

4.0 ENVIRONMENTAL ASSESSMENT

The following section addresses the key assessment requirements identified by the Director General as follows:

- Relevant EPIs and Guidelines
- Key Issues:
 - Built Form and Height
 - Environmental and Residential Amenity
 - Transport and Accessibility Impacts
 - Ecologically Sustainable Development
 - Contamination
 - Heritage
 - Aboriginal Heritage
 - Drainage
 - Waste
 - Hazards
 - Public Domain
 - Operational Management
 - Utilities
 - Maintenance of Patient Care

The Draft Statement of Commitments pertaining to the assessment requirements identified above is set out in Section 5 of this report.

4.1 RELEVANT EPIs AND GUIDELINES

4.1.1 Environmental Planning & Assessment Act, 1979

Part 3A of the Act came into force on 1 August 2005. It established assessment procedures for various forms of 'major development' of state or regional significance. Under Clause 6 of the State Environmental Planning Policy (Major Development) 2005, 'Identification of Part 3A projects', such significance can be established if:

- (1) *Development that, in the opinion of the Minister, is development of a kind:*
 - (a) *that is described in Schedule 1 or 2."*

Within Schedule 1 of the SEPP (Major Development) 2005, Group 7 Clause 18 'Health and public service facilities, Hospitals', the definition is as follows:

- (1) *Development that has a capital investment value of more than \$15 million for the purpose of providing professional health care services to people admitted as in-patients (whether or not out-patients are also cared for or treated there)."*

The overall concept plan for the redevelopment of Wagga Wagga Base Hospital conforms to the Group 7 Clause 18 class of development given capital investment value of the project is \$317,593,700.

On 7 December 2010, NSW Health Infrastructure requested that the Minister declare that the redevelopment of Wagga Wagga Base Hospital is a 'Major Project' pursuant to Regulation 6 of the SEPP. Concurrently a PEA was submitted to obtain the DGRs.

On 24 January 2011, the DoP confirmed that the redevelopment of Wagga Wagga Base Hospital is a 'Major Project' to which Part 3A applies.

On 16 February 2011, the DoP provided the DGRs by which the proposed redevelopment would be assessed. A Concept Plan Application was subsequently prepared and submitted.

In May 2011, NSW Health Infrastructure requested the DGRs by which the Wagga Wagga Base Hospital Redevelopment Stage 1A, 1B and 2A works would be assessed. In June 2011, the Department of Planning and Infrastructure (DP&I) (formerly the Department of Planning) provided the DGRs. This Project Application for Phase 1, which represents Stage 1A only, addresses the assessment criteria.

On 4 April 2011, Part 3A was repealed. However the DP&I has subsequently issued a Planning Circular and Fact Sheet, and addressed Frequently Asked Questions, all of which confirm that the Project is a class of development that remains under Part 3A of the Act. Accordingly, this Project Application for the Wagga Wagga Base Hospital Redevelopment Phase 1 works is submitted for approval under Part 3A of the Act.

4.1.2 NSW State Plan

The State Plan is the NSW Government's long term plan to deliver the best possible services to the people of NSW.

The State Plan identifies the redevelopment of the Wagga Wagga Base Hospital in its infrastructure projects list. The Project represents the first phase of the proposed redevelopment.

4.1.3 State Environmental Planning Policy (Major Development) 2005

SEPP (Major Development) 2005 came into force on 25 May 2005 and was most recently amended on 31 July 2009. The SEPP defines development that is state significant development and is determined by the Minister for Planning and Infrastructure.

The redevelopment of Wagga Wagga Base Hospital was declared a 'Major Project' on 24 January 2011 under the EP&A Act, pursuant to Regulation 6 of the SEPP because it falls within Schedule 1, Group 7 Health and public service facilities, Clause 18 Hospitals. The Project represents one stage of the proposed redevelopment.

4.1.4 State Environmental Planning Policy (Infrastructure) 2007

SEPP (Infrastructure) 2007 came into force on 1 January 2008 and was most recently amended on 2 March 2011. The SEPP aims to facilitate the effective delivery of infrastructure across NSW.

The redevelopment of Wagga Wagga Base Hospital falls within 'Division 10 Health services facilities' of the SEPP which has allowed a number of separate Early Works packages to be identified. The early works include:

- Temporary car parking.
- Demolition of existing residences.
- Changes to roads to accommodate a land swap.
- Water, sewer and gas upgrades.
- Medical gas modifications.
- Central Energy Plant.

Approval of these works will facilitate the delivery of the Project, which represents one phase of the proposed redevelopment of Wagga Wagga Base Hospital.

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

SEPP No. 33 – Hazardous and Offensive Development came into force on 11 March 1992 and provides clear definitions of hazardous and offensive industries where used in environmental planning instruments. It aims to facilitate development defined as hazardous and/or offensive, or potentially so, as defined in the SEPP by ensuring sufficient information is made available to the consent authority to assess whether development is hazardous or offensive, and in doing so impose conditions accordingly, taking into account measures proposed by the proponent to reduce or minimise any adverse impact to human health, life, property or to the biophysical environment.

An assessment of the Project against SEPP 33 – Hazardous and Offensive Development has been initiated and the findings will be provided as part of the Preferred Project Report. Refer to Section 4.11.

4.1.6 State Environmental Planning Policy No. 55 – Remediation of Land

SEPP No. 55 – Remediation of Land states that land must not be rezoned or developed unless contamination has been considered and, where relevant, land has been appropriately remediated.

Any contaminated land will be remediated prior to commencement of works.

4.1.7 NSW Planning Guidelines for Walking and Cycling

The NSW Planning Guidelines for Walking and Cycling exist within a broader policy context which includes the NSW Government's *Integrating Land Use and Transport Planning Policy Package* and *Action for Bikes*; the NSW Government's action plan to promote physical activity, *Simply Active Everyday* and the *NSW Bikeplan 2010*; and the Commonwealth Government's *The National Charter for Integrating Land Use & Transport* and *The National Greenhouse Strategy*.

While the Guidelines focus on metropolitan areas, their application to Wagga Wagga is an important extension of both transport and healthy lifestyle objectives from the NSW State Plan.

The Guidelines provide recommendations for improved awareness of the various public and active transport options available at a site (Transport Access Guides) and recommendations for cycle and cyclist facilities.

A discussion of the Project in relation to the Guidelines is provided at Appendix G.

4.1.8 Wagga Wagga Local Environmental Plan 2010

Wagga Wagga Local Environmental Plan 2010 (WWLEP 2010) came into force on 16 July 2010.

Under the WWLEP 2010, the Project site occupies an area primarily zoned SP2 Infrastructure (Hospital) and part zoned R3 Medium Density Residential. Health services facilities (including hospitals) in the R3 zone are permissible with consent. The Project is permissible with consent under the current LEP.

Wagga Wagga Base Hospital is listed as a Heritage Item I261 under Part 1, Schedule 5 Environmental Heritage of WWLEP 2010. This listing relates to Lot 77, DP 757249 and Lot 13, DP 659184, and includes the Old Hospital Building and Multi-Storey Ward Block.

The Wagga Wagga Conservation Area, which is listed under Part 2, Schedule 5 Environmental Heritage abuts the southern boundary of the hospital site.

To achieve the development of an integrated service delivery model (as described in the overall concept plan) the LEP listed buildings cannot be retained. The buildings are discussed in detail in Section 4.7. However, the works described in this Project Application do not require demolition of the Old Hospital Building or the Multi-Storey Ward Block.

4.1.9 Wagga Wagga Development Control Plan 2010

Wagga Wagga Development Control Plan 2010 (WWDCP 2010) was approved by Council on 27 May 2010 and came into effect on the making of WWLEP 2010. WWDCP 2010 contains detailed provisions that supplement the provisions of WWLEP 2010. As WWLEP 2010 is a comprehensive DCP, no other DCPs apply to the Project.

The following DCP provisions are relevant to the Project:

- Part 2.3 Off-Street Parking:
 - Car parking requirement of 1 space / 25sqm of additional GFA for hospital redevelopments

A further detailed car parking assessment is provided in Section 4.4.2.

4.1.10 Contributions

City of Wagga Wagga Contributions Plans

City of Wagga Wagga Section 94 Contributions Plan 2006 - 2019

The City of Wagga Wagga Section 94 Contributions Plan 2006 - 2019 came into force on April 2010. The plan aims to ensure the adequate provision of public facilities and services to meet the needs of incoming population as a result of development.

Under Section 1.1 Overview of This Plan, the plan states:

A condition may only be imposed under section 94 towards the future provision of public facilities: if the proposed development will or is likely to require the provision of, or increase the demand for, public facilities within the local government area;"

The Wagga Wagga Base Hospital is itself a public facility and the redevelopment is proposed to service the needs of the population within the MLHN up to 2021. Accordingly, Section 94 contributions do not apply.

Under Section 2.5 Development to Which This Plan Applies, the list comprises only: subdivision of land for the purposes of a dwelling house, residential flat building or dual occupancy, and self-care housing.

The proposed redevelopment does not meet the above criteria and accordingly, Section 94 contributions do not apply.

The plan also allows for Section 94 Credits (Section 2.16 and 2.17) and Works in Kind (Section 2.18) where demand for public facilities is satisfied by the proposed development and/or works in kind and other material public benefits are made. As well as providing new hospital facilities, the overall concept plan provides for, improved pedestrian access; improved traffic management; an increase in on-site parking above the increase in service levels, decreasing the demand for on-street parking; and upgrading of some adjacent roads and a new road which replaces a portion of Lewis Drive. The new road will be built to Council's road design standards. These proposals will provide additional material public benefit.

City of Wagga Wagga S94A Levy Contributions Plan 2006

The City of Wagga Wagga S94A Levy Contributions Plan 2006 aims to offset the negative effects of development which increases the population which then places a strain on existing infrastructure.

The Wagga Wagga Base Hospital is a public facility and the redevelopment is proposed to service the needs of the population within the MLHN up to 2021. Thus, rather than have a negative effect, the project will improve the lives of existing residents and cater for future increases in population. Accordingly, it is argued that Section 94A contributions do not apply.

The plan also allows for Alternatives to Payment of the Levy (Section 20) where an offer to carry out works or provide material public benefit can be made. The overall concept plan provides for new hospital facilities as well as additional material public benefit outlined above.

The provision of enhanced public hospital services for Wagga Wagga, and the additional material benefits associated with the proposed redevelopment satisfy the intent of Wagga Wagga City Council's Section 94 and 94A Contributions Plans for public facilities. Accordingly, Council has advised that it will not be seeking any contributions for Section 94 or 94A purposes.

Road Acquisition

NSW Health has progressed negotiations with Wagga Wagga City Council regarding the acquisition of roads adjacent to the site.

A Heads of Agreement between the Health Administration Corporation and Wagga Wagga City Council was signed on 9 April 2010. This agreement acknowledges the need for HAC to acquire portions of existing Council roads to enable the Project to proceed and provides a mechanism for this to occur.

A Heads of Agreement between the Health Administration Corporation and Wagga Wagga City Council was signed on 22 July 2011. This agreement transfers ownership of the roads shown in Figure 8, p. 13 to HAC and requires that HAC provide a replacement road as part of the Project. This agreement supersedes the agreement between the parties dated 9 April 2010.

