



ENVIRONMENTAL IMPACT STATEMENT

BLACKTOWN MT DRUITT HOSPITAL BLACKTOWN CAMPUS STAGE 1 EXPANSION

Volume 1

Prepared for



**By
BBC Consulting Planners**

**Job No. 11013
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- 3 Flora and Fauna Report – BMDH Blacktown Campus by Abel Ecology
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- 5 Urban Design and Architecture Report by SKM S2F
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- 1 Site Analysis Diagrams
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- 3 Landscape Drawings
- 4 Civil and Stormwater Drawings
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- 7 Photomontages
- 8 Survey

STATEMENT OF VALIDITY

Submission of Environmental Impact Statement

Prepared under Part 4 of the *Environmental Planning and Assessment Act 1979*

Environmental Impact Statement prepared by

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Qualifications	MSc (Urban and Regional Planning); MPIA
Address	BBC Consulting Planners 55 Mountain Street Broadway NSW 2007
In respect of	Blacktown Mt Druitt Hospital – Blacktown Campus Stage 1 Expansion

Applicant & Land Details

Applicant Name	Health Infrastructure, NSW Health
Applicant Address	Level 8/77 Pacific Highway North Sydney, NSW 2060
Land to be developed	18 Blacktown Road, Blacktown
Lot & DP	Lots 300, 301, 306, 308 DP15914; Lot 1 DP 128344, Lot 3 in DP71010; Lot 1 in DP730307.

Environmental Impact Statement

An EIS is attached

Statement of Validity

I certify that I have prepared the contents of the Environmental Impact Statement assessment in accordance with Schedule 2 of the *Environmental Planning and Assessment Regulation 2000* and the Director General's Requirements dated 9 May 2012. To the best of my knowledge, all available information relevant to the environmental assessment of the development is contained in the EIS and that this information is neither false nor misleading.



Signature
Date

16 August 2012

EXECUTIVE SUMMARY

Background

Blacktown Mount Druitt Hospital (BMDH) comprises health services located on two separate campuses: Blacktown campus and Mount Druitt campus. The campuses work in clinical partnership with each playing a complementary role in providing services to the community. Service delivery is guided by a Clinical Services Plan which outlines the direction for health service delivery and facility requirements at both campuses.

Blacktown LGA is the largest in NSW with an estimated resident population of 297,487 persons (March 2010). It is projected to experience rapid population growth increasing from 280,612 in 2006 to 369,983 in 2021. This is an increase of 89,371 which represents the largest numerical population growth of any LGA in NSW between 2006 and 2021. The LGA is projected to experience rapid population growth beyond 2021 increasing to 414,090 persons in 2026.

Blacktown LGA has a greater level of socio-economic disadvantage than the NSW average. Given this there is likely to be a continued high demand and reliance on the availability of public health services.

BMDH is part of the Western Sydney Local Health District (WSLHD). The principal catchment population for BMDH is Blacktown Local Government Area and residents of bordering LGAs including Parramatta, Holroyd, Hawkesbury, Penrith and Fairfield.

The BMDH Clinical Service Plan 2010 outlines the direction for health service delivery and facility requirements on the Blacktown and Mount Druitt Hospital campuses to 2021. The plan's key objectives are:

- Clear delineation of the role of each facility and the overall role of BMDH at both a district and area level;
- Agreed range and levels of service to be provided by BMDH including models of care that are sustainable based on three key frames of reference - patient safety and service quality, value for money, and workforce availability;
- Estimated bed capacity requirements for projected activity in 2021;
- Identified clinical service priorities for development.

The Site

The Blacktown campus comprises Lots 300, 301, 306, 308 DP15914, Lot 1 DP 128344, Lot 3 in DP71010 and Lot 1 in DP730307 and comprises the site of the existing hospital. It is about 1.2 kilometres from Blacktown Station and is close the Blacktown city centre which is classified as a major centre in the Metropolitan Plan for Sydney 2036. The site has an area of 12.42 hectares with frontages to Blacktown Road and Marcel Crescent. Access to the site is from Marcel Crescent with service vehicle access from Blacktown Road.

Development Overview

The development to which this application relates comprises Stage 1 of the staged expansion at the Blacktown campus. Future stages (including Stage 2) of the expansion do not form part of this application.

The Stage 1 expansion at the Blacktown campus comprises:

- a new clinical services building (CSB) of approximately 32,000m² constructed over 8 levels including 2 basement levels, five clinical services levels and a rooftop plant level and containing:
 - Approximately 185 inpatient beds (coronary care, cardiology, respiratory medicine, acute aged care, cancer, surgical day only, renal dialysis);
 - Comprehensive Cancer Care Centre (2 linear accelerators (with 3 bunkers + expansion), radiation therapy, medical oncology, outpatient clinics and clinical trials);
 - Additional outpatient clinics;
 - Expansion of pharmacy and pathology;
- Alterations to the existing main hospital buildings to complement the new buildings and integrate services. These include:
 - An expansion in emergency department capacity (urgent care centres etc) and colocated PECC;
 - 8 additional intensive care beds;
- An internal hospital street to join the new and existing buildings;
- Site landscaping providing an integrated landscape plan for the whole site;
- The provision of a new permanent access to the site from Blacktown Road;
- Additional parking and entry forecourt's to the new building;
- Associated building services.

Other developments at the Blacktown campus which are not part of this application include:

- A new multi storey car park for approximately 600 cars to the south of the new building;
- A stand-alone 20 bed Sub-Acute Mental Health inpatient unit at the south end of the site;
- Additional at grade car parking at various locations on the campus;
- New internal roads comprising a new east west road located between the multi storey car park and the new building and connecting the new access from Blacktown Road to the existing circulation road from Marcel Crescent.

Summary of Environmental Assessment

Statutory Provisions

The Blacktown campus is appropriately zoned to permit hospital development with the zoning reflecting the institutional nature of the uses at the site. The development is permissible with consent and is not contrary to provisions of the relevant environmental planning instrument.

Height Bulk and Scale

The development represents a major investment in public health in Sydney West and consequently results in significant additions to the built form at Blacktown campus. New buildings have been located to enable integration with existing hospital services on the site having regard to the nature of surrounding development.

The new CSB has been designed to ensure solar access is largely maintained to adjoining residential buildings and to provide an appropriate setback from side and rear boundaries.

The new building has an appropriate bulk and scale in the context of the zoning and intended purpose of the land and in the context of the relationship of the site to the centre of Blacktown. Amenity impacts on adjoining residential areas are readily managed by building setback, design and façade treatment.

It is considered that the height, bulk and scale of the building is appropriate on the site and in this location and signify the important investment in public hospitals and health in Sydney's West.

Traffic and Transport

With staffing levels at the Blacktown campus expected to increase by nearly 50% there is the potential for improved public transport use and reduced car dependency for the journey to work.

The Blacktown campus is well serviced by bus with 6 routes travelling past the site on Blacktown Road and a dedicated loop service between the campus and Blacktown Railway Station. More than half of the staff working at the hospital and in the immediate area live within the Blacktown LGA. This indicates that there is good opportunity to encourage non-car mode or travel focusing on bicycle and bus in particular through a Workplace Travel Plan.

Existing bus and train services are well placed to cater for increased demand. Car parking provision on the campus has been tailored to meet anticipated future demand as the hospital expands in two stages taking into account reduced car dependence. There is scope in Stage 2 to adjust on-site car parking provision to suit any reductions in demand that may occur from improved public transport use.

A new site access point is proposed at the eastern side of the campus connecting directly to Blacktown Road at a new intersection opposite Baronta Street. The existing access via Panorama Parade will be maintained as the emergency access route and one of two staff

and public access points. The existing service vehicle access on Blacktown Road will be maintained. The adjacent Blacktown Road / Wall Park Avenue intersection is currently at capacity and the proposed development would nominally increase the saturation level. The remainder of the main road system has been modelled with the new access arrangements and continued acceptable levels of operation are expected.

Careful consideration has been given to construction staging to ensure an adequate supply of parking during construction for staff, visitors and construction workers.

Suitability of the Site

The site is located in an established urban area will all urban services available or capable of augmentation to meet the needs of the development. Investigations into contamination, geology, slope, flora and fauna, cultural heritage, access and services show that the site is suitable for the proposed development and capable of accommodating development of the intensity proposed.

Measures will be put in place to manage impacts during construction and operation to protect the amenity of adjoining residents and patients, staff and visitors to the hospitals.

Waste and Hazards

Measures will be put in place to effectively and safely manage hospital wastes in accordance with relevant NSW Health and accepted industry standards. All dangerous goods will be stored in appropriately designed areas in accordance with license requirements.

Conclusion

A range of mitigation measures are proposed to ensure that the development will be constructed and will operate in a manner that has no significant adverse impacts on the surrounding environment.

Having regard to the provisions of the Environmental Planning and Assessment Act 1979 and this environmental impact statement, it is concluded that the development is significantly in the public interest because of the important improvements in health and hospital services resulting from the new hospital facilities to be provided.

The Minister is urged to approve the application.

1. INTRODUCTION

1.1 Development Overview

This Environmental Impact Statement (EIS) has been prepared on behalf of the Health Infrastructure (the applicant), a division of NSW Health, to accompany a development application submitted under Section 78A of the *Environmental Planning and Assessment Act 1979* (the Act) for consent to development at the Blacktown campus comprising:

- a new clinical services building (CSB) of approximately 32,000m² constructed over 8 levels including 2 basement levels, five clinical services levels and a rooftop plant level and containing:
 - Approximately 185 inpatient beds (coronary care, cardiology, respiratory medicine, acute aged care, cancer, surgical day only, renal dialysis);
 - Comprehensive Cancer Care Centre (2 linear accelerators (with 3 bunkers + expansion), radiation therapy, medical oncology, outpatient clinics and clinical trials);
 - Additional outpatient clinics; and
 - Expansion of pharmacy and pathology;
- Alterations to the existing main hospital buildings to complement the new buildings and integrate services. These include:
 - An expansion in emergency department capacity (urgent care centres etc) and colocated PECC; and
 - 8 additional intensive care beds;
- An internal hospital street to join the new and existing buildings;
- Site landscaping providing an integrated landscape plan for the whole site;
- The provision of a new permanent access to the site from Blacktown Road;
- Additional parking and entry forecourt's to the new building; and
- Associated building services.

These capital works seek to accommodate the following service priorities:

- Cancer Care - Establishment of a comprehensive cancer care centre including:
 - radiation therapy;
 - day chemotherapy;
 - ambulatory care clinics;
- Expansion of the Emergency Department including:
 - Co-located Short Stay Unit (Urgent Care);
 - Psychiatric Emergency Care (PECC);
 - Medical Assessment Unit beds;
 - Specialist spaces for forensic medicine and mental health secure assessment;

- Expand capacity of Critical Care, both Intensive Care and High Dependency beds;
- Inpatient beds – Medical, sub-specialities including but not limited to:
 - Cardiology – comprehensive clinical centre model:
 - CCU beds;
 - Inpatient beds – Step down and short stay;
 - Procedural and echocardiography;
 - Cath Labs to remain in Diagnostic Imaging with close adjacency to Emergency Department;
 - Medical Assessment Unit:
 - Beds co-located with ED;
 - Beds short stay separate inpatient unit;
 - Aged Care and Rehabilitation:
 - Co-located aged care unit and acute rehabilitation unit;
 - Stroke unit;
 - Secure area for patients with challenging behaviours in Aged Care unit;
 - Respiratory Medicine -Comprehensive clinical centre model:
 - Inpatient beds;
 - Non-invasive ventilation unit (Sleep clinic);
 - Respiratory function lab;
 - Renal:
 - Inpatient haemodialysis unit.
- Ambulatory Care Unit – for the consultation, assessment, treatment, referral and follow up of medical and surgical patients;
- Additional inpatient bed capacity including medical (overnight and day stay), surgical (day only and 28-hour extended day only).

Other developments at the Blacktown campus which are not part of this application include:

- A new multi storey car park for approximately 600 cars to the south of the new building;
- A stand-alone 20 bed Sub-Acute Mental Health inpatient unit at the south end of the site;
- Additional at grade car parking at various locations on the campus;
- New internal roads comprising a new east west road located between the multi storey car park and the new building and connecting the new access from Blacktown Road to the existing circulation road from Marcel Crescent.

Future stages of expansion (e.g. Stage 2) also do not form part of this application.

The Blacktown campus will provide high-level inpatient and outpatient services generally having a capacity to manage complex patients who required specialist acute care.

This EIS has been prepared in accordance with Section 78A(8A) of the Act and the *Environmental Planning and Assessment Regulation 2000* (the Regulations).

1.2 Background and Master Planning

In March 2012 the NSW Premier and Minister for Western Sydney and the Minister for Health announced the NSW Government would commit \$300 million to the expansion of Blacktown and Mt Druitt Hospitals.

Blacktown Mount Druitt Hospital (BMDH) comprises health services located on the separate hospital campuses at Blacktown and Mt Druitt. The campuses work in clinical partnership with each playing a complementary role in providing services to the community. Service delivery is guided by a Clinical Services Plan which outlines the direction for health service delivery and facility requirements at both campuses.

BMDH is part of the Western Sydney Local Health District (WSLHD). The principal catchment population for BMDH is Blacktown Local Government Area and residents of bordering LGAs including Parramatta, Holroyd, Hawkesbury, Penrith and Fairfield.



Figure 1: Western Sydney Local Health District
(Note: Red circle indicates hospital)

BMDH has been managed as one hospital on two sites for some years. The realignment of services across both campuses in 2004 achieved the following improvements in service delivery:

- Reduction in unnecessary duplication of services and enhancement of clinical networking arrangements;
- Clear role differentiation including consolidation of acute adult medical services on the Blacktown campus, a reduction in patient complexity on the Mount Druitt campus to better match staff availability and enhancement of selected services at Mount Druitt to create 'centres of excellence' for planned surgery, rehabilitation and paediatrics.

The overall site master plan for the Blacktown campus is shown on **Figure 2** and in **Appendix 1 of Volume 2**.

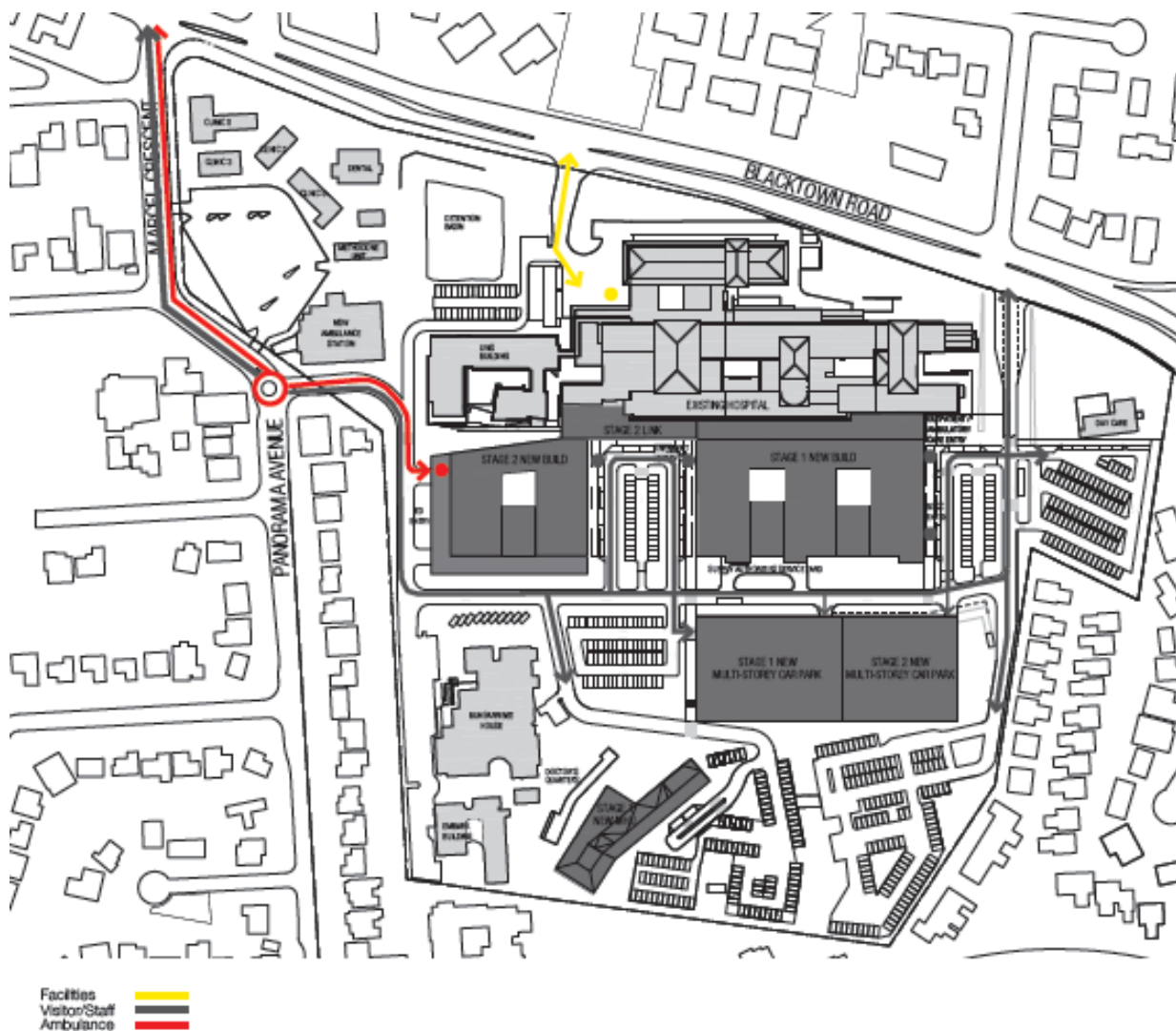


Figure 2 BMDH - Blacktown Campus Master Plan

1.3 Approvals Strategy

Stage 1 expansion at Blacktown campus is complex and requires careful planning and sequencing of works to enable the development to proceed whilst the existing hospital continues to function and maintain services and safety for patients, visitors and staff.

A number of approval mechanisms are being used the campus to facilitate ongoing hospital operations and the sequencing of works at Blacktown campus including:

- A development application to the Minister for Planning for consent for State Significant Development (this application);
- A development application to Blacktown City Council for consent for the new multi-storey car park required for the new hospital facilities and temporary construction access from Blacktown Road;
- Approvals under State Environmental Planning Policy (Infrastructure) 2007 for:
 - A sub-acute mental health facility at Blacktown campus;
 - Civil works including services diversions, minor building relocations, demolition, parking areas, internal roadworks and access works, tree removal and preparatory site works to enable the existing hospital to continue functioning during the construction program; and
 - Works to Mt Druitt Hospital.

1.4 Environmental Impact Statement

This Environmental Impact Statement (EIS) has been prepared on behalf of the Health Infrastructure (the applicant), Section 78A(8A) of the *Environmental Planning and Assessment Act 1979* (the Act).

The Director General of the Department of Planning and Infrastructure (DPI) has issued environmental assessment requirements for the EIS (EARs), a copy of which is attached at **Appendix 1**. This EIS addresses these requirements and the matters contained in Schedule 2 of the Regulations. The following table presents the Director-General's Environmental Assessment Requirements and indicates where each requirement is addressed in this report.

Environmental Requirements	Where addressed
KEY ISSUES	
1 Statutory and Strategic Context	
Strategic Context Address the statutory provisions applying to the development contained in all relevant environmental planning instruments, including: <ul style="list-style-type: none"> • State Environmental Planning Policy (State & Regional Development) 2011; • State Environmental Planning Policy No.55 – Remediation of Land; 	S5.1

Environmental Requirements	Where addressed
<ul style="list-style-type: none"> State Environmental Planning Policy No.33 – Hazardous and Offensive Development; State Environmental Planning Policy (Infrastructure) 2007; and Blacktown Local Environmental Plan 1988. <p>Address the relevant planning provisions, goals and strategic planning objectives in the following:</p> <ul style="list-style-type: none"> NSW 2021; Metropolitan Plan for Sydney 2036; North West Subregion Draft Subregional Strategy; Blacktown Development Control Plan 2006; Blacktown Planning Strategy; NSW Bike Plan; Planning Guidelines for Walking and Cycling; Integrating Land Use and Transport Policy Package; and Healthy Urban Development Checklist, NSW Health. 	
2 Built Form and Urban Design	
<ul style="list-style-type: none"> Address the height, bulk and scale of the proposed development within the context of the locality, including the existing main hospital building, proposed multi-storey car park and adjoining residential development. Design quality, with specific consideration of the overall site layout, connection with the existing adjacent hospital buildings, axis, vistas and connectivity, open spaces and edges, primary elements, gateways, façade, rooftop, mechanical plant, massing, setbacks, building articulation, materials, choice of colours, including an assessment against the Crime Prevention Through Environmental Design Principles; Impact of the proposed hospital redevelopment on the existing at-grade car park. 	S5.2
3 Amenity	
<ul style="list-style-type: none"> •Solar access, acoustic impacts, visual privacy, servicing requirements (including but not limited to, waste management, loading zones, mechanical plant), view loss, overshadowing and wind impacts. A high level of environmental amenity for land uses immediately adjacent and the surrounding residential areas must be demonstrated. 	S5.3, S5.5, S4.18,
4 Ecologically Sustainable Development (ESD)	
<ul style="list-style-type: none"> Detail how ESD principles (as defined in clause 7(4) of Schedule 2 of the Environmental Planning and Assessment Regulation 2000 will be incorporated in the design, construction and ongoing operation phases of the development. Include a description of the measures that would be implemented to minimise consumption of resources, water and energy, including an Integrated Water Management Plan which details any proposed alternative water supplies, proposed end uses of potable and non- 	S4.11, S4.12, S5.4

Environmental Requirements	Where addressed
potable water, and water sensitive urban design.	
5 Noise	
<ul style="list-style-type: none"> Identify and provide a quantitative assessment of the main noise generating sources and activities at all stages of construction, and any noise sources during operation. Outline measures to minimise and mitigate the potential noise impacts on surrounding occupiers of land. Relevant Policies and Guidelines: NSW Industrial Noise Policy (EPA) Interim Construction Noise Guideline (DECC) 	S5.5
6 Transport and Accessibility (Operation)	
<ul style="list-style-type: none"> Detail the proposed final access arrangements between Blacktown Road and hospital, including augmentation requirements and intersection treatments for left and right vehicle movements to and from the site. Detail access arrangements and service vehicle movements at all stages of operation (including vehicle type and likely arrival and departure times) and measures to mitigate any associated traffic impacts. Prepare a Transport Accessibility Study that addresses the following: <ul style="list-style-type: none"> the proposed access and parking provisions; demonstrates minimised car parking demand having regard to the availability of public transport and the proposed multistorey car park, which is the subject of a development application lodged with Blacktown City Council (Note: reduced car parking provision maybe supported in areas well serviced by public transport.); demonstrates how users of the development will be able to make travel choices that support the achievement of State Plan targets; details existing pedestrian and cycle movements within the vicinity of the site and determine the adequacy of the proposal to meet the likely future demand for increased public transport and pedestrian and cycle access; and describes measures to be implemented to promote sustainable means of transport including public transport usage and pedestrian and bicycle linkages in addition to addressing the potential for implementing a location specific sustainable travel plan. Estimate the total daily and peak hour trips generated by the proposed development, including accurate details of the current and future daily vehicle movements and assess the impacts of the traffic generated on the local road network, including intersection capacity and any potential need for upgrading or road works (if required), having regard to local planning controls. Key intersections to be examined/modelled include: <ul style="list-style-type: none"> Blacktown Road and Wall Park Avenue, including signalisation 	S5.6

