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NSW Health Infrastructure

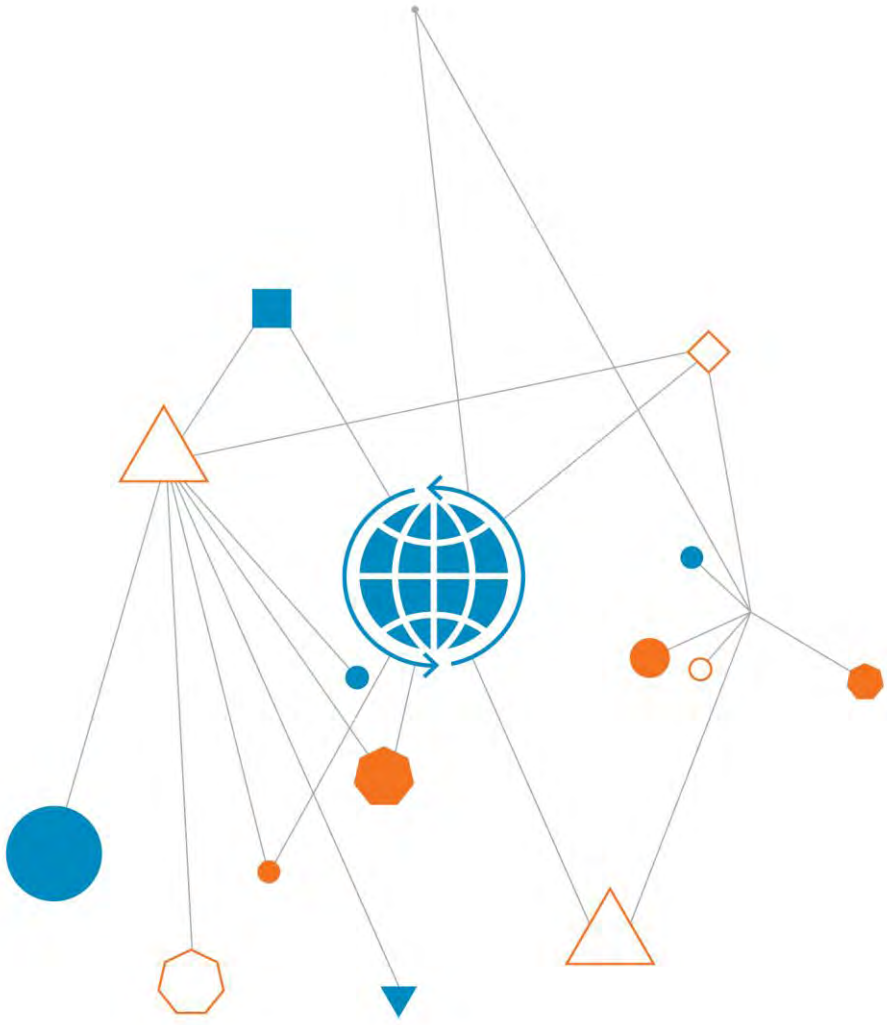
Blacktown Hospital Redevelopment Stage 2

Preliminary Hazard Assessment

17 June 2016

Partner:

NSW GOVERNMENT | Health Infrastructure



When you think with a global mind problems get smaller

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Blacktown Hospital Redevelopment Stage 2

Prepared for
NSW Health Infrastructure

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Distribution

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1. Introduction

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

The expansion program at the Blacktown Hospital campus, located at 18 Blacktown Road, Blacktown, NSW, is being undertaken across three stages. Stage 1 involved the construction of the new Clinical Services Building which opened on 11 April 2016. A separate Sub-acute Mental Health facility, a new multi-storey car park and refurbishment of the existing main hospital building have also been completed as part of Stage 1.

Stage 2 of the Blacktown Hospital redevelopment is being delivered in several packages, and the development approval is being conducted as Staged State Significant Development in accordance with Section 83B of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

An environmental impact statement (EIS), prepared by JBA Urban Planning Consultants dated October 2015, was submitted to the Department of Planning and Environment (the Department) in support of an application for State Significant Development (SSD) for the staged development of a new Acute Services Building (ASB) at Blacktown Hospital under Section 83B of the Environmental Planning and Assessment Act 1979 (EP&A Act). The proposal sought concept approval for the envelope of the new ASB, and detailed consent for enabling works including excavation and shoring of the building footprint. The concept approval and construction enabling works SSD Application was approved by the Department on 5 April 2016.

The Early Works Package 2 is being completed in preparation Stage 2 and comprises construction works consisting of shoring and bulk excavation from ground level.

The Blacktown Hospital redevelopment is now moving into the Stage 2 scope of works for provision of the ASB. A second SSD EIS is therefore required to be lodged in June / July 2016 for construction of the ASB and associated works as described in Section 1.2. The Secretary's Environmental Assessment Requirements (SEARs) to be addressed in the EIS with regards to waste management, include the following:

- 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.

As part of the ASB waste management plan, a Preliminary Hazard Assessment (PHA) (this report) has been prepared to describe how wastes associated with operation of the building will be managed, and has been prepared in response to the SEARs for the EIS being prepared to support the SSD application.

1.1. General Description

The Blacktown Hospital campus is located approximately 1.2 km south-east of the Blacktown town centre and Blacktown Railway Station. The hospital is approximately 30 kilometres west of the Sydney CBD within the Blacktown LGA.

The services offered in the ASB are presently provided in other buildings at the Blacktown campus; however, they will be consolidated into the one building and connected to the Main Building via service tunnels and public walkways. The waste management services compound will continue to store all clinical waste prior to collection.

1.2. Proposed building and services

The ASB will comprise two separate tower forms (refer to schematic figures in Appendix A) and will be located on the western side of the campus in order to provide improved community accessibility both to the new acute services and to the hospital as a whole. Service tunnels will connect the new ASB (Stage 2) with the new Clinical Services Building (construction in Stage 1) and the existing main hospital building.

The proposed 9 storey ASB building will be located at the south western corner of Loop Road (refer to Figures in Appendix A) and is understood to include the following service areas:

- Emergency;
- Intensive Care Unit;
- Operating Suite;
- Sterile Supply;
- Birthing Suite;
- Newborn Care;
- Maternity & Women's Health Inpatient Units; and
- Paediatric Inpatient Unit.

2. Scope Purpose Objective

The purpose of this PHA is to qualitatively evaluate potential hazards as follows:

- Identification of hazards associated with the handling, storage and disposal of hazardous materials in relation to the proposed Acute Services Building, including fuel associated with emergency power generation;
- Conduct an analysis of risk scenarios associated with the identified hazardous materials to human health and the surrounding environment (where applicable), in terms of consequences and the likelihood of occurrence; and
- Classify and prioritise the identified hazards.

The risk analysis undertaken in this PHA is specific to the proposed ASB and its services areas. It has been assumed that existing practices elsewhere on the Blacktown campus have already been approved.

This PHA has been undertaken to inform the EIS and to address the requirement of the State Environmental Planning Policy No.33 – Hazardous and Offensive Development (SEPP 33).

3. Adopted approach

The Multi-Level Risk Assessment guideline (NSW Department of Planning and Infrastructure, 2011), provides a detailed framework to determine the level of evaluation required based on the nature, scale and location of the project. The framework was developed with the aim of undertaking the

hazard analysis only to the level required in order to demonstrate the operation will not pose a significant risk to surrounding land uses.