Property Acquisition

NSW Health has completed the acquisition of the four residential properties on Yabtree Street to enable the Project to proceed (refer to Figure 8, p. 13).

4.1.11 Other Relevant Legislation

Floodplain Development Manual 2005

Wagga Wagga City Council abides by and implements the New South Wales Government's Floodplain Development Manual which was gazetted on 6 May 2005. The Manual aims to reduce the impact of and losses from flooding, but recognises the benefits of use, occupation and development of flood prone land.



FIGURE 21: Contextual Visualisation

Source: Rice Daubney

4.2 BUILT FORM AND HEIGHT

The DGRs state that the following items must be addressed:

- *Consideration of the height, bulk and scale of the proposed development within the context of the locality.*
- *Details of proposed open space and landscaping areas.*
- *Design quality with specific consideration of setbacks, building articulation, colours / materials / finishes and the public domain.*

4.2.1 Height, Bulk and Scale of the Development

The existing hospital site is generally flat with a gentle fall from the south east across the site, towards the corner of Edward and Docker Streets, of approximately 3.6m.

The surrounding land use is predominately residential but forms part of an existing health precinct. In broad terms the bulk and scale of the surrounding development is single storey low density.

The southern boundary zone of the site (adjacent to Rawson Lane) abuts the Wagga Wagga Conservation Area. The southern side of the lane is characterised by the backs of single storey residences, car parking areas, garages and private backyards. In response (as part of subsequent project phases) on-grade landscaped car parking will be located along this edge extending to the existing Yathong Lodge, resulting in minimal impact on the residences with a rear address to Rawson Lane. (It should be noted that the works described in this Project Application do not require the demolition of the existing buildings located on the northern side of Rawson Lane. Accordingly, there will be no impact on the northern address to Rawson Lane which will remain the same).

As described in Section 3.3, the height of the new Mental Health Building will be two storeys with a third storey of plant which is appropriate in response to the scale of the adjacent residences.

The location of taller elements toward the centre of the site, together with the proposed on-grade parking and landscape areas along the boundaries of the site (as part of subsequent project phases), minimise the potential bulk and scale impacts on the surrounding residences.

The Project is shown in the context of the existing hospital and surrounding buildings in Figure 21.

4.2.2 Landscaping and Open Space

Formal landscaping once occupied the northern sector of the site, providing a visual buffer from adjacent major roads. This has been lost over time, for safety reasons following arborist inspections, the landscaping is now characterised by grassed areas with scattered trees.

The landscaping proposed for the Project is localised around the development site but will complement the pedestrian walkways around the perimeter of the site and assist in providing a green outlook and screening to the hospital from beyond the site boundary and surrounding streets.

Section 3.4 describes the Landscape Masterplan prepared for the Project. Refer to Figure 18 (p. 26). Details of proposed landscaping and open space, including planting arrangements, species selection, lighting, furniture and paving materials are shown in Figures 19, p. 27 and 20, p. 28 and at Appendix D.

4.2.3 Design Quality

Setbacks and Building Articulation

The 3D visualisations (refer to Figure 22) show the setbacks and articulation of the proposed built form of the Project within the context of the existing hospital.

The visualisations show that the height of the Mental Health building within the scale of the surrounding residences. Accordingly, the Project will have a minor impact on the overshadowing and visual privacy of surrounding properties.

The built form is articulated through the careful selection of materials and finishes and these are described below.

Colours, Materials and Finishes

A simple palette of materials selected from those exhibited within the local context is proposed. The existing context of brick, timber detailing with rendered inserts and metal cladding to roofs and fencing is translated into a palette of brick, cladding and perforated metal screening.

The Mental Health Building is a two storey building of residential character, with a third storey of plant, with a red brick ground storey and a clad upper storey. The white cladding sits atop this brick base with grey cladding used for the gable ends so the roofs appear to float. The roofs are pitched to minimise the perceived scale of the building and the differing pitches allow a clerestorey glazing strip to provide daylight to the upper level ensuring the inpatient accommodation is light and airy. An upper level plant is set back enveloped in grey cladding with louvres to meet services intake and extract requirements.

The double height atrium to the Mental Health entry is screened from the future ambulance bay by a series of vertical louvres which are suspended from the eaves height of the building. Shopfront glazing with perforated screening, required to reduce solar gains, is provided to the northern elevation at ground storey to maximise natural light to the staff offices. The upper level mental health bedrooms above incorporate glazing in a paired arrangement with horizontal solar shading to this northern façade. The upper inpatient accommodation to the remaining building incorporates full height windows punched into this clad upper storey façade.

The staircores, clad in brickwork, define the ends of the inpatient wings whilst providing the necessary fire egress to ground level.

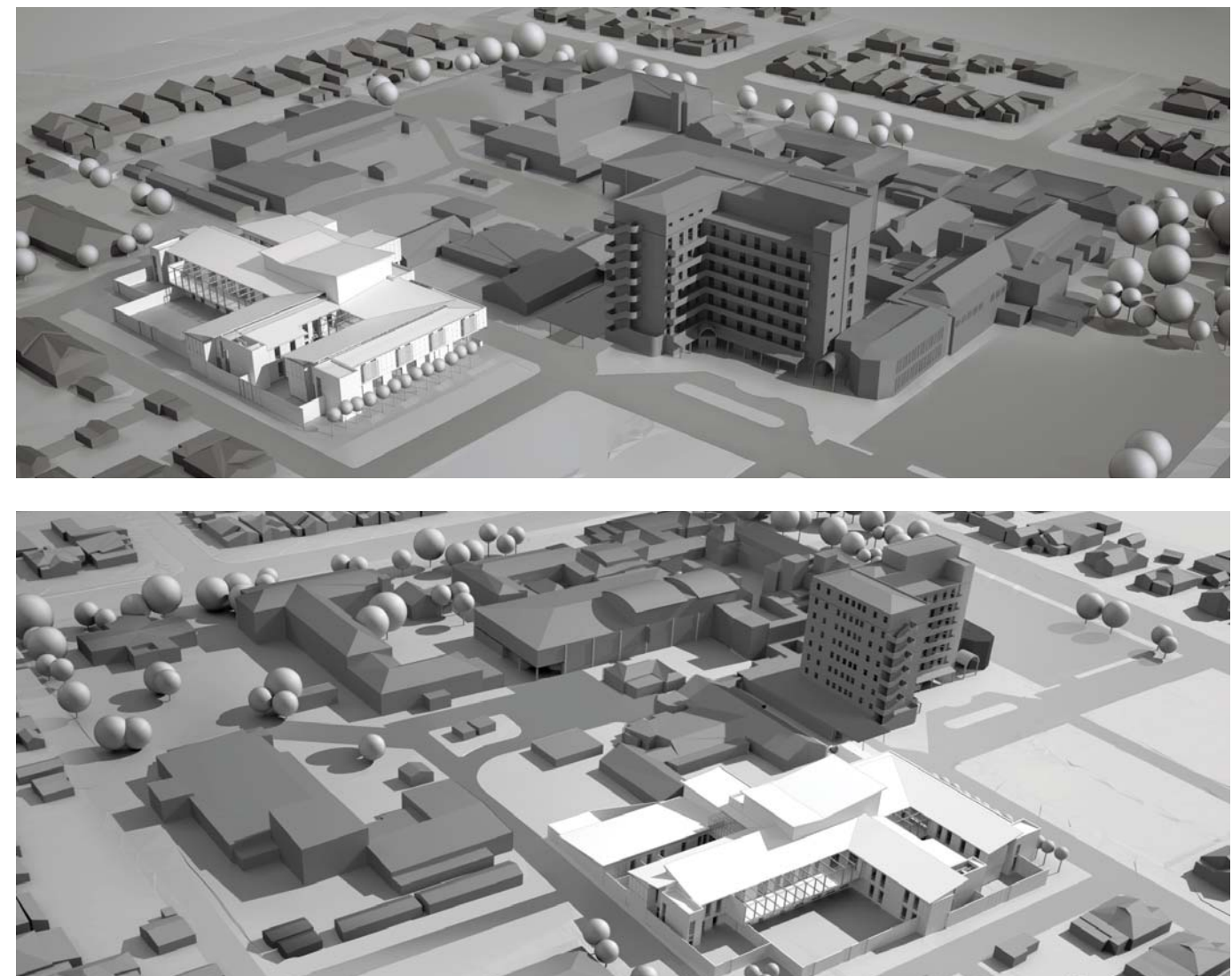


FIGURE 22: 3D Visualisations

Source: Rice Daubney



FIGURE 23: Colours, Materials and Finishes

Source: Rice Daubney

The upper level courtyards are enclosed by full height perforated metal screens to ensure the safety of the patients, affording views out whilst allowing privacy from neighbouring residential properties.

Refer to Figure 23.

Public Domain

The public domain is addressed in the overall concept plan of which the Project forms a part.

The overall concept plan shows that the proposed hospital building is set back from the boundaries of the site with low storey development around the perimeter to minimise overshadowing to adjacent residences. Acute clinical services are provided centrally within the site and vertically stacked with the highest development located to the centre of the site.

The existing UNSW Rural Clinical School (Harvey House) is retained with its frontage onto Docker Street. Harvey House is well maintained and is of excellent architectural quality. The two existing date palms in front of Harvey House are to be retained and the landscaped zone extended along the length of the site with the proposed buildings respecting and enhancing this setback.

The proposed hospital building respects the building setbacks of the adjacent Motor Inn and buildings to the north of the site and a landscaped edge is provided to the Edward Street frontage. During construction of phase 1 works an on grade car will replace the parking lost by development to the east. Approval for this replacement car park is to be sought under State Environment Planning Policy (Infrastructure) 2007 regulation.

The existing site entrance off Edward Street is retained with access onto Lewis Drive. The southern portion of Lewis Drive is diverted with a proposed new road to the east of the mental health development. The new road provides a physical link between the low scale hospital accommodation to the east and the main hospital building located centrally. Following the completion of Phase 1 traffic will continue to leave via Yabtree and/or Yathong Streets.

In the final stage of the overall concept plan Yathong Street will be extended across the site to Docker Street and will form a new entry to the site. The entry will be opposite the existing Hardy Avenue with potential links to the nearby Calvary Hospital.

4.3 ENVIRONMENTAL AND RESIDENTIAL AMENITY

The DGRs state that the following items must be addressed:

- *Impacts of the proposal on solar access and privacy within the site and on surrounding developments..*

4.3.1 Solar Access



The design of the overall concept plan concentrates the bulk of facilities toward the centre of the site with parking and landscaping around the periphery. As a result, there will be minor shadow impact on neighbouring properties.

Properties along Edward Street to the north and Docker Street to the west, as well as the motel and properties to the north east will not be impacted by overshadowing given that the Project occupies the south east sector of the site.

Properties to the south east will not be impacted by overshadowing as the built form is only three storeys at the eastern boundary where the Mental Health Building is located.

The existing Engineering Building will experience minor overshadowing impacts as a result of the Project. The properties to the south with rear address to Rawson Lane will also not experience overshadowing impacts given that surface car parking, located on the northern side of the road, is proposed as part of the overall concept plan.

