pedestrian Protection

Pedestrian and vehicular movements into and around the site will be maintained, or alternate routes determined where necessary, and be defined by clear signage. If necessary, physical traffic management personnel will be used to guide pedestrians and vehicles safely.

Temporary hoarding appropriate to the interaction between pedestrians and construction works (as per Workcover requirements and Australian Standards) will be constructed to prevent unauthorized access to the construction site. These hoardings and fences may be staged to allow for appropriate construction methodologies to be planned.

7.3 Deliveries and Materials Storage

Development and implementation of detailed construction delivery programs and staging of the works in a way to optimise the available space will be carried out. During the early phases of the Project, the site fence will be established at the extreme boundaries of the site to allow the major plant to operate safely and efficiently within the site. These major items of plant include piling rig, anchor rig, excavators, trucks and concrete trucks, etc.

Materials will be staged and stored in such a way to promote a clear and safe work site. As the Project progresses storage areas will become a premium and will require detailed planning by the Site Manager. At all times, materials are to be stored within the confines of the site. While loading and unloading vehicles, it will be clearly stated that vehicles must not obstruct roads, driveways and escape routes from the building or fire protection equipment.

8 Waste Management / Recycling Principles

The Contractor will be required to recycle and reuse materials where possible. The contractor will be required to arrange for the sorting and recycling of waste materials and packaging to ensure maximum recycling is achieved. The contractor will be committed to achieving compliance with the EPA guidelines. All packaging is to be removed before materials are delivered to site to minimise waste generation on site.

8.1 Storage of Dangerous Goods

Dangerous goods (such as petrol, diesel, oxy-acetylene, oils etc.) will be stored in a lockable compound with sufficient ventilation in accordance with relevant codes of practice and standards. Safety data sheets on all of these flammable and potentially harmful liquids will be maintained by the contractor undertaking the Works.

Geotechnical and Contamination Reports have been prepared by 'Douglas Partners'. These reports indicate little to no issues of contamination on the site.

These reports will be used as the basis for identifying and managing the removal of any contaminated materials identified during the Works. An 'Unexpected finds' protocols will be implemented to manage any contaminated materials found during works.

9 Service Disconnections

During the Works, service disconnection and diversions will be undertaken. In general, the following principles will be adopted when disconnecting services:

- Services impacts on the existing Campbelltown hospital campus facilities will be undertaken with full coordination, development and input with relevant hospital and authority stakeholders and will only proceed with approval, via a Disruption Notice process and appropriate consultation with the relevant service providers
- Impacts on the hospital will be kept to the absolute minimum, which may result in 'Out of Hours' work. At all-time patient care will be paramount and staff and visitor safety, access and security maintained.
- All Service authorities will be consulted prior to the Works commencing to ascertain lead times and correct termination locations.
- All termination works will be undertaken in accordance with project design engineers' specification and instructions.
- All termination works will be undertaken by suitably licensed contractors.