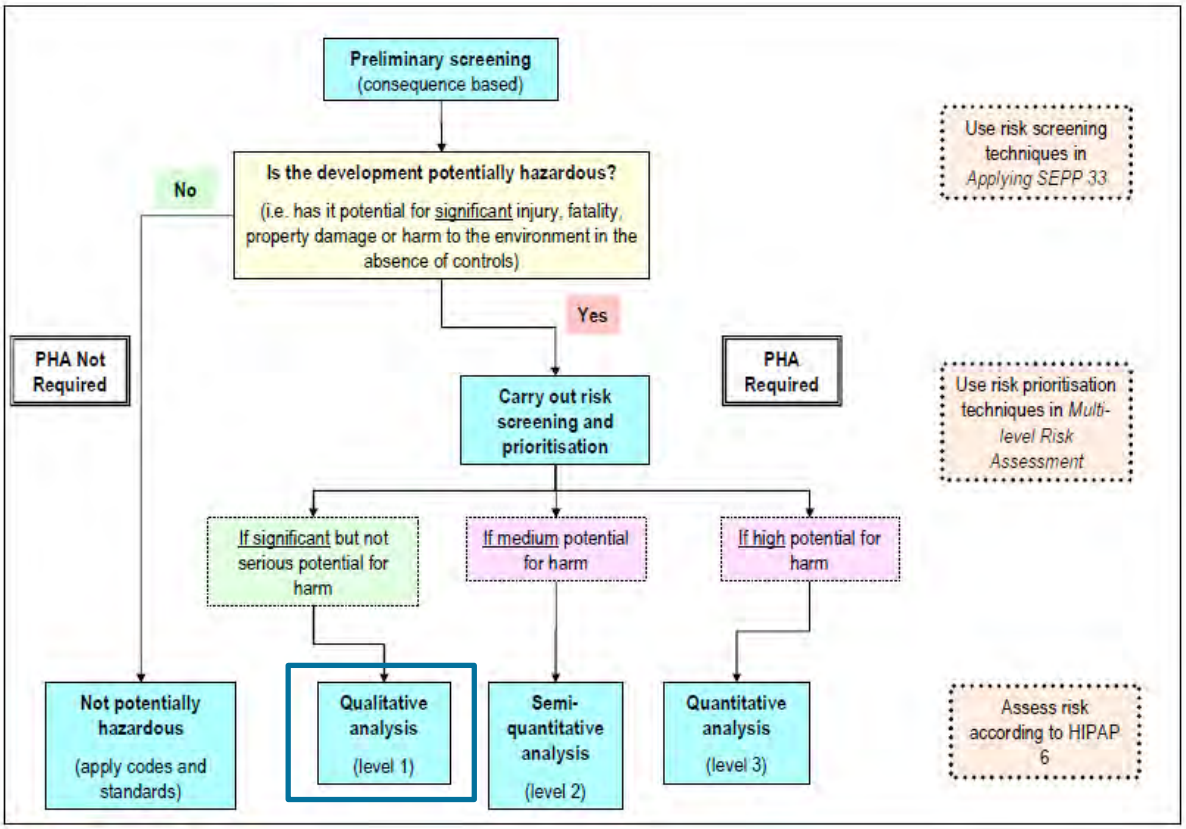

Figure 1:Multi-Level Risk Framework (source: Multi-level Risk Assessment Guidance, NSW DoPI 2011)

The provision of medical services by hospitals is known to generate hazardous wastes that may harm individuals and the wider community. A qualitative approach has been adopted in this PHA, equivalent to a level 1 risk analysis, on the basis that hazards associated with handling, storage and disposal of hospital wastes are generally well understood and safety management systems (including staff training and dedicated waste collection staff) are currently implemented in other existing areas of the Blacktown campus operations.

The approach adopted in this PHA is consistent with the Hazardous Industry Planning Advisory Paper No. 6 - Hazard Analysis published by the Department of Planning and is described further in section 0.

4. The risk assessment process

The risk assessment process adopted in this PHA is consistent with the Hazardous Industry Planning Advisory Paper No. 6 — Hazard Analysis published by the Department of Planning, as outlined in Figure 1. The objectives of this PHA are also aligned with this process.

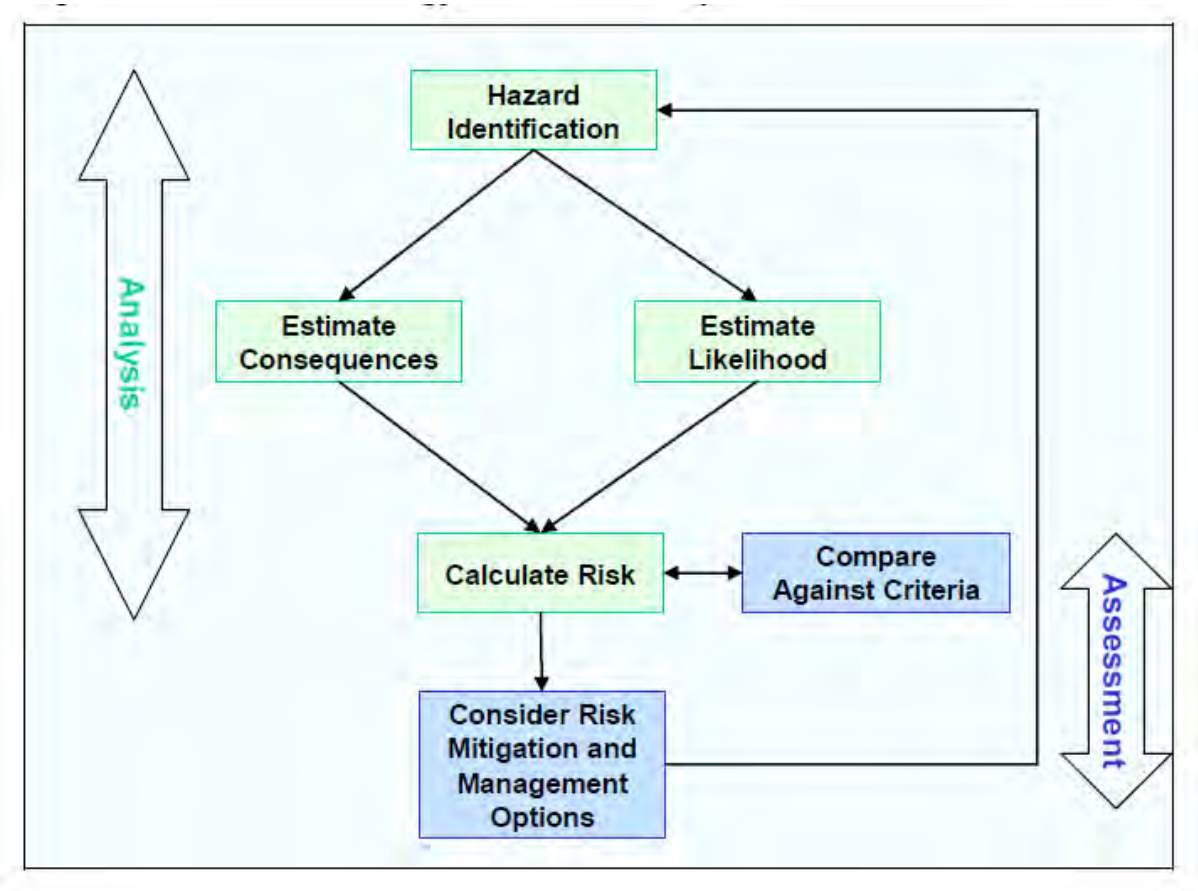

Figure 2: Basic Methodology for Hazard Analysis (source: Hazardous Industry Planning Advisory Paper No. 6, NSW DoP, 2011)

The hazard analysis methodology consists of the following steps:

- Hazard identification based on hazardous materials likely to be generated as a result of the services proposed in the ASB.
- Identification of key scenarios based on the handling processes, storage conditions and location, disposal processes and the site layout at the Blacktown campus.
- Qualitative estimate of potential risks and comparisons with qualitative criteria where appropriate.
- Discussion of protective technical and management measures, including codes and standards.

The PHA is based on the information available at the time of this evaluation. The assessment of potential risks should be considered an iterative process and future changes to the proposed plans for the ASB and/or services should trigger a review of this PHA.

5. Hazard identification

Hazards associated with the handling, storage and disposal of dangerous goods or other materials at hospitals are generally related to clinical, cytotoxic, pharmaceutical, radioactive and chemical waste streams. Hazards may also be associated with handling and storage of hazardous medical gases such as oxygen and nitrous oxide.

Other materials likely to be generated by hospitals, such as organic, liquid and general wastes, as defined by the Waste Management Guidelines for Health Care Facilities (WMGHCF, 2016) are not considered to be dangerous when separated and disposed/recycled appropriately.