Shadow diagrams showing the impact of the Project on solar access to the site and adjacent properties for 9.00 am, 12.00 midday and 3.00 pm on the summer solstice, (Dec 21), winter solstice (Jun 21) and equinox (Mar 21 and Sep 21) are shown in Figures 24, 25, p. 39 and 26, p. 39.

Existing buildings 
Proposed buildings 

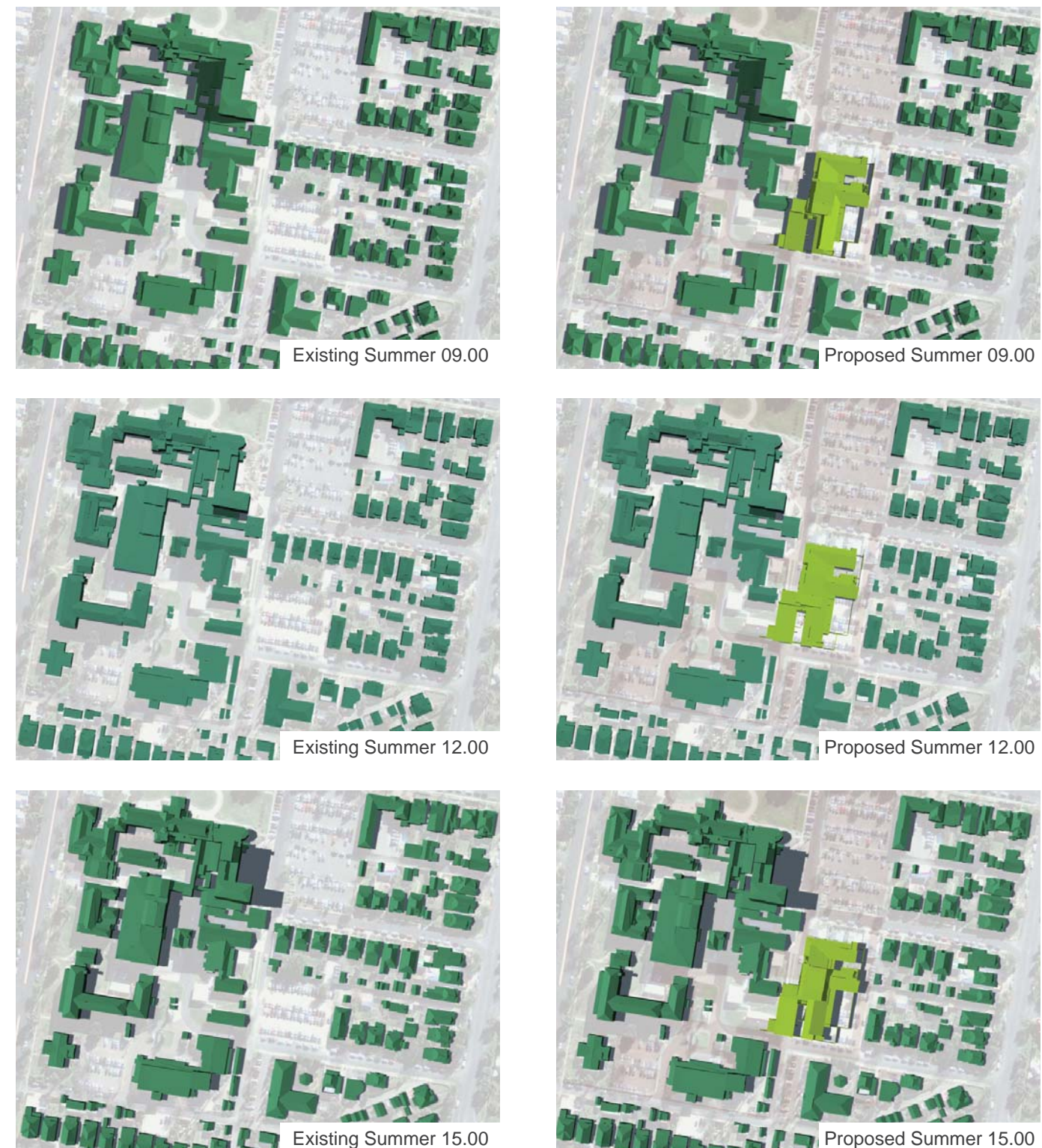


FIGURE 24: Shadow Diagrams - Summer (Dec 21)

Source: Rice Daubney

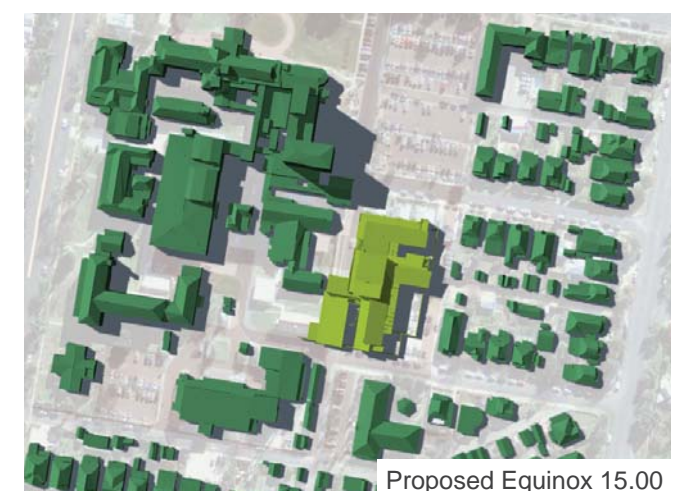
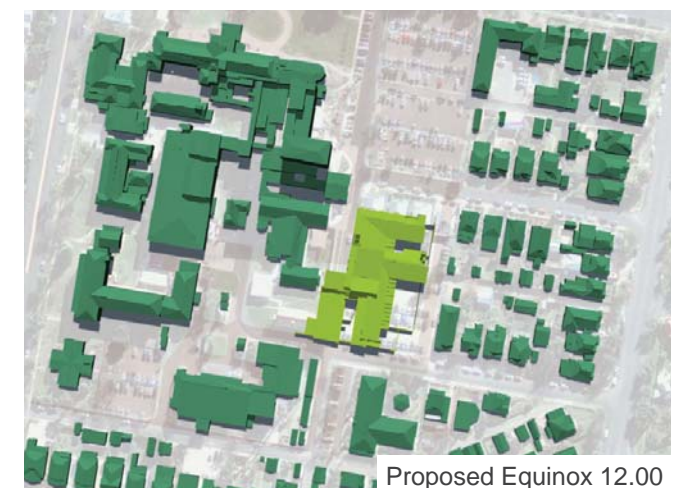


FIGURE 25: Shadow Diagrams - Winter (Jun 21)

Source: Rice Daubney

FIGURE 26: Shadow Diagrams - Equinox (Mar 21 and Sep 21)

Source: Rice Daubney

4.3.2 Privacy

The Project site is bounded by Edward Street to the north and Docker Street to the west, neither of which present any visual privacy issues.

To the east the Project site is bounded by an existing motel and a number of residences. This address will be characterised by the continuing use of surface car parking, which will not pose any visual privacy issues.

To the south the Project site is bounded by a number of residences, many of which are used for consulting purposes, with a rear address to Rawson Lane. This address will also be characterised by surface car parking. It is noted that many of the residences have taken advantage of vehicular access via Rawson Lane and converted backyards to car parks which has mitigated visual privacy issues.

The visual impact of the Project has been addressed in Section 4.2. A series of 3D visualisations have been provided to show the Project within the context of the existing hospital. The visualisations show that the built form is only three storeys in height resulting in the Project having a minor impact on the sight lines to and from surrounding buildings.

Acoustic privacy is mitigated by the design of the overall concept plan which concentrates facilities toward the centre of the site with parking and landscaping to the periphery.

4.4 TRANSPORT AND ACCESSIBILITY IMPACTS

The DGRs state that the following items must be addressed:

- *EA shall provide details on traffic, transport and accessibility generation, access (including emergency access), car parking arrangements, disabled spaces and patient pick up / drop off, loading areas and pedestrian and bicycle linkages associated with the proposed works.*

A Transport and Accessibility Impact Assessment has been undertaken and is included at Appendix G. The study addresses the relevant plans, guidelines and policies and the findings are summarised below.

4.4.1 Existing Transport Context

Wagga Wagga Base Hospital forms part of a wider health precinct and is currently accessed via car parking areas provided adjacent to the core hospital premises as well as street parking. Analysis of the key intersections around the hospital site has revealed that the intersections are operating at a 'satisfactory' to 'good' level of service.

A hospital staff mode-of-travel survey undertaken in 2007 revealed that more than 85% of hospital staff travel to work by car, and that there are very low levels of active and public transport use. Car-sharing is uncommon. Three bus routes currently service the hospital but patronage levels are low which is reflected in the frequency of the services. The nearby railway station offers transport options to regional users only. Paved pedestrian footpaths are common in the vicinity of the hospital but formal on- and off-road cycle paths are not provided.

A parking survey undertaken in 2007 indicated that 304 car parking spaces were available on-site, with a further 275 provided on-street. Parking demand is highest between 11am and 3.30pm, when the peak parking demand is approximately 440 spaces. The current on-site, unallocated car parking provision is 326 spaces including 7 disabled spaces.

4.4.2 Traffic Impact Assessment

Phase 1 Development

The Mental Health Building will occupy land between Yathong and Yabtree Streets where there is currently 74 unallocated car parking spaces and four residential properties (which have been acquired by NSW Health).

The Project will add 4,763sqm (16%) to the total hospital area, 30 beds (13%), 31 FTE weekday staff (6%) and approximately 9 registered and visiting medical officers (6%).

On-Site Car Parking

The Traffic Impact Assessment (refer to Appendix G) proposes that the key indicator for increased demand for parking in relation to the Project is the increase in staffing. The Project represents a 6% increase in staffing which equates to the need to provide an additional 20 unallocated spaces.

To compensate for the loss of car parking spaces and meet the increased car parking needs, a replacement car park will be provided in front of the Old Hospital Building to the west of Lewis Drive. (The replacement car park is proposed as part of an Early Works package under the provisions of the ISEPP). The replacement car park will provide an additional 97 unallocated spaces, one allocated space and five disabled spaces.

Existing parking along the western kerb of Lewis Drive will be rearranged to provide 22 unallocated spaces (six more than currently available) and an additional nine spaces will be provided in front of the Mental Health Building in Yabtree Street.

In total, the proposed car parking provision is 38 spaces, 18 more than required. 8 disabled spaces will be provided which meets BCA 2011 requirements.

Refer to Figure 27.

General Traffic Circulation

The Mental Health Building will occupy land between Yathong and Yabtree Streets requiring acquisition by NSW Health of a portion of Lewis Drive and Yathong Lane and four residential properties. The properties have been acquired and a Heads of Agreement between NSW Health and Wagga Wagga City Council, transferring ownership of the roads, has been signed.

As part of the HoA a replacement road is to be provided. Accordingly, a new road is proposed east of the Mental Health Building, providing for continuing through access on the site. The new road will be two-way to provide for improved construction traffic circulation. The Project also requires reconfiguration of Yabtree Street to two-way. The operation of the new road and Yabtree Street is being approached under separate approval through the Wagga Wagga Local Traffic Committee.