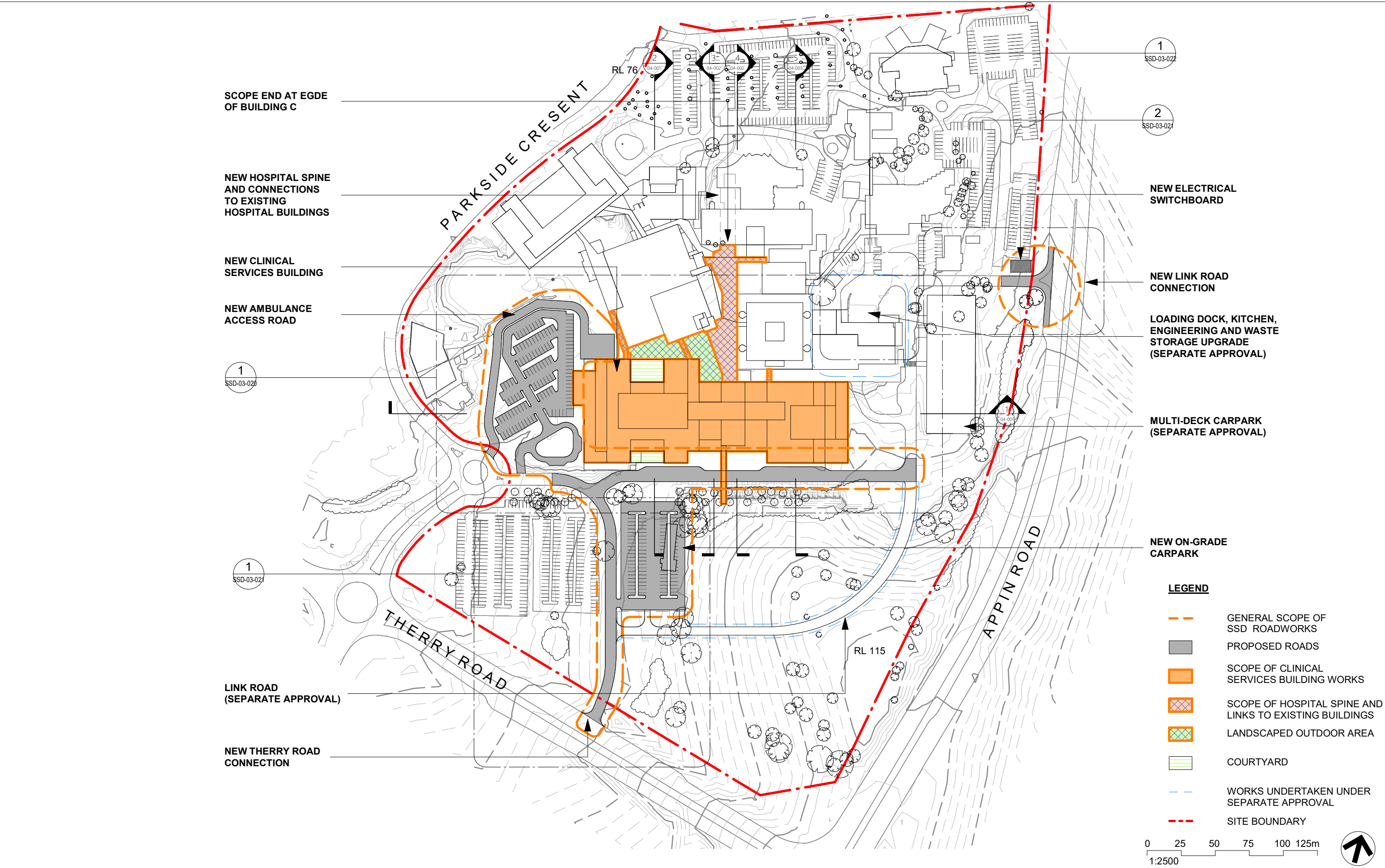
10 Dilapidation Report

Prior to commencing the works onsite and at completion, the appointed Principal Contractor will generate a Pre and Post Dilapidation Report. The report shall cover as a minimum the following areas:

- Existing roads and access roads;
- Infrastructure;
- Adjacent hospital buildings;
- Adjoining properties;
- Existing landscape, including trees to be retained;
- Services mains;
- Stormwater systems; and
- Existing utilities and authority services.

The full extent of the Dilapidation reports will be agreed with the Principal prior to investigations proceeding.

Attachment A – Site Plan



H	ISSUE FOR SSD	25/06/2018	RB
G	ISSUE FOR SSD	22/06/2018	RB
F	ISSUE FOR SSD	19/06/2018	DR
E	UPDATED SCOPE	05/06/2018	DR
D	ISSUE FOR SSD	04/06/2018	RB
Revision	Description	Date	Initial

Attachment B – Traffic Management Plan

10. Preliminary Construction Traffic Management Plan (CTMP)

10.1 Objective

It is acknowledged that prior to the Development Approval and an engaged contractor, there are many unknown factors that might affect this Construction Traffic Management Plan (CTMP). As such, this section is presented as a preliminary management plan, to support the development application process by outlining high-level considerations for the construction of the proposal. An updated CTMP will be required and a construction contractor appointed for Construction Certification (CC).

A primary consideration is the timing of the construction works for the Main Works and the multi-deck car park. If construction for both activities occurs simultaneously or with some overlap, a Cumulative Construction Management Plan may be required to assess the combined impacts of the total traffic activity as a result of the construction.

The CTMP associated with the construction activity of the Campbelltown Hospital Redevelopment Project aims to ensure safety of all workers and road users within the vicinity of the construction site, with the following primary objectives:

- To minimise the impact of the construction vehicle traffic on the overall operation of the road network;
- To ensure continuous, safe and efficient movement of traffic (vehicular and pedestrian) for both the general public and construction workers;
- Installation of appropriate advance warning signs to inform users of the changed traffic conditions;
- To provide a description of the construction vehicles and the volume of these construction vehicles accessing the construction site;
- To provide information regarding the changed access arrangement and also a description of the proposed external routes for construction vehicles accessing the site; and
- Establishment of a safe pedestrian environment in the vicinity of the site.

10.2 Construction Activities & Program

10.2.1 General Construction Activity

All construction activities shall be wholly contained within the approved construction compounds, including, but not limited to plant, vehicles, materials, waste, site offices and amenities.

Any hoardings and barriers shall not impact pedestrians, maintain worksite security whilst providing appropriate pedestrian thoroughfare. Providing safe pedestrian visibility near any crossing points will be a key criterion in the hoarding arrangements. Prior to any site establishment works, the hoarding arrangement will obtain approval from the relevant Certifying Authority. Upon completion of any stage, the dismantling of any hoardings or road-signage shall be done in accordance with RMS Traffic Control at Works Sites Manual.

In accordance with Road and Maritime Services (RMS) requirements, all vehicles transporting loose materials will have the entire load covered and/or secured to prevent any items, excess dust or dirt particles depositing onto the roadway during travel to and from the site. All subcontractors must be inducted by the lead contractor to ensure that the procedures are met for all vehicles entering and exiting the construction site. The lead contractors will

monitor the roads leading to and from the site and take all necessary steps to rectify any road deposits caused by site vehicles.

Vehicles operating to, from and within the site shall do so in a manner, which does not create unreasonable or unnecessary noise or vibration. No tracked vehicles will be permitted or required on any paved roads.