Environmental Requirements	Where addressed
and proposed entry and exit point to Blacktown Hospital and impact on Baronta Street; <ul style="list-style-type: none"> - Blacktown Road/Main Street and Marcel Crescent; and - Main Street and Sunnyholt Road/Newton Road. 	
7 Transport Accessibility (Construction)	
<ul style="list-style-type: none"> • Detail access arrangements at all stages of construction and measures to mitigate any associated pedestrian, cycleway or traffic impacts. • Details regarding car parking arrangements during construction, including the displacement of visitor and patient car parking. Alternative off-site arrangements should be made for staff and construction workers. 	S4.21, S5.6
8 Flora and Fauna	
<ul style="list-style-type: none"> • Address impacts on flora and fauna, including threatened species, populations and endangered ecological communities and their habitats and steps taken to mitigate any identified impacts to protect the environment. 	S5.7
9 Heritage	
<ul style="list-style-type: none"> • A statement of significance and an assessment of the impact on the heritage significance of any heritage items and/or conservation areas should be undertaken in accordance with the guidelines in the NSW Heritage Manual, if relevant. 	S5.8
10 Aboriginal Heritage	
<ul style="list-style-type: none"> • The EIS shall address Aboriginal Heritage in accordance with the Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation 2005 and Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010, if relevant. 	S5.8
11 Sediment, Erosion and Dust Controls (Construction and Excavation)	
<ul style="list-style-type: none"> • Detail measures and procedures to minimise and manage the generation and off-site transmission of sediment, dust and fine particles. <ul style="list-style-type: none"> - 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) 	S4.11, S5.9
12 Utilities	
<ul style="list-style-type: none"> • In consultation with relevant agencies the EIS shall address the existing capacity and any augmentation requirements of the development for the 	S4.9, S5.11 S4.10,

Environmental Requirements	Where addressed
<p>provision of utilities including staging of infrastructure through the preparation of an Infrastructure Management Plan.</p> <ul style="list-style-type: none"> Prepare an Integrated Water Management Plan detailing any proposed alternative water supply, proposed end users of potable and non-potable water, demonstration of water sensitive urban design and water conservation measures. 	
13 Staging	
<ul style="list-style-type: none"> Details regarding the staging of the proposed development (if proposed). 	S4.20
14 Contributions	
<ul style="list-style-type: none"> Address Council's Section 94 Contribution Plan and/or details of any Voluntary Planning Agreement 	S5.12
15 Flooding	
<ul style="list-style-type: none"> An assessment of any flood risk on site in consideration of any relevant provisions of the NSW Floodplain Development Manual (2005) including the potential effects of climate change, sea level rise and an increase in rainfall intensity. 	S5.10
16 Drainage	
<p>Address the development's stormwater and drainage infrastructure requirements.</p> <p>Relevant Policies and Guidelines:</p> <ul style="list-style-type: none"> Blacktown City Council's Engineering Guide for Development (Current Version). Blacktown City Council's Works Specification – Civil (Current Version). Blacktown City Council's DCP Part R – Water Sensitive Urban Design & Integrated Water Cycle Management. Upper Parramatta River Catchment Trust On-site Stormwater Detention Handbook, Third Edition, December 1999. 	S5.10
17 Servicing and Waste	
<ul style="list-style-type: none"> 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. 	S4.7, S4.18, S5.6
18 Hazards	
<ul style="list-style-type: none"> Hazards A description of the proposed storage, use and management of 	S4.18, S5.14

Environmental Requirements	Where addressed
any hazardous materials and measures to be implemented to manage hazards and risks associated with the storage.	
PLANS AND DOCUMENTS	
<p>The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the Environmental Planning and Assessment Regulation 2000. Provide these as part of the EIS rather than as separate documents.</p> <p>In addition, the EIS must include the following:</p> <ul style="list-style-type: none"> • Architectural drawings; • Site Survey Plan, showing existing levels, location and height of existing and adjacent structures/buildings and boundaries; • Site Analysis Plan; • Stormwater Concept Plan; • Shadow Diagrams; • View Analysis/Photomontages; • Landscape Plan; • Preliminary Construction Management Plan, inclusive of a Preliminary Construction Traffic Management Plan; • Geotechnical and Structural Report; • Arborist Report; and • Sample board and schedule of materials and finishes. 	<p>App 2 Volume 2 App 7 Volume 2</p> <p>App 1 Volume 2 App 8 Vol 1 App 6 Vol 2 App 7 Vol 2 App 3 Vol 2 App 9, 10 Vol 1</p> <p>App 2 Vol 1 N/A App 2 Vol 2</p>
CONSULTATION	
<p>During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners.</p> <p>In particular you must consult with:</p> <ul style="list-style-type: none"> • Blacktown City Council; • Local Aboriginal Land Council and stakeholders; and • Local Heritage Group/s, if relevant. <p>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</p>	S1.4

GENERAL	
Schedule 2 of EPA Regulation 2000 - Clause 6 Form of Environmental Impact Statement	
<p>An environmental impact statement must contain the following information:</p> <p>(a) the name, address and professional qualifications of the person by whom the statement is prepared,</p> <p>(b) the name and address of the responsible person,</p> <p>(c) the address of the land:</p> <p style="padding-left: 40px;">(i) in respect of which the development application is to be made, or</p> <p style="padding-left: 40px;">(ii) on which the activity or infrastructure to which the statement relates is to be carried out,</p> <p>(d) a description of the development, activity or infrastructure to which the statement relates,</p> <p>(e) an assessment by the person by whom the statement is prepared of the environmental impact of the development, activity or infrastructure to which the statement relates, dealing with the matters referred to in this Schedule,</p> <p>(f) a declaration by the person by whom the statement is prepared to the effect that:</p> <p style="padding-left: 40px;">(i) the statement has been prepared in accordance with this Schedule, and</p> <p style="padding-left: 40px;">(ii) the statement contains all available information that is relevant to the environmental assessment of the development, activity or infrastructure to which the statement relates, and</p> <p>(iii) that the information contained in the statement is neither false nor misleading.</p>	<p>Statement of Validity S3.2</p> <p>S4</p> <p>S5</p> <p>Statement of Validity</p>
Schedule 2 of EPA Regulation 2000 Clause 7 content of environmental impact statement	
<p>(1) An environmental impact statement must also include each of the following:</p> <p>(a) a summary of the environmental impact statement,</p> <p>(b) a statement of the objectives of the development, activity or infrastructure,</p> <p>(c) an analysis of any feasible alternatives to the carrying out of the development, activity or infrastructure, having regard to its objectives, including the consequences of not carrying out the development, activity or infrastructure,</p> <p>(d) an analysis of the development, activity or infrastructure, including:</p> <p style="padding-left: 40px;">(i) a full description of the development, activity or infrastructure, and</p> <p style="padding-left: 40px;">(ii) a general description of the environment likely to be affected by the development, activity or infrastructure, together with a detailed description of those aspects of the environment that are likely to be significantly affected, and</p>	<p>Exec Sum</p> <p>S4</p> <p>S2.4</p> <p>S3, S4 and S5</p>

<p>(iii) the likely impact on the environment of the development, activity or infrastructure, and</p> <p>(iv) a full description of the measures proposed to mitigate any adverse effects of the development, activity or infrastructure on the environment, (this should include detailed contingency plans for managing any significant risks to the environment)</p> <p>(v) a list of any approvals that must be obtained under any other Act or law before the development, activity or infrastructure may lawfully be carried out,</p>	S6
<p>(e) a compilation (in a single section of the environmental impact statement) of the measures referred to in item (d) (iv),</p>	S6
<p>(f) the reasons justifying the carrying out of the development, activity or infrastructure in the manner proposed, having regard to biophysical, economic and social considerations, including the principles of ecologically sustainable development set out in subclause (4).</p>	S2

1.5 Consultation

The design development process has involved a detailed program of consultation including:

- Clinical and support service user group consultation that commenced in 2011;
- Briefings to Blacktown Council;
- Briefings and consultation with relevant government service providers and approval agencies including RMS, Sydney Water and others;
- Briefing to community representatives at Blacktown;
- Regular media briefing releases through local newspaper, radio and television stations;
- Ad hoc meetings with community benevolent and action groups;
- Regular meetings with staff consultative groups to discuss work change and related matters.

There has been consultation with the Local Aboriginal Land Council and other Aboriginal groups with an interest in the site. All Aboriginal consultation has been undertaken in accordance with *Aboriginal Cultural Heritage Consultation Requirements (ACHCRs) for Proponents* (DECCW 2010).

2. PROJECT JUSTIFICATION AND CONSIDERATION OF ALTERNATIVES

2.1 The Case for Change

The development is informed by the following key drivers of service need at BMDH:

- Blacktown LGA has a greater level of socio-economic disadvantage than the NSW average and approximately half of the LGAs in NSW pointing to a continued high demand and reliance on the availability of public health services.
- Blacktown LGA is the largest in NSW with an estimated resident population of 297,487 persons (March 2010).
- Blacktown LGA is projected to experience rapid population growth increasing from 280,612 in 2006 to 369,983 in 2021. This is an increase of 89,371 which represents the largest numerical population growth of any LGA in NSW between 2006 and 2021. The LGA is projected to experience rapid population growth beyond 2021 increasing to 414,090 persons in 2026.
- Blacktown LGA is projected to experience rapid population ageing (persons aged 65 years and above) increasing from 22,454 in 2006 to 41,203 in 2021 (an increase of 18,749 or 83%).
- BMDH is experiencing significant capacity pressures and cannot meet the projected future demands for health care. In addition to this, the two major referral hospitals for WSLHD (Nepean and Westmead) are also experiencing capacity pressure which is in turn placing greater pressure on Blacktown campus.
- The health status of Blacktown LGA compares unfavourably with the NSW average in several key indicators of health.
- The inequality in key health indicators across metropolitan Sydney. Of the Sydney Statistical Division (fourteen statistical subdivisions) Blacktown recorded the highest standardised death rate (35% above the lowest standardised death rate) and the lowest median age at death of 76 years (8 years lower than the highest median age at death).
- Morbidity for Blacktown LGA compares unfavourably with the NSW average for key areas including ambulatory case sensitive conditions, infectious and parasitic disease, endocrine nutritional and metabolic disease, cardiovascular disease and respiratory disease.
- Mortality for Blacktown LGA compares unfavourably with the NSW average for all causes, coronary heart disease, all cardiovascular disease, and premature mortality (deaths under the age of 75 years).
- Blacktown LGA recorded 413 premature deaths per year in 2006 and 2007. This represents the highest number of any LGA in NSW and is 116 deaths or 39% higher than the next most significant LGA in NSW. The Blacktown LGA is also one of only 19 LGAs across NSW who recorded a premature death rate that was most significantly above the NSW average.

- Leading causes of potentially avoidable deaths in the WSLHD relate to cardiovascular disease, cancers, injury and poisoning and respiratory disease.
- Blacktown LGA recorded 166 deaths per year between 2006 and 2007 (the highest in NSW) from causes which are considered to be amenable to health care intervention for persons aged under 75 years. The Blacktown LGA is also one of only four LGAs across NSW who recorded the highest standardised mortality ratio in NSW for causes amenable to health care intervention.
- The malignant cancer death rate for both males and females in the Blacktown LGA is higher than the NSW average; and for males is higher for all cancers.
- There were 5,171 new cancer cases in the Blacktown LGA between 2004 and 2008. This is the highest number of cases of any LGA in the WSLHD and amongst the highest of any LGA in NSW.
- The Blacktown LGA has the largest Aboriginal and Torres Strait Islander population of any LGA in NSW (7,600 persons in 2006). The life expectancy for Aboriginal and Torres Strait Islander persons is much lower than for non-Indigenous persons and in addition to this Aboriginal and Torres Strait Islander persons have an overall higher burden of disease. The BMDH Expansion will provide local access to services and new models of care which will better meet the needs of the Aboriginal and Torres Strait Islander and broader community.

The endorsed Clinical Services Plan projects the requirement for a significant increase in BMDH capacity to 2021 to meet the future health care needs of the population.

2.2 Clinical Services and Health Outcomes

The BMDH expansion project will deliver the three clinical services priorities in the BMDH Clinical Services Plan including:

- Additional inpatient bed capacity including medical (overnight and day stay), surgical (day only and 28-hour extended day only) and intensive care requirements.
- Additional ambulatory care capacity.
- Establishment of a comprehensive cancer care centre.

The BMDH expansion project will enable the development of new and contemporary models of care including:

- Clear delineation of the role of each campus by enhancing and or consolidating acute services at the Blacktown campus and sub-acute services at the Mt Druitt campus.
- Delivering services and models of care that are sustainable based on three key frames of reference: patient safety and service quality; value for money; and workforce availability. This is evidenced by the establishment of new services, new models of care including comprehensive service centres, and the consolidation of cardiology services at the Blacktown campus.
- A comprehensive cancer centre which collocates radiation therapy, medical oncology, outpatient clinics, and clinical trials.

- An ambulatory medical day and rapid assessment service which provides a “third door” approach (for example by-pass emergency department, or direct admission) to better manage the health care needs of people with chronic and complex conditions.
- A cardiac care centre collocating cardiology inpatient beds, coronary care, clinical measurements unit, and cardiac gymnasium.
- A respiratory comprehensive clinical centre collocating respiratory inpatient beds, non-invasive ventilation inpatient beds, respiratory clinical measurements (respiratory function laboratory), and outpatient clinics.
- An integrated acute aged care, rehabilitation and stroke care centre which collocates inpatient beds and therapy spaces.
- The establishment of new models of care for emergency services including an urgent care centre at each campus, emergency short stay unit and emergency medical assessment unit at Blacktown campus, and a colocated psychiatric emergency care centre at Blacktown campus.
- The configuration of ICU / HDU into two modules of 12-beds which is consistent with contemporary practice.

Health service outcomes of the BMDH expansion project include:

- Building capacity to respond to the rapid growth in service demand and the health care needs of the local community.
- Responding to the changing patient mix by delivering new and contemporary models of care. This includes the establishment of a comprehensive cancer centre, expansion of ambulatory care services including a new ambulatory medical day stay and rapid assessment model, and the establishment of comprehensive care centres including cardiac care, acute aged care, rehabilitation and stroke, and respiratory care.
- Improving patient care for the residents of Blacktown LGA.
- Improving access to and equity in the delivery of health care for local residents (in particular local access to services such as cancer services).
- Improving patient safety and service quality.
- Improving efficiency and effectiveness of service delivery and resource management.
- Improving service and facility functionality.
- Enhancing the capability of the WSLHD and BMDH to recruit and retain a skilled and sustainable workforce across disciplines and specialities. This capability will be further enhanced by linkages between the BMDH and The University of Western Sydney Clinical School which will strengthen the focus on education, teaching, and research.
- Enhancing medical leadership through links with The University of Western Sydney Clinical School and University of Sydney.

Stage 1 expansion at Blacktown campus is a key component of the staged development project.

2.3 Consistency with Strategic Health Policy

The proposed development at the Blacktown campus is aligned with the strategic directions of NSW Department of Health and WSLHD.

Strategic Planning Framework for the Health System

The NSW Government and NSW Health have developed an integrated planning framework for the NSW public health system to guide the development of services and investment in the NSW public health system. *Fit for the Future, Future Directions for Health in NSW Towards 2025*, identifies the long term (20 years) planning framework for the NSW public health system. The framework identifies seven overarching strategic directions:

1. Make prevention everybody's business
2. Create better experiences for people using the health system
3. Strengthen primary health and continuing care in the community
4. Break down barriers to regional collaboration
5. Make smart choices about the costs and benefits of health services
6. Redesign the health workforce
7. Stay alert for new risks and opportunities.

The proposed development is consistent with the strategic directions and in particular resonates with Strategic Direction 2 by enhancing local access to existing and new services and implementing new models of care which better meet the specific health care requirements of the population.

State Health Plan 2010

The *State Health Plan – A New Direction for NSW*, is aligned to the seven overarching strategic directions of *Fit for the Future, Future Directions for Health in NSW Towards 2025*. The plan identifies the challenges facing the NSW public health system, health priorities in NSW, and guides the development of the NSW public health system towards 2010 and beyond. The Plan has four goals:

- To keep people healthy
- To provide the health care that people need
- To deliver high quality services
- To manage health services well.

The proposed development is consistent with all four goals of the State Health Plan in particular providing the health care that people need and the delivery of high quality services. The projected increase in population in the geographic vicinity of Blacktown and Mount Druitt has implications for the quantum of health services to be delivered and the need to keep this population healthy.

Specialty and Statewide Services Plans

NSW Health has developed *Selected Specialty and Statewide Services Plans*. Number Seven of these plans is the *Radiation Therapy Services in NSW Strategic Plan to 2016* which identifies the following:

- The Western Sydney region is a remaining area of need and priority for radiation therapy service provision.
- If all residents of the area were to be treated in the area, a capacity for three linear accelerators to service this growing area will be required by 2016.
- WSLHD has identified the establishment of an integrated cancer centre at Blacktown campus as a future service development proposal, and this would be consistent with the enhancement of services in this geographic area.

Health NSW recognises the integrated cancer centre at Blacktown campus as one priority of the Blacktown Mount Druitt Hospital Clinical Services Plan and is presented as one of the foundations of the development.

CAREFirst

CAREFirst is the underpinning service philosophy of the WSLHD. Through CAREFirst, WSLHD aims to provide the highest quality of services and places the experience of health service consumers as the central tenet of service provision. The organisational goals fundamental to WSLHD are outlined in CAREFirst and include:

- Provide accessible and appropriate clinical services.
- Design safe, effective and innovative models of care.
- Invest in services that are value for money.
- Advocate a culturally appropriate model of service and community participation.
- Promote a culture of knowledge through teaching and research.
- Develop a highly skilled workforce.

The proposed development is critical to meeting these organisation goals by:

- Providing local access to services.
- Implementing new and innovative models of care to meet the future health care needs of the catchment population.
- Strengthening linkages with The University of Western Sydney Clinical School and new simulation laboratory which will facilitate a strong nexus between education and teaching, research, and clinical service delivery.
- Building up services to sustainable levels.

Healthcare Services Plan 2005-2010

The WSLHD Healthcare Services Plan 2005-2010 outlines how services will be enhanced, developed, and delivered in the Area to 2010 to support CAREFirst. The plan is aligned to the seven overarching strategic directions of the *State Health Plan – A New Direction for NSW* and provides the basis for health service developments and enhancements within the WSLHD.

Service priorities within the Plan include aged care, mental health, integrated primary health care services, critical care, cardiology, as well as cancer, emergency care, imaging, surgery, women and children's, and other medical services including renal and respiratory. The plan identifies specific facility development strategies for Blacktown and Mount Druitt Hospitals.

Blacktown Mount Druitt Hospital Clinical Service Plan

The WSLHD completed the BMDH Clinical Service Plan (CPS) in September 2010. This Plan outlines the direction for health service delivery and facility requirements on the Blacktown and Mount Druitt Hospital campuses to 2021. The plan's key objectives are:

- Clear delineation of the role of each facility and the overall role of BMDH at both a district and Area level.
- Agreed range and levels of service to be provided by BMDH including models of care that are sustainable based on three key frames of reference -patient safety and service quality, value for money, and workforce availability.
- Estimated bed capacity requirements for projected activity in 2021.
- Identified clinical service priorities for development.

The future directions for service delivery across BMDH campuses encompass a broad range of service and facility development proposals including establishment of new services and / or new service models and enhancement of existing services. To inform facility planning, the CSP identifies the following three service priorities against the above principles and criteria (with final decisions about priorities to occur through the facility planning process):

- Additional inpatient bed capacity including medical (overnight and day stay), surgical (day only and 28-hour extended day only) and intensive care requirements.
- Additional ambulatory care capacity.
- Establishment of a comprehensive cancer care centre.

These elements are incorporated into the development.

2.4 Consideration of Alternatives

A range of options were considered for service delivery and the layout of the site. The applicant has undertaken a comprehensive site analysis and design development process, the key elements of which were:

- A comprehensive review of the scope of health services and facilities proposed for expansion at BMDH.
- The development of a number of viable options as a basis for the selection of the most functional, efficient and cost effective approach to the expansion of health facilities on both campuses.
- A program of systematic site investigation to ensure concept planning options are viable including the preparation of a number of specialist investigations.
- An analysis of operational requirements to reduce recurrent costs of delivering health care and the preparation of schedules of accommodation and room data/layout sheets for each of the proposed facilities in accordance with NSW Health Guidelines.
 - The preparation of a Project Definition Plan (PDP) for works at the hospital.

Options for the expansion of Blacktown campus were driven by implementation of the following framework design principles:

- Provide good hospital identity and clear wayfinding;

- Acknowledge existing site levels and identify platforms;
- Appropriate location of services on the site;
- Acknowledge residential areas;
- Identify a long term strategy for circulation;
- Create opportunity, renewal and buffer zones;
- Create future proofing opportunities;
- Integrate ESD principles;
- Integrate community zones (cafes and meeting points);
- Integrate green zones.

Three broad options were developed that met these principles:



Figure 3 Consideration of Options

These options were subject to evaluation with the preferred option being Option 3 which has been subject to further refinement in the preparation of the proposed development as detailed in the master plan (**Figure 2**) and the *Site Analysis Diagrams* contained in **Appendix 1 of Volume 2**.

3. SITE AND CONTEXT

3.1 Regional Context

The Blacktown campus is located at Blacktown approximately 30 kilometres from Sydney CBD and 9 kilometres north west of Parramatta CBD, as shown on Figure 3. Blacktown is situated on the expansive Cumberland Plain in the heart of Western Sydney, and is bounded by six Local Government Areas: The Hills, Hawkesbury, Parramatta, Fairfield, Holroyd, and Penrith.

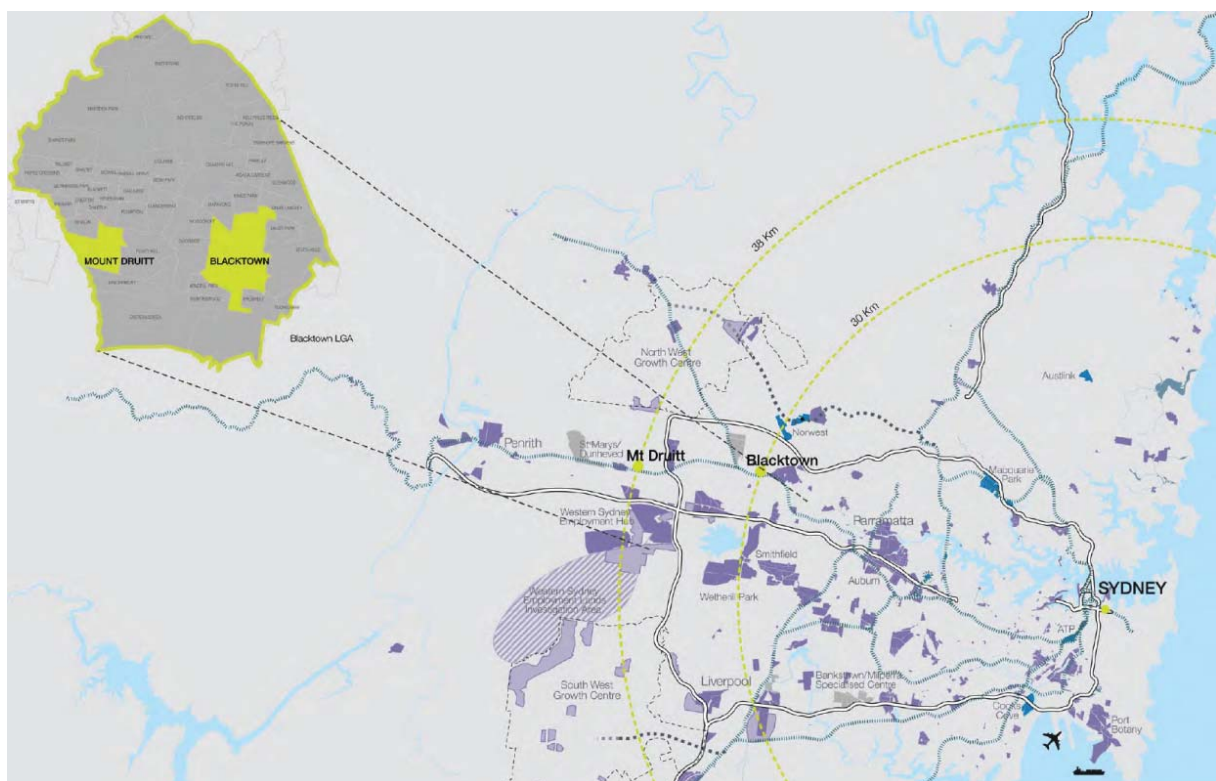


Figure 4 Regional Context

The area has good access to the regional road network including M4, M2 and M7 Motorways and the western rail line. The hospital on the eastern edge of the Blacktown CBD approximately 1.2 kilometres from Blacktown Station.