The proposed traffic circulation is shown in Figure 28, p. 43, and discussed in detail at Appendix G.

Emergency and Service Vehicle Circulation

Emergency vehicles will continue to access the hospital via Lewis Drive off Edward Street. Egress will be via Yabtree or Yathong Streets.

Service vehicles will continue to access the hospital via Yathong Street, off Murray Street.

WWBH Traffic Generation

Having assumed that parking demand will increase in proportion to staff increase, it is also considered that with no change in hospital functions, traffic generation will increase in the same proportion (6%). This increase is marginal. To provide a more robust assessment, a 20% increase in site traffic has been assessed for its effect on surrounding intersections.

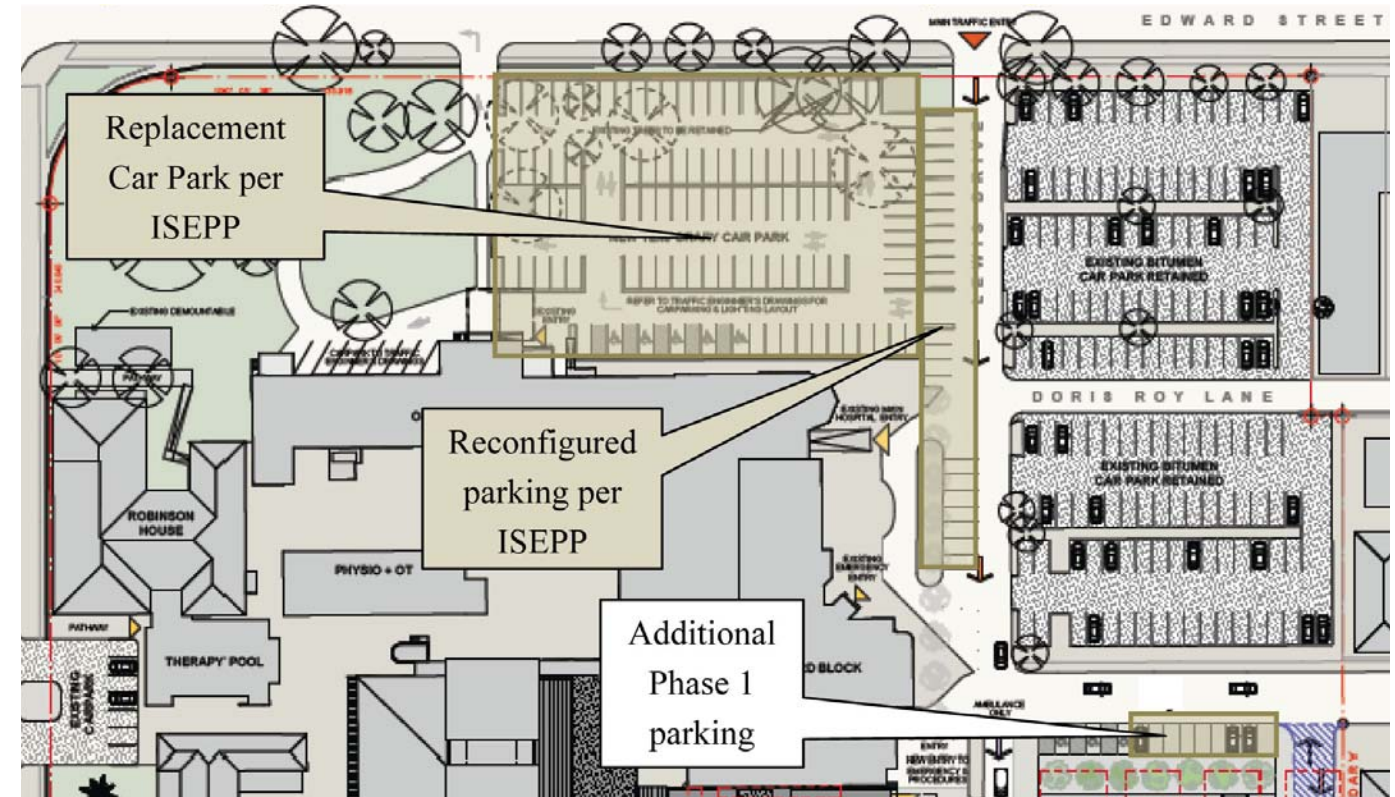


FIGURE 27: Replacement Car Park

Source: SKM

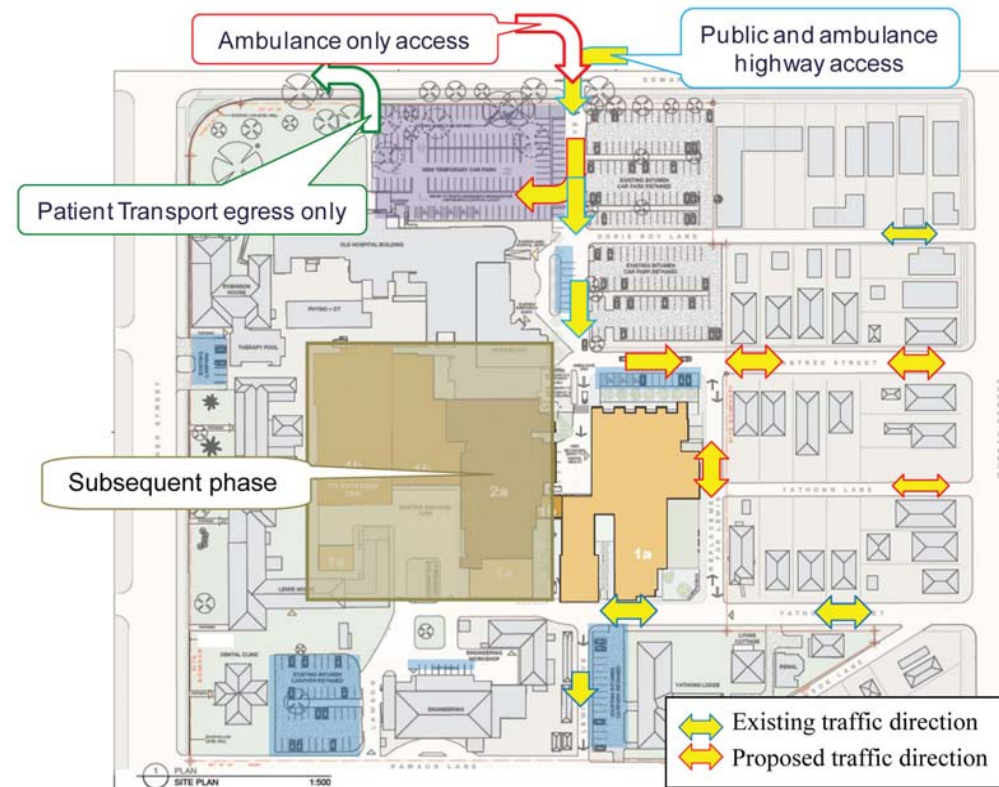


FIGURE 28: Proposed Phase 1 Traffic Circulation

Source: SKM

The assessment concluded that the effect of the Project on the performance of surrounding intersections is negligible (refer to Appendix G).

4.4.3 Travel Demand Management

Work Place Travel Plan

Reduced dependence of private car travel and development of Travel Demand Management initiatives is consistent with the NSW State Plan and other similar government initiatives. It provides the opportunity for reduced car reliance and increased active transport including walking and cycling. This can best be developed through preparation of a Work Place Travel Plan (WPTP) also known as a Green Travel Plan.

As part of the overall concept plan a commitment was made to provide a WPTP as part of subsequent Project Applications. However the works described in this Project Application will result in an increase of only 31 staff and this number is not considered an appropriate threshold for implementation of a WPTP. It is intended that a WPTP be provided as part of subsequent project phases.

Public Transport

Previous studies indicate that hospital journey-to-work trips originate from throughout Wagga Wagga, creating a challenge for the enhancement of public transport servicing the hospital. The shift patterns of hospital staff also impose constraints on commercially viable services. Development of appropriate services with local bus operators should be adopted within the Work Place Travel Plan to be provided as part of subsequent project phases.

Cycling Facilities

The NSW Planning Guidelines for Walking and Cycling identify the need to include end-of-trip facilities for cyclists as part of any development. The Project proposes a male and a female shower/change room and 12 lockers for hospital staff. Cycle racks can be readily incorporated into the landscape masterplan proposed for the Project.

However, the provision of hospital-wide, end-of-trip facilities for cyclists is beyond the scope of the Project (Phase 1). It is recommended that a more coherent cycling strategy be integrated within the Work Place Travel Plan to be provided as part of subsequent project phases.

4.4.4 Construction Activity

Phase 1 requires construction of the Mental Health Building while the existing hospital continues to operate. Accordingly, construction activity has been considered to ensure the least disruption as described below. These proposals also form the basis for the Traffic Management Plan (refer to Appendix G).

Traffic

The proposed traffic route and circulation is as follows:

- Most heavy vehicle traffic will approach the site from the east on Edward Street and leave the same way.
- Most construction traffic will come from locations in east Wagga Wagga.
- Waste materials will be delivered to the Gregadoo Waste Management Centre at Gregadoo, 20km south east of the site.
- Direct access to the site off the Sturt Highway can readily be achieved via Murray Street.

- Heavy vehicles should enter the site via Yathong Street into the new road and exit via Yabtree Street.
- Heavy vehicles should leave the site via Murray Street, right-turn to Brookong Avenue, right-turn to Docker Street, and right-turn to Edward Street.
- On site, heavy vehicles should travel in one direction and transition through the site via a series of right turns.

Refer to Figure 29.

Workforce

The construction workforce is expected to reach a peak of approximately 140 persons in the sixth month of construction. It is anticipated that the workforce will arrive between 6:30am and 7:00am, and leave between 3:00pm and 5:00pm. It is most likely that the site will be accessed by single occupant private cars.

On-site car parking is fully utilised by hospital staff and visitors and is not available for use by construction workers. Accordingly, car parking will need to be provided off-site with provision on-site for secure storage of tools and other equipment to be accessed throughout the day.

Management of on-street car parking, including time restrictions, is required to ensure that the workforce arriving before 7:00am does not consume all available kerb parking around the site.

The provision of off-street car parking may be necessary and could include the opening of additional on-site car parks early in the construction programme or the creation of temporary construction car parks near the site. Locations for off-site car parks include the Wagga Wagga Showgrounds, former Mobil Fuel Depot at 110 Coleman Street and Duke of Kent Oval.

New Road

The Mental Health Building will occupy land between Yathong and Yabtree Streets including a portion of Lewis Drive and Yathong Lane. By agreement, a replacement road is to be provided to the east of the Mental Health Building to ensure continued through access on the site.

It is proposed that during construction, the new road be reserved for construction traffic only. The new road can then be returned for general use prior to the opening of the Mental Health Building.

The current pedestrian demand on Lewis Drive is predominantly hospital staff accessing on- and off-site car parking. The current access provision is unsatisfactory due to inadequate carriageway width.

It is anticipated that hospital staff will not walk around the Mental Health Building during construction but rather will filter through the hospital via back-of-house areas. This route can be managed by the hospital or, alternatively, a separate temporary path could be provided along the new road during construction. However, such a path is not warranted.