5.1. Hazardous waste

Wastes generated by health care facilities are categorised according the streams mentioned above and each have a minimum standard of management that would apply, as stipulated in the waste management guidelines. Current procedures used by Blacktown hospital staff and waste contractors to manage hazards posed by these waste materials, are generally described in the WMGHCF guidelines. The WMGHCF was first published by NSW Health in August 1998, and most recently reviewed on 25 January 2016.

Waste streams that are considered in this PHA are described as follows:

- Clinical waste (including sharps)

  Clinical waste is waste that has the potential to cause sharps injury, infection or be aesthetically offensive. Such waste include sharps (ie needle or other object capable of penetrating human tissue), human tissue, bulk body fluids, visibly blood stained body fluids/disposable material/equipment, laboratory specimens/cultures, and animal tissues/waste resulting from laboratory investigations or research.

- Pharmaceutical storage and waste.

  Pharmaceutical wastes include substances regulated by the Poisons and Therapeutic Goods Act (1966) that have expired, have contaminated other materials or are no longer needed.

- Cytotoxic Waste

  Cytotoxic waste includes all material contaminated with residues or preparations containing material toxic to cells. These wastes are usually associated with specialised departments such as oncology or radiotherapy units.

- Chemical waste

  Chemical waste includes those regulated in the Poisons and Therapeutic Goods Act (1966) and the Dangerous Goods Regulations. Chemical wastes include metals (mercury, silver) and disinfectants.

- Radioactive waste

  Radioactive waste includes material contaminated with radionuclides. They are produced in hospital laboratories and imaging.

Based on the services proposed, the following hazardous waste streams have been identified for further consideration.

Table 5-1: Service Waste Stream Identification in the new ASB

Service	Clinical	Pharmaceutical	Cytotoxic	Chemical	Radioactive
Emergency	Clinical wastes are expected from all services and the number of collection points will vary	Pharmaceutical waste expected to be minimal	Unlikely but may be generated in certain circumstances	Not expected	Not expected
Intensive Care Unit		Pharmaceutical waste expected to be minimal		Not expected	Not expected
Operating Suite		Pharmaceutical waste expected to be minimal	Not expected	Not expected	Not expected
Birthing Suite		Pharmaceutical waste expected to be minimal	Not expected	Not expected	Not expected
Newborn Care		Pharmaceutical waste expected to be minimal	Unlikely but may be generated in certain circumstances	Not expected	Not expected
Maternity & Women's Health Inpatient Units		Pharmaceutical waste expected to be negligible	Not expected	Not expected	Not expected
Paediatric Inpatient Unit		Pharmaceutical waste expected to be negligible	Not expected	Not expected	Not expected
Sterile Supply	Not applicable	Not applicable	Not applicable	Not expected	Not applicable

On the premise the wastes generated by the services performed in the Stage 2 ASB are primarily related to clinical and pharmaceutical, potential hazards associated with these waste are considered further. The sterilisation supply area will provide services using newer technologies, such as steam sterilisation or microwave treatments, and sterilisation process chemicals will be reused wherever possible. Chemicals wastes associated with sterilisation are liquids (hydrogen peroxide and other acids) and will be disposed to sewer as appropriate by trained staff.

5.1.1. Current waste management

Waste segregation practises at the point of generation are currently undertaken throughout the Blacktown Hospital campus and are described in greater detail in the Policy Directive, WMGHCF (1998). Such practices are known to prevent injury and infection, as well as prevent hazardous waste entering inappropriate waste streams. Blacktown hospital staff receives training in waste handling procedures, to ensure waste separation occurs at the point of generation and waste disposal is labelled and stored appropriately as required by the Waste Act (1995).

The waste streams likely to be generated by services offered in the Stage 2 ASB, and subsequent management procedures prior to collection for off-site disposal by waste contractors are summarised below.

Waste collection

Clinical waste is expected to be generated in all service areas of the Stage 2 ASB and will be disposed to yellow hazardous waste receptacles marked with the biohazard symbol. The yellow waste receptacles will be collected by staff trained in waste handling, and placed in a large yellow

hazardous waste bin which is transported via trolley or motorised cart to the existing waste management area located in the existing Main hospital building, Blacktown docks on Level 1.

A service lift will be used to transport the hazardous bins to Level 1 of the Stage 2 ASB and Tunnel 1 is the route taken to the waste management area. Tunnel 1 is the connecting tunnel between the new ASB and the existing Main Hospital Building. Neither the service lift nor Tunnel 1 is intended for use by patient or public transport.

Cytotoxic waste is disposed to purple hazardous waste receptacles. The waste is collected, stored and disposed in the same manner as clinical waste.

Waste storage

The hazardous waste bins are stored in a locked waste disposal collection room at the docks, within the waste management area, whilst awaiting collection by the waste contractor. The waste contractor returns empty hazardous waste bins to the waste disposal collection room.

Clinical wastes associated with body parts are stored in a refrigerated area within the waste management compound prior to collection by the waste contractor.

Access to the area is by authorised personnel only and entry is via a keypad or keyed lock.

It is expected the waste storage process will remain unchanged with the opening of the Stage 2 ASB. It is expected that hazardous wastes generated by the new ASB may double from the current waste at the Blacktown campus which can be accommodated by the existing waste facility within the Main Hospital Building.

Waste transport

Daniels Corporation International, the clinical waste contractor used by the Western Sydney Local Health District, collects the bins from the secure waste storage dock area. The bins are collected once a day, 6 days a week.

5.2. Pharmaceutical storage and waste

Pharmaceutical waste associated with genotoxic drugs are not expected to be used or stored in the ASB. Pharmaceutical waste awaiting disposal is stored in the same manner as pharmaceuticals in use. Pharmaceuticals are generally stored in the hospital pharmacy located on level 3 of the Stage 1 Clinical Services Building (CSB); however, selected pharmaceuticals are likely to be stored in various services areas within the Stage 2 ASB. As with current pharmaceutical dispatch procedures in other areas of the hospital, accessing the pharmaceuticals stored in the ASB would require 2 authorised staff using a two-key system.

5.3. Mechanical and Medical Gases

Medical gases are stored in bulk liquid vessels or cylinders. The medical gases are delivered by the contractor, Air Liquide, to the loading dock in the secure waste management area. All medical gases are connected directly from their storage vessels on the dock, to appropriate pipes that distribute the gases to the various service areas around the hospital. Access to the Waste Management Area and loading docks is restricted to authorised staff or contractors only.

The gas lines will be plumbed directly into the Stage 2 ASB and distributed to the appropriate service areas. Currently the Air Liquide contractor also supplies smaller portable gas bottles to the hospital wards daily as required via a trolley, and also collects the used or expired cylinders. Air Liquide staff

are responsible for the delivery, collection and maintenance of all medical gases and storage vessels at Blacktown Hospital.

Trained medical staff are authorised to connect regulated equipment to the gas wall outlets or smaller size C bottles when they are required. Internal emergency shutoff valves are expected to be located at strategic points to allow isolation of gas supply during a fire. The security elements associated with the storage and use of medical gases should be consistent with the NSW Health Policy (June 2013).

5.4. Uninterrupted Power Supply

Two new generators are to be installed in the new Stage 2 portion of the Multi Storey Car Park (MSCP), adjacent to the substation chamber. In order to provide uninterrupted power supply (UPS) to the ASB in the event of a mains power outage, the generation of electrical power will be fuelled by two diesel generators. Each generator is connected to a 1000 L fuel tank which sits above ground.

In addition to the 1000L tank associated with each generator, a 10,000L underground storage tank (UST) will provide diesel to the two generators as required in the event of a power failure to ensure maintenance of essential services. The UST is of double-skinned steel construction and all associated distribution infrastructure is subject to installation regulations including leak and integrity testing (NSW, 2014).

Diesel fuel is not considered to be a flammable liquid; however, it is combustible and its transport is regulated under the Australian Dangerous Goods Code (ADG, 2016). The storage and handling of diesel fuel is regulated under the Work Health and Safety Regulation (NSW, 2011).

Access to the UPS plant room is secure and entry only permitted by authorised hospital maintenance personnel. Adequate natural or mechanical ventilation of the refuelling area and plant room will prevent the accumulation of volatile hydrocarbons or exhausts during refuelling activities and generator operations, in accordance with the Australian Standard 1668.2-2012. Refuelling of the UST is undertaken by the trained staff employed by the fuel supplier. The refuelling point is located at the front of the MSCP, and is connected directly to the mini fuel tanker.