Blacktown has sustained rapid growth over the last few decades, and this growth is set to continue. It is the most populous City in NSW, the third largest in Australia behind Brisbane City and the Gold Coast, and the eighth largest growing City in Australia. Large scale urban development has contributed to Blacktown's continued population growth and to the development of new estate areas which has lead to the establishment of 47 suburbs to date. Blacktown therefore encompasses a mix of older established areas and new developing areas including the North West Growth Sector, one of two major growth sectors in metropolitan Sydney.

3.2 The Site

3.2.1 Site Details

The Blacktown campus comprises Lots 300, 301, 306, 308 DP15914, Lot 1 DP 128344, Lot 3 in DP71010 and Lot 1 in DP730307 and comprises the site of the existing hospital. A survey of the site is contained in **Volume 2**.

The site has an area of 12.42 hectares with frontages to Blacktown Road and Marcel Crescent. Access to the site is from Marcel Crescent with service vehicle access from Blacktown Road.



Figure 5 **BMDH - Blacktown Campus** (Source: Google Maps)

3.2.2 Topography

The site falls from south to north towards Blacktown Road from a high point on the site immediately to the south of approximately RL72m to Blacktown Road where the frontage varies from RL55m to a low point near Marcel Crescent of RL44m. This gives a general height variation of about 22 metres. This provides the opportunity to step buildings up the site.

3.2.3 Geotechnical Characteristics

A range of geotechnical investigations have been undertaken on the site associated with various development programs. Further geotechnical investigations were undertaken for the proposed development (**Appendix 2**). Key findings are summarised below.

The site is underlain by a variable thickness of fill overlying residual soils and shale or sandstone bedrock. In some locations relatively deep sand and gravel fill was encountered which may be associated with existing services or old in filled service trenches. In other locations clay fill was encountered which may be associated with levelling of the site during construction of the car parking area or backfilling associated with services trenches.

Excavation should be possible using conventional earthmoving equipment such as tracked loaders and hydraulic excavators. During or following periods of high rainfall, groundwater may be encountered near the soil/rock interface and at higher levels in the soil profile. Where excavations extend into the bedrock, it is expected that very low strength or fractured shale/sandstone should be able to be excavated using conventional earthmoving plant such as hydraulic excavators fitted with a rock bucket and dozers fitted with rippers. At depths where the rock is expected to be medium to high strength, ripping or the use of rock hammers and rock saws may be required.

Ground water seepages are likely due to high rainfall events, local drainage conditions etc and provision should be made for pumping from sumps. The risk of the development causing adverse impacts on adjacent sites due to changes in groundwater is assessed as low.

3.2.4 Site Contamination

A Stage 1 Preliminary Site Contamination Assessment was undertaken by Coffey Environments leading to the conclusion that there is a low to medium likelihood of contamination being present on the portions of the site where the proposed development is located from past and present activities (**Appendix 2**). The key areas of concern that may affect the proposed development zones are:

- potential uncontrolled fill material (used for levelling);
- the previous hospital footprint (potential presence of demolition wastes); and
- the potential presence of a 20,000L UST.

Additional intrusive investigations were undertaken by Coffey as recommended (**Appendix 2**). The results of the laboratory analysis indicate that concentrations of chemical contaminants within the subsurface are less than the adopted health-based assessment criteria and that no asbestos fibres were detected. Based on the results of the limited environmental assessment, there is no evidence at the borehole locations to suggest

contamination conditions exceeding human health criteria that may present significant limitations to the proposed hospital development.

For preliminary planning purposes, it appears that a majority of the fill and natural soils would likely meet the General Solid Waste criteria (for fill) and VENM classification (for natural soils), subject to further assessment including leachability testing based on the toxicity characteristics leaching procedure (TCLP).

Boreholes drilled during this investigation however did not provide any visual evidence of underground petroleum infrastructure. As such, there remains uncertainty in relation to the potential presence of USTs. An unexpected finds protocol will be implemented during excavation and earthworks at the site with additional investigations as required in the event of locating USTs.

3.2.5 Flora and Fauna

Investigations into flora and fauna characteristics of the site by Abel Ecology whose report is contained in **Appendix 3** and summarised below.

The site contains planted gardens with locally indigenous species as well as introduced native species and one remnant tree. The one remnant tree is a mature *Eucalyptus crebra*, which occurs in the north-eastern corner of the site, west of the Childcare Centre. This tree is possibly a remnant of the Critically Endangered Ecological Community, Cumberland Plain Woodland (CPW), scheduled under the Threatened Species Conservation Act 1995.

A seven-part test for this CPW was undertaken which determined that the removal of this tree is considered unlikely to have a significant effect on the CPW community on the site.

This tree would not be removed for the construction of the new CSB. However it is affected by other works which are the subject of separate approvals.

Despite the finding of 'no significant effect' from the proposed removal of the one remnant tree of the CPW community, Abel Ecology recommend replanting with local native tree species. Ten locally indigenous CPW trees are recommended, in the interests of general wildlife amenity and aesthetics in future landscaping, to be planted to offset the one remnant *Eucalyptus crebra* that will be removed. There is no impediment to this proposal in the scope of this report and the tree may be removed. There is not likely to be a significant effect to any EEC, Threatened Species or their habitats by removal of the tree.

The recommendations of this report have been taken into consideration in the preparation of the landscape plan.

3.2.6 Aboriginal and European Heritage

An Aboriginal & European Cultural Heritage Assessment for the Blacktown campus has been undertaken by RPS (**Appendix 4**). The site has been subject to major levels of impact associated with the development of the hospital and its associated buildings, car parks and clearance of vegetation to incorporate public pathways. The field survey identified no items of Aboriginal cultural heritage and no new historic items were found.

The Blacktown campus is well removed from any listed heritage items and therefore the proposed works will have no impact upon any listed heritage items.

As noted in the report in **Appendix 4**, the investigations included consultation:

This project has complied in full with the above requirements and satisfied in excess of their requirements by following the newly issued (April 2010) Aboriginal Cultural Heritage Consultation Requirements (ACHCRs) for Proponents (DECCW 2010). All Aboriginal consultation has been undertaken in accordance with these requirements.

Details of the outcomes of the consultation are included in the report contained in **Appendix 4**.

3.2.7 Existing Hospital Buildings

Figure 5 shows the location and use of key existing hospital buildings on the site. Further details are contained in the Site Analysis contained in **Appendix 1 of Volume 2**.

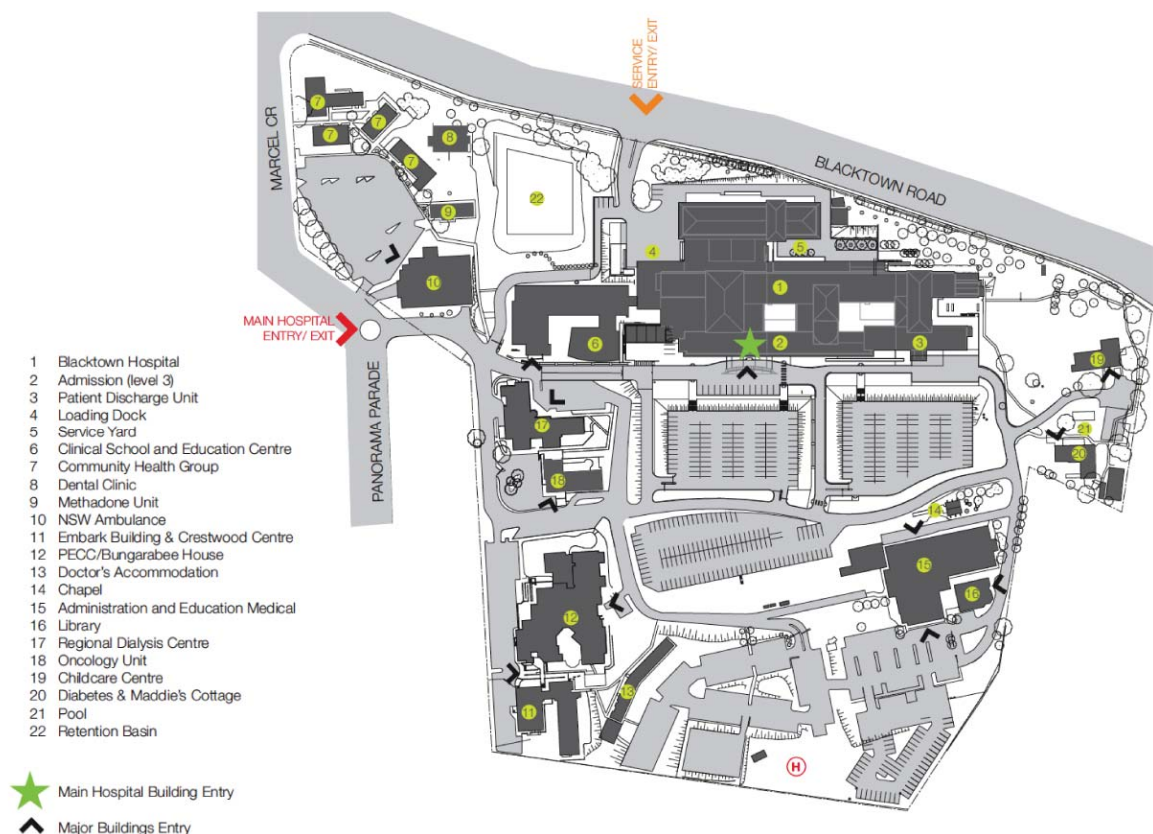


Figure 6 Existing Buildings

The site has developed progressively over the past 45 years. The two main phases of development include the establishment of the hospital in the mid 1960's and the

redevelopment of the hospital in the late 1990's including the demolition of the former main hospital building and the construction of the current building.

The Blacktown campus mainly provides services for local residents and attracts inflows from neighbouring LGAs. It performs a regional role in the provision of ambulatory renal dialysis services. Acute services are generally provided at Level 5 (sub-specialty level) including a 24-hour emergency service, medical and surgical services supported by a combined intensive care and high dependency service and obstetrics and newborn care. Inpatient and community mental health services are provided from Bungaribee House, a gazetted admission centre.

The Blacktown campus comprises approximately 330 beds. Clinical services include:

- Ante-Natal/Gynaecology Unit
- Delivery Suite
- Post-Natal
- Special Care Nursery
- Acute Medical
- Coronary Care and Coronary Stepdown Unit
- Diabetes Centre
- Acute Rehabilitation
- Acute Stroke Unit
- Pre-Admission Clinic
- Day Procedure Unit
- Orthopaedic
- Surgical
- Surgical/Medical Short Stay Unit
- Intensive Care Unit
- High Dependency
- Oncology Services
- Mental Health
- Regional Dialysis Centre and
- Community Health Services including Dental.

BMDH clinical teaching affiliations include:

- Medicine - University of Western Sydney, University of Sydney
- Nursing and midwifery -University of Western Sydney, University of Sydney
- Allied Health - University of Sydney, University of Newcastle, Charles Sturt University, Australian Catholic University, Macquarie University, University of Wollongong.

The University of Western Sydney recently opened a medical school and research facility at the hospital to the west of the main building.

3.2.8 Access and Parking

The main vehicular access point to the hospital is off Marcel Crescent at its intersection with Panorama Parade. A secondary access directly from Blacktown Road is used for servicing and deliveries. Site access principles are presented in the following diagrams.

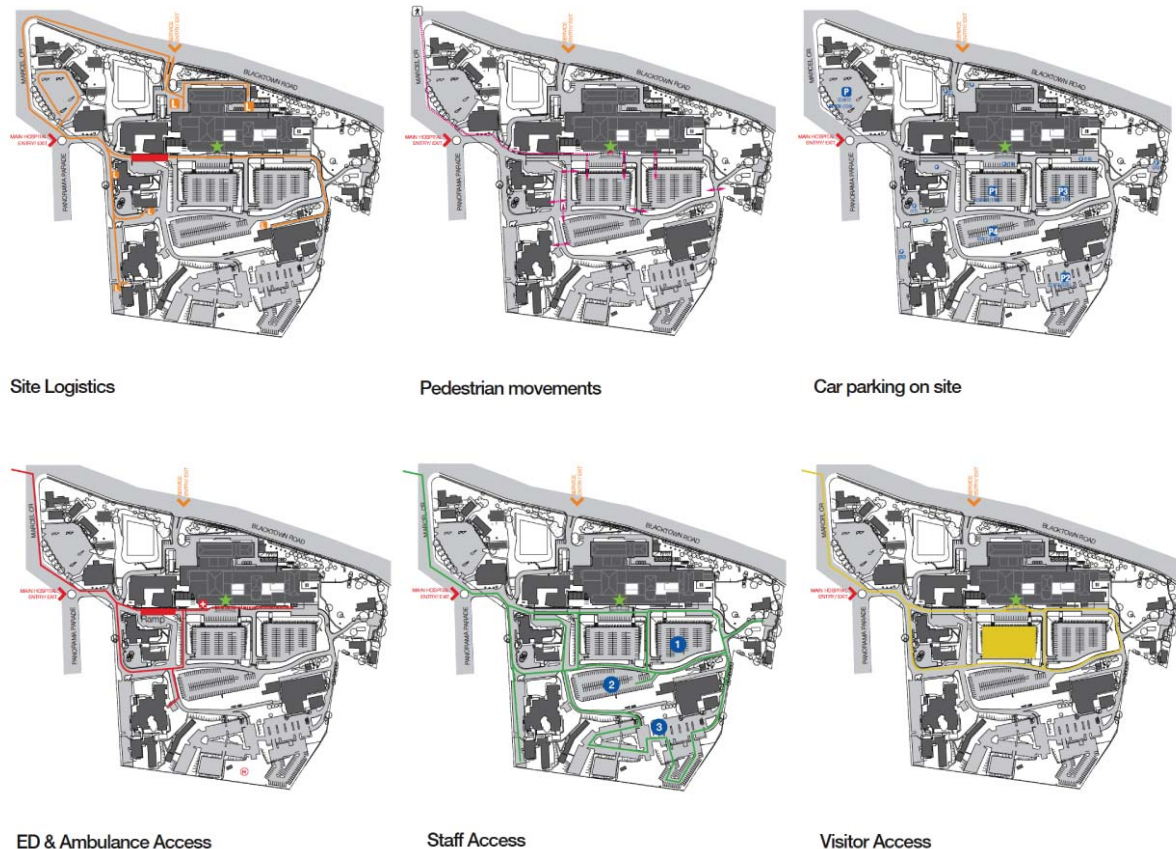


Figure 7 Access and Movement

The current site main entry lacks identity and address as it is located off a residential street and does not have sufficient capacity for the additional traffic envisaged by the overall project. The development of the site provides the opportunity for improved access to the site and improved wayfinding from the surrounding main road network.

The hospital is about 1.2 kilometres from Blacktown railway station with a service between the station and the hospital and other services along Blacktown Road. Buses currently enter the site.

Car parking is provided in a number of locations in at grade car parks. There are approximately 1031 car parking spaces which meet current demand. On street parking is

available in the surrounding street system with unrestricted parking in Marcel Crescent and Panorama Parade.

An at-grade emergency helicopter landing facility is provided within the grounds towards the southern end of the site.

3.2.9 Surrounding Land Uses

Immediately adjoining uses include (see **Figure 2**):

- To the west – the site adjoins the rear boundaries of a row of approximately 15 dwelling houses (or dual occupancies) fronting Panorama Avenue;
- To the north west – adjacent to Marcel Crescent are residential uses and special uses including the Salvation Army;
- To the south – the site adjoins land used by Uniting Care for seniors housing and church purposes including seniors housing and associated open spaces adjoining the southern boundary including 2 and 3 storey aged care units;
- To the east – the site has an irregular boundary and adjoins a large townhouse development comprising 2 storey brick townhouses with 26 townhouses and associated garden spaces adjoining the common boundary with the site;
- To the north east – the site adjoins two dwelling houses accessed from Lacey Place and one dwelling house accessed from Blacktown Road. Other properties in this area are residential;
- To the north – adjacent to the site on the northern side of Blacktown Road is a mix of uses comprising multi-unit residential development, motor showroom and commercial development.

The site is within close proximity to Blacktown CBD. The area is expected to undergo change and redevelopment in the future as Blacktown develops as a major sub-regional centre.

4. PROPOSED DEVELOPMENT

4.1 Introduction

Development consent is sought for:

- a new clinical services building (CSB) of approximately 32,000m² constructed over 8 levels including 2 basement levels, five clinical services levels and a rooftop plant level and containing:
 - Approximately 185 inpatient beds (coronary care, cardiology, respiratory medicine, acute aged care, cancer, surgical day only, renal dialysis);
 - Comprehensive Cancer Care Centre (2 linear accelerators (with 3 bunkers + expansion), radiation therapy, medical oncology, outpatient clinics and clinical trials);
 - Additional outpatient clinics;
 - Expansion of pharmacy and pathology;
- Alterations to the existing main hospital buildings to complement the new buildings and integrate services. These include:
 - An expansion in emergency department capacity (urgent care centres etc) and colocated PECC;
 - 8 additional intensive care beds;
- An internal hospital street to join the new and existing buildings;
- Site landscaping providing an integrated landscape plan for the whole site;
- The provision of a new permanent access to the site from Blacktown Road (note that construction access will be required at this point during the construction period);
- Additional parking and entry forecourt's to the new building;
- Associated building services.

Plans of the proposed development are contained in **Volume 2** and include:

- Architectural drawings contained in **Appendix 2** of **Volume 2**;
- Landscape drawings and strategy contained in **Appendix 3** of **Volume 2**;
- Civil works drawings contained in **Appendix 4** of **Volume 2**.

4.2 Objectives of the Development

The proposed development delivers the three leading priorities for service development in the Clinical Services Plan including:

- additional inpatient capacity (medical, surgical, intensive care);
- establishment of a comprehensive cancer centre, and
- enhancement of ambulatory care services (via an ambulatory medical day stay and rapid assessment service).

The development seeks to:

- Deliver additional emergency department capacity (complementary to the emergency short stay and emergency medical assessment unit);
- Establish new services e.g. comprehensive cancer centre, in-centre renal dialysis unit, nuclear medicine service;
- Enable the delivery of new models of care including the comprehensive cancer centre, ambulatory medical day stay and rapid assessment service, and comprehensive service centre models for cardiac care, respiratory care, aged care, rehabilitation and stroke, and urgent care centre;
- Provide dedicated car parking and drop off facilities at the eastern and western perimeter of the new build. This is particularly important for patients accessing services such as cancer services, antenatal and gynaecology clinics, ambulatory care services, respiratory outpatient services);
- Establish the concept of a pedestrian hospital street which establishes identity for the campus, provides intuitive wayfinding, and provides the interface between new and existing facilities;
- Expand key clinical support, non-clinical support and building and engineering services to support the clinical service enhancements;
- Integrate with improvements to onsite parking and access arrangements including a new access from Blacktown Road and a new multi-storey car park.

4.3 The New Clinical Services Building

4.3.1 Urban Design Principles

The Urban Design and Architecture Report prepared by project architects SKM S2F contained in **Appendix 5** of **Volume 1** outlines the design principles for the site and the proposed new hospital building. The development adopts the following key urban design principles leading to the site master plan (**Figure 2**) and the design of the Stage 1 expansion:

1. *Define major building development sites (Stages 1 & 2):* The development site for Stage 1 and 2 expansion has been defined at the centre of the site and to the south of the existing main building. This location allows advantage to be taken of site levels and existing building platforms across the site and proximity to the existing hospital. It enables the activity centre to be located at the centre of the site with lower intensity uses on the periphery.
2. *Establish north-south route and site separation:* An important north-south movement corridor separates the development site to create two building envelopes. This separation establishes a visual and physical route through the site and provides an opportunity for a public space between the buildings.
3. *Create a “Hospital Street” as an east/west civic route:* The existing main circulation space at the hospital will be transformed into a Hospital Street and will become the most significant public domain space on the campus. It will link old and new development and provide an important wayfinding route defining entries for the hospital buildings.

4. *Establish a legible site access arrangement:* The series of secondary public routes and open spaces will link to the primary spaces: north-south link and the Hospital Street. This clearly defined hierarchy will improve wayfinding across the site and establish entry points/ addresses for buildings. These routes contribute to the development of the building envelopes and future building zones.
5. *Create links through new buildings and establish new entries:* By reorientating the western end of the site a new entry forecourt will be created. A series of linkages into and through the new building will improve accessibility and the new buildings relationship with the existing hospital.
6. *Recognise solar access and reduce overshadowing:* The winter solar access planes have been considered to minimise overshadowing as well as maximising solar access into buildings, courtyards and the public domain. This assists in managing overshadowing of surrounding residential properties.
7. *Ensure optimal solar access to public domain and primary open spaces:* Setting back the building envelopes in response to solar access planes will ensure that an ideal amount of sunlight is achieved in the public domain particularly the three new entry plazas: east, west and central. These setbacks also recognise the importance of achieving shaded areas particularly through summer when the highest level of solar gain is possible.
8. *Redefine access points to site, establish clear vehicle routes and drop off zones:* A number of access options to the site have been explored throughout the design process. A new access to Blacktown Road is proposed to achieve improved access onto this primary road. These new routes will improve vehicle access and provide defined routes for emergency, staff and visitor parking.
9. *Define building envelopes for future development across the site:* By combining a number of the principles and key ideas which have been explored, a series of future development envelopes are proposed. These are identified between the public routes, are well accessed by the movement hierarchy and respond to the solar access planes which recognise the impact on the public domain spaces, existing buildings and adjacent properties.

These principles are described in greater detail in the design report prepared by SKM S2F in **Volume 2**.

Figure 8 presents the overall site master plan for stages 1 and 2 expansion. This application seeks approval for Stage 1 expansion.