10.2.2 Construction Program

The whole hospital redevelopment project will be undertaken in various stages. An indicative construction program and key milestones are outlined as follows:

- Commence Stage 2A – Enabling and Early Works October 2018
- Complete Stage 2A – Enabling and Early Works August 2019
- Commence Stage 2B – Main Works Preparation December 2018
- Complete Stage 2B – Main Works Preparation August 2019
- Commence Stage 2C – Main Works August 2019
- Complete Stage 2C – Main Works June 2022

The following phases, which are not included in this package of works, have the following milestones:

- Stage 1A – On-Grade Carpark to commence in May 2018 and be completed by August 2018
- Stage 1B – Multi Storey Carpark to commence in July 2018 and be completed in October 2019
- Stage 1C – Enabling Works to Existing Buildings to commence in October 2018 and be completed in June 2019.

Due to the overlap of construction activities, a Cumulative Construction Traffic Impact Assessment will be required.

10.3 Hours of Work

Hours of work will be defined by the Development Conditions of Consent provided by DPE.

Notwithstanding, the following hours are proposed, which align with typical Council regulations:

- MON-FRI: 7:00am – 6:00pm with works preparation activities proposed from 6.30am;
- SAT: 7:00am – 3pm;

No work will be permitted on Sundays and public holidays. It is proposed to be able to undertake safety inspections and works preparation from 6:30am on weekdays.

10.4 Construction Workforce

The construction workforce will be made aware that there is minimal on site and street parking. Parking arrangements will be developed with the selected contractor.

10.5 Construction Site Arrangement & Access

10.5.1 Site Arrangement

An indicative construction site plan is provided in Figure 36. Appropriate hoarding/fencing (as specified in Australian Standards and Workcover requirements) will be installed to prevent public and staff access and to maintain security for the various areas of the works.

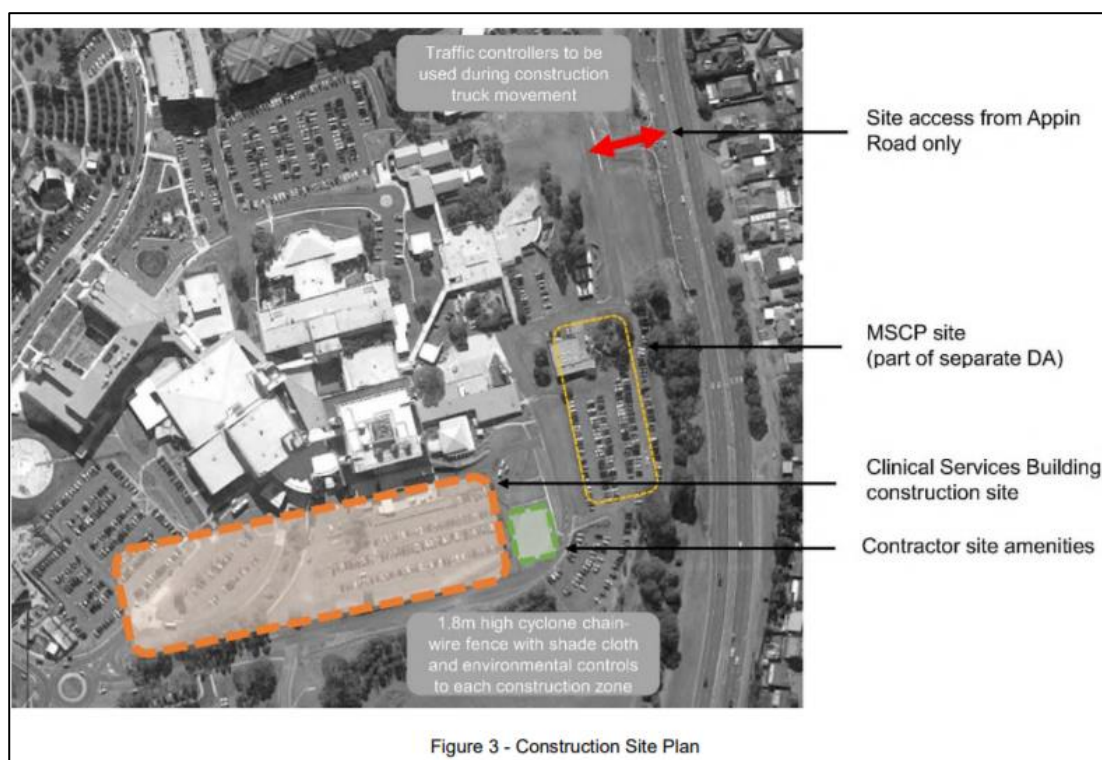


Figure 36 – Indicative Construction Site Plan

10.5.2 Site Access

Vehicles will access the Hospital via the Therry Road roundabout and Appin Road access. Preliminary swept path analyses have been undertaken, demonstrating the ability of vehicles up to a 19m AV accessing the site via the Therry Road roundabout and vehicles up to an 8.4m MRV accessing the site via the Appin Road access (without impeding on the opposing lane). The specific vehicle entrances to each site compound will be determined prior to CC, once contractor input is available.

10.5.3 Cycling and Pedestrian Access

It is unlikely that existing pedestrian access will be impacted by the construction activities. However, if there is an impact, the appropriate precautions and Traffic Control Plan (TCP) plans should be prepared.