6. Identification of potential hazards and potentially hazardous activities

Hazards associated with the services proposed in the Stage 2 ASB, as outlined in Section 1, are considered to be related to the handling, storage and collection of the following materials:

- **Infectious materials and sharps:** Pathogens contained in clinical wastes can enter the body via a puncture, abrasion or cut in the skin, through dermal contact with mucous membranes, inhalation and ingestion.
- **Chemicals and pharmaceuticals:** Exposures may occur via dermal contact via absorption through the skin and mucous membranes, ingestion and inhalation.
- **Medical gases:** Exposures may occur via inhalation or dermal absorption.
- **Diesel fuel:** Exposures may occur via inhalation of volatile hydrocarbons, dermal absorption or incidental ingestion. Diesel fuel is also combustible and ignition could result in physical injury and damage to property.

Based on the collection, transport and storage of wastes and gases associated with services offered in the ASB, the potentially hazardous activities are identified as follows:

- Exposure to infectious diseases in clinical waste materials, including sharps, where management controls for the collection and transport of clinical waste to the waste management area are insufficient;
- Exposure to infectious diseases via unauthorised entry/disturbance of waste storage/management area;
- Exposure to infectious diseases as a result of fire within the waste management area;
- Exposure to infectious diseases during transportation of clinical wastes to the disposal/treatment facility; and
- Exposure to the unauthorised use of pharmaceuticals.
- Exposure to the unauthorised use of medical gases.
- Exposure to the unauthorised entry/disturbance of the UPS plant room or refuelling area.
- Hot-works or ignition sources within the UPS plant room or refuelling area. Diesel fuel has an auto ignition temperature of 220°C.

7. Risk analysis methodology

The methodology used to evaluate the identified hazards is based on the Australian/New Zealand Standard for Risk Management – Principles and Guidelines, AS/NZS ISO 31000:2009. The standard provides principles and guidelines that can be applied to any project or activity to effectively manage risk. The risk management process comprises the following steps and it is noted steps 1 and 2 were undertaken in Sections 5 and 6 of this report:

1. Establish the Context (refer to sections 1 to 4)
2. Risk Identification (refer to sections 5 and 5.4)
3. Risk Analysis
4. Risk Evaluation
5. Risk Treatment

The analysis and evaluation process in the PHA utilises a Risk Assessment Matrix to assess each identified risk on the basis of Likelihood (the chance of something happening) and Consequence (the severity or impact if something happened. The descriptors used to classify the likelihood and consequences in the qualitative risk assessment process are outlined in Table 7-1 to Table 7-3.

Table 7-1: Qualitative Measures of Likelihood

Likelihood	Description
Almost certain	The event is expected to occur in most circumstances.
Likely	The event will probably occur in most circumstances.
Possible	The event could occur.
Unlikely	The event could occur but is not expected.
Rare	The event may only occur in exceptional circumstances.

Table 7-2: Qualitative Measures of Consequence

Consequence	Description
Insignificant	Minor health effect - No treatment required
Minor	Acute or short term health effect – First aid treatment required
Moderate	Short to medium term health effect – Lost time requiring medical treatment or admission to hospital.
Major	Chronic or serious irreversible human health effects.
Catastrophic	Fatality or permanent disability

The level of risk for each potential health or environmental effect is then determined by combining likelihood and consequence using the matrix in Table 7-3.

Table 7-3: Risk evaluation matrix

	Consequences				
Likelihood	**Insignificant**	**Minor**	**Moderate**	**Major**	**Catastrophic**
Almost certain	Medium	Medium	High	Extreme	Extreme
Likely	Low	Medium	Medium	High	Extreme
Possible	Low	Low	Medium	High	High
Unlikely	Negligible	Low	Low	Medium	High
Rare	Negligible	Negligible	Low	Medium	Medium

Source: Adapted from AS/NZS 4360:2004.

The resulting qualitative risk levels can then be used as a decision tool to assess whether the risk needs mitigation or further assessment, and guides prioritisation.

- Risks rated as negligible are deemed as acceptable or unlikely to require mitigation.
- Risks rated as low, medium or high require further assessment and/or controls in order to manage the risk to a tolerable level. Priority should be given to the implementation of controls to manage high and then medium risks over low risks.
  Likewise the type of controls required for high and medium risks may be more involved (and costly) than measures required for low risks. For example, a high risk may require a floor plan change in order to control the risk to a tolerable level, whereas a low risk is more likely to be effectively mitigated by lower order control measures such as implementing procedural controls.
- Risks identified as extreme are likely to make the proposed service unsuitable for the ASB, unless significant mitigation measures are implemented.

8. Preliminary hazard analysis

The determination of the level of risk is expressed by the combination of the likelihood of something occurring and the consequence. The initial risk rating (IRR) for each identified hazard scenario and the revised rating (MRR) following management or procedural controls is presented in Table 8-1.

Table 8-1: Preliminary Hazard Analysis

Hazard	Likelihood	Consequence	Initial Risk Ranking	Controls	Managed Risk Ranking	Comments
Exposure to infectious diseases due to insufficient management controls	Likely	Moderate - Major	Medium - High	Waste separation at point of generation. Transported and stored in secured bins. Waste handled by trained specialists	Low	Compliance with NSW Health Guidance is mandatory and audited annually. NSW Health Infrastructure to confirm capacity of existing waste management compound is adequate.
Exposure to infectious diseases due to entry/disturbance of waste management area;	Unlikely	Moderate - Major	Low – Medium	Waste storage areas are secured at all potential entry points to ensure authorised access only.	Low	NSW Health Infrastructure to confirm/audit physical security structures and access procedures.
Exposure to infectious diseases as a result of fire in the waste management area;	Unlikely	Moderate - Major	Low - Medium	Waste storage areas are fitted with fire alarms and thermal detectors. Fire extinguishers and fire hoses present in dock area	Low	NSW Health Infrastructure to confirm/audit fire detection mechanisms are adequate and response equipment is appropriate.
Exposure to infectious diseases during clinical wastes transportation	Possible	Moderate - Major	Medium	Waste is handled by trained specialists. Waste is securely contained.	Low	External annual audit to ensure process and emergency procedures are adequate.
Exposure to the unauthorised use of pharmaceuticals	Possible	Moderate	Medium	Compliance with access and dispatch procedures. Internal audits.	Low	External annual audit to ensure process is followed and is adequate

Hazard	Likelihood	Consequence	Initial Risk Ranking	Controls	Managed Risk Ranking	Comments
Exposure to the unauthorised use of medical gases	Possible	Moderate	Medium	Bulk and portable gas storage vessels and connections are handled by trained contractors and hospital staff. Gas storage vessels are kept in secure areas that allow authorised access only. Locking devices are fitted to exposed valves.	Low	External annual audit of medical gas contractor and hospital internal gas delivery system, including outlets and internal emergency shut off valves. Documentation of location of each portable gas cylinder, expiry date and usage information.
Exposure to the unauthorised entry/disturbance of the UPS plant room or refuelling area	Possible	Moderate	Medium	Refuelling, maintenance, operation and storage vessels and connections are handled by trained contractors and hospital staff. Fuel storage vessels are kept in secure areas that allow authorised access only. Refuelling area to be isolated prior to refuelling activities. Locking devices are fitted to exterior refuelling points. Hot works in storage and refuelling areas to be restricted.	Low	External annual audit of leak or spill records, loss detection procedures. Internal and external audits of ventilation adequacy, and compliance with UPSS regulations (NSW 2014) and WHS requirements.
Ignition of Diesel fuel within the UPS plant room or refuelling area	Unlikely	Major - Catastrophic	High		Medium	

9. Discussion and recommendations

Based on the information provided and the assumptions of the hazard and exposure identification process, the Preliminary Hazard Assessment indicates there is a low to medium risk associated with the consolidation of acute services in the Stage 2 development. It is noted a low to medium risk is only attainable when identified hazards are managed appropriately. NSW Health is responsible for undertaking internal and/or external audits to ensure all hazards associated with the collection, storage and transport of clinical wastes have been identified and are controlled or managed in line with international best practice. NSW health is responsible for the undertaking of internal and/or external audits relating to the requisition and dispatch of pharmaceuticals within the ASB and Blacktown hospital.