Traffic Control

A preferred access path through the site has been proposed, in via Yathong Street and exit, through a series of right-turns, via Yabtree Street.

A Traffic Control Plan will need to be provided prior to construction, detailing access routes, secure tool drop-off points, off-site waiting areas, on-site controls, wheel-wash areas and any other construction traffic controls as required. The plan will also need to designate construction workforce car parking areas in conjunction with Wagga Wagga City Council.



FIGURE 29: Inbound and Outbound Heavy Vehicle Routes

Source: SKM

4.5 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

The DGRs state that the following items must be addressed:

- *The EA shall detail how the development will incorporate ESD principles in the design, construction and ongoing operation phases of the development.*

Ecologically sustainable design (ESD) for the Project is governed by specific functional and maintenance requirements. The Project will be designed to meet a 'best practice' level of sustainable design and the requirements of the Building Code of Australia Section J – Energy Efficiency.

The following ESD principles are adopted in the overall concept plan:

- Thermal Efficiency
 - Minimise direct solar gains through building orientation and appropriate screening.
 - Maximise thermal efficiency through the selection of appropriate materials based on their insulating and thermal mass properties to assist in keeping areas cool during the day and radiate heat during the night.
- Energy Efficiency
 - Incorporate energy efficient design and equipment such as thermal zoning and energy efficient lighting.
 - Minimise non-renewable resource consumption and environmental impacts by adopting an integrated design approach and considering demand mitigation for energy, water and materials.
 - Consider alternative power options such as co-generation/tri-generation plant. Tri-generation systems are relevant for hospitals where electricity and thermal demand is high because of additional steam and hot water requirements. Those features, and the longer facility operation hours, provide a load profile that is ideal for a tri-gen system where energy saving, environmental and financial advantages of the system are maximised.

- Water Efficiency
 - Maximise water re-use through rainwater harvesting for toilet flushing and irrigation.
 - Incorporate WSUD principles in landscape, road and car park design. This should be complemented by the selection of plant species which have minimal irrigation requirements and that provide shading.
 - Use low-water use appliances and fittings with a minimum WELS rating of 3 Stars.
- Recycling and Waste
 - Embody the principles of waste avoidance, re-use, reduction and recycling as an integral part of waste management.
- Material and Product Selection
 - Select internal materials based on their low levels of Volatile Organic Compounds.
 - Minimise total facility costs by adopting 'whole of life' criteria in the selection of products, services and systems.

ESD measures will include the natural gas fired tri-generation plant located at the back of the hospital (which will be bought online in subsequent project phases), as well as those engineering solutions described above that complement passive design outcomes and reduce reliance on artificial means of heating, cooling, ventilation and lighting, while providing desirable levels of thermal, acoustic and visual comfort.

4.6 CONTAMINATION

The DGRs state that the following items must be addressed:

- *The EA is to demonstrate compliance that the site is suitable for the proposed use in accordance with SEPP 55.*

4.6.1 Contamination

A Preliminary Contamination Assessment was undertaken in May 2011. The report is included at Appendix J. The assessment concluded that the site is suitable for its intended use in accordance with SEPP 55. However, the report recommended that additional investigations be undertaken following demolition of existing buildings which present a potential source of contamination i.e. asbestos and lead.

A Construction Management Plan (CMP) (which includes an Environmental Management Plan) has been prepared (refer to Appendix N). The EMP includes procedures for the management of contaminated soil and hazardous waste. The EMP has been prepared by a suitably qualified person in accordance with relevant legislation and guidelines, including SEPP No. 55 – Remediation of Land, identifying any contaminants on site and the required procedure for removal of contaminants and remediation of the site.

4.6.2 Geotechnical

A Geotechnical Investigation relating to the design of the overall concept plan has been undertaken and is provided at Appendix I. The Project is proposed in accordance with the overall concept plan accordingly the findings of the report are applicable.

A preliminary desktop study indicated that the northern half of the site is underlain by unconsolidated sand, silt, clay and gravel (floodplain sediments) and includes high-level Tertiary aged terrace sediments of the Murray Valley comprising gravel, sand, silt and clay. The southern half of the site is shown to be underlain by the Wagga Marginal Base Formation comprising shale, slate, quartzite, sandstone and subgreywacke.

The subsequent field work confirmed the presence of alluvial clays, sands and gravelly sand extending to over 25m depth.

Excavation

The investigation concludes that the majority of the excavated material is expected to comprise very stiff to hard silty clay with some filling material. Excavation can be readily carried out using conventional earthmoving equipment and the spoil that is to be removed from the site will need to be tested in accordance with the *Waste Classification Guidelines – Part 1: Classifying Waste (DECC, 2008)* prior to deposition at the receiving site.

The investigation concludes that the types of structures adjacent to the site could withstand the vibration levels associated with the proposed excavation. A maximum peak velocity of 5mm/sec is proposed for both structural and human comfort however the effect on existing hospital operations needs to be assessed.

The investigation proposes retaining measures for excavated areas including battering and shoring. It is also recommended that dilapidation surveys be carried out prior to excavation.

Foundations

Based on the results of the geotechnical investigation, it is anticipated that the foundation design for the Mental Health Building will comprise pile groups or a piled raft design. The final solution will require refinement based on additional settlement analysis and further geotechnical investigation.



Recycled Balustrade from Old Hospital Building



Harvey House To Be Retained



Canary Island Date Palms To Be Retained

FIGURE 30: Heritage Mitigation Measures

4.7 HERITAGE

The DGRs state that the following items must be addressed:

- *A statement of significance and an assessment of the impact on the heritage significance of any heritage items and for conservation areas should be undertaken in accordance with the guidelines in the NSW Heritage Manual, if required.*

4.7.1 Heritage Impact

A heritage assessment, including a Heritage Impact Statement, was undertaken for the overall concept plan. The report provides an extensive history of the Wagga Wagga Base Hospital and supports the findings of the Conservation Management Report previously undertaken, in particular demolition of the Old Hospital Building and Main Building (Multi-Storey Ward Block) to ensure that a contemporary service delivery model within a modern health care facility can be provided. However, the works described in this Project Application do not require demolition of the Old Hospital Building or the Multi-Storey Ward Block.

Wagga Wagga Base Hospital has operated continuously on this site since the Old Hospital Building was completed in 1910. Since this time, the hospital has been constantly altered and new buildings constructed on the site so that it now presents as a complex of buildings of different periods and architectural styles. The long period of association of the Hospital with this site and significant community involvement means that the site has a high degree of social significance, making it a landmark site in Wagga Wagga. The Project will perpetuate this significance by providing for the next phase of health services on the site.

It has been determined that the existing site is the best site for a public hospital in Wagga Wagga for logistical and other reasons. To provide for the construction of the Project some of the existing infrastructure will be demolished, including the Old Mortuary and Gissing House, resulting in the loss of buildings that have social, historic and/or aesthetic significance in their own right. The social significance of these buildings will be perpetuated by the ongoing use of the site and can be recorded by measures such as interpretation, the relocation of moveable heritage and archival recording where appropriate.

The Project will not result in the loss of any significant historic or aesthetic relationships between the site and the adjoining Wagga Wagga Conservation Area or impact upon any significant view corridors into or out of the Conservation Area. The visual impact of placing buildings of a greater massing and scale within the vicinity of the Conservation Area (as part of subsequent project phases) is to be managed through the appropriate articulation of elevations and planting.

While the overall concept plan will impact upon the heritage of the site, mitigation measures are proposed (refer to Figure 30) and include:

- Archival recording.
- Relocation of moveable heritage items.
- Preparation of an interpretation strategy.
- Implementation of a naming policy commemorating those associated with the hospital.
- Preservation of existing Canary Island Date Palms.

The implementation of a naming policy is a mitigation measure applicable to the Project.

An assessment of the heritage impact of the Project has been undertaken. The assessment found that the Mental Health Building will have a positive impact with regard to the new services that will be provided, a minimal and acceptable impact on the significance of existing buildings and a minimal and manageable impact on the nearby Conservation Area.

The Heritage Impact Statement is provided at Appendix K.

4.7.2 Archaeological Assessment

In addition to a Heritage Report, a specialist study addressing aboriginal and historical archaeology was also undertaken for the overall concept plan (refer to Appendix L). The study was commissioned to inform a broader heritage impact assessment and identifies known Aboriginal and historical archaeological elements in and around the Wagga Wagga Base Hospital site.

The study found that historical archaeological resources relating to previous hospital structures and features are likely to have survived at the site. However, while the Project will impact upon the historical archaeological resource, investigating and recording it archaeologically, because of its limited potential to provide additional information to that already retained in historical material, would appear redundant and unwarranted on archaeological research grounds.

There is some potential for the remains associated with Rawson House to provide detailed information not currently known, which would add to the corpus of information about the hospital. While the Project will have no impact on Rawson House, the replacement car park, proposed as part of an Early Works package under the provisions of the ISEPP, may have an impact given its location. Accordingly, and in accordance with the commitments provided in the overall concept plan, it is recommended that should any remains be uncovered during site works associated with the replacement car park they be photographically recorded (refer to Figure 31).

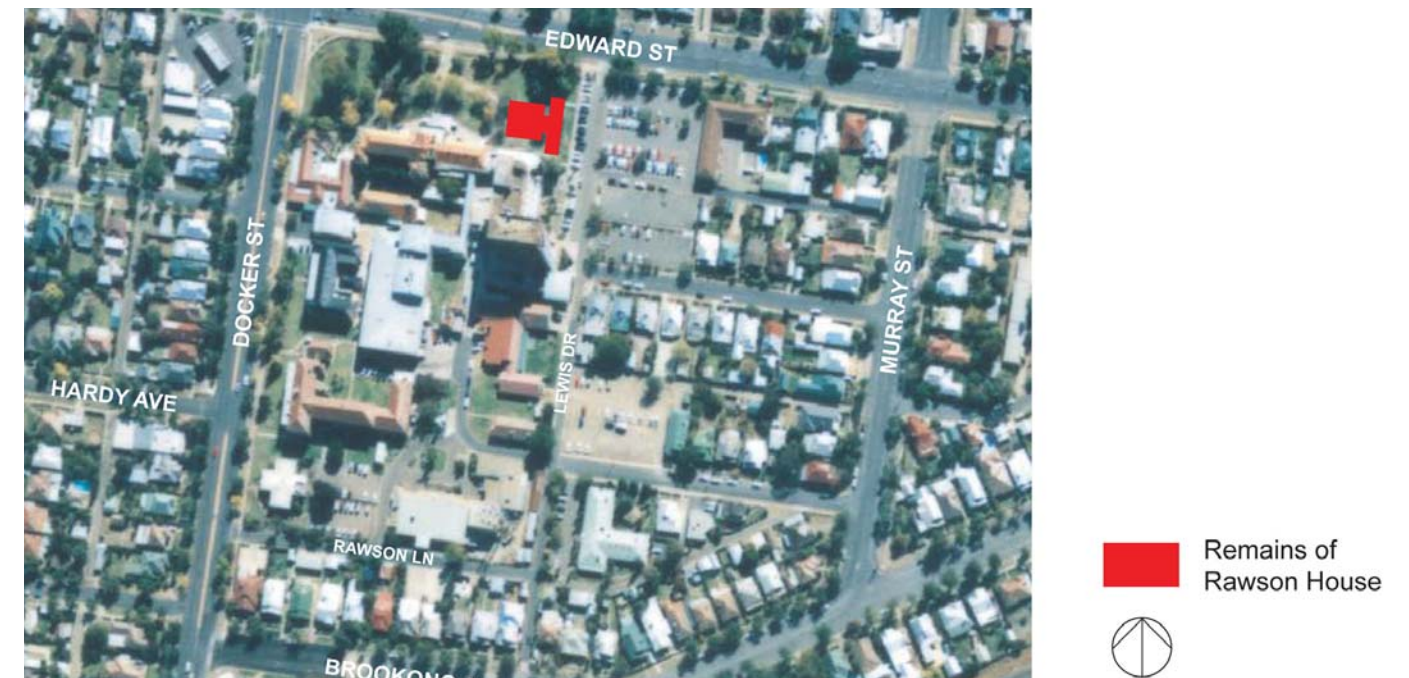


FIGURE 31: Remains of Rawson House

4.8 ABORIGINAL HERITAGE

The DGRs state that the following items must be addressed:

- *The EA shall address Aboriginal Heritage in accordance with the Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment Community Consultation 2005, if required.*

A specialist study addressing aboriginal and historical archaeology was undertaken for the overall concept plan (refer to Appendix L). The study found that within a 5km radius of the Wagga Wagga Base Hospital no Aboriginal sites were identified. In addition, Wagga Wagga City Council has no Aboriginal Heritage items listed on its Local Environmental Plan or Development Control Plan, nor are any items found on the NSW State Heritage Register. A search of the Native Tribunal website establishes that there are currently no Native Title claims active on the hospital site.

The archaeological patterning in the Wagga Wagga area and across the Murrumbidgee Plains indicates that the site (prior to hospital uses) would have had low to moderate archaeological potential. The original topsoil across the site has been significantly disturbed by past land uses, compromising the integrity and archaeological research values of any stone artefact deposits present within affected soils. In-situ artefact deposits are unlikely to occur, however, there remains some likelihood of isolated artefacts surviving in disturbed contexts.

Should any isolated artefacts be exposed, disturbed, discovered or excavated during works the study recommends local Aboriginal communities be consulted to determine how they may wish the artefacts be retrieved, recorded and collected. The study further recommends consultation with local Aboriginal communities to determine whether the site has any Aboriginal cultural significance.

A CMP (which includes an Environmental Management Plan) has been prepared (refer to Appendix N) and supports the recommendations of the specialist study. The EMP describes the procedures to be undertaken should any archaeological or Aboriginal heritage artefacts be discovered during construction.

Overall the Project, which is proposed in accordance with the overall concept plan, will have minimal impact on Aboriginal heritage and in particular no impact on items of Aboriginal significance.

4.9 DRAINAGE

The DGRs state that the following items must be addressed:

- The EA shall address drainage / flooding issues associated with the development / site, including: stormwater, drainage infrastructure and incorporation of Water Sensitive Urban Design measures.

4.9.1 Stormwater

The Wagga Wagga Base Hospital site is subject to local stormwater flows from adjacent local catchments and is also subject to flooding from the Murrumbidgee River.

The existing site condition is predominantly impervious in nature. It consists of roadways, car parks, buildings and other paved areas. The 2 metre contour data obtained from Wagga Wagga City Council indicates that the south eastern catchment of the site bounded by Rawson Lane and Murray Street generally flows towards the river through the internal minor roads within the vicinity of the hospital.

It has been identified that the existing drainage networks surrounding the site, including the adjacent roads, are likely to be inadequate to cater for the Project.

The Project will require the deflection of stormwater via the new road including Lewis Drive North and South, between the new hospital facility and existing buildings located east of the hospital site. (Diversion of drainage services falls outside the works described in this Project Application and is subject to separate Authority approval).

The existing adjacent stormwater catchment is shown in Figure 32 and the new catchment to the stormwater management systems proposed for the Project is shown in Figure 33, p. 51. Refer to Appendix H.

Stormwater Flows From the Adjacent Local Catchment

Stormwater flows from the south eastern catchment are currently conveyed overland through the existing Lewis Drive, Yathong Street, Yathong Lane, Yabtree Street and Doris Roy Lane, which fall towards the hospital site.

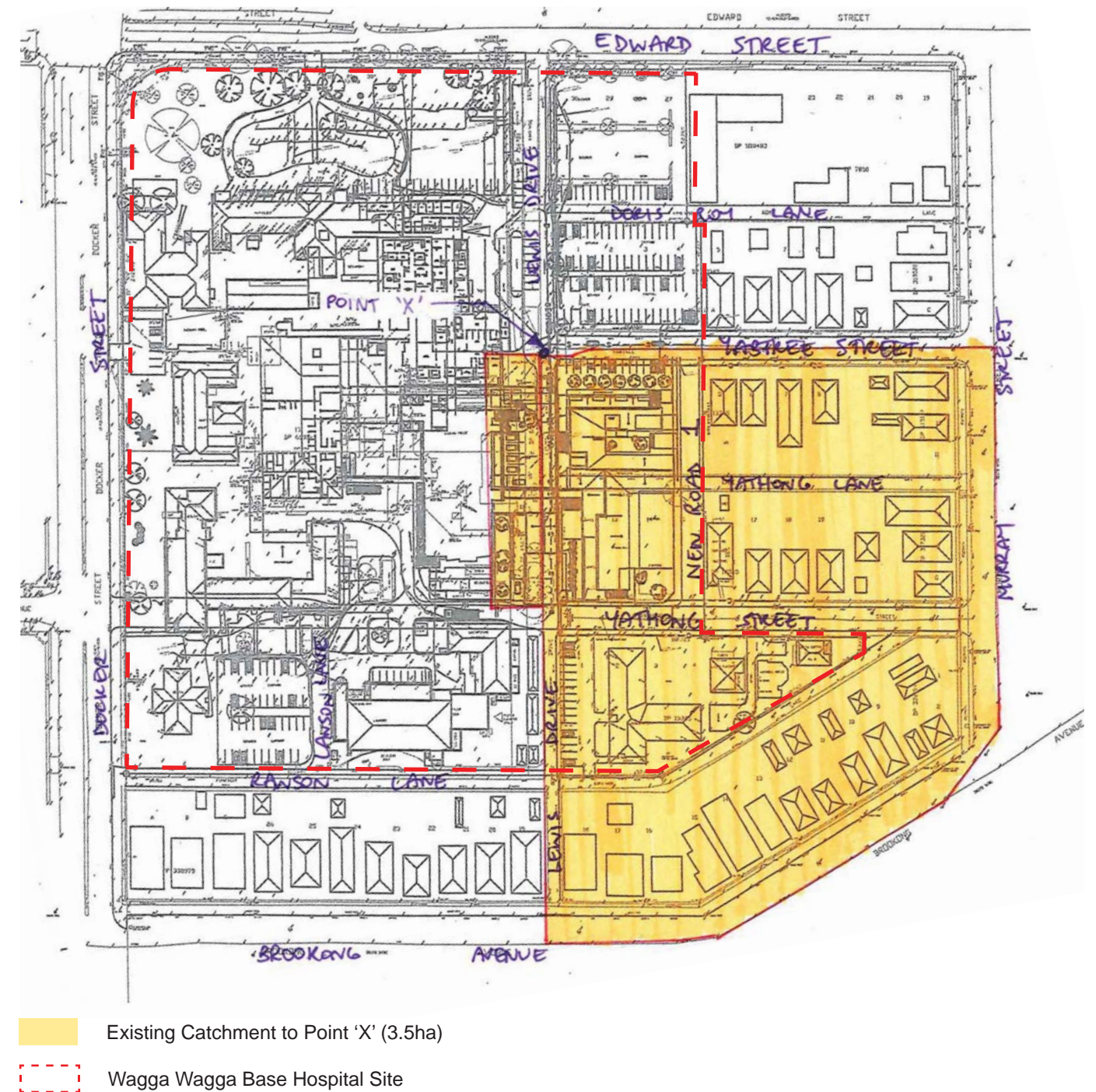


FIGURE 32: Existing Adjacent Stormwater Catchment

Source: SKM

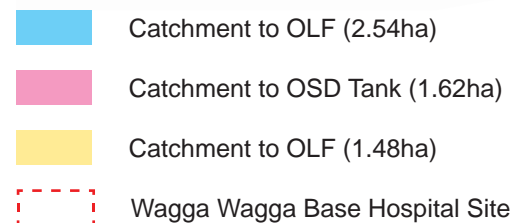
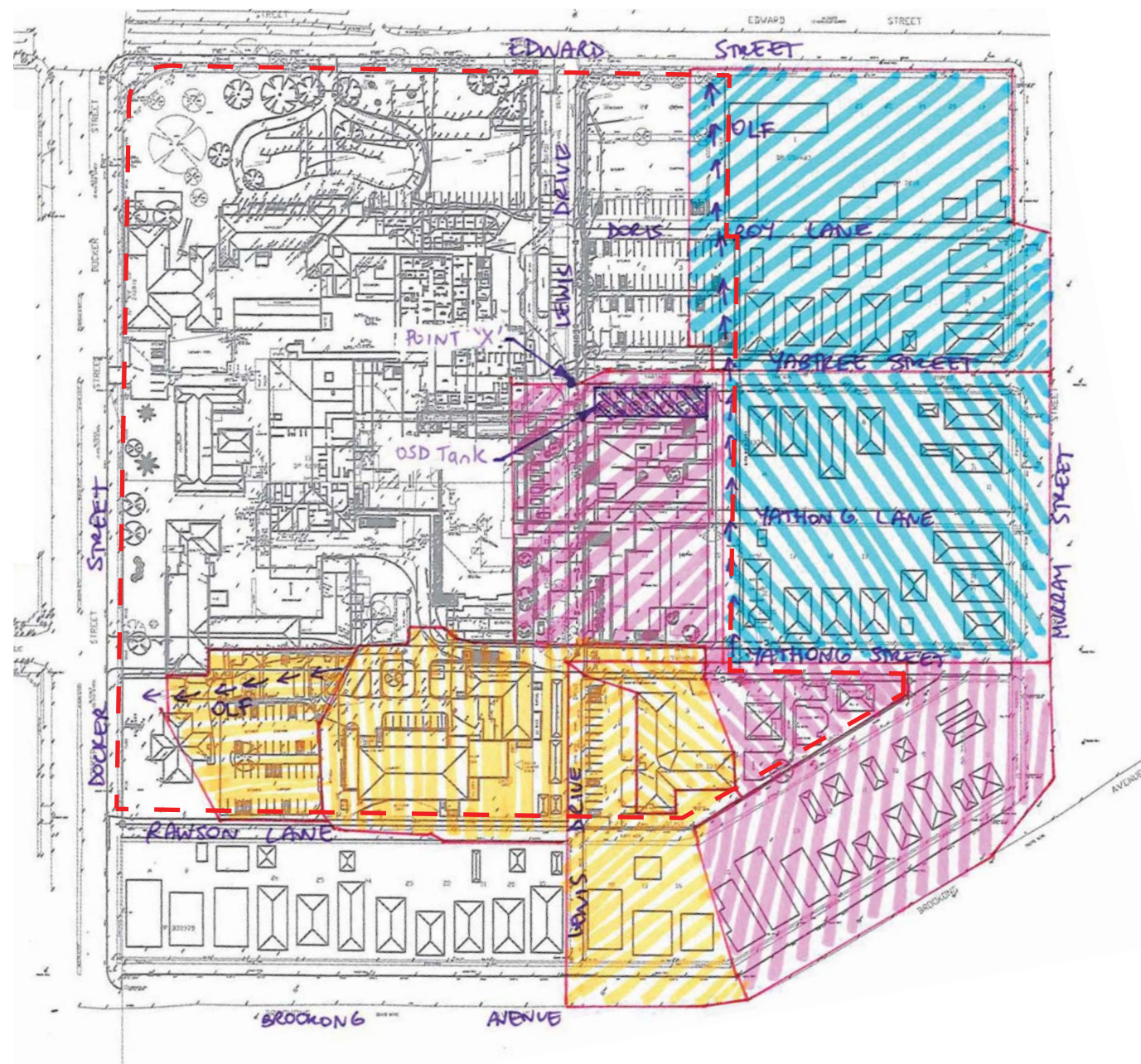