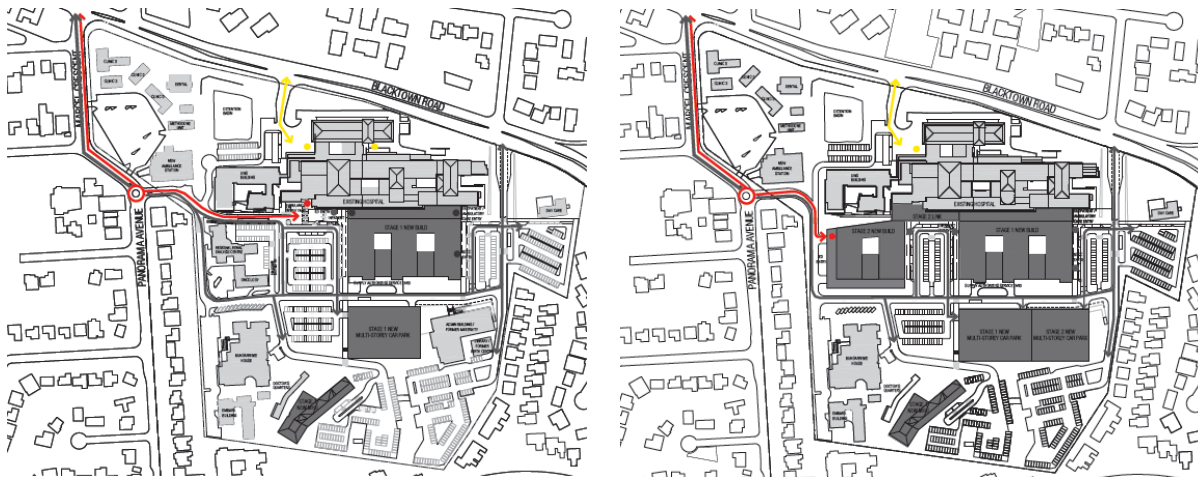


Figure 8 Hospital Expansion Stages 1 and 2

4.3.2 Building Elements

Architectural Design

The new hospital building is designed to functionally integrate with the existing main hospital building so that services can be delivered across both buildings. The key unifying element is the new hospital street at ground level (Level 3) which will remain a public thoroughfare from which hospital services in the existing building and the new building will be accessed.

The Project Architect has provided the following design statement for the new building (refer to **Appendix 5**):

The existing campus is an ad hoc mix of buildings of varying sizes, ages and styles. The suburban vernacular of the smaller buildings around the perimeter of the campus blends well into the surrounding housing and these are retained by this scheme.

The existing hospital building and the UWS building are the largest buildings on the site and are of good architectural quality. These buildings conform to a strict orthogonal layout. They use clean simple rectilinear forms with roofs hidden behind parapets and an emphasis on the horizontal east west axis. The existing hospital is predominantly beige with highlight bright coloured walls, projecting white forms and dark grey elements to offset the white and beige walls. Walls are mostly rendered and fenestration is a combination of small windows 'punched' through the facade and long horizontal strip windows. Landscaped courtyards allow light into the middle of the floor plates.

The new CSB responds by incorporating positive aspects of this architectural vocabulary into the new design, providing a linkage between old and new. The new building maintains the same orthogonal layout and uses clean simple rectilinear forms with projecting white forms to break down the scale of the building.

However, rather than the architectural surroundings, which do not reflect the interesting and significant history of Blacktown, the most important immediate 'context' for the hospital is the diverse people of the Blacktown community, their lives and their history. Uniquely Blacktown has a sizable representation of both Australia's oldest inhabitants and its newest arrivals both with cultural backgrounds quite distant from 'Anglo-Australians norms'.

Central to the hospital's identity is the definition of the entrance to the campus and the creation of a focal point of activity at the centre of the campus. Rather than making the new building appear to be an extension of the old, it is more appropriate for the new building to demonstrate the transformation of Blacktown campus with an updated identity. This will be defined by the new 'Hospital Street' and the new Clinical Services Building at the heart of the new campus.

The Arts and Cultural program associated with this development will address the community context, but this is also supported by the architectural design. The material and colour concept aims to be bold and colourful. Rather than copying the clinical off-white colour scheme of the existing hospital, the proposed new facades are darker and more earthy with highlights of bright rose coloured glass. Together the new and existing buildings will create a campus of varying character, rather than homogeneity. The coloured glass will reflect the diversity of the community and connect the interior and exterior of the hospital through the fenestration with positive healing emotions.

The new building will sit behind the existing hospital and therefore has limited scope to deal with the issue of lack of an address to Blacktown Road. Site constraints require the main pedestrian entrance of the hospital to be in the middle of the campus. Although this may not provide a clearly readable gateway or front door, it has the bonus of making the main entrance very convenient to most facilities. Glimpses of the new building from Blacktown Road and the Blacktown CBD will be made more apparent by the proposed materials and colours, helping to communicate the location of the main entrance.

Functional Spaces

New function spaces are shown on the drawings accompanying the development application and are summarised as follows:

- Levels 1 and 2 – tunnel connections with the existing main hospital building and plant areas will be provided on these levels.
- Level 3 (proposed ground floor) – will include the new main hospital street with publically accessible spaces and activities along the 'street' including café and retail functions, courtyards, main entry and admissions. Clinical areas include antenatal care and uses accessible by outpatients and including the Cancer Care Centre (radiation oncology) and pharmacy. As with the existing hospital, this will be the main activity level of the hospital in terms of outpatient activity and visitor and patient arrivals.
- Level 4 contains another part of the Cancer Care Centre, pathology and clinical trials, also generally high activity areas.
- Levels 5 to 7 include the inpatient ward areas designed as three separate wings linked by the central east west 'street'. Level 5 includes aged care and rehabilitation, Level 6 will be the new cardiology area including coronary care, and Level 7, cancer beds and respiratory medicine.
- Level 8 comprises roof top plant.

Spaces are flexible and can be changed in accordance with service delivery practice and need.

In addition to basement and rooftop plant, a large plant room is included in the multi-storey car park which will house plant for the new building.

Beds Spaces and Services

The new building will contain approximately 185 beds, bringing the total beds at the Blacktown campus to approximately 500 beds. The development will deliver the following major service enhancements:

- meeting the three leading priorities for service development in the Clinical Services Plan including additional inpatient capacity (medical, surgical, intensive care), establishment of a comprehensive cancer centre, and enhancement of ambulatory care services;
- additional intensive care and inpatient beds including coronary care, cardiology, respiratory medicine, acute aged care, cancer, surgical day only and extended day only, and short stay medical care (via emergency short stay, emergency medical assessment unit, and ambulatory medical day stay and rapid assessment service);
- additional emergency department capacity (complementary to the emergency short stay and emergency medical assessment unit);
- provision of new services e.g. comprehensive cancer centre, in-centre renal dialysis unit, nuclear medicine service;
- new models of care including the comprehensive cancer centre, ambulatory medical day stay and rapid assessment service, and comprehensive service centre models for cardiac care, respiratory care, aged care, rehabilitation and stroke, and urgent care centre; and
- provision of key clinical support, non-clinical support and building and engineering services to support the clinical service enhancements.

Materials and Colours

Facade materials and colours are shown on the architectural drawings contained in **Appendix 2 of Volume 2**. The material and colour concept aims to be bold and colourful. Rather than copying the clinical white and off-white colour scheme of the existing hospital, the facade of the new building is much darker with highlights of bright coloured glass. The new and existing buildings have a different character connected by a hospital street which integrates the two buildings. The materials and colour schedule is summarised below:

Code	Item	Colour	Finish	Location
ROOFING				
MR1	Sheet Metal Roofing.	White	Satin	Main Roof, Roof to Level 8 plant rooms, Hospital Street Roof, Canopy roofs
WMR1	Waterproof Membrane Roof topped with Ballast.	White Ballast		Bunker Roof, Hydraulic plant room roof only.
WMR2	Waterproof Membrane Roof with trafficable paving.	Grey or beige paving		Terraces, Sections of Courtyards with concrete slab base.

Code	Item	Colour	Finish	Location
MC1	Parapet Cappings and Flashings.	Dark Grey	Satin	All parapets to Main Building, not including Hospital Street Roof and canopies
WDC1	Timber Veneered Cladding.	Natural Woodgrain	Clear, Satin	Soffits to all canopies including one side of each vertical section of canopy.
WALLS				
PCC1	Panelised Brickslips cast into Precast Concrete Cladding Panels.	Blue grey blend brick slip. Grey Concrete.	Unsealed	General, refer drawings
ALC1	Aluminium-faced Cladding Panels with integral parapets.	White	Satin	Fascias / Parapets to Hospital Street roof and canopies. Projecting rooms and horizontal shading on upper floors.
ALC2	Aluminium-faced Cladding Panels.	Dark Grey	Satin	General, refer drawings
CM1	Sheet Metal Cladding.	Dark Grey	Satin	Spandrels behind LVS2 louvres.
LVS1	Louvres.	Dark Grey	Satin	Level 8 Plant, Level 3 & 4 Plant to South Cores
FENESTRATION				
GLZ1	Glazing Type 1.	Glass: Clear with grey tint Frame: Dark Grey	Frame: Satin	General, refer drawings
GLZ2	Curtain Wall Glazing Type 2.	Glass: Clear with grey tint Frame: Dark Grey	Frame: Satin	End facades to atrium, facades to north of courtyards and all other facades to courtyards at Levels 3 & 4 only.
GLZ3	Colourback Glass Spandrels.	Glass: Dark Grey / Black Frame: Dark Grey	Frame: Satin	Spandrel panels on facades to north of courtyards and all other facades to courtyards between Levels 3 & 4 only.
GLZ4	Skylight Glazing.	Glass: Clear with grey tint Frame: Dark Grey	Frame: Satin	Atrium Roof
	Window Frames.	Dark Grey	Satin	General, refer drawings
	Exterior Door Frames.	Dark Grey	Semi Gloss	General, refer drawings
	Exterior Door Leaves.	Grey / Beige	Semi Gloss	General, refer drawings
SHADING				
LVS2	Vertical Aluminium Sunshading Louvres.	Dark Grey	Satin	South Elevation
GLZ5	Coloured Laminated Glass Sunshading Fins.	Variety of bright colours: Red, Orange, Yellow, Violet, Etc.	Translucent	General, refer drawings
STS1	Exterior Exposed Structural Steel.	Dark Grey	Semi Gloss	Supports to canopies

4.4 Alterations to Existing Hospital Building

The construction of the new building will enable new services to be established on the site and existing services expanded. Services will relocate from the existing hospital to the new facilities and space will be occupied by new or expanded services. Thus there will be a program of refurbishing spaces within the existing hospital. Areas within the existing hospital which require either refurbishment or alterations include:

Level 1:

- Mortuary refurbishment;
- Engineering and Maintenance refurbishment and existing building alteration;
- Biomedical Engineering refurbishment;
- New Subterranean tunnel, a new link to the existing loading dock, this will be achieved by bringing new lifts down to the existing level 1 floor level and connecting the existing and proposed buildings via a new subterranean tunnel.

Level 2:

- ICU Refurbishment;
- New 12 Bed Extended Day Stay (Perioperative service);
- New Subterranean tunnel.

Level 3:

- New Psychiatric Emergency Care Centre (PECC), existing building alteration;
- New Short stay and Medical Assessment Unit, refurbishment of existing hospital;
- New Urgent Care Centre, refurbishment of existing hospital;
- New Medical Day Unit and Rapid Assessment, refurbishment of existing hospital;
- New Discharge Lounge, refurbishment of existing hospital;
- New Cardiac Catheterisation Laboratory;
- Re-modelling of Ambulance Bay Drop Off.

Level 4:

- Refurbishment of existing hospital to accommodate new enclosed bridge links.

There will also be internal alterations to the renal building and a minor extension to the main hospital building in the loading dock area for storage of medical gases.

4.5 Employment

It is envisaged that there will be an estimated daily staff attendance at Blacktown campus of 1,934 at the completion of the development. This can be compared with the existing daily staff attendance of 1,354.

To this can be added the additional short term jobs during the construction phase.

4.6 BCA

Buildings will be designed to comply with BCA and provide access in accordance with current standards as shown in the report contained in **Appendix 6**.

4.7 Access and Parking

4.7.1 Access and Circulation

The existing site entry off Marcel Crescent will be supported by an additional entry off Blacktown Road. This will improve the identity of the hospital with a more logical access and circulation pattern and a choice of entry points to provide greater efficiency in site access arrangements. Approval is sought for this new access arrangement in its permanent form. Temporary access for construction is proposed and was included in the application to Blacktown Council for the multi-storey car park. The new main entry to the site will be a left in left out intersection opposite Baronta Street.

Circulation within the site will be via new or upgraded internal access roads which provide access via clear wayfinding signs to various hospital functions. This includes a new east west circulation road between the new hospital building and the multi-level car park. This road is being constructed to enable the existing hospital to continue operating throughout the construction process.

4.7.2 Public Access

The main entry to the hospital will be rearranged with access points to the hospital street at the eastern and western end.

4.7.3 Emergency Vehicles

Ambulances will continue to access the site via Marcel Crescent to the ambulance bays outside the Emergency Department which remains in its present position.

4.7.4 Services and Delivery Vehicles

Service and delivery vehicles will continue to access the site from Blacktown Road to the existing service and delivery area. Supplies will be taken from the existing building to the new building via the proposed tunnel service areas at Levels 1 and 2.

4.7.5 Parking

One of the keys to developing the Blacktown campus is the need to “free up” space currently used for at-grade car parking by defining an alternate car parking strategy. This requires consideration of staging issues to ensure that there is minimal or no adverse impact on the on-going operation of the hospital or the local area.

A new multi-storey car park is proposed to the south of the new hospital building. This will be supported by at-grade parking areas generally on the periphery of the site. The car park is to be constructed over 6 levels and contain approximately 616 spaces subject to final design. This car park is the subject of a development application to Blacktown Council. Parking and access arrangements shown on Figure 9.

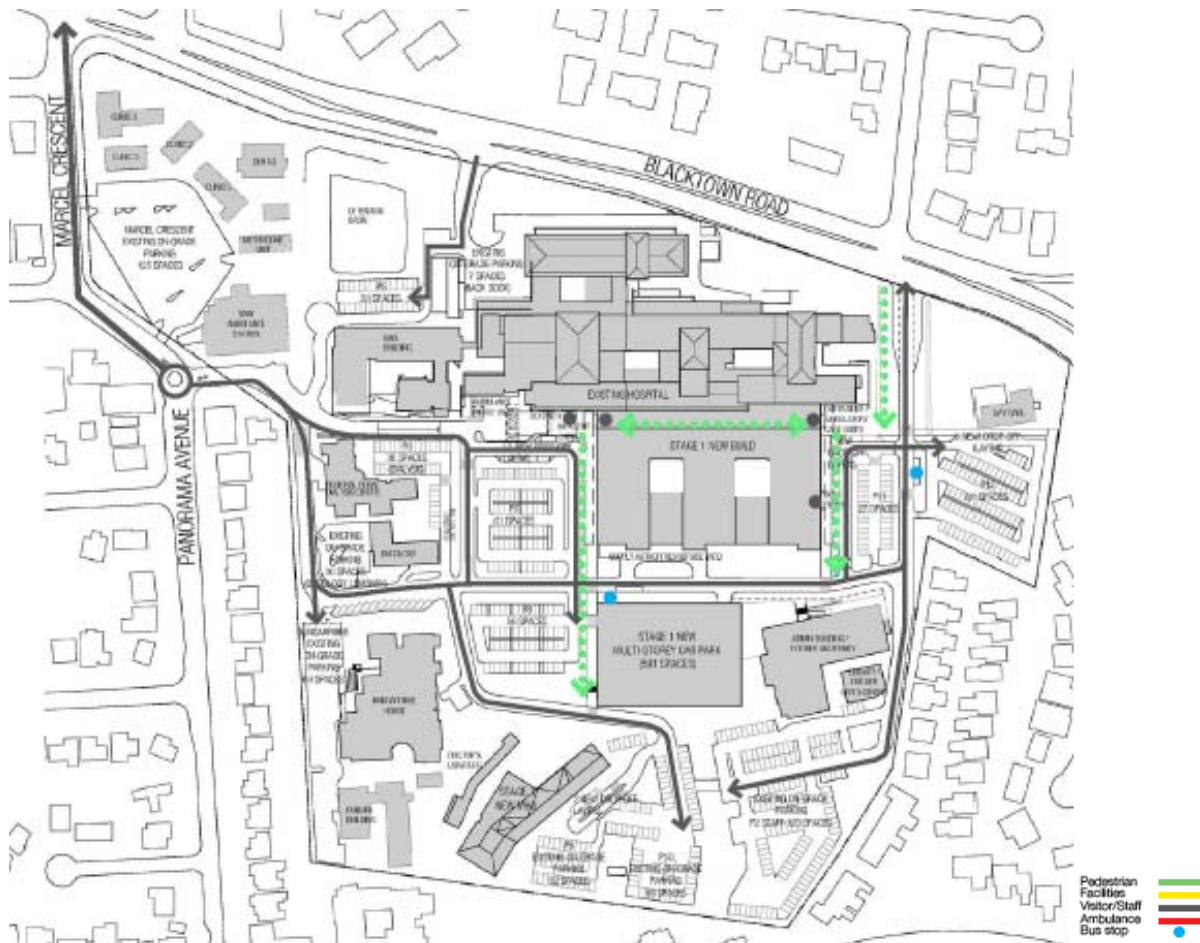


Figure 9 BMDH - Blacktown Campus Access and Parking

Consent is sought as part of this application to parking area P11 containing 28 spaces immediately to the east of the main building. This includes a new drop off and pick up area adjacent to patient discharge, ambulance drop off and the eastern main entry to the new building hospital street. Plans of the layout of this area are included in the civil drawings contained in **Appendix 4 of Volume 2**.

4.7.6 Public Transport

The development will accommodate public transport within the site. Bus movements are proposed along the new internal access road from Marcel Crescent, along the new east west access road and the new access road from Blacktown Road. Movements in both directions can be accommodated and will be resolved in discussion with bus operators.

4.7.7 Pedestrian and Cycle Access

The internal road network will accommodate safe cycle and pedestrian movement. Cycles will share carriageways with cars in a generally low speed environment. Bicycle parking facilities are proposed as part of the multi storey car park.

4.8 Open Space, Landscaped Area and the Public Domain

Landscape Concept

A landscape proposal for the site has been prepared by Site Image is contained in **Appendix 3 of Volume 2**. The landscape concept is based generally on the following principles.

Access, Circulation and Wayfinding:

- The landscape and public domain will provide a clear and legible wayfinding strategy for the campus.
- Enhance clear and legible navigation to key locations such as front entry to Emergency Departments and Cancer Centre.
- Provide clear and simple navigation for both pedestrian and vehicle traffic.
- Develop a road and footpath hierarchy which will enhance the wayfinding experience.
- Create a unified public domain language and surface treatment to provide a cohesive campus.
- Utilise nodes and landmarks to improve wayfinding and orientation.
- Enhance the access to public transport, and clearly define the main transport links.

Users, Uses and Facilities:

- Provide passive green spaces to offer relief for staff, patients and visitors.
- Provide safe external green spaces for patients to relax in.
- Provide a pleasant environment for the Hospital Street cafe and the public domain core.
- Use the public domain to clearly delineate the function of the space.

Environment and Culture:

- Maintain and establish maximum tree canopy to improve ecological value, and carbon sequestration.
- Maximise soft surfaces to reduce urban heat island effect.
- Use native and endemic species to enhance the biodiversity on site.
- Capture water collected on site and utilise for irrigation purposes.
- Focus irrigation and maintenance on high use areas and use low water species and surfaces in broad scale low use areas.
- Work with new microclimatic conditions in the courtyards to provide shade and visual relief.
- Re-use and rehabilitate suitable salvaged top soil excavated from site.
- Reuse all felled trees for mulch on site.
- Reuse demolition materials where possible on site.

Management, Infrastructure and Maintenance:

- Reduce maintenance costs by focussing high intensity landscapes for visitors and patient areas.

- Extend low maintenance regimes and low water use species to less utilised spaces and site boundaries.
- Facilitate management with a limited and coordinated suit of furniture and fixtures.

These principles are illustrated on Figure 10.



Figure 10 BMDH - Blacktown Campus Landscape Plan

Tree Removal

The development will result in the removal of nine trees (refer to arborist report contained in **Appendix 14**). These are associated with the acceleration lane associated with the new access road off Blacktown Road and the minor expansion of the loading area of the main hospital building. The trees lost along the Blacktown Road frontage will be replaced as part of the landscape concept.

Approval has been obtained for the removal of other trees as part of the civil works approval under ISEPP.

4.9 Utility Services

4.9.1 Water and Sewer

Requirements for water services have been investigated by Warren Smith & Partners whose report is contained in **Appendix 7** and summarised below.

Water Supply

Domestic cold water supplies the site via an existing 100mm water connection from the 250mm DICL Sydney Water Corporation water main in Blacktown Road. The supply is via an 80mm water meter and 100mm reduced pressure zone device. Water reticulates via a 100mm water main to the site water storage tanks located adjacent to the helipad. The tank has a total capacity of 64,000 litres. Domestic water boosting is via an adjacent pump set with a duty of 5.5 l/sec @ 20 m/head.

An existing 150mm connection to the Sydney Water Corporation main in Blacktown Road supplies the existing fire hydrant site service.

The hospital has a maximum peak demand of approximately 5.5 l/s and an average daily demand of 285 kL for domestic cold water. The existing authority water main has sufficient capacity to provide the additional water demand for both Stage 1 & 2 developments for both domestic and fire services.

Existing services on the site are being diverted to enable the existing hospital to continue operating resulting in the provision of a ring main on site.

Works will be undertaken to connect the new building into the existing supply. Additional 50,000 Litres water storage will be provided in the roof plant room. This would include a new filtration system.

Dedicated hot water plant will be provided for the new building. A localised co-generation plant will provide pre-heat for the new hot water system. Hot water will be reticulated through the building in a flow and return arrangement via hot water circulating pumps. Tempered water will be provided to fixtures via thermostatic mixing valves at point of use.

Sewer

The site is serviced by a Sydney Water sewer passing through the north west corner of the site. A 300mm and 225mm authority main combine within the site and traverse through to Blacktown Road as a 300mm main. Generally the main passes in an easement from Marcel Crescent to Blacktown Road. The hospital has three existing connections to the authority sewer in this area.

The majority of the site drains via a 225mm branch line running along the Blacktown Road frontage of the site. This main is reported to have been replaced in 1997. Two smaller 100mm and 150mm connections drain individual buildings in the north west corner of the site.

Advice from Sydney Water notes that the current infrastructure can support increased flows projected as a result of the development.

Rainwater Drainage

The internal rainwater drainage system will collect water from metal and concrete roofs and gravitate by downpipes adjacent to building columns and horizontal stormwater drainage pipes to a Rainwater Reuse Tank.

Harvested rainwater will be reused for toilets flushing and irrigation.

The internal rainwater drainage system will collect water from trafficable roofs, terrace areas and landscaped areas and gravitate by downpipes adjacent to building columns and horizontal stormwater drainage pipes to the stormwater drainage system.

Fire Services

The existing fire service to the site is supplied from the 250 mm Sydney Water Corporation water main in Blacktown Road. A 150 mm branch line supplies the site. Supply is via a 150 mm double check detector assembly and 150 mm booster valve located adjacent to the road alignment near the North / East corner of loading dock entry from Blacktown Road. External dual standpipe hydrants and building internal hydrants provide fire protection within the site.

In order to maintain supply to the existing hospital during construction and allow new buildings to be connected, the existing incoming water supply will be decommissioned and a new incoming water supply, 150 mm backflow valve and booster valve adjacent to the new site entry from Blacktown Road. A new 150 mm hydrant main will be provided around the site. These works are subject to a separate approval and will enable services to be provided to the new building.