The waste management procedures currently undertaken at the Blacktown Hospital to manage hazardous waste are outlined in the Policy Directive (WMGHCR, 1998). Security and risk management associated with medical gases and hazardous waste and materials at the Blacktown Hospital are outlined in the NSW policy, Protecting People and Property (June 2013). It is recommend that internal and external audits are undertaken annually or as appropriate to ensure all procedures and controls comply with current policies and guidelines.

It is also recommended the capacity of the waste management area to securely store, distribute and manage a potentially increasing waste load, be evaluated three months following commencement of ASB services, and again at six months. The capacity of the waste management area should be reassessed annually thereafter.

The storage and handling of diesel fuels at the refuelling points and within the Stage 2 MSCP must be audited internally and externally annually at a minimum, or as required by NSW EPA and NSW Worksafe regulations. Ventilation of the generator plant room should be monitored following operation of the generators to ensure it is adequate for human health. Hot works in storage and refuelling areas to be restricted. Security and risk management of the refuelling and plant areas at the Blacktown Hospital should be audited externally to ensure compliance with the NSW policy, Protecting People and Property (June 2013).

10. References

Australian and New Zealand Standard *Adapted* from AS/NZS 4360:2004

Australian Standard 1668.2-2012, The use of ventilation and air conditioning in buildings.

Australian Standard 1940-2004, The storage and handling of flammable and combustible liquids.

Australian/New Zealand Standard for Risk Management – Principles and Guidelines, AS/NZS ISO 31000:2009

ADG 2016, Australian Code for the Transport of Dangerous Goods by Road and Rail. Version 7.4

NSW Department of Planning 2011, Hazardous Industry Planning Advisory Paper No. 6 — Hazard Analysis

NSW Department of Planning and Infrastructure, 2011. Multi-Level Risk Assessment Guidelines

NSW Health 1998, Waste Management Guidelines for Health Care Facilities, - August 1998, Reviewed 25 January 2016.

NSW Health 2013, NSW Health Policy and Standards for Security Risk Management in NSW Health Agencies. June 2013.

NSW 2011, Work Health and Safety Regulation

NSW 2014, Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation

SEPP 33, State Environmental Planning Policy No.33 – Hazardous and Offensive Development

WMGHCF1998, Waste Management Guidelines for Health Care Facilities. Policy Directive, reviewed 25 January 2016

Appendix A - Stage 2 Development Figures

SCHEMATIC DESIGN

REV.	DATE	REWD BY	APP'D BY	APP'D P.DIR	AMENDMENT
2	13-05-2016	SD	CY	CY	ISSUED FOR INFORMATION
1	06-04-2016	SD	CY	CY	ISSUED FOR INFORMATION

KEY PLAN

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PROJECT

BLACKTOWN AND MT. DRUITT HOSPITALS REDEVELOPMENT - STAGE 2

BLACKTOWN CAMPUS: BLACKTOWN ROAD, NSW 2148

ARCHITECTURAL

DRAWING TITLE
STAGE 2 DEVELOPMENT
OVERALL PLAN LEVEL 1

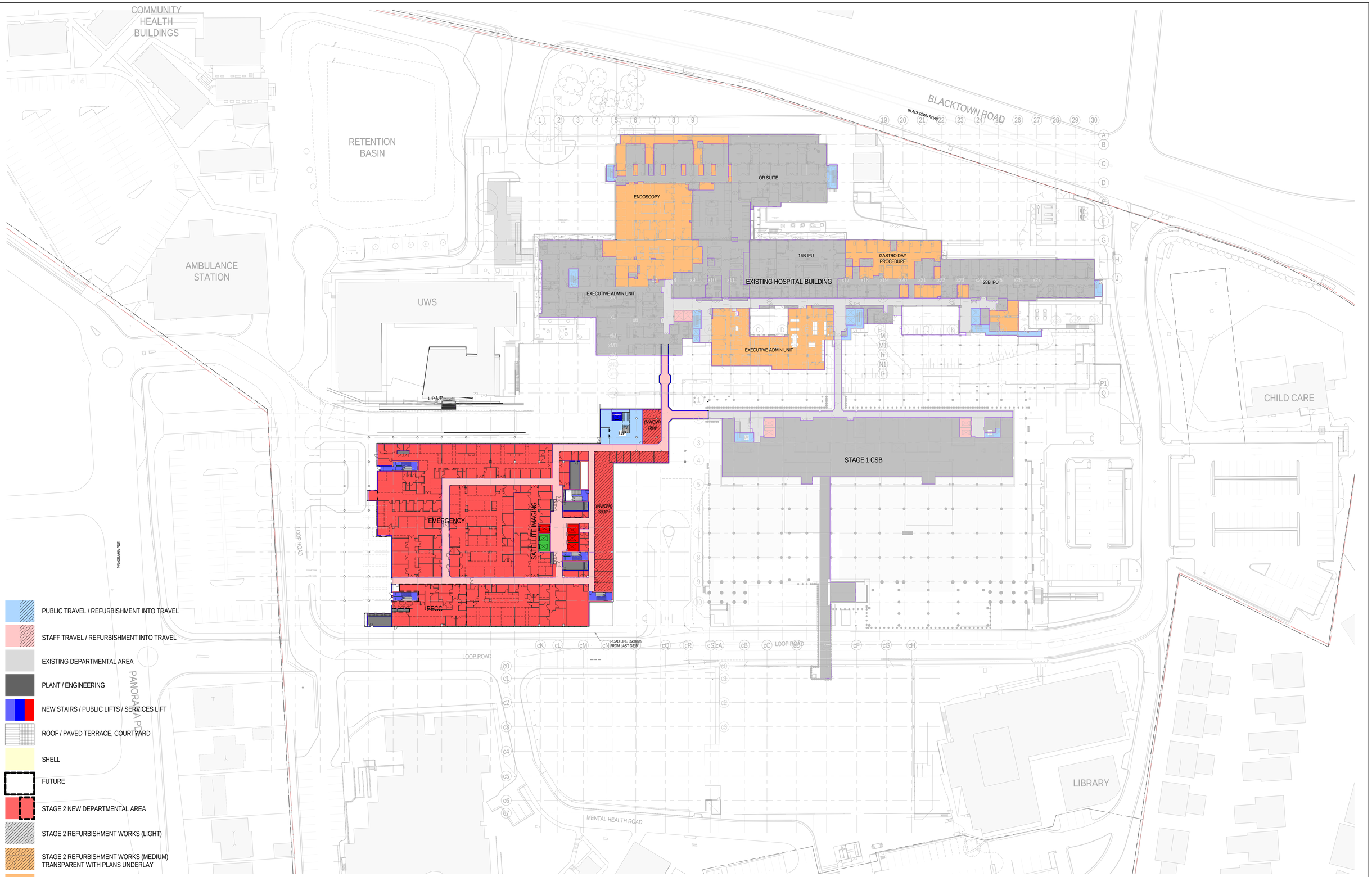
SCALE (@B1) As indicated

PROJECT No. NB98100

DRAWING No. BS2-AR-DG-0101

REVISION 2

B1



SCHEMATIC DESIGN

REV.	DATE	REVWD BY	APP'D BY	APP'D P.DIR	AMENDMENT
2	13-05-2016	SD	CY	CY	ISSUED FOR INFORMATION
1	06-04-2016	SD	CY	CY	ISSUED FOR INFORMATION

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PROJECT

BLACKTOWN AND MT. DRUITT HOSPITALS REDEVELOPMENT - STAGE 2

BLACKTOWN CAMPUS: BLACKTOWN ROAD, NSW 2148

ARCHITECTURAL

DRAWING TITLE
STAGE 2 DEVELOPMENT
OVERALL PLAN LEVEL 2

SCALE (@B1) As indicated

DRAWING No. BS2-AR-DG-0102

PROJECT No. NB98100

REVISION 2

B1

SCHEMATIC DESIGN

REV.	DATE	REVWD BY	APP'D BY	APP'D P.DIR	AMENDMENT
2	13-05-2016	SD	CY	CY	ISSUED FOR INFORMATION
1	06-04-2016	SD	CY	CY	ISSUED FOR INFORMATION