FIGURE 33: New Catchment to Stormwater Management Systems

Source: SKM

A consequence of the new Mental Health Building over a portion of the existing Lewis Drive road reserve and adjacent gravel car park between Yabtree and Yathong Streets is the blocking of the existing overland flow path (OLF) for the southeast portion of the site. Consequently the existing flow regime will need to be redirected to keep external stormwater runoff away from the hospital site.

To manage stormwater runoff and maintain existing overland flow paths an assessment of four conceptual systems has been undertaken:

- Diversion of upstream catchment to Docker Street firstly via the continuation of Yathong Street and then via grassed swale south of Lewis House.
- Provide an underground OSD system at the corner of the proposed New Road and Yabtree Street, underneath the new car park north of the Mental Health Building.
- Provide a minor drainage pipe system within the proposed new road east of the Mental Health Building from Yathong Street and linking this drainage up with Council's existing stormwater network in Edward Street.
- Diversion of OLF from adjacent catchment from Yathong Street, Yathong Lane and Yabtree Street away from the main hospital entrance through the doctor's car park requiring a section of kerb to be removed and the re-grading of the car park to convey the flow.

The assessment has confirmed that the likely final drainage solution will incorporate elements of all four conceptual systems to achieve the best value permanent solution for the Project, benefiting the operators and users of the site and the community at large.

The proposals for stormwater management are discussed in detail at Appendix H.

Hospital Site Stormwater Drainage System

The stormwater drainage for the overall concept plan will be managed through the installation of pit and pipe drainage systems in accordance with the *Wagga Wagga City Council Engineering Guidelines (Part 3 - Stormwater Drainage Design, Draft December 2008)* and will connect to Council's existing drainage infrastructure located along Edward Street and Docker Street.

The capacity of the piped drainage system is to be designed for the 20 year ARI storm event. It is envisaged that existing drainage infrastructure will be utilised where possible and that redundant stormwater infrastructure within the site will be removed.

The stormwater runoff for minor events up to the design storm will be handled by the pit and pipe drainage systems. Excess flows due to storms higher than the design ARI will be conveyed through the site as overland flows along roadways and footpaths.

On-Site Detention System

On-Site Detention (OSD) is to be incorporated as part of the stormwater drainage system, to ensure that the peak discharge from the Project is less than or equal to that from the existing development. This may include underground devices and possibly some parts of the carpark areas which could also be utilised to achieve similar results to form part of the overall OSD system.

OSD requirements can be accommodated within the site considering that the impervious areas of the Project are only slightly greater than that of the existing condition. OSD is to be designed for the 20 and 100 year events.

An underground OSD system is proposed at the corner of the new road and Yabtree Street, underneath the new car park north of the Mental Health building. The proposed on-site detention system is discussed in detail at Appendix H.

4.9.2 Drainage Infrastructure

The Wagga Wagga Base Hospital is impacted by stormwater inundation. The hospital is subject to stormwater flows from adjacent local catchments and is also subject to flooding from the Murrumbidgee River.

Based on Council's services plan and site investigations, the existing stormwater drainage system is located along Docker Street, Edward Street, Murray Street and Brookong Avenue.

Site investigations indicate a single pipe system along the eastern side of Lewis Drive, however it would appear Doris Roy Lane, Yabtree Street and Yathong Street are not serviced by stormwater drainage systems and rely on the road reserve to convey catchment flows.

4.9.3 Flooding

A Flood Impact Assessment has been undertaken on the Wagga Wagga Base Hospital site. The report is provided at Appendix E.

The assessment concludes that flooding of the Wagga Wagga Base Hospital site is likely only in the event that the Murrumbidgee River overtops the Main City Levee. The levee is designed to prevent inundation up to approximately a 60 year ARI. Wagga Wagga City Council has a proposal to upgrade the levee but this has not commenced. Inundation would also be possible in overland flow events not associated with riverine flooding or levee overtopping. The Murrumbidgee River flood levels at the hospital site are as follows:

Flood Recurrence Interval (m AHD)	Design Flood Level
200yr ARI	180.6
500yr ARI	181.8
1000yr ARI	182.3
PMF	183.6

TABLE 02: Selected 2010 Riverine Flood Levels at WWBH (Source: SKM)

The overall concept plan provides for a minimum floor level of 182.580 to tie into the existing CSB slab level which provides the site with approximately 750 year ARI protection including an allowance for 0.5m freeboard. The proposed finished floor level of the Mental Health Building is 183.175 which affords flood protection from the 750 year ARI with approximately 1.095m freeboard. The proposed FFL is also above the 1000 year ARI but below the PMF level of 183.6.

NSW Floodplain Development Manual

The Project has been designed to ensure that all buildings are sited above the appropriate FPL, in a manner consistent with the NSW Floodplain Development Manual (2005) Policy Provisions which state:

The policy provides for: a merit based approach to selection of appropriate flood planning levels (FPLs)...noting that...it is neither feasible nor socially or economically justifiable to adopt the PMF as the basis for FPLs."

However as the Project is an emergency response facility:

Consideration should also be given to using the PMF (probable maximum flood) as the FPL when siting and developing emergency response facilities such as...hospitals."

The adoption of the PMF level as the FPL is not feasible for the Project due to economic and practicality constraints. While appropriate FPLs will be adopted, an Emergency Evacuation Plan will be implemented as part of the hospital's emergency response planning which acknowledges that the site is subject to inundation in quite rare events and highlights that flood-free access is available during the PMF from the south east corner of the site. The hospital's emergency response planning will also address the need for essential services to remain operational during any flood-related emergency.

Climate Change, Sea Level Rise and Rainfall Intensity

The Wagga Wagga Base Hospital Site is prone to inundation from riverine flooding in rare events (greater than 500 year ARI).

Investigations by CSIRO and BOM into the past and likely future changes to climate in NSW estimate that extreme rainfall (defined as a 1 in 40 year 1 day total rainfall event) would be likely to increase by up to 7% for the Murrumbidgee River catchments by 2030. Based on these investigations and taking into consideration the *DECCW Draft Floodplain Risk Management Guideline – Practical Consideration of Climate Change* which recommends a sensitivity analysis for increases in rainfall of between 10% and 30%, an assessment was undertaken based on a 10% increase in rainfall due to climate change.

The results show flood levels as a result of climate change could potentially increase by between 0.2 and 0.3m. The most significant potential increase occurs at the corner of Lewis Drive and Yabtree Street (0.3m). A potential 10% increase in rainfall intensity also increases the extent of inundation, resulting in a small portion of the site that was previously flood free during the 1000 year ARI being inundated.

4.9.4 Water Sensitive Urban Design

There is a requirement under the *Wagga Wagga City Council Engineering Guidelines (Part 3)* to include the principles of Water Sensitive Urban Design (WSUD) as part of the Project.

The guidelines provide a requirement that WSUD be in accordance with the general principles outlined in the references listed (i.e. *WSUD - Melbourne Water 2005*, *Australian Runoff Quality - A guide to water sensitive urban design*, etc). The principles have been considered in the detailed design of the Project to ensure that site stormwater is treated to the extent that the quality of stormwater leaving the site is improved.

The proposed WSUD elements will set up 'treatment trains' whereby stormwater from impervious areas is treated through a series of linked treatment devices before discharging into Council's existing stormwater system in Edward Street.

The WSUD devices will include:

- Buffer Strips
- Vegetated swales
- Bio-retention systems or rain-gardens

Other water quality devices such as Gross Pollutant Traps, rainwater storage and permeable-type paving, may also be considered as part of subsequent project phases.

4.10 WASTE

The DGRs state that the following items must be addressed:

- *Identify the likely waste to be generated during the construction and operation of the development and describe the measures to be implemented to manage, reuse, recycle and safely dispose of this waste.*

4.10.1 Construction

The waste streams likely to be generated by construction of the Project include:

- General solid (non-putrescible)
- General solid (putrescible)
- Organic (green)
- Hydraulic
- Hazardous

A significant contributor to the construction waste generated by the Project will be the demolition of existing buildings. A licensed demolition contractor will be engaged to carry out the demolition works. Any waste materials that cannot be re-used or sold will be transported to a certified landfill to either be recycled or disposed of.

A waste management sub-contractor will be engaged to regularly remove collected/stored waste associated with the amenities provided for construction workers.

A CMP (which includes an Environmental Management Plan) has been prepared (refer to Appendix N). The EMP details the waste likely to be generated during construction (as listed above), the management of such waste and the procedure for removal of hazardous waste.

4.10.2 Operation

NSW Health promotes sustainable operations through the provision of dedicated facilities for waste management and sorting. In particular, the Wagga Wagga Health Service Cluster, of which the Project is a part, is committed to maintaining a waste management system that is safe, efficient, cost effective and considers environmental issues.

The waste streams generated by the Project include:

- Chemical
- Clinical
- Cytotoxic
- Liquid
- Organic
- Pharmaceutical
- Radioactive
- Recyclable
- General

Waste management for the Project will be undertaken in accordance with the Wagga Wagga Health Service Cluster Waste Management Plan 2010-2011 (WMP) which is provided at Appendix L.

The three key objectives of the WMP are:

- All waste is disposed into the correct waste streams.
- Waste volumes are reduced; waste minimisation and recycling is increased.
- Waste management practices optimise staff safety.

The WMP outlines strategies for the effective management of waste including:

- Waste management committees, plans and waste audits.
- Waste minimisation, avoidance, segregation, recycling and re-use.
- Waste labeling and containment.
- Proper waste handling, storage and transport.
- Correct waste treatment / disposal.
- Staff training and education.

4.11 HAZARDS

The DGRs state that the following items must be addressed:

- *A description of the proposed storage, use and management of any hazardous material and measures to be implemented to manage hazards and risks associated with the storage.*

An assessment of the Project against SEPP 33 – Hazardous and Offensive Development has commenced and the findings will be provided as part of the Preferred Project Report.