The Main Hospital Building incorporates electric and diesel fire hydrant pumps located in the Level 5 plant room with reticulation to all internal fire hydrants. Existing hydrants will be relocated or new hydrants will be provided to suit the development works. All new work will comply with AS 2419.1 – 2005. The new build will be provided with a fire hydrant systems complying with BCA Part E1.3 and AS 2419.1 – 2005. The systems will be fed from the site ring main. A diesel booster pump will be located in the fire pump room adjacent to the new hospital entry off Blacktown Road.

Fire hose reels are connected to the domestic cold water system and reticulate to each fire hose reel. An electric fire hose reel pump located in the Level 5 plant room and reticulates to all fire hose reels. Existing hose reels will be relocated or new hose reels will be provided to suit the development works. All new work will comply with AS 2441 – 2005. A fire sprinkler system complying with BCA Part E1.5 and AS 2118.1 - 1999 will be provided throughout the new building and Hospital Street.

4.9.2 Natural Gas

Natural Gas is reticulated to service the mechanical plant, kitchen and co-generation facility via a 75mm high pressure Jemena gas main in Blacktown Road. Gas is reticulated within the site via a 100mm main at pressure of 35kPa.

A formal application will be required to the local gas authority in order to accurately determine available capacity within the local gas main infrastructure.

As part of the infrastructure works gas will be reticulated to the new building. Gas will supply cogeneration plant and other gas outlets.

4.10 Building Structure and Services

4.10.1 Building Structure

Vertical support of the floor slabs is provided by a series of concrete columns, with reinforced concrete walls forming selected lift and stair cores, and major services risers.

The column grid has been selected to:

- maximise floor slab spans
- integrate with the modular room layout of the hospital wards
- minimises the total number of columns required, giving maximum flexibility to the floor plate
- design for potential future “churn” or adaptive re-use

The column grid has also been selected to be transposed into the basement levels. Where this is not achievable, structural transfer beams at level 3 will be used to achieve optimum column locations in the basement for efficient space usage.

Floor structures include:

- The slab at lowest sub-ground level will be a reinforced concrete raft slab;
- The sub-ground L2 slab will comprise a conventionally reinforced slab with drop caps and an edge beam, supported on concrete columns.
- The L3 slab will comprise a post-tensioned concrete slab with drop caps and an edge beam, supported on concrete columns. Where the column grids are not able to be transposed into the sub-ground levels, there will be a minor number of localised transfer beams within this level to allow column relocation to suit basement planning.
- The Level 4 to 7 suspended floor slabs will comprise a post-tensioned concrete flat slab system, supported on concrete columns and walls. A flat slab system has been selected due to its superior vibration performance, and ability to allow flexibility for future ceiling services coordination and relocation. Slab thicknesses will remain consistent across the floor plate, however reinforcement will vary depending on the usage of the slab area.
- The roof is likely to comprise a post-tensioned concrete flat slab system or conventionally reinforced slab, supported on concrete columns and walls or similar.

4.10.2 Mechanical Services

The mechanical services for the new building include:

- A Central chilled water plant and pumps in a central energy plant (CEP - located in the Multi-storey carpark), and reticulation pipework via services tunnel to the new building with cooling towers for heat rejection on the roof;
- A Central hot water heating system including natural gas hot water generators and pumps in the CEP, and pipework reticulation via services tunnel to the new building.
- Air handling unit (AHU) plantrooms located on Level 2 and on roof level. A Level 2 AHU plantroom provided with outside air intake risers via courtyards.
- Air handling units will generally be variable air volume with on floor VAVs, except for Inpatient Units (IPUs) which will be provided with a separate multi-zone constant volume air handling unit to serve each IPU unit wing floor.
- Dedicated chilled water and heating hot water ceiling mounted fan coil units to serve miscellaneous retail areas and shops in Hospital Street including a kitchen exhaust system for the Cafeteria.
- Dedicated chilled water and heating hot water ceiling mounted fan coil unit to serve each Isolation Room bedroom with associated exhaust ventilation system.
- Provision of medical gas reticulation to serve the new building by extending existing medical gas bottle storage reticulation systems. The design will include alarm systems and valve boxes for local isolation of medical gas during an emergency within each department or area.
- Upgrading of the existing medical air (breathing) plant including new compressor units. (existing plant area to be reviewed)
- New medical vacuum suction plant to serve the new building located on level 2.
- Provision of new pneumatic tube sending and receiving stations, tube reticulation and interconnection work with new blower(s) to serve the new building. Interconnection of the existing and new systems will be undertaken during design development.
- Provision of stair pressurisation systems in accordance with AS 1668.1.
- Dedicated toilet exhaust, Photocopy/print room, Utility Room and Garbage Room exhaust will be provided in accordance with AS 1668.2.
- Dedicated east and west AHUs will be provided in level 2 AHU plantroom to serve Hospital Street from high level of Level 3.
- Mixed mode natural ventilation of the Hospital Street Atrium when ambient conditions are suitable utilising the smoke exhaust system for relief.
- Smoke exhaust system to the Hospital Street Atrium to meet the requirements of the Fire Engineer.

All mechanical systems including air conditioning and ventilation will be designed to comply with the internal and site boundary noise levels.

Provision of a new Building Management and Control System (BMCS) for the new building plant and systems (utilising the existing computer front end system and associated software) for control and monitoring of the new building engineering services (mechanical, medical

gases, electrical, fire, hydraulic and lift services). The new BMCS will integrate with existing Hospital BMCS.

The existing air conditioning and ventilation systems will be altered and/or augmented to suit the new functional requirements in the refurbished areas.

4.10.3 Electricity

The existing power supply is derived from the Integral Energy 11kV network and provides power to a main indoor substation (for the main hospital) and a number of kiosk substations around the site (for numerous outbuildings).

The existing main indoor substation does not have sufficient spare capacity for the new proposed work and is located too far from the new work. Therefore a new Integral Energy substation will be provided.

Power supplies will be maintained to all operational areas within the existing complex during the staged refurbishment process and the construction of the new works.

It is proposed that new electrical infrastructure be provided to service the new CSB. Due to the spatial constraints within the new building, the main electrical infrastructure will be located in the Central Energy Plant (CEP) located at the northern end of the new multi-storey carpark at ground level.

General Electrical System

The electrical services to the new CSB encompasses the following:

1. Within the new Central Energy Plant (CEP) – At ground level
 - Transformers and associated high voltage and low voltage switchgear (new Endeavour Energy indoor substation);
 - Emergency back-up generators;
 - Power Factor Correction (PFC) equipment;
 - Central energy plant low voltage Main Switchboards (CEP MSB), including metering;
2. Within the Stage 1 building – Located on level 2 (one level below ground) of the new building:
 - LV (non-essential and essential) sub-mains from the CEP
 - Stage 1 LV Main switchboard
 - Uninterruptable Power supply (UPS)
 - Sub-main cable reticulation and distribution switchboards
 - Sub-metering
 - Lighting control systems
 - General power (Non-essential, essential, UPS)
 - Earthing and lightning protection system

- Internal and external lighting
- Emergency evacuation and Exit lighting
- Specialist medical examination lighting
- Patient area protected wiring
- Electrical services on medical service panels/pendants

The Endeavour Energy indoor substation located in the CEP contains two (2) transformers rated at 1,500kVA each with an additional space provision for an additional transformer.

Emergency Power Generation

Standby diesel generators will be provided within the CEP and will supply power to essential loads, in the event of a normal mains failure from the supply authority. The amount of emergency standby power available is anticipated to equate to approximately 30% of the Hospital's maximum demand.

Co-Generation

A Co-Generation machine will be provided within the CEP, which will operate in parallel with the supply authority mains, in order to reduce the power demand from the supply authority.

Uninterruptible Power Supplies

Emergency uninterruptible power supplies (UPS) will be provided requiring battery storage systems to provide a "no break" response time. UPS's will be provided for communications room, file server, and selected medical equipment. The UPS will be located adjacent to the main switch room in a dedicated UPS room with a redundant configuration and will be rated for 30 minutes continuous power (at end-of life).

Lighting Systems

Internal

Illumination levels will be based on the recommendations of AS/NZS 1680 series on Interior lighting.

In areas where the primary focus is on medical care, the main emphasis will be on the needs of staff to examine, treat and observe patients and to carry out procedures and the lighting schemes in these areas will reflect this. In areas that are designed for patient occupation and not for treatment the main emphasis will be on creating a comfortable visual environment that will aid the psychological well being of patients.

Factors to be taken into consideration in the lighting designs include:

- The use of natural daylight, where possible
- Design life for electrical components
- Glare control
- Direct and indirect illumination
- Minimise maintenance costs
- Architectural aesthetics
- Energy efficiency and management

The lighting design will consider the above factors and where appropriate design solutions will be selected with a view to overall energy efficiency whilst balancing operational, maintenance and functional requirements.

External

Illumination levels will be based on the recommendations of AS/NZS 1158.3.1: *Lighting for Roads and Public Spaces - Pedestrian lighting*. Consideration will be given to the control of spill lighting for external lighting and will follow the recommendations set out in AS/NZS 4282: *The control of the Obstructive Effects of Outdoor Lighting*.

Energy Management and Control

Energy management associated with the electrical services will be provided as follows:

- Sub-metering of power and lighting supplies
- Provision of a lighting control system for general area and external lighting
- Use of energy efficient luminaires, lamps and control gear

4.10.4 Information and Communications Technology (ICT)

ICT services have a key role in the service delivery for the new building. A flexible and forward looking ICT strategy is proposed to deliver up to date relevant technology services. The development of ICT services infrastructure recognises that specific ICT hardware, enterprise applications and specialist services such as picture archiving and communications systems (PACS) will continue to evolve and be upgraded throughout the life of this project. The requirement is therefore for high performance, flexible and standards based (rather than proprietary) solutions.

The design of the ICT services includes a structured cabling system (SCS), based on floor distributor communications rooms, and linking to technical outlets. Rack mounted equipment will enable connection to backbone networks.

The communications systems will to be designed to provide the new building with the communications infrastructure that will complement the information technology and functional needs. All communications services will be designed to:

- Provide flexibility, built-in spare capacity and expandability
- Provide ease of ongoing management
- Be cost effective (both in the initial installation and life cycle)
- Provide full redundant pathways
- Support existing applications as well as emerging technologies and future applications so as to accommodate future expansions.

The following has been adopted for this facility:

- VoIP telephony will be adopted as the primary “telephony” service but will be supported/backed up by other technologies for specific direct lines to departments including “disaster recovery” phones and other analogue devices such as fax machines.

- The implementation of the backbone infrastructure cabling (both fibre optic and copper) together with cable pathway redundancies.
- The implementation, size and location of the individual Floor Distributor/Building Distributor.
- The type/class of horizontal cabling to be used (from the floor distributor to the technical outlets).

Other ICT services include

- Voice and data services;
- Wireless Local Area Network (WLAN);
- Public phones;
- Public Address System;
- Patient (Nurse) Call System;
- Unified Messaging System;
- MATV System;
- Audio Visual and Videoconferencing.

4.11 Stormwater Management

The stormwater management concept for the site is described in the Integrated Stormwater Report prepared by Robert Bird Group contained in **Appendix 8**. The site is within the Upper Parramatta River Catchment and as such all stormwater detention design must comply with the Upper Parramatta Catchment Trust Stormwater Design Guide (UPRCT design guide). Consideration has also been given to Part R of Council's Development Control Plan.

Stormwater management will be provided for the development. Underground piped stormwater systems will be provided through the site to convey runoff from internal catchments. The underground drainage system will be designed to convey the 20 year design flows. For storm events in excess of the 20 year design storm flows will be conveyed through the site as overland flow.

Peak stormwater drainage from the redeveloped parts of the site will be limited by using on-site detention tanks, controlled by measures outlined in the UPRCT On-Site Stormwater Detention Handbook.

In light of development at the hospital and to meet water quality measures set out in the DCP Part R, the stormwater from the new Clinical Services Building will be redirected to a new detention tank within a proposed on-grade car park adjacent to the existing Child Care Centre. Stormwater quality measures will be provided upstream and downstream of the tank. These measures are to be implemented as part of the civil works required to enable the existing hospital to continue operating.

The stormwater runoff from the eastern catchment that takes in the new building is to be treated to remove pollutants through two sets of measures to the targets set out in Council's DCP 2006 Part R Table 4. This will provide a considerable enhancement to the water quality discharging from the site into council's stormwater assets.

As a result of the detention works, the current pressure on the existing detention basin will be considerably reduced due to the incorporation of the new underground tanks. The existing connection locations to council's drainage system will be retained which means that very little work will be required on council's existing infrastructure.

Stormwater quality will be improved by the use of combined gross pollutant trap / oil and silt arrestor devices to provide filtration and sedimentation in accordance with Blacktown City Council policies. This will provide a considerable enhancement to the water quality discharging from the site into council's stormwater assets.

4.12 Environmentally Sustainable Development

The key sustainable development objectives for the development are based on the three principles of social, environmental and economic sustainability. The scope and approach for sustainable design include:

- In conjunction with the functional requirements, the building form will incorporate passive design considerations to minimise the capacities and operation of engineering services, and to minimise energy use;
- The building's passive design and engineering services will complement each other, through an integrated design process involving all disciplines right from the beginning, to achieve the sustainable design outcomes for the whole building;
- The required sustainable design outcomes include thermal comfort, visual comfort and acoustic comfort for the building users, as well as ensuring good indoor air quality;
- The building form (including the shape, size, depth and orientation of the floor plates, etc) will be optimised to minimise solar heat gain, maximise day lighting access and benefits, and provide optimum energy efficiency outcomes;
- The engineering services and building passive design will complement each other in design and operation to jointly achieve the functional outcomes for the building, including providing an energy efficient, healthy, thermally comfortable and acoustically acceptable indoor environment;
- Water conservation and water cycle management has been considered in the design including rainwater reuse and stormwater management;
- Only environmentally sound materials (with minimal impact on the environment, minimised use of non-renewable resources, no-hazardous substances, minimised impact on indoor air quality and high recycled/recyclable content) will be used wherever possible.

The environmental performance of the development will be assessed by using the NSW Health facility document, *Technical Series TS11 Engineering Services and Sustainable Development Guidelines* includes provisions for sustainable building design. Generally these provision require consideration be given to passive design, indoor environment quality, energy conservation, water conservation and environmentally sound materials. Section J of the BCA sets regulations for energy efficiency that must be met by the design.

A number of ESD features have been identified as viable initiatives for the development. These features have been highlighted as they are considered to have a high relevance to the sustainable outcome of the development. The sustainability features identified range from passive design features aimed at reducing energy consumption, water efficiency and conservation and advanced automation and controls. These measures include:

1. Architecture

Efficient Building Orientation:

- The building envelopes have been setback in response to solar access planes. This will ensure that an ideal amount of sunlight is achieved in the public domain particularly the three new entry forecourts: east, west and central. These setbacks also recognise the importance of achieving shaded areas particularly through summer when the highest level of solar gain is possible.
- The CSB comprises two podium levels and three IPU 'fingers' with courtyards between. The 'fingers' will provide shading to the podium levels below, reducing the demand on building services.
- Limited northern exposure.
- The Hospital Street will be a high quality public domain space with good solar access.
- Entry canopies have been orientated to provide shade and shelter at the main entry points.
- Building orientation contributes to good quality outdoor public spaces.

Facade Systems:

- High performance building envelope incorporating high levels of insulation.
- High performance glazing will be incorporated with external feature coloured glass fin sunshades to minimise heat gains within the building.
- The Inpatient ward 'fingers' have been designed for optimal natural light and views, including outlook into the feature landscaped courtyards between 'fingers'.

Building Materials:

- A concrete structure is proposed for high thermal mass to keep the space cool during the summer and radiate heat during the winter.
- Internal materials and finishes will be selected with low level Volatile Organic Compounds.
- All timber and composite timber products are to be sourced from sustainable sources.
- Recycled or recyclable, environmentally friendly, building materials used where possible.

Bicycle Provision.

- The design incorporates a direct accessible pedestrian link to the Multi-Storey Car Park where there are public and staff bicycle racks. There will also be external bike racks located adjacent the main entry points to the CSB.

Places of Respite

- Places of respite will be provided in the CSB both externally (courtyards) and internally (on Levels 3 & 4 of the Hospital Street). This includes patient respite lounges, dining rooms, courtyards & activity areas. A landscaping master plan will enhance and revitalise the existing surroundings.

2. Electrical

Optimal lighting design.

- Optimal lighting levels to meet all the relevant standards and brief requirements.
- Energy efficient light fittings such as T5 lamps, luminaires with high Light Output Ratio and the use of LED lighting (where suitable).
- Promote patient/public/staff wellness through the use of high-frequency ballast, better quality, fluorescent lighting with less maintenance.
- Efficient external lighting compliant with AS1158.3.1. Luminaires have been selected on their technical criteria in maximising downward light distribution and illumination. Lighting control will be achieved using a combination of photo-electric (PE) cell and timer control. The selected luminaires have good cut-off performance, light distribution control and minimal waste spill and upward lighting.
- Energy efficient switching and control systems and strategies. Lighting controls generally will be achieved by manual local switches that compartmentalise corridor areas and ward areas. Rooms such as consult rooms, offices, store rooms will generally be controlled by Occupant Detection (PIR) with local manual override off switch. Public areas will be controlled from the BMS.

Optimal Electrical efficiency.

- The new CSB will have separate metering to the lighting and general power and will enable BMS monitoring. This will ensure that the building will operate efficiently and effectively.
- The main electrical plant is centrally located in the CEP enclosure, co-located with the mechanical chiller plant, reducing cable runs and eliminating electrical interference from the CSB building.

Power Generation.

- The proposed CSB will incorporate a co-generation plant to provide base load power. The design will incorporate a back-up diesel generator set to provide temporary emergency power to selected electrical services.

3. Mechanical

Air conditioning

- The CSB will be designed with energy efficient air conditioning systems.

Reduce Space Heating

- The CSB will be designed with high efficiency heaters.

Reduce refrigeration energy

- Outdoor air rates will be reduced where possible to min code
- Economy cycles will be used
- Optimum efficiency water chillers will be used (selected according to load profile of the CSB).

Central Energy Facility

- A central energy facility will be provided within the multi storey car park to house the major refrigeration, space heating, standby generation and electrical substation plant. This location will enable simpler and more efficient maintenance and enhances flexibility for the future.

Building Management System

- The new CSB will be integrated with the existing hospital BMS and all major hydraulic and fire equipment will be monitored.

4. Hydraulic

Water Conservation.

- Site rainwater harvesting. Storm water will be collected and recycled by draining rainwater into an in-ground rainwater retention tank under on-grade Carpark P11. This water will be reused for toilet flushing, irrigation of the internal courtyards and fire test drain down water;
- Water efficient fittings and fixtures;
- Low water use landscapes utilising native species.

Materials.

- All pipework will be environmentally friendly.

Water heating.

- The CSB will be designed with energy efficient water heating systems. Gas is currently being used for the proposed BMHU (separate approval) and is being investigated for the CSB.

5. Commissioning

Building guides

- All consultants will be preparing a simple, easy to use, building user guides and Maintenance Guides as part of the CSB handover process to the WSLHD.

4.13 Demolition

No buildings are to be demolished as part of this application. Any demolition will be undertaken in conjunction with works required to enable the existing hospital to continue operating.

4.14 Earthworks

The proposal will require the excavation for construction of basements. Excavation is shown on the civil drawings contained in **Appendix 4** of **Volume 2**. Surplus excavated material will be removed from site.

Due to the relatively shallow depth to competent rock across the site, and the depth of the excavation, the proposed excavation retention system will be a combination of contiguous piles, soldier piles and temporary batters.

4.15 Signage

Appropriate and comprehensive signage is to be provided at the Blacktown campus. Signage will clearly identify staff, patient and visitor areas. External signs will include directional signs, illuminated signs, road marking and street signs designed and located in accordance with regulatory requirements.

Specific signposting will be required for the Blacktown campus to link the site with CBD and beyond. Appropriate locations will be determined through liaison with Council.

Temporary signage will be installed during construction to clearly identify temporary access arrangements.

4.16 Public Art

Consultation with user groups and the hospital community is being undertaken to identify opportunities for public art in the hospital street and public spaces in the vicinity of the new building. These will be resolved during detailed design.

4.17 Safety and Security including Crime Prevention Through Environmental Design

The safety and security of staff, patients and visitors is of the highest priority and has been integrated into the planning and design of the new facilities. The facilities will comply with the *NSW Health DS36 – Safety and Security Guideline ‘Protecting People and Property – NSW Health policy and Guidelines for Security Risk Management in Health Facilities,’ NSW Health Facility Guideline – Part C* and other OHS documentation.

A number of security features will be introduced to the site as follows:

Table 1 Security Features

Safety/Security Issue	Measure
Crime prevention by environmental design	<ul style="list-style-type: none"> • Territorial design <ul style="list-style-type: none"> - landscaped areas to be maintained to a good standard. - clear delineation between public and private areas. - signage, site maps and location of activities to avoid conflict. - use of bollards and access barriers. • Surveillance <ul style="list-style-type: none"> - effective sightlines between public and private spaces. - effective use of lighting. - landscape, building position and activities orientated to maximise natural surveillance. - CCTV in high risk and high security areas including ED and ICU, public entrance, car parks, education and research, administration, pharmacy, and methadone unit. • Access Control <ul style="list-style-type: none"> - physical or symbolic barriers to control or restrict pedestrian and vehicle movement of paths, roads, fences, lines of lighting and signs.
Design for security	<ul style="list-style-type: none"> • Exits and entries <ul style="list-style-type: none"> - design will minimise public access to restricted areas. - visitors will access the building via the main entry, security will be provided at the main entry. • Patient safety and security <ul style="list-style-type: none"> - effective design of waiting rooms, reception areas and signage. - control of access and egress. - management of wandering patients from rehabilitation, aged care and emergency departments. - Management of mental health and other disturbed patients including safe areas for containment and observation, preventing means of escape (e.g. proximity alarms). • Staff safety and security <ul style="list-style-type: none"> - staff to have ready access to exits as escape routes if an aggressive incident occurs. - effective design of reception and waiting spaces. - management of conflict with patients and relatives. - staff to have ready access to exits as escape routes if an aggressive incident occurs.

Safety/Security Issue	Measure
	<ul style="list-style-type: none"> - staff movement around the hospital site e.g. to and from public transport, car parks, staff accommodation. - access to alarms, assistance and support from colleagues. - after hours working and working in isolation. • Secure storage of confidential records and files. • Secure storage of drugs and other supplies.
Design of building elements and building services	<ul style="list-style-type: none"> • Access control via electronic locking system, to allow lock down of the whole facility from a centralised point. • Access control system with specific levels of staff access programmed to control movement throughout the facility. • Doors <ul style="list-style-type: none"> - lockable and alarmed. - entry doors to meet requirements of the BCA - after hours public entry to be controlled and fitted with video/CCTV intercoms to allow screening of members of the public. - glazing in doors and panels beside doors will be resistant to breakage. • Lockable external windows. • Security grilles to be used in high security areas. • External and internal lighting to be designed to maximise security and meet relevant Australian Standards. • Car parking areas <ul style="list-style-type: none"> - to be well lit at night, with minimal impact on neighbouring residential properties. - located in easy walking distance of hospital buildings. - Staff car parks to be fitted with alarms.