10.6 Construction Traffic

10.6.1 Construction Vehicle Types

The proposed works are envisaged to be carried out using a mix of commercial small to heavy rigid vehicles (6.4m SRV to 12.5m HRV) including utes, tip trucks, concrete agitators, concrete pumps, etc. Articulated vehicles including 'truck & dogs' (18m) and 19m semi-trailers are also anticipated to be used for material collections and deliveries.

It is also anticipated that some special oversize vehicles will be required, such as a crane. These vehicles will be subject to an access permit application to the National Heavy Vehicle Regulator (NHVR).

10.6.2 Traffic Generation

Construction traffic generation for the Main Works will coincide with the multi-deck car park works. Construction traffic impacts will need to be assessed based upon the cumulative amount of construction traffic. As the construction vehicle routes are similar, an assessment of the construction traffic generation considering the combined trip generation of the Stage 2 Main Works and other works within the Hospital should be undertaken.

The peak hour and daily construction vehicle movements to and from the site is unknown at this stage.

10.6.3 Construction Vehicle Routes

The indicative construction vehicle route is provided in Figure 37. This path enables access from the north and south and egress to the north. The preferred construction vehicle access is off Appin Road which can accommodate two-way movement for vehicles up to an 8.4m MRV without vehicle movements affecting opposing lanes. Access for vehicles up to a 19m AV is possible with encroachment into opposing lanes (see swept paths provided in Attachment 3).

Secondary construction vehicle access is possible via Therry Road, with swept path analysis indicating the ability of vehicles up to a 19m AV accessing and egressing the site. This also enables an egress path down towards the south, if required, by exiting onto Therry Road and then turning right into Appin Road.

Upon engagement of a construction contractor, this proposed route is intended to be revisited and revised based on specific vehicle requirements and contractor advice.