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NSW GOVERNMENT Health Western Sydney Local Health District

PROJECT

BLACKTOWN AND MT. DRUITT HOSPITALS REDEVELOPMENT - STAGE 2

BLACKTOWN CAMPUS: BLACKTOWN ROAD, NSW 2148

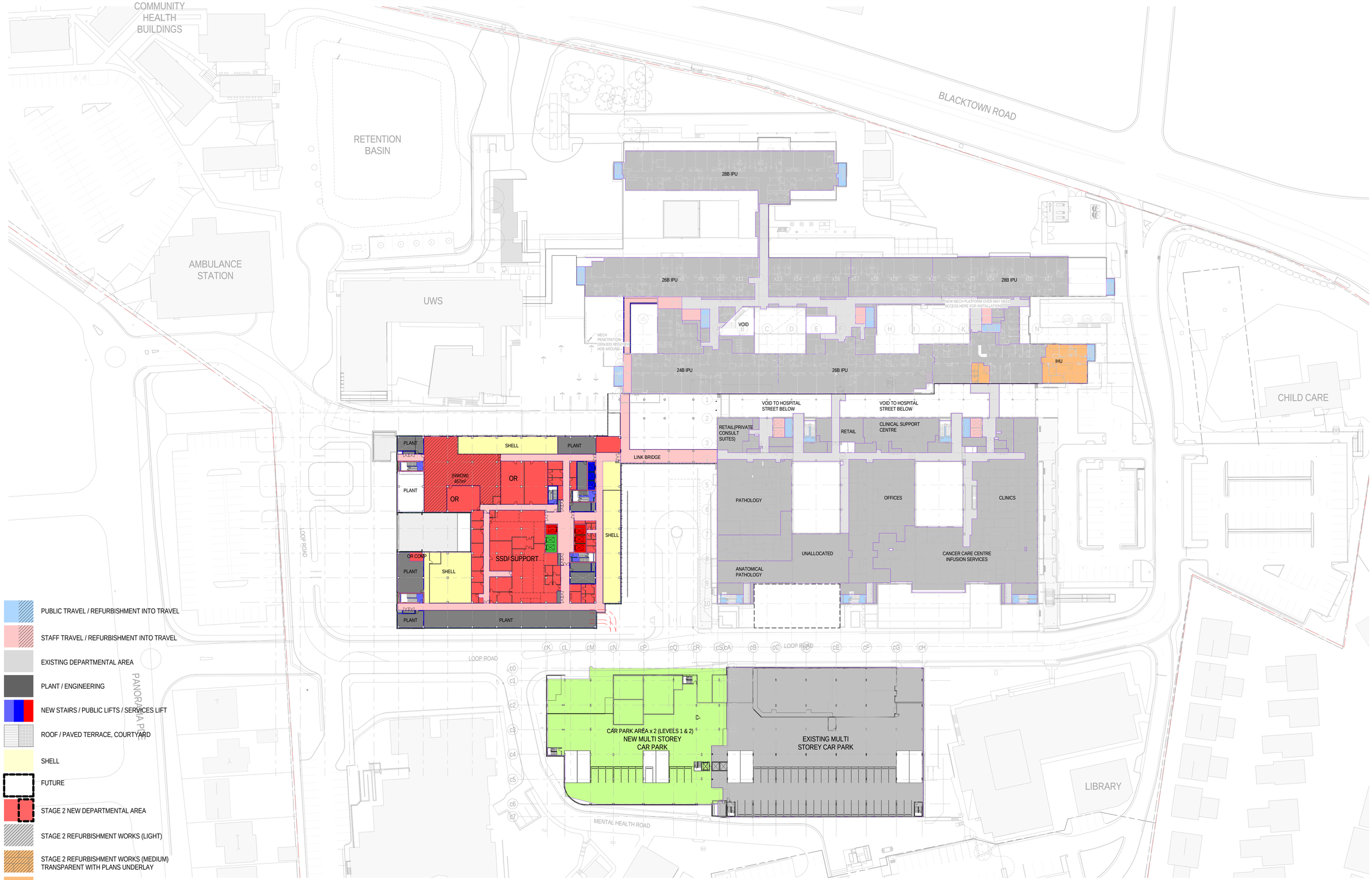
ARCHITECTURAL

DRAWING TITLE
STAGE 2 DEVELOPMENT
OVERALL PLAN LEVEL 3

SCALE (@B1)	DRAWING No.	REVISION
As indicated	BS2-AR-DG-0103	2

PROJECT No. NB98100

B1



SCHEMATIC DESIGN

REV.	DATE	REVWD BY	APP'D BY	APP'D P.DIR	AMENDMENT
2	13-05-2016	SD	CY	CY	ISSUED FOR INFORMATION
1	06-04-2016	SD	CY	CY	ISSUED FOR INFORMATION

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NSW GOVERNMENT Health Western Sydney Local Health District