4.18 Operational Waste Management

Waste generated by the development will be managed in accordance with key policies and guidelines including:

- NSW Health guidelines for the management of clinical and related waste including *SWAHS Waste Management Policy Manual* and *NSW Waste Reduction and Purchasing Policy* (WRAPP);
- *Waste Management Guidelines for Health Care Facilities – August 1998*;
- National Clinical Waste Management Industry Group Code of Practice;
- Relevant legislation relating to Environmental Protection and Australian Standards;
- *NSW Occupational Health and Safety Act (2000) & NSW OH&S Regulation (2001)*.

In accordance with NSW Health requirements for health care facilities, a Waste Management Plan will be prepared for the site providing detailed information regarding the nature and volume of waste generated by the development and the means of storage and disposal of waste from the site. Waste management practices will adopt the principles of reduce, reuse, recycle, treat and dispose.

The major components of the waste management system will include:

- Waste segregation at the source - Clinical waste bins, cytotoxic bins, Anatomical (body parts) bins, sharp containers, general waste bins, commingled recycling bins, paper recycling bins, food waste bins, security document destruction bins and - all standardised and colour-coded.
- Waste streams - Clinical & related waste, general, recycling.
- Storage and transport - cold storage for contaminated waste and body parts; transport in safe (locked bins), leak proof containers.
- Waste treatment - sterilization, autoclaving, shredding, grinding, incineration of clinical & related waste.
- Waste disposal - local Council approved, engineered, sanitary landfill.
- Waste minimisation procedures and recycling practices is promoted throughout all health service facilities.

Waste Segregation

Waste will be segregated at the point of generation. Colour coded (closed) mobile bins will be used to contain and transport waste. Bins will be provided by WSLHD appointed contractor(s) on an exchange basis. WSLHD also utilises other containers such as cardboard boxes to collect paper & toner cartridge recycling and skip bins to collect scrap metal for recycling.

Waste Streaming

Hospital waste can be divided into a number of broad categories which are defined in the NSW Health Department's *Waste Management Guidelines for Health Care Facilities, 1998*. Clinical, cytotoxic, pharmaceutical, chemical and radioactive wastes are classified as Hazardous wastes under Part 3, Schedule 1 of the Waste Minimisation and Management Regulation, 1996 and Section 3 of the Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes (EPA 1998).

Table 2 Waste Streaming

Waste Category	Description
Clinical Waste	<p>Waste which has the potential to cause sharps injury, infection or offence (unless treated to standards approved by the Director General of NSW Health). When packaged and disposed of appropriately, there is virtually no public health significance. Clinical waste includes the following (unless treated to standards approved by the Director General of NSW Health):</p> <ul style="list-style-type: none"> • sharps (include needles and other sharp objects or instruments designed to perform penetrating procedures).

Waste Category	Description
	<ul style="list-style-type: none"> human tissue (excluding hair teeth and nails). bulk body fluids (free flowing liquids normally contained within a disposable vessel or tubing, not capable of being safely drained to the sewer) and blood. visibly blood stained body fluids and visibly blood stained disposable material and equipment. laboratory specimens and cultures. animal tissues, carcasses or other waste arising from laboratory investigation or for medical or veterinary research.
Cytotoxic Waste	Material contaminated with residues or preparations containing materials toxic to cells, principally through action on cell reproduction, and includes any residual cytotoxic drug and any discarded material associated with the preparation or administration of cytotoxic drugs.
Pharmaceutical Waste	Pharmaceuticals or other chemical substances specified in the Poisons List under the <i>Poisons and Therapeutic Goods Act 1966</i> . Pharmaceutical substances include expired or discarded pharmaceuticals, filters or other materials contaminated by pharmaceutical products.
Chemical Waste	Generated from the use of chemicals in medical applications, domestic services, maintenance, laboratories, during sterilisation processes and research. It includes mercury, cyanide, azide, formalin and glutaraldehyde which are subject to special disposal requirements. Chemical wastes included in the <i>Dangerous Goods Regulations</i> and <i>Poisons and Therapeutic Goods Act</i> are also included in this stream.
Radioactive Waste	<p>Material contaminated with radioactive substances which arises from medical or research use of radionuclides. It is produced, for example, during nuclear medicine, radio immunoassay and bacteriological procedures and may be in a solid, liquid or gaseous form. It includes body waste of patients under treatment. Reference is made to the <i>Radiation Control Act 1990</i> and the <i>Radiation Control Regulation 1993</i> for the use and disposal of radioactive waste.</p> <p>Radioactive waste, once lead shielded and allowed to decay to a safe level as set by the Regulatory Authority, is no longer deemed to be radioactive waste.</p>
Recyclable Products	Items which are composed of materials or components, capable of being remanufactured or reused. Items are considered recyclable if facilities are available to collect and reprocess them.
Organic Products	Products include wood, garden waste, food and vegetable scraps and natural fibrous material which are biodegradable.
Liquid Waste	Liquid wastes are defined in the <i>Waste Minimisation and Management Regulation, 1996</i> . These wastes include grease trap waste, used lubricating oil and waste normally discharged to the sewer.
General Waste	Any waste not included in the other categories and which is not capable of being composted, recycled, reprocessed or re-used. This stream includes incontinence pads, sanitary waste and disposable nappies.

Storage and Transport

Full contaminated clinical waste will be stored in designated lockable mobile bins which will be provided in all inpatient unit and clinical departmental dirty utility rooms. The size of storage facilities will be determined according to the volumes of waste generated.

Designated mobile bins for general (dry) waste will be provided in departmental equipment or disposal rooms according to the volume generated. Wet waste from pulpers will be deposited directly into mobile bins and removed from the kitchen at regular intervals.

Tamper proof reusable wall or trolley mounted containers for sharps will be provided in all clinical areas and public toilets for the disposal of sharps. Filled containers will be held in the inpatient unit and other departmental disposal rooms for collection as part of the clinical waste stream. Filled containers are held in inpatient unit and other departmental disposal rooms, for collection as part of the clinical waste stream. (BMDH uses mainly reusable sharps containers and these must NOT be disposed into the clinical waste bins).

Designated lockable mobile bins will be provided to those inpatient units and other departments generating cytotoxic waste. Bins will be located in utility and disposal rooms according to the volume generated. All disposal rooms used for the storage of cytotoxic waste will be fitted with a hand basin.

Waste bins will be transferred to inpatient unit and clinical departmental disposal rooms and held for collection and removal in the waste holding area on a regular basis. Waste will be removed from the health service secure waste holding area via a dispatch dock situated in the north west section of the existing general hospital building and transported off-site by the appointed contractor(s).

Waste Treatment

No clinical or related waste will be disposed of on the site. All waste will be removed from the site and disposed of by licensed contractors.

Waste Disposal

Liquid trade waste will either be pre-treated prior to discharge to render it safe, or will be contained in sealed, covered and banded drums for disposal by an appropriate trade waste disposal contractor. Treatment systems, pits and associated apparatus will be developed with regard to Sydney Water requirements.

Radioactive waste will be disposed of in accordance with WSLHD *Waste Management Policy & Procedures Manual*.

Prior to discharge into the sewer system, chemotherapy and radiotherapy waste water discharges are to be treated strictly in accordance with guidelines issued in the following publications:

- NSW Department of Health *Waste Management Guidelines for Health Care Facilities*, 1998.
- EPA Environmental Guidelines Classification and Management of Liquid and Non-Liquid Waste.

Waste Minimisation and Recycling

Recyclable waste including paper, cardboard, glass, aluminium and plastics will be disposed of in separate bins. All toner cartridges will be recycled in appropriate containers, scrap metal will be recycled in the allocated metal skip bin.

4.19 Hazards

Some dangerous goods necessary for the provision of services are stored on the site with licences from WorkCover. These include liquid oxygen and nitrogen, diesel for emergency generators and other flammable liquids (in very small quantities only). Class 6.1 cytotoxic drugs (with small quantities of active ingredients) will also be stored in accordance with NSW Health guidelines.

Notwithstanding, the design of the facilities for the receiving, storage, handling and use of hazardous materials and the proposed operations of the hospital will be in accordance with the relevant codes and standards.

Diagnostic and clinical treatment radiation equipment will be present and used in the new cancer centre. Shielding requirements for imaging equipment will be provided in accordance with manufacturers recommendations. A radiation consultant will provide shielding requirements for the internal structure and that surrounding it. The design will be developed so as to fully comply with the relevant Australian Standards.

Adherence to the relevant standards and those in relation to dangerous goods safety, ensures that the facilities and activities will be in accordance with best-practice achievable for a clinical facility, and will secure an acceptable level of safety.

4.20 Development Staging

The development will be constructed within the environment of a working hospital and consequentially works will be implemented in stages.

Details of construction staging will be resolved during detailed design stage and once a contractor has been appointed. Of paramount importance will be the need to ensure that the current hospital remains operational and accessible by staff and visitors, including the provision of parking as required for staff and visitor requirements, and with minimal impacts on the amenity of nearby residents.

Staging plans for all works on site, including the development which is subject of this application are contained in **Appendix 5 of Volume 2**.

4.21 Construction Management

Construction Traffic

An outline Construction Management Plan is contained in **Appendix 9** and a Construction Traffic Management Plan is contained in **Appendix 10**. More detailed plans will be prepared at the construction stage of the development by the appointed contractor.

A key element of the construction traffic management plan is the continuous supply of parking for the continuing operation of the hospital during construction. An offsite parking area will be provided to provide staff parking during the construction period to provide greater Flexibility in construction staging and minimise impacts on existing hospital operations.

Provision will be made for pedestrians and cyclists to pass the worksite safely. Suitable pedestrian road crossing points would be maintained. Traffic controllers or other traffic devices to direct traffic would be provided in accordance with AS 1742.3: 1996.

The construction schedule for the development will also aim to minimise:

- disruption to traffic movements particularly at peak periods;
- interference with public transport services.

Adequate fencing will be installed around the perimeter of the construction site to restrict unauthorised public access.

All demolition and construction related vehicles would comply with relevant Blacktown City Council traffic and parking regulations. Vehicular access points to the construction site will be selected to avoid conflict with high volume pedestrian desire lines.

A detailed construction traffic management plan would be prepared at the construction stage of the development. Measures will recognise the high volumes of pedestrians in the vicinity of the site.

Provisions will be made for pedestrians and cyclists to pass the worksite safely. Suitable pedestrian road crossing points would be maintained. Traffic controllers or other traffic devices to direct traffic would be provided in accordance with AS 1742.3: 1996.

The construction schedule for the development will also aim to minimise:

- disruption to traffic movements particularly at peak periods
- interference with public transport services

Adequate fencing will be installed around the perimeter of the construction site to restrict unauthorised public access.

All demolition and construction related vehicles would comply with relevant Blacktown City Council traffic and parking regulations. Vehicular access points to the construction site will be selected to avoid conflict with high volume pedestrian desire lines.

Erosion and Sediment Control

Measures will be employed on 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).

Construction Waste Management

The appointed contractors will be required to prepare a construction waste management plan prior to works commencing.

4.22 Off-Site Works

The development is likely to require some off-site works in areas such as access management (intersection works and traffic management works to the public street system) and utility services augmentation (new and upgraded connections to existing off site utility services) and the like. Such works will be undertaken in accordance with authority requirements.

5. ENVIRONMENTAL ASSESSMENT

The following assessment has been undertaken with reference to the environmental assessment requirements specified for the development (see **Appendix 1**).

5.1 Relevant EPIs, Policies and Guidelines

5.1.1 Objects of the EP&A Act

The objects of the EP&A Act are outlined in section 5 of the Act, and are as follows:

“(a) to encourage:

(i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,

(ii) the promotion and co-ordination of the orderly and economic use and development of land,

(iii) the protection, provision and co-ordination of communication and utility services,

(iv) the provision of land for public purposes,

(v) the provision and co-ordination of community services and facilities, and

(vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and

(vii) ecologically sustainable development, and

(viii) the provision and maintenance of affordable housing, and

(b) to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and

(c) to provide increased opportunity for public involvement and participation in environmental planning and assessment.”

The proposed development is consistent with these objects in that it:

- provides for social and economic welfare of the community through the provision of additional health services in a manner that has no significant impacts on natural or artificial resources and is suitable at this location in close proximity to the established centres;
- represents the orderly and economic use of public land by making more effective and efficient use of an existing hospital site;
- makes effective use of available utility services and infrastructure;
- provides much needed public facilities and services;
- promotes ecologically sustainable development;
- has no impact on the provision of affordable housing;
- represents a reasonable sharing of responsibilities for environmental planning between local and State government;
- provides for the involvement of the public through the exhibition process.

5.1.2 SEPP (State and Regional Development) 2011

The new clinical services building and the refurbishment of the existing hospital building is declared to be State Significant Development under Clause 8 of SEPP (State and Regional Development) 2011 being development specified in paragraph 14 of Schedule 1 of the SEPP being development with a capital investment value of more than \$30m for the purposes of a hospital.

5.1.3 SEPP No 55 Remediation of Land

SEPP55 requires an approval authority to consider whether the subject land of any rezoning or development application is contaminated. If the land requires remediation to ensure that is made suitable for a proposed use, Council must be satisfied that the land can and will be remediated before the land is used for that purpose.

SEPP55 further requires the preparation of a report specifying the findings of a preliminary investigation of the land concerned, carried out in accordance with the contaminated land planning guidelines, to be considered by the consent authority before determining an application for consent to carry out development that would involve a change of use on that land.

Preliminary environmental assessments have been undertaken followed by further targeted sampling and investigations of potential contaminated area. The results of these investigations are contained in **Appendix 2**.

Based on the results of this preliminary assessment the report concludes that there is no evidence at the borehole locations to suggest contamination conditions exceeding human health criteria that may present significant limitations to the proposed hospital development.

These investigations provide sufficient information to meet the requirements of the SEPP.

5.1.4 SEPP No 33 – Hazardous and Offensive Development

Some dangerous goods necessary for the provision of services are stored on the site with licences from WorkCover. These include liquid oxygen and nitrogen, diesel for emergency generators and other flammable liquids (in very small quantities only). Class 6.1 cytotoxic drugs (with small quantities of active ingredients) will also be stored in accordance with NSW Health guidelines.

Notwithstanding, the design of the facilities for the receiving, storage, handling and use of hazardous materials and the proposed operations of the hospital will be in accordance with the relevant codes and standards.

Diagnostic and clinical treatment radiation equipment will be present and used in the new cancer centre. Shielding requirements for imaging equipment will be provided in accordance with manufacturers recommendations. A radiation consultant will provide shielding requirements for the internal structure and that surrounding it. The design will be developed so as to fully comply with the relevant Australian Standards.

Adherence to the relevant standards and those in relation to dangerous goods safety, ensures that the facilities and activities will be in accordance with best-practice achievable for a clinical facility, and will secure an acceptable level of safety.

5.1.5 SEPP (Infrastructure) 2007

The general aim of this Policy is to facilitate the effective delivery of infrastructure in NSW. The proposed development is located within a 5(a) Special Uses Zone - Hospital and is permitted with consent. Some works can be undertaken without development consent.

Schedule 3 of the SEPP identifies traffic generating developments that require referral to the RTA. The proposed development is identified as traffic generating development requiring referral to the RTA.

5.1.6 NSW 2021

NSW 2021 is a 10 year plan to rebuild the economy, provide quality services, renovate infrastructure, restore government accountability and strengthen local environment and communities. It replaces the State Plan as the NSW Government's strategic business plan, setting priorities for action and guiding resource allocation.

The plan is based around five strategies:

- Rebuild the Economy - restore economic growth and establish NSW as the 'first place in Australia to do business'
- Return Quality Services - provide the best transport, health, education, policing, justice and family services, with a focus on the customer
- Renovate Infrastructure - build the infrastructure that makes a difference to both our economy and people's lives
- Strengthen our Local Environment and Communities — improve people's lives by protecting natural environments and building a strong sense of community
- Restore Accountability To Government - talk honestly with the community, return planning powers to the community and give people a say on decisions that affect them.

NSW 2021 includes:

- 32 Goals and 180 targets
- Priority actions to support the achievement of each target
- An annual community and business leader's forum to discuss progress and identify new initiatives
- Consultation with the community to identify local priorities and develop Local and Regional Action Plans
- Verification of data prior to the release of an annual performance report, by independent experts.

A number of the plans goals are relevant to the proposed development, in particular Goal 12 – Health: Provide world class clinical services with timely access and effective infrastructure.

To achieve the above goal the NSW Government aims to:

“provide timely access to world class health care through increased investment in infrastructure, making more beds available, and providing more nurses. By establishing Local Health Districts and new governance arrangements for the NSW health system, we are restoring local decision-making so that our hospitals and health services can be managed by those closest to the patient. As the ‘front door’ to acute hospital services, our emergency departments need targeted changes to better manage demand, and our planned surgery management strategies need to be transparent. The patient and their carers will be at the heart of these plans to ensure timely access to quality health care.”

The proposed development will provide high-level inpatient and outpatient services and will assist in meeting the goals outlined by NSW government.

5.1.7 Sydney Metropolitan Plan for Sydney 2036

The Metropolitan Plan for Sydney 2036 released in December 2010 is a major review of the previous Metropolitan Strategy – *City of Cities: A Plan for Sydney’s Future, 2005*. The Metropolitan Plan for Sydney 2036 provides a broad framework for managing growth and development of Sydney over a 25 year period. It aims to support continued economic growth for the Sydney region while balancing social and environmental aspects. It aligns with a number of State Plan priorities, including promoting jobs closer to home and improving housing affordability. The Plan draws on the strengths and principles of the 2005 Metropolitan Strategy and the 2010 Metropolitan Transport Plan. With the integration of transport and land use planning, there is now a much greater emphasis on a connected and networked city.

The Metropolitan Plan for Sydney 2036 considered higher population projections than those envisaged under the 2005 Metropolitan Strategy, with an extra 400,000 people expected in Sydney by 2031. This results in a need for an additional 770,000 new dwellings by 2036, an increase of 46%.

The Metropolitan Plan includes the following strategic directions and key policy settings:

Strengthening a City of Cities

- Make Sydney a more resilient, compact, connected, multi-centred and networked city;
- Strengthen Sydney’s role as a globally competitive city;
- Strengthen Parramatta’s role as the premier Regional City and second CBD;
- Support key economic gateways with integrated land use, infrastructure and transport planning;
- Plan to grow global businesses, investment, innovation and research & development;
- Strengthen links to Regional Cities, Australian capital cities and South East Asia.

Growing and renewing centres

- Locate at least 80 per cent of all new homes within the walking catchments of existing and planned centres of all sizes with good public transport;
- Focus activity in accessible centres and limit out-of-centre commercial development;
- Plan for centres to grow and change over time;
- Plan for new centres in existing urban areas and greenfield release areas;
- Plan for urban renewal in identified centres;
- Support clustering of businesses and knowledge-based activities in Major and Specialised Centres.

Transport for a connected city

- Implement the Metropolitan Transport Plan's \$50.2 billion in projects and enhancements;
- Target development around existing and planned transport capacity;
- Improve passenger rail capacity for Sydney's South West and North West and the Sydney-Parramatta-Penrith corridor;
- Enhance freight rail paths and intermodal terminals;
- Enhance capacity on Sydney's motorways at key locations;
- Identify long-term transport corridors for passengers and freight;
- Improve local opportunities for walking, cycling and using public transport.

Housing Sydney's population

- Plan for 770,000 additional homes with a range of housing types, sizes and affordability levels for a growing and ageing population;
- Locate at least 70 per cent of new homes in existing suburbs and up to 30 per cent in greenfield areas;
- Drive delivery through subregional targets and Local Environment Plans with follow-through on outcomes and yield.

Growing Sydney's economy

- Plan for 760,000 new jobs, with half in Western Sydney and most in cities or centres;
- Extend Sydney's Global Economic Corridor to Parramatta from Macquarie Park;
- Develop detailed land use, transport and infrastructure plans for Western Sydney employment areas;
- Support high growth and high value industries through clustering;
- Increase the proportion of homes within 30 minutes by public transport of jobs in a major centre, ensuring more jobs are located closer to home.

Balancing land uses on the city fringe

- Contain Sydney's urban footprint by focusing greenfield development in the North West and South West Growth Centres;
- Maintain and protect Sydney's rural and resource lands.

Tackling climate change and protecting the natural environment

- Reduce greenhouse gas emissions from the manufacturing and commercial sectors;
- Expand BASIX to include further measures for the residential sector;
- Prepare a climate change adaptation strategy for Sydney;
- Integrate environmental targets into land use and infrastructure decisions;
- Implement water, air and biodiversity plans for Sydney.

Achieving equity, liveability and social inclusion

- Consider social impacts in planning and assessment;
- Protect places of special cultural, open space and heritage value;
- Strengthen the State's lead on best practice urban renewal for improved liveability;
- Set affordable housing targets for State urban renewal projects.

Blacktown is identified as a major centre serving the subregion and Mt Druitt is a potential major centre. New residential land releases are focussed in the North West and South West Growth Centres with Blacktown hosting a significant part of the North West Growth Sector.

Urban renewal is to be focussed along railway corridors within walking distances of centres.

The development will reinforce the position of Blacktown as a major centre and a focus for employment and activity. It will also enable Blacktown to function as a specialised centre with a strong connection to health services and medical research and education. It will also enable Mt Druitt to evolve into a major centre consistent with the strategy.

The Strategy provides that the Department of Planning, Transport NSW and Blacktown City Council will investigate Blacktown as a priority area for urban renewal to capitalise on recent investment and future commitment to transport infrastructure and the centre's significant capacity to grow.

Blacktown will be part of the Western Express program and Mt Druitt to Blacktown will be a bus corridor priority in addition to improved services to the north west from Blacktown. Such improvements in public transport will encourage mode shift to public transport away from car based modes of travel.

The Metropolitan Strategy identifies planning targets for 2036 of an additional 169,000 new dwellings and an additional 145,000 new jobs within the North West subregion which is a significant increase on projections in the previous metropolitan strategy. The timely provision of hospital services will make an important contribution to meeting the health needs of the existing and future community of the subregion.

5.1.8 Draft North West Subregional Strategy

The Draft North West Subregional Strategy provides the linkage from the directions in the Metropolitan Plan to the regional and local level. The draft strategy is to be updated and finalised having regard to the increased projections in the Metropolitan Plan for Sydney 2036.

The North West Subregion comprises the LGAs of Baulkham Hills, Blacktown, Blue Mountains, Hawkesbury and Penrith. The Strategy identifies the following key points:

- The North West Subregion is the largest and fastest growing of Sydney's subregions.
- The North West Subregion planning targets for 2031 include approximately an additional 140,000 new dwellings and 130,000 new jobs. This represents the greatest share of Sydney's future housing growth (23%) and jobs growth (24%) over the next 25 years. These targets are to be revised upwards based on the Metropolitan Plan for Sydney 2036.
- Of the additional 140,000 new dwellings, 60,000 dwellings will be located in the North West Growth Centre (now to be 87,000 dwellings).
- Blacktown LGA is within the North West Growth Centre (covering the majority of the Centre along with the LGA's of Baulkham Hills and Hawkesbury). Much of the housing and employment growth within the North West subregion is planned to occur within Blacktown the LGA (as the majority of the North West Growth Centre and Western Sydney employment hub is located within this LGA).
- Blacktown LGA is the fastest growing in NSW, and considerable further growth in the population of the centre's catchment is expected in coming years. Additionally, the M7 Motorway and the associated Western Sydney Employment Hub to the south are expected to provide further impetus for the growth and diversification of activity in the centre.
- Blacktown is a Major Centre and Mount Druitt a potential Major Centre under the NSW Department of Planning's centres typology.
- The various attributes of the Blacktown Major Centre indicate that Blacktown Town Centre may have the capacity to emerge as a second Regional City for the North West Subregion over the next 25 years.