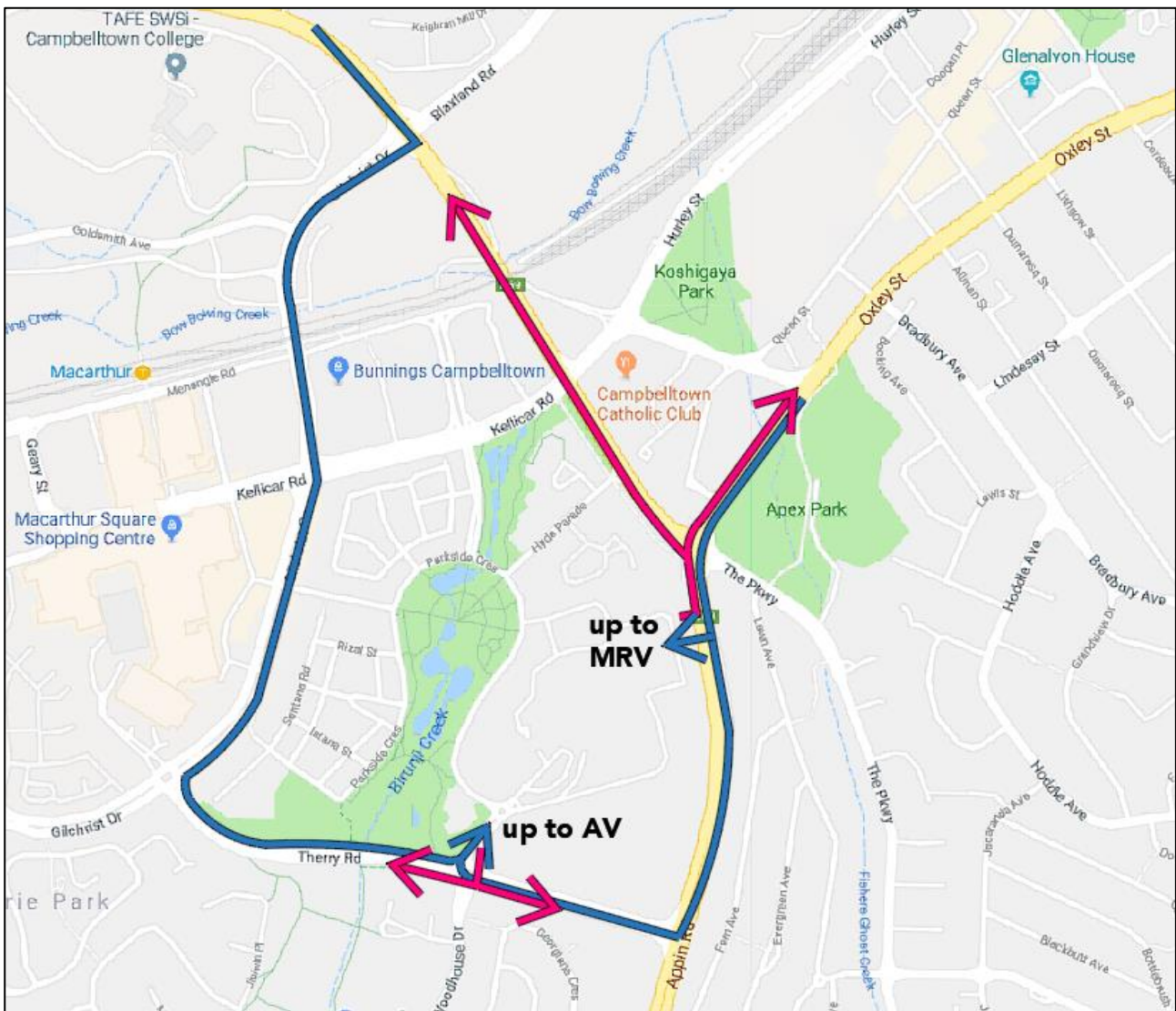


Figure 37 – Indicative Construction Vehicle Route

10.6.4 Works Zones

No Works Zone is proposed at this stage; however, if a Works Zone is required on a public road, the appropriate work zone applications shall be lodged with Campbelltown Council.

10.6.5 Road Occupancies

No lane or road closure is proposed at this stage. In the event that works do require a lane or road closure, the proponent shall submit a Road Occupancy Licence (ROL) application to the Transport Management Centre (TMC) for approval, prior to carrying out the associated works. The proponent recognises that a minimum of 10 days is required for the assessment of an ROL and will manage this accordingly.

10.7 Construction Impacts & Stakeholders

10.7.1 Impacts

It is anticipated that construction impacts will be minimal, as construction activities appear to be readily capable of occurring wholly within the proposed work compounds, without the need to modify the external road network, and with minimal interference with the internal roads and facilities of Campbelltown Hospital. Moreover, all routes are anticipated to minimise use of local roads, limiting as far as is practicable, interfacing between heavy vehicles and other road users. Various routes surrounding the site have been swept-path tested (in accordance with AS2890.2:2002) with 19m semi-trailer vehicles for feasibility in the Traffic Impact Assessment for the multi-deck car park. These swept paths have been included in Attachment 3.

In light of the above, although the volume of light and heavy vehicles will increase within the immediate road network, these increases are not expected to create any major traffic-related impacts to the road users and local population around the site.

It is anticipated that the increased volume of heavy vehicles in the internal road network may create some delays or hazards to internal road users if not properly managed. A traffic control plan may be required with traffic controllers engaged to safely coordinate traffic. It is advised that the Project Manager maintain constant communication with the Hospital, to coordinate activity between the two sites.

In addition, the cumulative influence, if any, of construction vehicles at the Main Works site and the multi-deck car park site should also be considered and if need be, require mitigation measures which would be included in the updated CTMP for the Construction Certificate stage.

10.7.2 Cumulative Impacts

ptc. has contacted Campbelltown Hospital and the Department of Planning who have indicated no significant developments within the vicinity of the Hospital. In addition, the Greater Macarthur Growth Area Infrastructure schedule¹³ does not indicate any major developments near the Hospital within the immediate future. Hence, the cumulative construction traffic impacts will only result from other works (i.e. multi story car park) **within** the Hospital.

10.7.3 Stakeholders

Stakeholders should be identified, and informed of the proposed works, potential timing, and possible impacts. These details will be better understood upon further development progression and engagement of a contractor. Some of the initial stakeholders are listed in the following section.

- Campbelltown Hospital (Proponent);
- Department of Planning & Environment (Approval Authority);
- Campbelltown City Council;
- Roads & Maritime Services (RMS);
- State Transit Authority (STA);

¹³ <http://www.planning.nsw.gov.au/Plans-for-your-area/Priority-Growth-Areas-and-Precincts/Greater-Macarthur-Growth-Area/Infrastructure-schedule>

- Chamber of Commerce

10.8 Traffic Control Measures

No traffic control plan is required at this stage – in the event that an activity requires a TCP, it shall be developed in accordance with the Australian Standards and the RMS Traffic Control at Works Sites Guidelines.

Any traffic controllers engaged on-site shall be accredited by RMS, and act in accordance with RMS Conditions, including:

- No stopping of traffic on public streets; and
- No stopping of pedestrians in anticipation of truck movements. Pedestrians may only be held for short periods, for their safety, whilst a truck is entering or leaving the site.

No marshalling or queuing of trucks shall be permitted on the public road.

10.9 Contractor Parking

Employees and sub-contractors will be encouraged to use public and active transport to access the site and not park on public roads. As part of the induction program, contractors and sub-contractors will be advised during their site inductions that there is no parking within the Campbelltown Hospital site, or within the adjacent streets. To minimise impact on street parking, contractors and sub-contractors will be encouraged to use public transport or to car pool.

To support alternative travel, secure areas could be made available within the work compounds for tradesmen and staff to store equipment, overnight, making light travel via alternative modes more viable.

10.10 Work Site Security

The works site shall be fully bounded with barriers to prevent pedestrian access. When not in use, the site shall be appropriately secured.

10.11 Induction

All staff and subcontractors engaged on site will be required to undergo a site induction. The induction will include permitted access routes to and from the construction site for all vehicles, as well as standard environmental, OH&S, driver protocols and emergency procedures. Additionally, the lead contractor will advise workers of public transport and car-pooling opportunities.

10.12 Emergency Vehicle Access

The proposed works are not anticipated to involve any closure of local roads. Any emergency vehicles requiring to access the project site will have unobstructed access.