PROJECT

BLACKTOWN AND MT. DRUITT HOSPITALS REDEVELOPMENT - STAGE 2

BLACKTOWN CAMPUS: BLACKTOWN ROAD, NSW 2148

ARCHITECTURAL

DRAWING TITLE
STAGE 2 DEVELOPMENT
OVERALL PLAN LEVEL 4

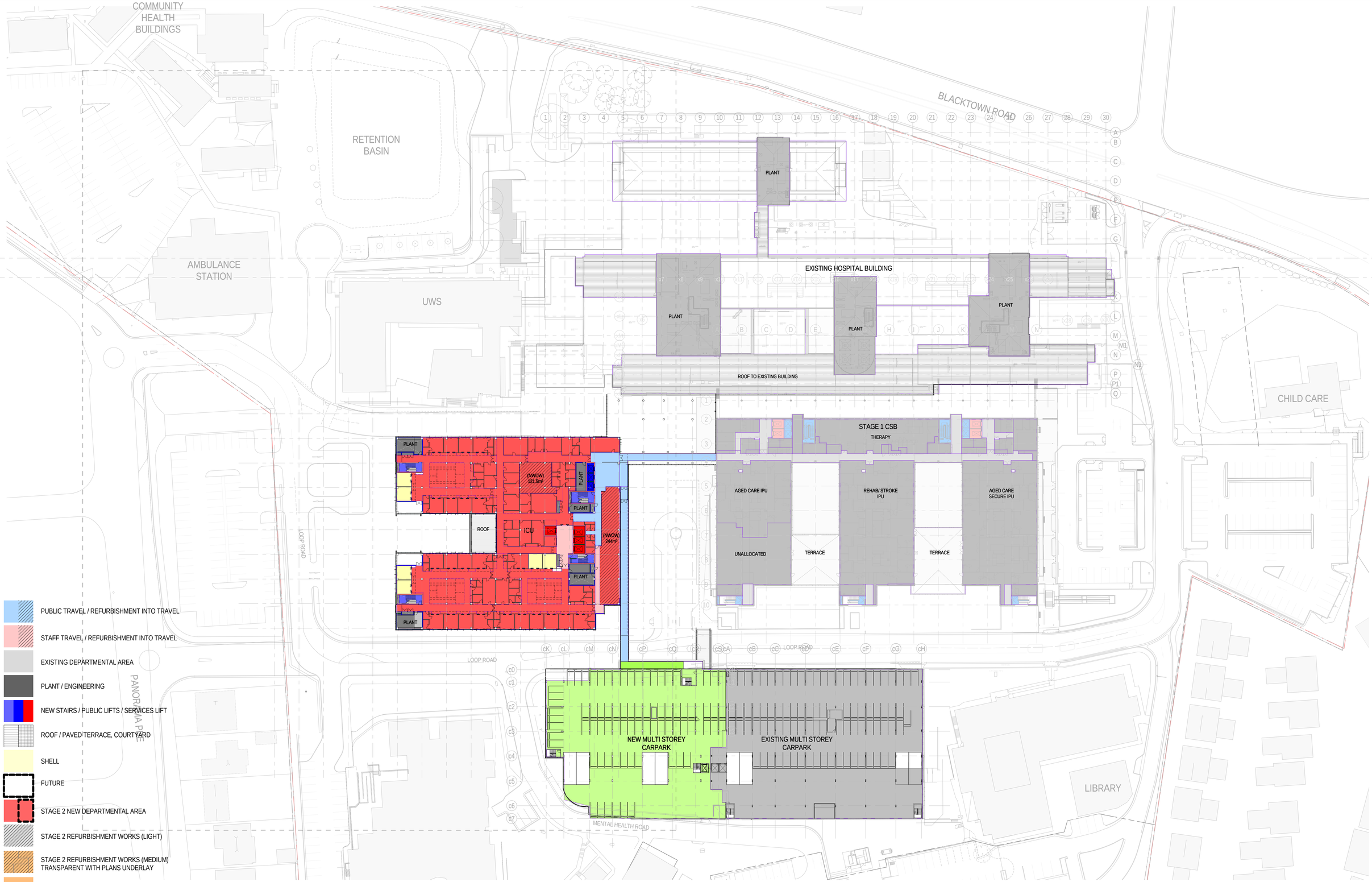
SCALE (@B1) As indicated

DRAWING No. BS2-AR-DG-0104

PROJECT No. NB98100

REVISION 2

B1



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PROJECT

BLACKTOWN AND MT. DRUITT HOSPITALS REDEVELOPMENT - STAGE 2

BLACKTOWN CAMPUS: BLACKTOWN ROAD, NSW 2148

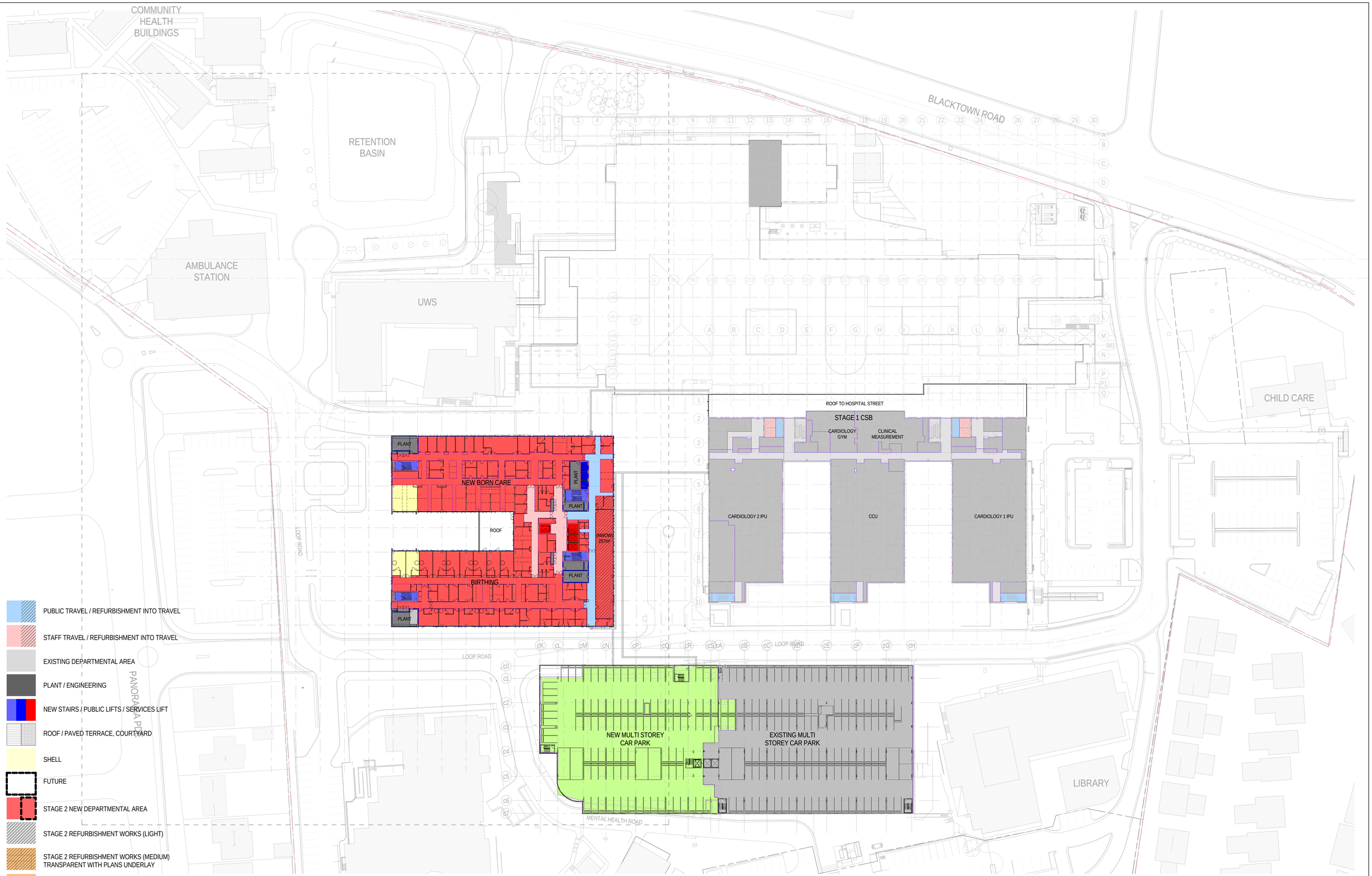
ARCHITECTURAL

DRAWING TITLE
STAGE 2 DEVELOPMENT
OVERALL PLAN LEVEL 5

SCALE (@B1)	DRAWING No.	REVISION
As indicated	BS2-AR-DG-0105	2

PROJECT No. NB98100

B1



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PROJECT

BLACKTOWN AND MT. DRUITT HOSPITALS REDEVELOPMENT - STAGE 2

BLACKTOWN CAMPUS: BLACKTOWN ROAD, NSW 2148

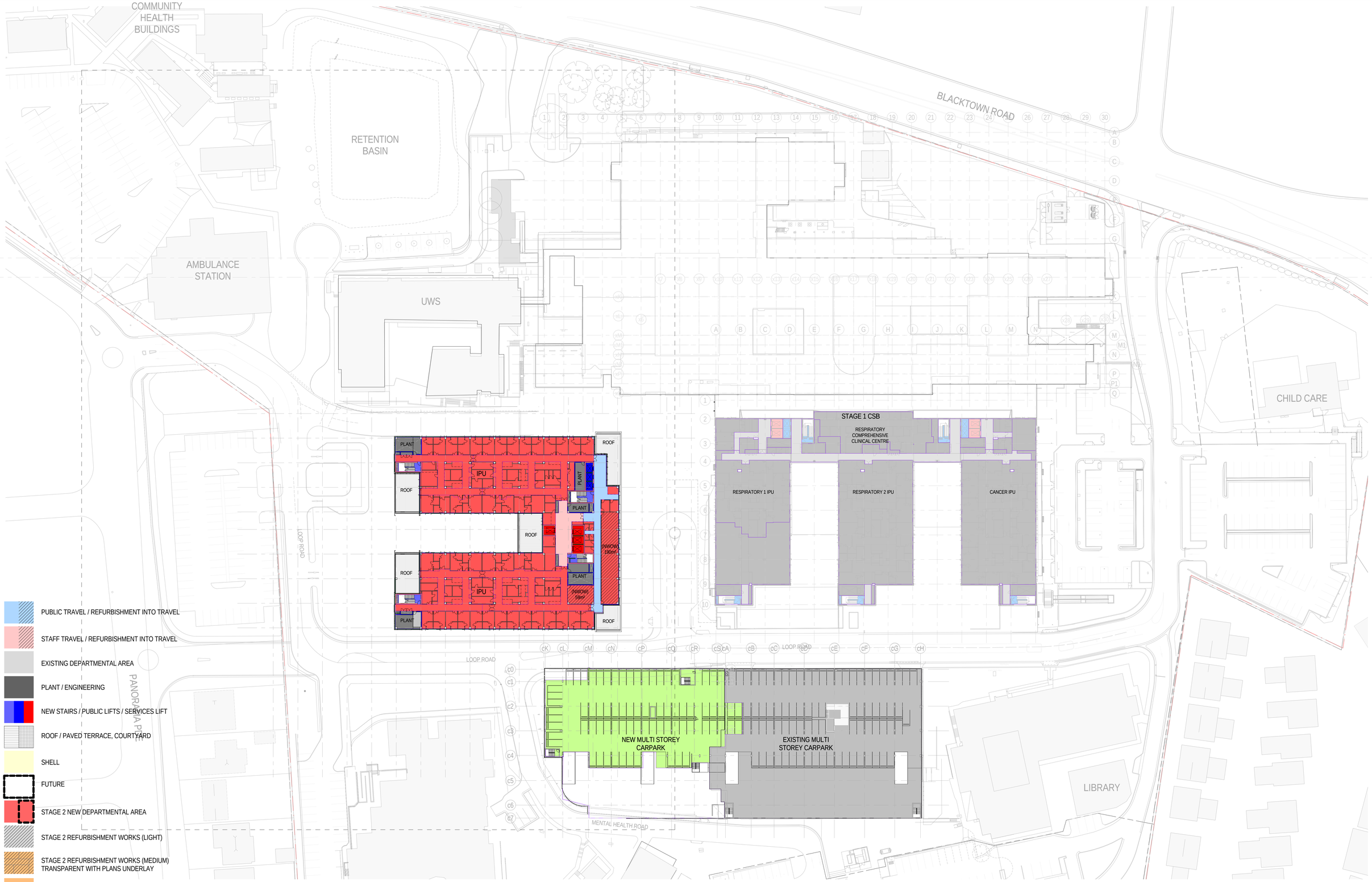
ARCHITECTURAL

DRAWING TITLE
STAGE 2 DEVELOPMENT
OVERALL PLAN LEVEL 6

SCALE (@B1)	DRAWING No.	REVISION
As indicated	BS2-AR-DG-0106	2

PROJECT No. NB98100

B1



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PROJECT

BLACKTOWN AND MT. DRUITT HOSPITALS REDEVELOPMENT - STAGE 2

BLACKTOWN CAMPUS: BLACKTOWN ROAD, NSW 2148

ARCHITECTURAL

DRAWING TITLE
STAGE 2 DEVELOPMENT
OVERALL PLAN LEVEL 7

SCALE (@B1)	DRAWING No.	REVISION
As indicated	BS2-AR-DG-0107	2

PROJECT No. NB98100

B1