Blacktown LGA and its neighbouring LGAs are therefore part of a strategic growth corridor which is a key enabler to the NSW Government meeting its housing growth and job targets which are projected to continue well in excess of the timeframe of the BMDH expansion.

5.1.9 Blacktown Planning Strategy – Blacktown City 2025

Blacktown City 2025 adopted in 2008, informs Council's long term Community Strategic Plan and guides the City over the next 15 years. It identifies strategies and trigger projects which have been developed to achieve Council's vision "*to be a vibrant, healthy and safe City - A City of Excellence*". Blacktown 2025 identifies the following strategies:

- A creative friendly and inclusive City;
- Environmental sustainability;
- Vibrant commercial centres;
- A smart economy;
- Urban living and infrastructure;
- Clean green spaces and places;

- Getting around;
- A sporting City.

A set of Trigger Projects that, along with the Strategies, will help to ensure that Blacktown City 2025 is delivered have been identified. These are:

- Environmental sustainability framework;
- Blacktown Showground;
- Motor sport precinct;
- Second Sydney AFL team;
- Blacktown International Sports park;
- Becoming a Regional City;
- Urban planning framework;
- Commuter carparking;
- Bridging the digital divide.

The development is consistent with, and will help achieve the vision of the Blacktown City 2025 plan.

5.1.10 Blacktown Local Environmental Plan 1988

The sites are within Zone No 5 (a) (Special Uses—General Zone) under Blacktown Local Environmental Plan 1988 (the LEP). The objectives of this zone specifically relate to identify land which is currently used by public authorities, organisations and the Council to provide certain community facilities and services including hospitals. Development for the purpose of hospitals and purposes normally associated with and ancillary to hospitals is permissible under the zoning.

The LEP contains no development standards applicable to the development.

Clause 19 of the plan requires drainage to be provided in accordance with Council requirements with respect to the drainage of land or the drainage of other land. Discussions have been held with Council in developing the stormwater management strategy for the development.

Clause 22 deals with land adjoining designated roads such as Blacktown Road. This clause provides that development shall not be carry out on land which adjoins Blacktown Road unless vehicular access to the land from that road is made by way only of another road (not being a designated road). However the clause also provides that the council may allow permanent vehicular access to a designated road, if, in the opinion of the council, alternative access to that development is neither practicable nor provided by another road.

The ability for Marcel Crescent to accommodate additional traffic generated by the expansion of Blacktown campus is limited. Consequently an additional access is proposed. This is described in greater detail in the traffic report contained in **Appendix 11**.

Clause 24 requires satisfactory arrangements for the provision of sewerage services. Adequate services can be provided with some localised augmentation as discussed in Section 4.9.

5.1.11 Relevant Development Control Plans

Clause 11 of SEPP (State and Regional Development) 2011 provide that development control plans do not apply to State significant development. Blacktown Development Control Plan 2006 contains general controls for development. Controls included in the DCP and the response in relation to the development are as follows:

Issue	Response
Soil conservation	Erosion and sediment controls will be put in place as described in the Water Management Report contained in Appendix 8.
Tree preservation	Development will require the removal of some trees. There are no areas of natural vegetation remaining on the site. The flora and fauna impacts of the development on both sites has been assessed and found to be acceptable. Landscaping is proposed in association with the development which includes replacement locally indigenous vegetation.
Cultural Heritage	The impacts of the development on Aboriginal and European cultural heritage has been assessed and found to be acceptable.
Pollution Control	Measures are proposed to controls the quality of stormwater runoff.
Noise reduction	The acoustic impacts of the development are addressed in the report prepared by Acoustic Logic contained in Appendix 12.
Access and Parking	Council's requirements for access and parking are addressed in the Traffic Report contained in Appendix 11. An additional access to Blacktown Road is proposed.
Services	Investigations into utility services requirements for the development have been undertaken and all services are available and capable of meeting the requirements of the development with minimal augmentation.
Solar Access	Amenity impacts of the proposed development are addressed in Section 5.3.
Safety	Crime prevention through design is addressed in Section 4.17.
Waste Management	Waste management will be in accordance with State government policy as described in Section 4.18.

5.1.12 NSW Bike Plan

Arup's Transport and Accessibility Study (**Appendix 11**) outlines key provisions of the NSW Bike Plan, see below.

The NSW Bike plan recognises a growth of people riding a bike in NSW, with many finding it an affordable, practical and healthy option for everyday personal travel. The NSW Bike Plan aims to build investments and initiatives that have encouraged cycling in NSW by outlining a 10-year bicycle infrastructure plan, including:

- Construction of over 4,000 kilometres of cycle facilities in NSW

- *Delivery of extensive cycleways as an integrated component of major road upgrades*
- *Support for major events like the Sydney Spring Cycle and investment in programs to promote safe bike-riding in schools and as part of major urban development and*
- *Report cycling success stories from all parts of NSW as case studies.*

The Plan also establishes the Metro Sydney Bike Network, a regional network of high-quality cycle routes that connect the city's Major Centres and Regional Cities. The following missing links to the existing Metro Sydney Bike Network have been identified as items of priority:

- *Prospect to Blacktown*
- *Blacktown to Parramatta*

Blacktown and Mt Druitt Hospital are located in close proximity to . An opportunity to encourage active transport modes such as cycling is recognised for the Blacktown and Mt Druitt Hospital redevelopment. Specifically, bicycle facilities for hospital staff and visitors are to be provided, including bicycle storage facilities, showers, lockers and change rooms. This is consistent with the NSW Bikeplan, in that it will encourage residents, hospital staff and visitors to an active travel mode.

5.1.13 Planning Guidelines for Walking and Cycling

The guidelines are summarised in Arup's Transport and Accessibility Study (**Appendix 11**) as follows:

This document was prepared by the NSW Department of Infrastructure, Planning and Natural Resources (DIPNR) in 2004, outlining guidelines to assist land-use planners and related professionals to improve consideration of walking and cycling in strategic planning and development assessment. The guidelines have been designed to provide a walking and cycling focus to the NSW Government's Integrating Land Use and Transport Planning Policy Package.

The guidelines encourage the preparation of Transport Management and Accessibility Plans (TMAPs) as part of masterplanning and development approvals process for larger developments. TMAPs promote a mode shift away from motor vehicle use toward walking, cycling and use of public transport.

TMAPs generally comprise a background study, an action plan and an agreement between council, the proponent (developer, building owner/manager or tenant) and other relevant stakeholders, aimed at:

- *Managing transport impacts of developments;*
- *Maximising the use of public transport, walking and cycling;*
- *Reducing VKT (Vehicle Kilometres Travelled) growth by cars and commercial vehicles generated by the development*
- *Reducing car reliance; and*
- *Minimising the impacts of freight, whilst allowing for efficient freight movement.*

The guidelines also recommend the preparation of Transport Access Guides as

part of a development approval. TAGs are concise presentations of how to reach a site or venue by public transport, walking and cycling. The objective is to make the choice of travel by these modes easier. TAGs are to be prepared in accordance with the RTA/SEDA brochure, Producing & Using Transport Access Guides.

5.1.14 Integrated Land Use and Transport Package

Arup's report (**Appendix 11**) states:

The Integrated Land Use and Transport Package (DUAP, 2001) provides guidance to local councils in implementing the objective of 'promoting attractive and convenient places to live and work.' This Package emphasises the need for urban structures, building forms, land use location, development designs, subdivisions and street layouts to achieve sustainable transport objectives. The Package introduces the following concepts to be considered when planning for transport choice:

Convenience — *the transport mode needs to be easy to find and use, and to transfer from one mode to another.*

Information — *reliable information at accessible locations is essential to encourage use of various travel alternatives.*

Proximity — *transport facilities and services, such as cycle paths and bus services, need to be in close, convenient and obvious locations to people's trip origins and destinations.*

Destination choice — *the more destinations that can be linked on a public transport route, the more attractive it will be.*

Directness — *routes should take the shortest and least deviating course, with priority to achieve fast travel times for walking, cycling and public transport (e.g. pedestrian links, dedicated bus lanes, and bikeways).*

Security — *the environment for walking and waiting needs to be comfortable and safe from personal attack or conflicts with traffic (e.g. waiting areas sheltered from the elements, natural surveillance, good lighting, bike lanes on major roads).*

The Integrated Land use and Transport Package highlights the key role that planning has in facilitating sustainable transport as well as the risks of inhibiting transport choice. The Package recognises that transport planning concepts need to be considered at all stages of land use planning to result in successful urban communities. The Blacktown and Mt Druitt Hospital redevelopment proposal has been designed with consideration to the key concepts outlined in the Integrated Land Use and Transport Package.

5.1.15 Healthy Urban Development Checklist

The NSW Department of Health publication *Healthy Urban Development Checklist* (NSW Department of Health 2009) provides guidelines and checklists for identifying and improving the health outcomes of general urban development policies, plans and proposals. The checklist was designed to ensure that the key principles which promote health and wellbeing are considered at all levels of planning including policy development, plan making and development assessment. It consists of a number of high-level principles, arranged as a series of questions that should be asked of development policy, plan or proposals.

The document notes 'that 'the advice provided is not intended to replace the work of planners; it should not advise planners to accept or reject a policy, plan or proposal. It is more about identifying health effects and suggesting how positive effects can be maximised and negative health effects minimised' (2009:3).

Four key principles are identified in the checklist: equity, early engagement in policy or plan making, interdependence of healthy urban development, and building cross-sectoral partnerships. These principles are reflected in the ten characteristics of healthy urban development outlined in the report. These characteristics, and a summary of how the proposed development addresses the checklist, is presented below.

Characteristic of healthy urban development	Comment on proposed development
Healthy food	Provision of, and access to, healthy food will be considered in accordance with relevant NSW Health policies and guidelines.
Physical activity	A range of design and landscaping measures will be incorporated to facilitate passive recreation. These include streetscape pedestrian paths and access, bicycle facilities, green zones and interior courtyards.
Housing	Not applicable.
Transport and physical connectivity	The proposed development is serviced by public transport and shuttle buses, facilitates cycling and its design considers internal pedestrian accessibility. A full assessment against the transport and physical connectivity is presented in the attached Transport and Accessibility Study.
Quality employment	Jobs will be provided within a 30 minute travel time of residential areas, in reasonable proximity to employment centres, and in a location serviced by public transport. The development will provide access to employment opportunities in different job sectors, for different levels of skill, and will help to develop training opportunities. More than half the staff working within the Blacktown travel zone live within in the Blacktown LGA.
Community, safety and security	The proposed development has been designed with Crime Prevention Through Urban Design principles in mind as outlined in Section 4.17.
Public open space	The proposed development provides green zones and courtyards appropriate to its intended use. Streetscaping will be of a high standard and incorporate trees and plants, and along with high quality building

	<p>facades will encourage walking.</p> <p>Landscaping will incorporate shaded pocket parks with seating set back and screened from the street to create areas of respite.</p> <p>Public spaces are designed to be universally accessible and inclusive, and smoking/drinking in public will be restricted.</p> <p>Signage will be clear and well-displayed, and intuitive way-finding has been a key architectural design driver.</p>
Social infrastructure	<p>The proposed development will provide a high standard and broad range of health services to the entire population within its catchment area. These services will be universally accessible, and designed to be inclusive. The Blacktown campus expansion has been designed with patient-focused care as a key design driver. It will accommodate cancer care, an expanded emergency department and critical care ward, specialty inpatient beds, and an ambulatory care unit.</p> <p>The facility has been developed in accordance with needs identification and planning conducted by the WSLHD.</p> <p>The proposed development will accommodate a range of teaching and training opportunities.</p>
Social cohesion and social connectivity	<p>The proposed development includes several public spaces including courtyards and green areas that facilitate public interaction and provide settings for people to gather in small groups.</p> <p>By providing an improved and larger hospital the development would offer opportunities for improving health outcomes and equity in its catchment area. Vulnerable and disadvantaged groups would have fair and equitable access to services.</p>
Environment and health	<p>The proposed development will incorporate a work travel plan, discussed in the attached Transport and Accessibility Study, to encourage public transport usage. The development incorporates water saving through urban design principles, and a full water management report has been completed and is attached.</p> <p>Disturbance and health effects associated with noise, odour and light pollution have been considered in this EIS.</p>

The proposed development is considered to generally have a high level of consistency with the criteria outlined in the *Healthy Urban Design Checklist*.

Refer also to the Transport and Accessibility Study prepared by Arup and contained in **Appendix 11**.

5.2 Built Form and Urban Design

5.2.1 Height Bulk and Scale in Context

The proposed building envelope is located towards the centre of the site. The new and amended access arrangements and internal circulation system for the site results in a modified grid internal street pattern with buildings that sit logically on the site behind the existing main hospital building rising with the slope of the land.

The site is within a Special Uses (Hospital) Zone and consequently the planning controls envisage a building of institutional character and scale different to the character of residential development in the surrounding area.

The new building integrates with the existing hospital building through the interconnecting 'new hospital street' as described in Section 4 above. The architecture of the new building is distinctly different to the existing building, adding to the interpretation of the history of development and progressive improvements in health service delivery from the site. The function linkages and integration are strong however. Further, the proposed landscape plan and public domain improvements provide a further unifying element to the site.

The new main hospital building sits behind the existing hospital building and, due mainly to the topography, rises above the height of the existing building by some 16 metres. This would not be generally visible from the surrounding street system.

Of importance to consideration of bulk and scale is the relationship of the new building to adjoining development and in particular the low to medium density residential development adjoining the site to the east, west and south.

The Stage 1 new hospital building is located some 50 metres from the nearest residential boundary to the east with boundary vegetation retained. The height of the building at its closest point is some 26 metres above ground level resulting in a generous setback providing an appropriate transition in form.

To the south of the new main hospital building is the new multi-storey car park building subject to a separate development application to Blacktown Council. This building is approximately 75 metres from the eastern residential boundary and has an overall height of approximately 11 metres.

The built form and scale of buildings on the site will increase in a manner consistent with the services provided and the size of the catchment area population. The hospital will continue to form an important element of the wider regional centre of Blacktown and make an important contribution to the growth and development of this regional centre role. In this context, the bulk and scale of the development is compatible with the character of the site

and the existing buildings on the site. Generous boundary setbacks and retention of boundary vegetation results in an appropriate transition to neighbouring residential uses.

5.2.2 Design Quality

Overall Site Layout

The elements of the overall site layout are described in Sections 1.1 and 4.3 and in the design report prepared by SKM S2F in **Appendix 5**. The site master plan incorporates the following key elements:

- A clear internal street system characterised by a grid movement system comprising:
 - A new “Hospital Street” as an east/west civic route as a link between the existing hospital building and the new hospital building and providing a pedestrian spine linking the site from east to west including the recently completed UWS teaching and research facility, the main hospital buildings and extending to the child care centre at the eastern end of the site;
 - A new east west accessway for vehicular access around the central activity core and providing access to staff and visitor car parks; : A new north-south route accessway from a new intersection with Blacktown Road complementing the existing access from the west;
 - North south and east west primary pedestrian movement networks;
- The series of primary and secondary accessways arranged in a rough grid pattern provides a clearly defined hierarchy to improve wayfinding across the site and establish entry points/ addresses for buildings including drop off points and the removal of general staff and visitor traffic from the activity centre;
- The movement network relates to existing and future building zones that respond to site topography, provides separation between buildings, establishes a visual and physical route through the site and provides an opportunity for a public space between the buildings;
- New entry forecourts at the eastern and western ends of the new hospital street;
- Future building zones have been defined at the centre of the site and to the south of the existing main building enabling the activity centre to be located at the centre of the site with lower intensity uses on the periphery. This minimises overshadowing and maximises solar access into buildings, courtyards and the public domain.

Building Design

The new building incorporates the following key design elements:

- Establishes the new hospital street as a unifying element between the existing hospital building and the new building;
- Provides access points and associated drop off areas at the eastern and western end of the building reinforced by building design;

- Responds to and reinforces new access arrangements to the site;
- Incorporates a logical layout with clearly defined wayfinding and access points;
- Integrates mechanical plant into the design of the building;
- Provides courtyards and open spaces for staff and visitors.

Building articulation is provided by a combination of elements including variable window sizes, colour patterning of façade sections and colourful sun shading devices. The facades are dark, rich and earthy with highlights of strong colours. The new building has a distinctly different character whilst being functionally integrated into existing buildings.

5.2.3 Details of Proposed Open Space, Landscaped Areas and Public Domain

Details of proposed open space, landscaped areas and the public domain are provided in the landscape drawings and report prepared by Site Image in **Volume 2**. Landscaping is used as a unifying element and a setting for the new buildings. Hard and soft landscaping is used to provide a clear and legible wayfinding to the main entries to the hospital and the pathways to parking areas.

Passive spaces are provided for staff and visitors and the main hospital street is enhanced to provide an attractive environment for staff and visitors.

The landscape concept responds to the internal street pattern and location of building zones. The central civic space will be a major focus and unifying element to the site with the new street system accommodating pathways and landscaping that is logical and readily understood.

The landscape responds to the movement system and emphasises arrival points and key movement pathways. Courtyard spaces are provided for staff and visitors and landscaped areas contain a range of furniture including lighting, seating and the like.

Consideration has been given to landscaping on a site wide basis providing an integrating role and responding to the emerging movement system and site access. Landscaping is used to delineate vehicular and pedestrian areas, safe passive recreational areas and quiet zones for staff and visitors.

It is considered that the landscaping responds to the urban form and the built form in a manner that provides an appropriate setting for buildings, enhances the movement system and provides comfortable, safe, useable and legible ground level spaces.

5.2.4 Impact on the Existing at-grade Car Parking

Detailed consideration has been given to access to parking for staff and visitors during the construction program. The staging drawings contained in **Appendix 5** of **Volume 2** indicate the means by which parking will be maintained at the existing hospital during the construction phase. The proposed clinical services building is located on land currently used for car parking. In order to provide sufficient parking numbers for the construction period, additional parking will be provided as follows:

- Additional at grade parking spaces on site at three principal locations being P7, P10 and P12 as shown on the staging drawings;
- A temporary off site staff car park comprising some 211 spaces.

Once the multi-storey car park is completed, there will be sufficient car parking on site to meet the needs of the existing hospital and the new buildings.

The provision of at grade parking for the existing hospital, the temporary offsite parking and the new multi-storey car park are subject to separate approvals.

5.3 Environmental Amenity

5.3.1 Solar Access

Shadow diagrams of the new building have been prepared by project architects SKM S2F and are contained in **Appendix 6 of Volume 2**.

The building has been designed having regard to protecting mid-winter solar access to adjoining residential properties. The SKM S2F shadow diagrams indicate that the town house development to the east of the site retain solar access until approximately 2.30pm in the mid-winter afternoon and thus are only affected to a minor extent within the period between 9.00am and 3.00pm mid-winter. The area affected by additional overshadowing at that time is also affected from shadows from existing trees on the boundary of the site. Only a small part of the proposed building creates the overshadowing and for a short period of time.

5.3.2 Visual Privacy

Visual privacy is to be provided through façade design and building placement on the site. There is potential for overlooking from the upper levels of inpatient units from the hospital building over the adjoining residences to the east of the site.

This potential has been minimised by:

- Building setbacks from adjoining boundaries with the setback from the new building to the adjacent residential boundary being 50 metres at the closest point. This provides adequate building separation to manage the effects of overlooking.
- Building façade design - the orientation of the new building is to the east with the nearest dwellings being to the south east. Retention of boundary vegetation adjacent to the closest town houses would assist in restricting any overlooking.
- The provision of glazing screen elements on the edge of windows on each level to direct views away from nearby dwellings.

It is considered that the combined effects of building separation and façade design will ensure that privacy impacts of the proposed development can be managed to an acceptable level.

5.3.3 View Loss

Consideration has been given to the impact of the proposed development on existing views across the site from the surrounding area.

The high point of the site is located in the southern part of the site at RL72.5 in the vicinity of the existing helipad. The land to the south falls away generally from this high point. There are limited district views from the seniors housing buildings located to the south of the site with views restricted by buildings on the site and perimeter landscaping which is to be retained. Proposed buildings are located some 145 metres from the southern boundary. Impacts on district views are considered to be minimal.

Residential areas adjoining the site to the east and west are generally at the same level as the hospital or are at a lower level. Views over the hospital site are limited by boundary features such as fences and vegetation. Whilst new buildings will be visible from the surrounding area, district views are not currently available and will not be impacted to any significant extent.

The hospital buildings will be visible from surrounding roads and more distant public places including the existing CBD of Blacktown as indicated on the photomontages contained in **Appendix 7 of Volume 2**. This is considered a positive impact in that greater recognition will be given to important public buildings in the context of the regional centre of Blacktown and signify an important institutional use being the major public hospital in the sub-region.

The new hospital building has been designed as modern attractive building with a varied façade and building elements that have focus and strength. They integrate well with the existing buildings on the site and will make a positive contribution to the visual quality of the site assisted in no small part by the planned improvements to the landscape setting of the hospital.

5.3.4 Wind Impacts

The proposed hospital buildings will be designed with façade and ground level features to minimise the potential for adverse wind conditions at the base of the buildings. The buildings are considered medium rise and this will not be subject to the wind forces commonly experienced by high rise buildings.

Windy conditions can cause discomfort to pedestrians and people using open spaces and can affect the growth of street trees. Moderate breezes are important for pedestrian comfort.

Features have been incorporated into the design of buildings to minimise adverse wind conditions. These include:

- Provision of canopies above pedestrian level at the base of the hospital buildings;
- Provision of courtyards and civic spaces to separate buildings;
- Use of landscape features to disperse wind flows.

Given the height of the buildings and the proposed façade and ground level treatment, it is expected that impacts of adverse wind conditions on pedestrian comfort will be minimised.

The wind impacts of the proposed building have been considered by CCP Wind Engineering and Air Quality Consultants in their report contained in **Appendix 13** of **Volume 1**. This report concludes that the wind conditions around the site are expected to be suitable for use as a public accessway.

5.4 Ecologically Sustainable Development

ESD initiatives associated with the development are described in Section 4.12. A number of ESD features have been identified as viable initiatives for the development. These features have been highlighted as they are considered to have a high relevance to the sustainable outcome of the development. The sustainability features identified range from passive design features aimed at reducing energy consumption, water efficiency and conservation and advanced automation and controls. These are supported by sustainable transport initiatives described in Section 5.6.

The building will be designed to comply with Section J of the Building Code of Australia 2011. The principles of ecologically sustainable development are set out in Clause 7(4) of Schedule 2 of the EP&A Regulation. The consistency of the development with these principles is discussed below.

(a) the precautionary principle, namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:

- (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and*
- (ii) an assessment of the risk-weighted consequences of various options,*

The design of the development has been informed by detailed investigations into the site and its context in order to design a building that has minimal impacts on the amenity of the surrounding area and is appropriate in its context. Further impact investigations have been undertaken indicating that the site is suitable for development and there are no constraints that prevent the development from taking place. Mitigation measures have been identified to minimise the risk of environmental damage.

The extent of investigation and the nature of the existing environment are such that impacts have been determined with a significant degree of certainty and the mitigation measures and design elements are considered adequate to prevent any environmental degradation.

(b) inter-generational equity, namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,

The development brings considerable social benefits in the form of improved health services to the residents of Western Sydney. This will enable existing and future generations to benefit from improved health care and health outcomes. Short term impacts during construction will be managed and minimised and the operation of the new hospital building

has been found to have no significant environmental impacts. The benefits of the development to improved health services delivery are considerable.