10.13 Occupational/Work Health and Safety

Any workers required to undertake works or traffic control within the public domain shall be suitably trained and covered by adequate and appropriate insurances. All traffic control personnel will be required to hold RMS accreditation in accordance with Section 8 of Traffic Control at Worksites.

Attachment C – Noise and Vibration Plan

6.7 Construction noise and vibration mitigation

Noise mitigation measures for each major construction activity are discussed in the following sections. These mitigation measures are considered to represent ‘feasible and reasonable’ mitigation measures suitable for implementation during construction of the project.

6.7.1 Construction noise and vibration management plan

For all construction works, the contractor would be expected to prepare a detailed Construction Noise and Vibration Management Plan (CNVMP). This plan should include but not be limited to the following:

- Roles and responsibilities
- Noise and vibration sensitive receiver locations
- Areas of potential impact
- Mitigation strategy
- Monitoring methodology
- Community engagement strategy.

General guidance on the control of construction noise and vibration impacts relevant to this study are discussed in the following sections.

6.7.2 General

In general, practices to reduce construction noise impacts will be required, and may include;

- Adherence to the standard approved working hours as outlined in the Project Approval.
- Manage noise from construction work that might be undertaken outside the recommended standard hours
- The location of stationary plant (concrete pumps, air-compressors, generators, etc.) as far away as possible from sensitive receivers
- Using site sheds and other temporary structures or screens/hoarding to limit noise exposure where possible.
- Sealing of openings in the building (temporary or permanent) prior to commencement of internal works to limit noise emission.
- The appropriate choice of low-noise construction equipment and/or methods
- Modifications to construction equipment or the construction methodology or programme. This may entail programming activities to occur concurrently where a noisy activity will mask a less noisy activity, or, at different times where more than one noisy activity will significantly increase the noise. The programming should also consider the location of the activities due to occur concurrently.

- Carry out consultation with the community during construction including, but not limited to; advance notification of planned activities and expected disruption/effects, construction noise complaints handling procedures.

6.7.3 Universal work practices

The following noise mitigation work practices are recommended to be adopted at all times on site:

- Regularly train workers and contractors (such as at toolbox talks) to use equipment in ways to minimise noise.
- Site managers to periodically check the site and nearby residences for noise problems so that solutions can be quickly applied.
- Avoid the use of radios or stereos outdoors.
- Avoid the overuse of public address systems.
- Avoid shouting, and minimise talking loudly and slamming vehicle doors.
- Turn off all plant and equipment when not in use.

6.7.4 Vibration – minimum working distances

Recommended minimum working distances for vibration intensive plant, which are based on international standards and guidance and reproduced in Table 25 for reference. With regards to the proposed development works, vibration is not expected to impact upon surrounding development.

Table 25: Recommended minimum working distances for vibration intensive plant

Plant Item	Rating / Description	Minimum working distance	
		Cosmetic damage (BS 7385)	Human response (OH&E Vibration Guideline)
Small Hydraulic Hammer	(300 kg - 5 to 12t excavator)	2 m	7 m
Medium Hydraulic Hammer	(900 kg – 12 to 18t excavator)	7 m	23 m
Jackhammer	Hand held	1 m (nominal)	Avoid contact with structure

Attachment D – Soil and Water Management Plan

4 MITIGATION MEASURES

4.1 Construction

4.1.1 Soil and Water Management Plan

Prior to commencement of excavation works, a Soil and Water Management Plan (SWMP) must be prepared as part of the Contractor's Construction Environmental Management Plan (CEMP) for the works. The SWMP must include an Erosion and Sediment Control Plan (ESCP) prepared in accordance with the 'Blue Book'. Preliminary ESCP is included in Appendix B.

The SWMP must address the following requirements:

- Provision of sediment and erosion controls at downstream locations from the construction areas (e.g. sediment fences, sediment basins, other as required).
- Provision of stormwater diversion to divert clean run-off from undisturbed areas around any disturbed areas.
- Designated stockpile location away from gutters, stormwater pits, site boundary, footpaths and roadways or traffic areas.
- Coverage and/or stabilisation of stockpiles as required to minimise erosion.
- Sediment control barriers to be established around the stockpile area to restrict runoff from the stockpile area entering areas beyond the project site.
- Protection of on-site drains and exposed areas using erosion control mats or similar.
- Work staging to limit the area and duration that soils are exposed.
- Disturbed areas to be stabilised progressively to ensure that no areas remain exposed for any extended period of time.
- Where available and practicable, stormwater, recycled water or other water sources shall be used in preference to potable water for construction activities, including dust control.
- Provision of dewatering requirements as further discussed below.
- Any water collected from the site and requiring disposal is to be tested and discharged in compliance with ANZECC (2000) water quality guidelines for protection of aquatic ecosystems.
- Any truck transporting dusty loads, including excavated materials, must be covered.
- Soil not to leave the site as a result of vehicle, plant and equipment movements.
- Regular maintenance and inspection of plant and equipment and of sediment and erosion controls.
- Provision of a spill kit on site
- Provision of vapour monitors for unexpected finds; such as chemical contamination.

4.1.2 Dewatering

As stated in Section 3.1.2 of this report, groundwater dewatering is not projected for this project. However, stormwater dewatering of the excavated area is anticipated.