COMMUNITY HEALTH BUILDINGS

RETENTION BASIN

AMBULANCE STATION

UWS

BLACKTOWN ROAD

CHILD CARE

LIBRARY

LOOP ROAD

MENTAL HEALTH ROAD

PANORAMA PDE

PLANT

IPU SHELL

IPU

PLANT

PLANT

PLANT

PLANT

NWOW 142m²

- PUBLIC TRAVEL / REFURBISHMENT INTO TRAVEL
- STAFF TRAVEL / REFURBISHMENT INTO TRAVEL
- EXISTING DEPARTMENTAL AREA
- PLANT / ENGINEERING
- NEW STAIRS / PUBLIC LIFTS / SERVICES LIFT
- ROOF / PAVED TERRACE, COURTYARD
- SHELL
- FUTURE
- STAGE 2 NEW DEPARTMENTAL AREA
- STAGE 2 REFURBISHMENT WORKS (LIGHT)
- STAGE 2 REFURBISHMENT WORKS (MEDIUM) TRANSPARENT WITH PLANS UNDERLAY
- STAGE 2 REFURBISHMENT WORKS (HEAVY) SOLID COLOUR

SCHEMATIC DESIGN

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PROJECT

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BLACKTOWN CAMPUS: BLACKTOWN ROAD, NSW 2148

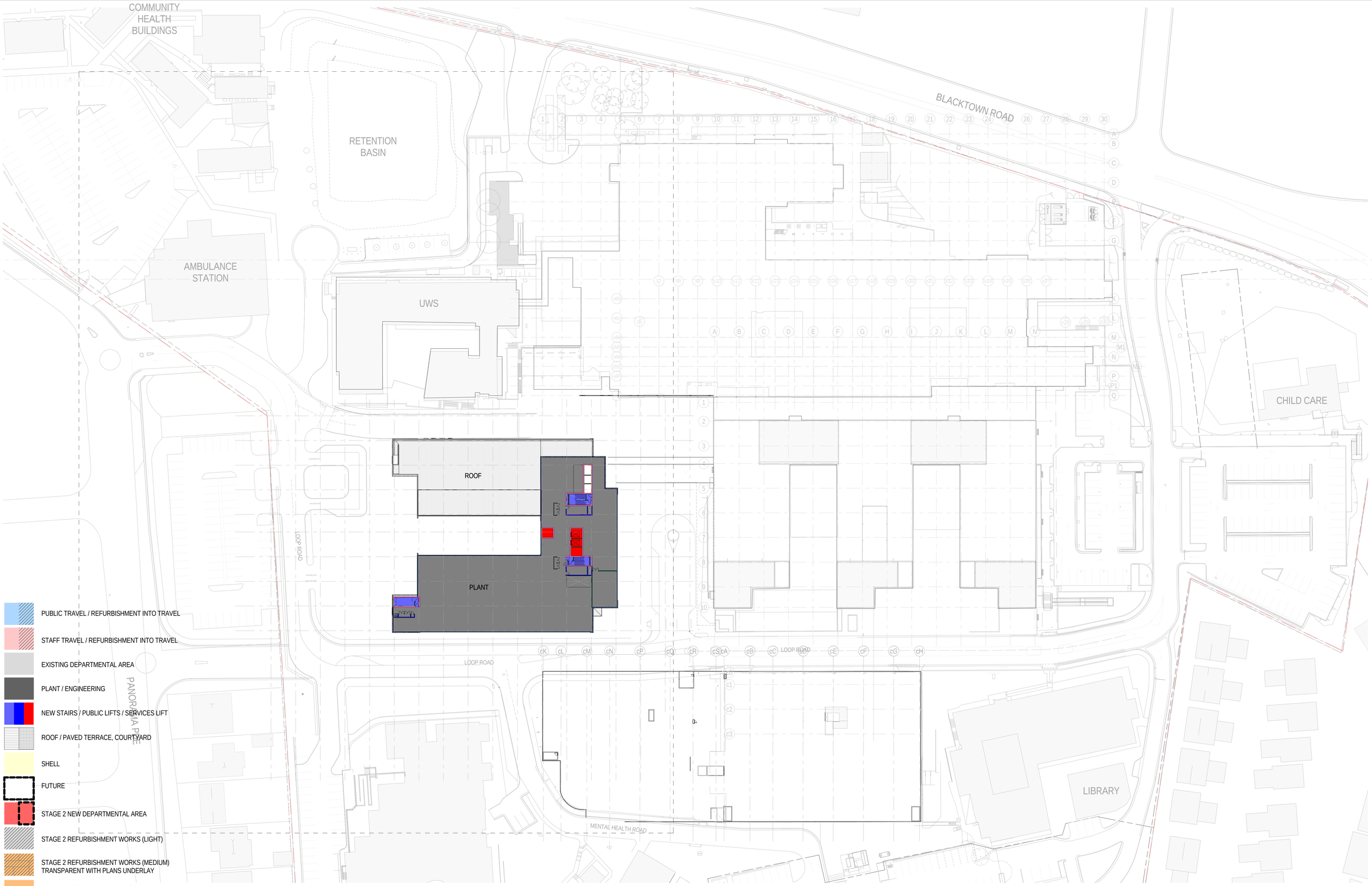
ARCHITECTURAL

DRAWING TITLE
STAGE 2 DEVELOPMENT
OVERALL PLAN LEVEL 8

SCALE (@B1)	DRAWING No.	REVISION
As indicated	BS2-AR-DG-0108	2

PROJECT No. NB98100

B1



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Health Infrastructure
Health Western Sydney Local Health District

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BLACKTOWN CAMPUS: BLACKTOWN ROAD, NSW 2148

ARCHITECTURAL

DRAWING TITLE
STAGE 2 DEVELOPMENT
OVERALL PLAN LEVEL 9

SCALE (@B1) As indicated

PROJECT No. NB98100

DRAWING No. BS2-AR-DG-0109

REVISION 2

B1