(c) conservation of biological diversity and ecological integrity, namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,

The biodiversity characteristics of the site have been fully investigated. It is highly unlikely that there would be any significant impacts on threatened species populations or ecological communities. Trees lost during the construction phase will be replaced by new plantings integrated into the design of the development.

(d) improved valuation, pricing and incentive mechanisms, namely, that environmental factors should be included in the valuation of assets and services, such as:

- (i) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,*
- (ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,*
- (iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.*

Measures have been incorporated into the design of the development, and thus its cost, to minimise adverse environmental impact and to incorporate required infrastructure. The proposed hospital services can be defined as public goods and are provided with heavy subsidy from State and Commonwealth governments.

5.5 Noise

Investigations into acoustic impacts of the proposed development have been undertaken by Acoustic Logic whose report is contained in **Appendix 12** and are summarised below.

5.5.1 Construction Noise

Noise impacts on nearby development will be dependent on the activity and where on the site the activity is undertaken. Excavation and piling works tend to be the loudest typical activity. Work close to the eastern and western boundaries will have greatest impact on the surrounding residences while work along the northern and southern boundaries will have greatest impact on hospital buildings.

Initial analysis indicates that noise from activities such as excavation/soil retention (piling), cranes and the use of hand tools (angle grinders etc) and concrete pumps will potentially generate noise such that OEH acoustic criteria may be exceeded from time to time, with higher noise levels generated when working near the eastern boundaries of the site. Once construction of the building shell is complete, noise from hand tools will be relatively low, as the new building façade will provide considerable noise attenuation. Once the building shell is largely complete, use of hand tools in internal areas is unlikely to exceed OEH recommended levels.

Noise impacts can be minimised using the following:

- Selection of equipment and process.
- Location of static plant (particularly concrete pumps and cranes).
- Use of screens or enclosures (typically only feasible for static plant).
- Scheduling of noisy activities and provision of respite periods.

Detailed construction noise planning is typically undertaken after engagement of a builder and a construction program is prepared (i.e. – after approval stage).

The following recommendations are made in relation to construction noise:

- *During preparation of the construction program (CC stage), consult with staff at the Blacktown campus to determine what areas of the hospital are particularly noise sensitive, and at what time (ward rooms, operating theatres etc).*
- *On completion of the construction program, acoustic review of proposed construction activities and plant/methods should be undertaken to identify work items likely to exceed OEH guidelines.*
- *For those noise intensive activities, the analysis should identify where on the construction site are the areas likely to result in high noise levels. This will then assist in determining the likely time period for which high noise levels will occur at nearby properties.*
- *Identify feasible acoustic controls or management techniques (use of screens, scheduling of noisy works, notification of adjoining land users, respite periods) when excessive levels may occur.*
- *For activities where acoustic controls and management techniques still cannot guarantee compliant noise levels, implement a notification process whereby nearby development is made aware of the time and duration of noise intensive construction processes.*

Through adoption of the above, noise impacts on nearby development can be suitably managed to prevent excessive impact.

5.5.2 Vibration Impacts

Due to its proximity, vibration impacts on the residential properties to the east and west are unlikely to be higher than the levels of vibration to be generated at the boundary of the adjacent hospital buildings, especially the exiting hospital development in the northern portion of the site. Acoustic Logic recommend measures to provide a framework to ensure that appropriate systems for monitoring and management of vibration on existing hospital operations can be implemented.

5.5.3 Operational Noise

Mechanical plant items are not typically selected at selected at development application stage. Detailed review of all external mechanical plant should be undertaken at construction certificate stage (once plant selections and locations are finalised). Acoustic treatments

should be determined in order to control plant noise emissions to acceptable levels as set out in Section 6.2 of **Appendix 12**.

All plant can be satisfactorily attenuated to levels complying with noise emission criteria through appropriate location and (if necessary) standard acoustic treatments such as noise screens, enclosures, in-duct treatments (silencers/lined ducting) or similar.

5.6 Transport and Accessibility Impacts

Transport and accessibility impacts of the proposed development have been considered by Arup in their report contained in **Appendix 11**. The key findings are summarised below.

5.6.1 Trip Generation

Traffic generation from the proposed development has been modelled and distributed to the surrounding road network. Arup has undertaken a full intersection traffic capacity analysis of Blacktown Road / Wall Park Avenue intersection and the adjacent Blacktown Road / Baronta Street intersection with a new proposed access to the Blacktown campus located opposite Baronta Street.

This analysis found that:

For the new hospital access on Blacktown Road configured with left turn in / left turn out movements only, the right turn hospital traffic flows on Blacktown Road are directed to use the Panorama Parade access. The distribution of traffic and intersection analysis shows that the Level of Service for each of the intersections remains at the level prior to the proposed works with the exception of Blacktown Road / Marcel Crescent. As a result of this analysis it is expected that the proposed works will have no adverse impact on the surrounding road network in terms of traffic capacity or delay, although the intersections are operating closer to their operating capacity. The increases in delay are not significant, however there will be more occasions when congestion will occur as minor incidents or spikes in demand affect the road system.

5.6.2 Public Transport Provision

The hospital is approximately 1.2km from Blacktown Railway Station which is outside the normal walk distance and hence staff and visitors would rely on bus connections. Busways operates a hospital service Route 721 which operates 8 services on weekdays between 8.51am and 5.33 pm between Blacktown Station and the hospital. A similar number of services operate on weekend days. Route 722 runs 3 morning peak services and 1 evening peak service diverted to Panorama Parade to service the hospital. Hills Bus / Westbus operate regular services along Blacktown Road which provide access to the hospital including Routes 630, 611, 700, 702, 705, 711 and 830.

The mode of travel and car occupancy assumptions for staff have been adjusted to reflect the Workplace Travel Plan initiatives that will be implemented. Car mode has been reduced to 88% with a car occupancy of 1.25 in Stage 1 and to 83% with a car occupancy of 1.25 in Stage 2. Night staff and visitor and patient travel characteristics have not been changed for the future modelling.

Based on 2006 Journey to work data, the current home location of workers in the travel zone which includes the Blacktown campus indicates that just over 50% of all workers live in the

Blacktown local government area. This indicates that walk, cycle and bus modes could be viable travel options for many workers at Blacktown campus. In addition, train is a viable travel option for many of the high ranking home locations. Based on the travel characteristics adopted for the travel model, the number of trips made by non-car modes can be determined. There are good public transport services to provide for this potential increase in activity.

5.6.3 Sustainable Transport Measures

Arup advises as follows.

The NSW State Plan 2010 includes the following transport targets:

- Increase the proportion of total journeys to work by public transport in the Sydney Metropolitan Region to 28% by 2016 (2009 value 24%)
- Increase the mode share of bicycle trips made in the Greater Sydney region, at a local and district level, to 5% by 2016 (2009 value 1%).

These targets will be met by measures to promote sustainable means of transport including public transport usage, car sharing, car pooling and pedestrian and bicycle linkages as described below.

Public Transport Accessibility

The hospital has bus routes running through the internal road system which provide direct connection to the nearby railway station. Additional bus routes travel past the site for local travel. The train station is within an acceptable walking distance (1.2km) for people who are willing to combine walking with their travel connection to public transport.

It is therefore considered that the hospital well connected to a number of existing public transport services.

Site Travel Plan

With the numerous transport options available to staff and visitors to access the site, the Blacktown Mount Druitt Hospital will establish a green transport plan. A green transport plan is a package of measures introduced to promote the use of public transport, walking and cycling by patrons and employees for travel to and from work and for business related trips. Some specific measures that could be incorporated in this travel plan include:

- Public transport timetables and maps
- Key local walking and cycling routes
- Improvement of current website detailing transport options for both staff and patients
- Establishment of transport information packs to new staff explaining the various ways (other than motor vehicle) of travelling to the site
- Development of a travel plan booklet for staff and visitors
- Liaising with staff, either face to face or via email/telephone, providing them with advice where needed about travelling to work

Provision of good bus service, complemented with the implementation of a green travel plan will reduce the reliance on private vehicle for Blacktown Mount Druitt Hospital staff and patients.

5.6.4 Access and Parking Provisions

Parking required to meet the needs of the development incorporating achievable targets of public transport use are provided on site in a series of structured and at grade car parking areas. The development will result in the provision of 1,410 spaces on site. Based on future levels of activity predicted for the campus, Arup predicts a peak parking demand for 1469 spaces and hence supply will almost meet demand, with minimal overflow on-street. The provision of these spaces will be staged to ensure that adequate parking is provided during the construction period. This will involve the use of the Blacktown Bowling Club car park as temporary staff car parking.

A new access from Blacktown Road is proposed at the intersection with Baronta Street. This will provide an alternative access to the site and assist in on-site circulation.

5.6.5 Conclusions

Arup conclude that:

The Blacktown campus is approximately 1.2km from Blacktown Railway Station and the Blacktown City Centre. It is well serviced by bus with 6 routes travelling past the site on Blacktown Road and a dedicated loop service between the campus and Blacktown Railway Station. More than half of the staff working in the travel zone within which the Blacktown campus is located live within the Blacktown LGA. This indicates that there is good opportunity to encourage non-car mode or travel focusing on bicycle and bus in particular through a Workplace Travel Plan.

The future travel characteristics of staff, visitors and patients have been considered for the expanded campus facilities. Existing bus and train services are well placed to cater for increased demand. Car parking provision on the campus has been tailored to meet anticipated future demand as the hospital expands in 2 stages taking into account reduced car dependence. There is scope in Stage 2 to adjust on-site car parking provision to suit any reductions in demand that may occur from improved public transport use.

A new access road has been proposed at the eastern side of the campus connecting directly onto Blacktown Road as a left turn in / left turn out intersection opposite Baronta Street. The existing access via Panorama Parade will be maintained to service as the main hospital access including emergency access. The existing service vehicle access on Blacktown Road will be maintained. The adjacent Blacktown Road / Wall Park Avenue intersection currently operates at capacity however the proposed development would only nominally increase the saturation level. The remainder of the main road system has been modelled with the new access arrangements and continued acceptable levels of operation are expected.

The Stage 1 development will involve a considerable change to on-site parking arrangements. A number of existing parking areas will be replaced by new buildings whilst other at-grade car parks will also be constructed. The traffic and parking model highlights that the multi-storey car park, with approximately 616 spaces, is an integral component of the Stage 1 development and will provide a suitable level of parking supply on the campus to meet demand.

5.7 Flora and Fauna

Investigations into flora and fauna characteristics of the site by Abel Ecology whose report is contained in **Appendix 2** and summarised below.

The site contains planted gardens with locally indigenous species as well as introduced native species and one remnant tree. The one remnant tree is a mature *Eucalyptus crebra*, which occurs in the north-eastern corner of the site, west of the Childcare Centre. This tree is possibly a remnant of the Critically Endangered Ecological Community, Cumberland Plain Woodland (CPW), scheduled under the Threatened Species Conservation Act 1995.

A seven-part test for this CPW was undertaken which determined that the removal of this tree is considered unlikely to have a significant effect on the CPW community on the site.

This tree would not be removed for the construction of the new CSB. However it is affected by other works which are the subject of separate approvals.

Despite the finding of 'no significant effect' from the proposed removal of the one remnant tree of the CPW community, Abel Ecology recommend replanting with local native tree species. Ten locally indigenous CPW trees are recommended, in the interests of general wildlife amenity and aesthetics in future landscaping, to be planted to offset the one remnant *Eucalyptus crebra* that will be removed. There is no impediment to this proposal in the scope of this report and the tree may be removed. There is not likely to be a significant effect to any EEC, Threatened Species or their habitats by removal of the tree.

The development to which this application relates requires the removal of 9 trees. These trees are described in the arborist report contained in **Appendix 14**. The report recommends that additional locally indigenous trees be planted on site which is incorporated into the landscape plans.

The recommendations of this report have been taken into consideration in the preparation of the landscape plan.

5.8 European and Aboriginal Heritage

Investigations into the impacts of the development on cultural values of each site have been undertaken by the RPS Group (**Appendix 3**). These investigations found that the Blacktown campus has been extensively modified in the past. Any Aboriginal material that may have been present has likely been removed or destroyed as part of the construction of the hospital facilities and subsequent works.

The elevation of the site and proximity to two watercourses (tributaries of Blacktown Creek approximately 200m north, and 300m east) make it a possible candidate for a campsite, and within the parameters of the general predictive model for habitation sites for the western Cumberland Plain (McDonald & White, 2010). However, the level of disturbance would drastically reduce any potential for any archaeological evidence to be identified.

With respect to European archaeology, a review of parish maps from the late 19th and early 20th centuries confirm that the site were subdivided into medium to large acreages,

presumably used for grazing, market gardening and other agricultural purposes. From the earliest times of European settlement, much of the Blacktown LGA was reserved, first as a Government stock farm, and later by the Church and School Lands, with several large holdings. Smaller holdings became more common towards the latter decades of 19th century, however.

Given this, it is unlikely that there is any potential for subsurface items of European heritage to be present within the site.

Combined with the absence of sites identified during the archaeological survey and discussions with the representatives of the Aboriginal community stakeholders during the survey, it is considered that no archaeological constraints exist in relation to the proposed works.

The report makes a number of recommendations management recommendations:

Recommendation 1

All relevant staff and contractors should be made aware of their statutory obligations for heritage under NSW NPW Act (1974) and the NSW Heritage Act (1977), which may be implemented as a heritage induction.

Recommendation 2

If any Aboriginal site/s are identified in the project area, then all works in the area should cease, the area cordoned off and contact made with OEHD/DECCW Environment Line 131555, a suitably qualified archaeologist and the relevant Aboriginal stakeholders, so that it can be adequately assessed and managed.

Recommendation 3

In the unlikely event that skeletal remains are identified, work must cease immediately in the vicinity of the remains and the area cordoned off. The proponent will need to contact the NSW Police Coroner to determine if the material is of Aboriginal origin. If determined to be Aboriginal, the proponent, must contact the OEHD Environment Line 131555; a suitably qualified archaeologist and representatives of the local Aboriginal Community Stakeholders to determine an action plan for the management of the skeletal remains, formulate management recommendations and to ascertain when work can recommence.

Recommendation 4

If, during the course of development works, significant European cultural heritage material is uncovered, work should cease in that area immediately. The Heritage Branch, Office of Environment and Heritage (02 9873 8500) should be notified and works only recommence when an appropriate and approved management strategy instigated.

5.9 Sediment, Erosion and Dust Controls

Measures will be employed to control soil erosion during construction as outlined in **Appendix 8**. These measures will be in accordance with currently accepted principles, as

described in *Managing Urban Stormwater: Soils & Construction* (4th edition, Landcom, 2004).

5.10 Flooding and Drainage

Robert Bird Group have investigated the potential of the site to flood. Due to its elevation, the hospital site is not within a flood affected zone. This has been confirmed by reference to Council flood maps, a copy of which is included in **Appendix 8**. Consequently the site is not impacted by flooding and the development will have no impact on flooding.

The site is within the Upper Parramatta River Catchment.

Internally road and car park levels and grades have been set to ensure no localised flooding of the existing and new buildings and also not to impact adversely on the adjoining properties.

Proposals for the management of stormwater from the development are discussed in Sections 4.11 and **Appendix 8**. Adequate provision will be made on site for stormwater detention and treatment.

5.11 Utilities

All utility services are available or can be readily extended to meet the needs of the development as discussed in Sections 4.9 and 4.10.

5.12 Contributions

Discussions with Council S94 officers indicate that there are no S94 Contribution Plans of relevance to the proposed works at Blacktown. Furthermore no voluntary planning agreement is proposed.

The development proposes significant public benefit through the provision of improved hospital services to the sub-region. The development is a Crown development providing an essential community service and consequently should not be charged developer contributions.

The development will meet all reasonable costs of upgrading services to meet the needs of the development including improved road access and intersection costs. Facilities for staff will be provided on site including child care and staff amenities and open spaces.

5.13 Waste

Proposals for waste management are discussed in detail in Section 4.18 and 4.21. An operational waste management plan will be prepared prior to the occupation of the new building.

5.14 Hazards

As discussed in Section 4.18 and 4.19, dangerous good will be stored in accordance with WorkCover and Office of Environment and Heritage requirements and will be licensed as required.

6. MITIGATION MEASURES

This EIS has identified and assessed the key issues arising from the proposed development in accordance with the applicable legislation. On the basis of that assessment, it is concluded that the development will not have a significant impact on the environment, subject to the following mitigation measures:

ISSUE	RECOMMENDED MITIGATION MEASURES
Works	<p>Development will take place generally in accordance with the plans submitted with the EIS.</p> <p>All work is to be undertaken in accordance with the Building Code of Australia and referenced Australian Standards.</p> <p>All construction documentation and building work is to be certified in accordance with Section 109R of the Environmental Planning and Assessment Act 1979.</p>
Approvals	<ul style="list-style-type: none"> The applicant will obtain all necessary approvals required by State and Commonwealth legislation in undertaking the development. The applicant will continue to liaise with Blacktown City Council during the development process
Traffic and Access	<ul style="list-style-type: none"> The recommendations of the Transport and Accessibility Study in relation to site access are to be implemented including investigations into the most appropriate form of access to the site. Sustainable transport measures included in the Transport and Accessibility Study are to be implemented including a Green Transport Plan as recommended in the Transport and Accessibility Report contained in Appendix 11 of the EIS. A range of measures will be employed to ensure parking is managed during construction to ensure that adequate arrangements are in place for parking for staff, visitors and construction workers during the construction program.
Services	<ul style="list-style-type: none"> The applicant will comply with the requirements of the relevant public authorities in regard to the connection to,

	relocation and/or adjustment of services affected by the construction of the proposed development
Management of stormwater	<ul style="list-style-type: none"> Stormwater is to be collected within the site, and conveyed in a pipeline to the appropriate gutter or drain substantially in accordance with the approved concept stormwater drainage plans. The stormwater from the building is to drain into the onsite detention facility provided under car park P12 and is to be treated prior to leaving the site.
Erosion and sediment controls	<p>Soil erosion and sediment control measures will be designed in accordance with the guidelines set-out in the Blue Book <i>Managing Urban Stormwater: Soils and Construction</i> (4th edition, Landcom, 2004).</p> <p>An appropriately qualified person will design retaining walls or other methods necessary to prevent the movement of excavated or filled ground, including associated stormwater drainage measures.</p>
Flora and Fauna	The Landscape Plan accommodates ten locally indigenous CPW trees to be planted to offset the one remnant <i>Eucalyptus crebra</i> that will be removed.
Construction management	<p>Prior to the commencement of construction, a Construction Environmental Management Plan will be prepared. This plan will include:</p> <ul style="list-style-type: none"> Development of a site specific soil erosion and sediment control plan (see above); Details of construction hours; Air quality/dust control procedures; Noise management procedures; Construction Waste Management; Construction Traffic Management including temporary access controls to Blacktown Road; Community Safety Plan; Arrangements for pedestrian and vehicular access during construction; Storage and handling of materials procedures; Environmental Training and Awareness;

	<ul style="list-style-type: none"> • Communications, contact and complaints handling procedures; and • Emergency preparedness and response. <p>Any noise generated during the construction of the development that exceeds the limits specified in Acoustic Impact Assessment contained the Appendix 12 is to be ameliorated using the measures recommended in the Assessment.</p> <p>Wastewater from the washing of concrete forms or trucks is not to enter the stormwater drainage system.</p> <p>All soil erosion and sediment control measures required to be put in place prior to the commencement of demolition or construction works are to be maintained during the entire period of the works until disturbed areas are restored by turfing, paving or revegetation.</p> <p>Any contamination / spills on the site during construction works must be actively managed and reported immediately to appropriate regulatory authorities to minimise any potential damage to the environment.</p> <p>Dust generation during construction will be controlled using regular control measures such as on site watering or damp cloth fences.</p> <p>All vehicles transporting loose materials and travelling on public roads must be secured (i.e. closed tail gate and covered) to minimise dust generation.</p> <p>Spraying of paint and other materials with the potential to become air borne particulates must only be undertaken in light wind conditions.</p>
Disabled access	<p>The design of the works will permit effective, appropriate, safe and dignified use by all people, including those with disabilities and will be in accordance with:</p> <ul style="list-style-type: none"> • NSW Health Facility Guidelines, in

	<p>particular Part B – Design for Access, Mobility, OH&S and Security.</p> <ul style="list-style-type: none"> • DDS32 Improved Access for Health Care Facilities. • The Building Code of Australia.
ESD Initiatives	The ESD initiatives outlined in Section 4.12 are to be implemented in the design and operation of the facility.
Waste Management	A final Waste Management Plan is to be prepared prior to the commencement of demolition / construction. The plan will detail the amount of waste material and the destination of all materials, recyclable and non-recyclable.
Heritage	<p>Historic and indigenous archaeological sites and relics are protected under the Heritage Act 1977 and National Parks and Wildlife Act 1974 respectively. Should any relics be uncovered during the course of the approved works, work must cease in the affected area until all necessary approvals are obtained.</p> <p>All workers / contractors must be informed of their obligations under the National Parks and Wildlife Act 1974, namely that it is illegal to disturb, damage or destroy a relic without the prior approval of the Director General of the Department of Environment, Climate Change and Water.</p> <p>Recommendations of the Heritage Report contained in Appendix 4 are to be implemented</p>
Hours of work	<p>Demolition / construction / civil work is only permitted on the site between the hours of 7am to 6pm Monday to Friday and 8am to 1 pm on Saturday with no work permitted on Sundays or public holidays.</p> <p>Situations, where construction work may need to be undertaken outside these hours are:</p> <ul style="list-style-type: none"> • the delivery of oversized plant or structures that police or other authorities determine require special arrangements to transport along public roads; • emergency work to avoid the loss of life or damage to property, or to prevent

	<p>environmental harm;</p> <ul style="list-style-type: none"> • maintenance and repair of public infrastructure where disruption to essential services and/or considerations of worker safety do not allow work within standard hours; • public infrastructure works that shorten the length of the development and are supported by the affected community; and • works where a proponent demonstrates and justifies a need to operate outside the recommended standard hours.
Contamination	<p>If contaminated soils or materials are detected during construction, it is to be inspected by a suitably qualified person to identify any contaminated or hazardous material present. A proposal for remediation is to be prepared, which may include preparation of a Remedial Action Plan, and remediation is to be carried out in accordance with the proposal. A Validation Report, prepared in accordance with Environment Protection Authority requirements, is to be obtained from a qualified expert on completion of the remediation work to verify that the site is suitable for the intended use.</p>

APPENDICES

APPENDIX 1

Director General's Environmental Assessment Requirements

APPENDIX 2

**Geotechnical and Contamination Assessment BMDH - Blacktown
Campus by Coffeys**

APPENDIX 3

Flora and Fauna Report – BMDH Blacktown Campus by Abel Ecology

APPENDIX 4

Cultural Heritage Assessment by RPS Group

APPENDIX 5

Urban and Architecture Design Report by SKM S2F

APPENDIX 6

Building Code of Australia Report by Blackett McGuire

APPENDIX 7

Hydraulic Services Report by WSP

APPENDIX 8

Integrated Stormwater Report by RBG

APPENDIX 9

Outline Construction Management Plan by Appian Group

APPENDIX 10

Construction Traffic Management Plan by Arup

APPENDIX 11

Transport and Accessibility Study by Arup

APPENDIX 12

Noise Impact Assessment by Acoustic Logic

APPENDIX 13

Wind Impact Assessment by CPP

APPENDIX 14

Arborist Report by Abel Ecology