Management options for potential dewatering activities include:

- Pumping, transport and disposal off-site at a licensed liquid waste facility;
- On-site treatment and discharge to stormwater connections in accordance with acceptable criteria (e.g. ANZECC (2000), the 'Blue Book', and ANZECC Water Quality Guidelines for Fresh and Marine Waters 2000); or
- On-site treatment and discharge to Council stormwater drains to criteria acceptable to relevant authorities.
- Treated dewatering effluent may be allowed to be used for dust suppression.

Monitoring of discharged water will also be required to demonstrate compliance with the acceptable criteria.

4.1.3 Water Quality

For protection of groundwater and receiving waters, the threshold concentrations are based on the ANZECC Water Quality Guidelines for Fresh and Marine Waters 2000 (95% freshwater).

In order to ensure adequate response times in the event of detection of undesirable concentrations of contaminants, a Trigger and Action level for target contaminants has been formulated. The trigger level being 50% of the recommended threshold with the action level set at 75% of the relevant threshold.

Table 4. Stormwater disposal criteria

Water Parameter	Objective	Units
pH	6.5 – 8.5	pH
Total Suspended Solids (TSS)	<50	TSS
Turbidity (where correlation established through sampling and analysis at a NATA accredited laboratory)	86	NTU
Hydrocarbons	No hydrocarbon sheens observed	N/A

Other treatment methods can be deployed depending on the contaminant levels. If onsite treatment is not feasible, offsite disposal and treatment is recommended.

4.2 Operation

4.2.1 Stormwater Management

Internal stormwater drainage system consists of building gutters and downpipes will be designed by the building hydraulics consultant. The roof drainage system of gutters, downpipes and associated pipework is to be designed in accordance with AS/NZS 3500.3.

The collection and conveyance of runoff generated in different areas within the CSB development are described as follows:

- Roof and podium levels – Runoff from the roof will be collected by the building hydraulics system and conveyed into stormwater pits leading to a main drain.
- Ground areas – A system of pits and pipes will be provided to collect the runoff generated in the ground areas.
- Other areas - Courtyards and terraces at ground level and Level -01 will be collected and conveyed via a downpipe system via floor pits to the stormwater drainage system. Level -02 surface water will be directed to the tree pits and landscaped areas. Surface water will also be routed to the stormwater drainage system.

4.2.2 Water Quality

The stormwater system proposed for the site will discharge into Burinji Creek Basin. The development will achieve the pollution reduction targets by utilising WSUD treatment targets.

A hydrocarbons trap or separator will be required to treat runoff generated from the helipad. The nominated proprietary product will be specifically designed to provide high removal efficiencies of suspended solids and their associated pollutants, oil, and floatables over a wide range of flow rates.

As per Health Infrastructure (HI) requirements, a continuous deflection separation (CDS)-type gross pollutant trap (GPT) unit has been included in the CSB's treatment strategy. This will be located downstream of the ground vehicular movement access roads and internal car parking areas.

The combination of vegetated buffer, bioretention swales, vegetated swales, and filtration devices will be used through a treatment train approach to improve water quality before stormwater discharges from the site. These elements of the Stormwater Quality Management Strategy for the proposed development will achieve all the pollution reduction targets (Gross Pollutants, Total Suspended Solids, Total Phosphorus and Total Nitrogen) required to discharge stormwater to Burinji Creek Basin.

4.3 Flood Mitigation

4.3.1 Site Drainage

The minor site drainage system for the new development will be designed in accordance with requirement of Campbelltown City Council's DCP – Volume 2 for Engineering Design for Development.

A system of pits and pipes will be provided to collect roof water and runoff generated in the ground areas. The ambulance bay area will be discharge into GPT to stormwater drainage system. Full detain of system design is included in Appendix A.

4.3.2 Flood Mitigation Options

4.3.2.1 Flooding Patterns

Overland flow in the vicinity of the CSB site for the 100 year ARI flood is depicted below.

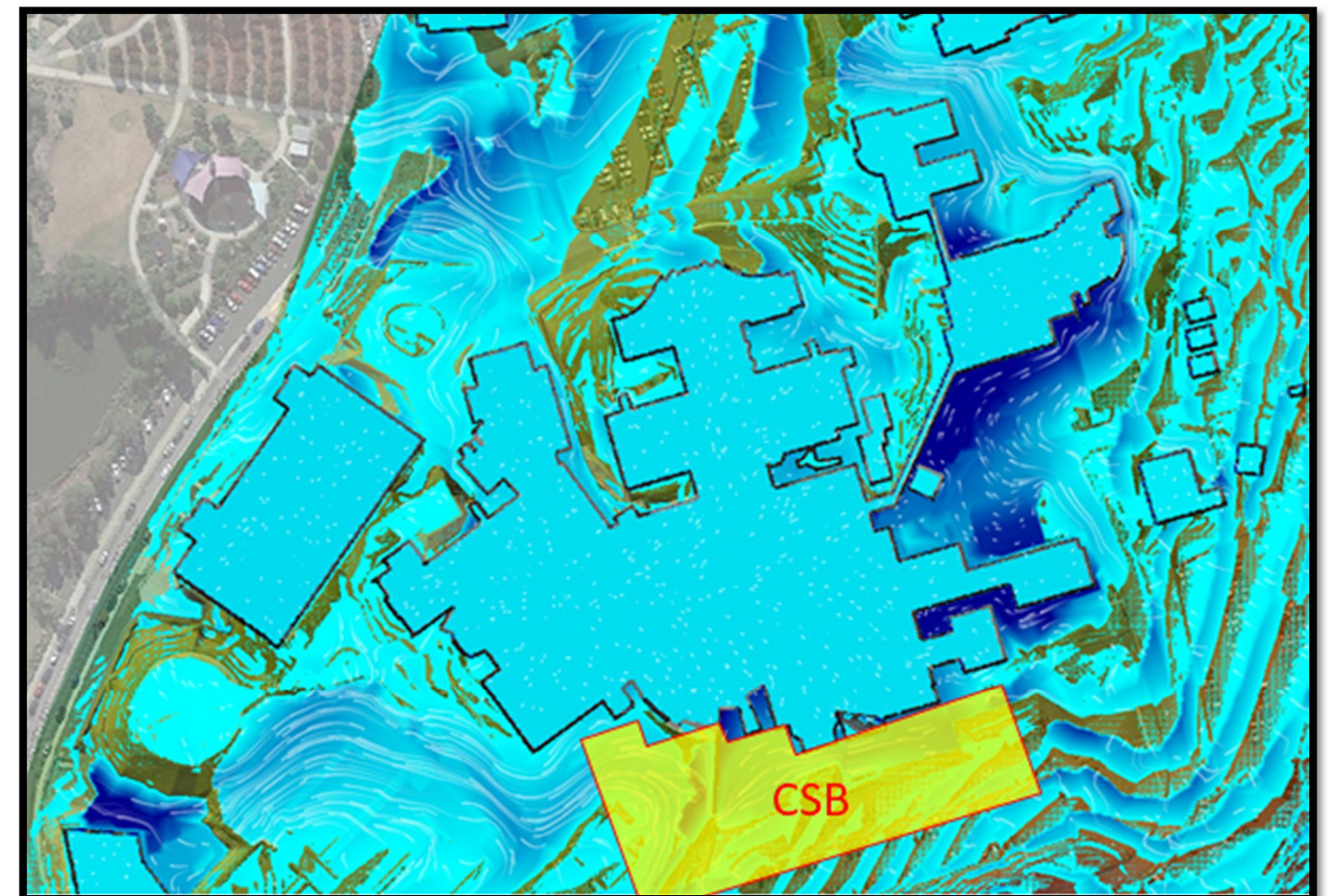


Figure 9. Overland flooding under post-development conditions for 100 year event

The flood maps under both existing and developed conditions concludes that overland flow is required to be diverted away from the hospital basement to achieve flood planning levels for the CSB. In addition to managing the flood impact, it is required that hospital operations remains unaffected during an extreme flood event, since the CSB is a critical form of community infrastructure.

Detail measures to minimise operational water quality impacts on surface waters and groundwater and outline measures to not cause surface water flows or flows within the Council owned drainage network to be transferred from one catchment or sub-catchment to a different catchment or sub-catchment, nor change the time of concentration for each sub-catchment as pre-development and post-development hydrographs.

4.3.2.2 Detailed Stage 2 Flood Study

Detailed hydraulic modelling for the study area will be carried out using TUFLOW modelling software. TUFLOW is an industry standard hydraulic modelling software system, which is used for fully dynamic modelling of floodplains by representing one (1D) and two dimensional (2D) elements of a floodplain.

Several flood management options will be identified and modelled to reduce the impact of the development and achieve satisfactory outcomes regarding management of flooding, including extreme flooding (PMF) event. Campbelltown Council agreed to incorporate site information into their catchment-wide model. The Campbelltown Council updated TUFLOW model can be utilized to design the proposed redevelopment of the hospital.

5 SUMMARY

Stormwater from the development will be discharged into existing Council infrastructure (Buringi Creek Basin).

Review of site flooding conditions suggests that there is significant overland flow within the site area.

- Impact of 100 year flood event is required to be assessed by subtracting the post-development flood levels from the existing condition using detailed TUFLOW model.
- Design the project is not anticipated to increase flooding impacts (or levels) on private property external to the site during rainfall events.
- The PMF level is critical for CSB operation during emergency conditions. At least 1 driveway is required to be operational during PMF event.

This report provides technical content to support the SSDA for CSB development. The attached plans show the proposed stormwater and flood mitigation works.

The civil engineering components of the works will be designed in accordance with the following Australian standards and guidelines:

- Australian Rainfall & Runoff: Volumes 1 & 2
- NSW Government Floodplain Development Manual (2005)
- AS3500.3 Plumbing and Drainage: Stormwater Drainage
- Managing Urban Stormwater, Soils and Construction, Volume 1, 4th edition, Landcom, March 2004
- Concrete Pipe Selection and Installation - Concrete Pipe Association 1990
- Campbelltown City Council Development Control Plan Volume 2 – Engineering Design for Development, June 2009
- Guidelines for developments adjoining land managed by the Office of Environment and Heritage (OEH 2013)