However, it is recognised that construction of, and operations at, the new Wagga Wagga Base Hospital are likely to generate, and require storage of, hazardous waste. A CMP (which includes an Environmental Management Plan) has been prepared (refer to Appendix N). The EMP describes the management of waste during construction and details the procedure for removal of hazardous waste.

The Wagga Wagga Health Service Cluster WMP, provided at Appendix M, details the types of waste likely to be generated during hospital operations and the relevant storage requirements.

The design of the Mental Health Building for the receiving, storage, handling and use of hazardous materials (where relevant) and the proposed operations of the new facility, are in accordance with the relevant codes and standards.

4.12 PUBLIC DOMAIN

The DGRs state that the following items must be addressed:

- *The EA shall address any required public domain improvements associated with the proposed development.*

The Wagga Wagga Base Hospital is itself a public facility and the redevelopment is proposed to service the needs of the population within the MLHN up to 2021. Accordingly, the project will improve the lives of existing residents and cater for future increases in population.

As well as providing new hospital facilities, the overall concept plan provides for, improved pedestrian access; improved traffic management; an increase in on-site parking above the increase in service levels, decreasing the demand for on-street parking; and upgrading of some adjacent roads and a new section of road to replace a portion of Lewis Drive. These proposals represent public domain improvements associated with the Project.

4.13 OPERATIONAL MANAGEMENT

The DGRs state that the following items must be addressed:

- *The EA shall address noise from plant and equipment; radiation, chemical and biological hazards; emergency and evacuation procedures; use of the helipad and lighting and signage associated with the proposed development.*

4.13.1 Operation Noise

The building services design will provide a Central Energy Plant which will co-locate all heavy and noisy equipment such as chillers, generators, cooling towers and pumps away from the clinical areas to minimise the impact of vibration and noise. (The CEP is proposed as part of an Early Works package under the provisions of the ISEPP).

Medical air compressors and air handling plant will be located in dedicated roof plant rooms with appropriate acoustic wall attenuation and in-duct attenuation to meet the internal noise requirements of AS2107.

The structural design of the building floor systems will ensure that vibration effects are kept to within an agreed set of criteria relevant to the usage of the floor area under consideration. The proposed criteria used to assess the structural design for control of floor vibration is obtained from ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers). ASHRAE defines a set of curves with differing levels of vibration tolerances corresponding to the functional floor uses such as operating theatres, medical imaging equipment and sensitive sleeping areas.

4.13.2 Radiation, Chemical and Biological Hazards

An assessment of the radiation, chemical and biological hazards associated with the Project has commenced and the findings will be provided as part of the Preferred Project Report.

The waste likely to be generated by the Project (including radiation, chemical and biological) and the management of such waste is discussed in Section 4.10.

4.13.3 Emergency and Evacuation Procedures

NSW Health will implement an Emergency Evacuation Plan as part of its review of the existing operating policies and procedures at Wagga Wagga Base Hospital. The plan will outline the process of emergency evacuation and public access and will be ongoing during the operation of the Mental Health Building.

4.13.4 Helipad

The overall concept plan provides for a helipad located on future phases of development. Accordingly, an assessment of the operational noise generated by the helicopter landing site and flight path will be undertaken as part of subsequent project phases.

4.13.5 Lighting and Signage

NSW Health will ensure that all artificial lighting, including internal, external and emergency, is provided in accordance with the relevant standards, codes and NSW Health Facility Guidelines.

NSW Health will promote sustainable operations through the provision of energy efficient lighting and lighting control systems and switching arrangements which minimise energy use. Solar energy options will be considered for external lighting.

NSW Health will ensure all new signage is implemented in accordance with the reviewed operating policies and procedures and NSW Health Facility Guidelines. Any external signage will address the objectives of SEPP No. 64 – Advertising and Signage.

4.14 UTILITIES

The DGRs state that the following items must be addressed:

- *In consultation with relevant agencies, the EA shall address the existing capacity and requirements of the development for the provision of utilities, including staging of infrastructure works.*

4.14.1 Electrical

The electrical service will require additional sub-stations and communications facilities for the Project. The power for the Project will be provided by an indoor Central Energy Sub-station and associated Main Switch Room. HV feeders will be available to provide firm supplies to the Project from the HV network to be expanded/modified following negotiations with Essential Energy. New emergency diesel generators and tri-generation system will form part of the central energy services with automatic synchronisation and control. The tri-generation system will come online during Phase 2 works.

Power factor correction, uninterruptible power supplies, surge protection equipment and lightning protection would be incorporated.

Lighting and power supplies will be provided in accordance with all relevant standards.

A new Campus Distributor Room and Carrier Room will be provided, in the initial stages, to contain cross-connect equipment to link with Carriers' equipment and other buildings as part of the Project including the existing parts of Wagga Wagga Base Hospital. A fibre optic based structured cabling system will be implemented with Category 6a STP minimum cabling for floor distribution.

At each level, Floor Distributors, in sufficient number to ensure that no technical outlet is in excess of 90m, will be provided. Where multiple levels are involved, these Floor Distributors (approximately 7m x 4m) will be stacked on an identical footprint for security of infrastructure.

Voice-Over Internet Protocol, Wi-Fi with integration to nurse call, and security systems will be considered.

4.14.2 Mechanical

The Mental Health Building will be air conditioned via central air handling units appropriately zoned to comply with BCA Section J energy efficiency requirements and AS1668.2-1991. All air handling plant will be located in a dedicated plant room located on Level 2 of the Mental Health Building accessed through public areas of the building to minimise interaction between contractors and patients.

The Mental Health Building will be provided with toilet exhausts and laundry exhaust systems. All obnoxious exhausts will be exhausted at roof level in accordance with AS1668.2-1991.

The air handling systems for the Mental Health Building will shutdown in the event of a fire in accordance with AS1668.1-1998. Stair pressurisation is not required.

Cooling and heating will be provided via pipework from the proposed Central Energy Plant, water cooled chillers, natural gas fired boilers and cooling towers located on the Wagga Wagga Base Hospital site in the vicinity of Yathong Street. In subsequent stages, the Central Energy Plant will be expanded to provide the full heating and cooling for the hospital and incorporate a tri-generation system. The chillers will contain non-ozone depleting refrigerant and be located in an enclosed plant room to contain both noise and any refrigerant leaks. The cooling towers will be acoustically treated to meet both the hospital internal noise requirements and those at the property boundary. Heating for domestic hot water will be provided via a plate to plate heat exchanger from the main heating system.

This central plant location ensures that exhaust flues will not affect the proposed helicopter flight path (part of subsequent project phases), separates heavy maintenance activities from clinical areas and locates the cooling towers at the maximum possible distance from any existing or new outside air louvres.

4.14.3 Hydraulic

The hydraulic services include potable water, fire water supply, non-potable water, sanitary and trade waste drainage and natural gas supply. Where existing connections to services are found to be suitable for reuse these will be maintained, otherwise new connections will be provided.

The Project will reuse the existing sanitary drainage connections with new PVC pipe work extending to all areas requiring sanitary drainage. This will include on-site treatment of grease and trade waste to local Authority's requirements.

A new upsized connection to the existing main in Docker Street will be provided and reticulated to all new fixture, plant and equipment requiring potable cold water. In addition to the new connection, storage of water, pumps and on-site treatment of water may also be conducted at a single point, downstream of the upsized connection. Once connected the redundant water service connections will be capped off to Authority's requirements.

Hot and warm water systems for the Project will include a hot water plant co-existing with the mechanical plant. Hot water will be reticulated as a flow and return system to all fixtures, plant and equipment. Localised thermostatic mixing valves will provide warm water to ablution fixtures.

The Project will have a new mains connection in Docker Street to supply fire water for both fire hydrants and fire sprinklers.

Fire hose reels will be connected to the new potable cold water service.

The existing 50mm mains connection and meter assembly will be retained to supply the demands of the Project. The natural gas service downstream of the main meter assembly will require upsizing of pipe work to suit the new demands of the Project.

4.14.4 Fire

The fire services include the installation of essential services to suit the Project.

A new smoke detection system complying with BCA Part E2.2 and AS 1670.1-2004 will be provided throughout the new Mental Health Building. The system will be controlled from a Sub Fire Indicator

Panel (SFIP) located in the main entry lobby of the building.

Smoke detectors will be provided to suit the mechanical services in accordance with AS 1668.1-1998 requirements with fire fan controls located on the SFIP. The fire fan controls will allow the fire brigade manual control of the mechanical services under fire mode if required.

A new fibre optic network cable will connect the Mental Health Building SFIP with the existing Multi-Storey Ward Building's FIP during Phase 1 works and the connection will be relocated to the new MFIP in the Fire Control Centre during Phase 2 works.

A new Sound System and Intercom System for Emergency Purposes will be provided throughout the Mental Health Building. The system will be controlled from a new Master Emergency Control Panel located in the main entry lobby of the Mental Health Building.

Portable fire extinguishers will be provided throughout the building.

4.14.5 Security

The Mental Health Building will be provided with a new integrated Security Management System (SMS).

The SMS will allow all electronic security systems to be totally integrated so that it can function as a complete and seamless system that will allow control, administration and management from a single user interface. Security sub-systems include an extension of the Main Hospital's existing Electronic Access Control and Intruder Alarm System (Concept 4000), a new full IP CCTV System, new Hard Wired and Wireless Duress Alarm Systems and a new Video Intercom system. Generally, the new security management system will be provided in accordance with AS4485 Parts 1-2 requirements.

The new SMS for the Mental Health Building will have administration, management and monitoring capabilities from a new Security Operator Workstation located at the Reception Desk of the Mental Health main entry. There will be space provision for at least one security personnel to perform security monitoring functions from this location. In subsequent stages, the monitoring and administration of the new SMS will be possible from other nominated security monitoring points connected to the security communications network.

A new fibre optic security communications backbone will be provided around the Mental Health Building to allow security communications from each level's communications node to be reported and monitored at the new Security Operator Workstation. Generally, the new security communications network will follow the proposed communications infrastructure layout.

The existing Concept 4000 system Electronic Access Control System will be extended to facilitate access for authorised personnel through restricted areas of the Mental Health Building. The system will comprise 13.56 MHz smart cards, smart card readers and electronic locks and be administered and managed from the nominated Security Operator Workstation. As part of the Concept 4000 system, an integrated Intruder Alarm system will also be provided to high risk areas of the Mental Health Building and be comprised of reed switches, volumetric detectors and remote arming stations to permit arming/disarming of the system. The system will be provided in accordance with AS2201 Parts 1-5 requirements.

A new IP CCTV system will allow video surveillance of key areas around the Mental Health Building for the purposes of staff and patient safety and overall security of the nominated areas. The system will be comprised of a combination of fixed full body, fixed dome and pan, tilt and zoom cameras and be monitored from the Security Operator Workstation for post-incident analysis. The system will be provided in accordance with AS4806 Parts 1-4 requirements.

Hard wired duress alarm points will be provided within the Mental Health Building to areas where staff are generally alone with patients or the public. A wireless duress alarm system will also be provided for staff working in high risk areas of the Mental Health Building. Generally, duress alarms will be provided in accordance with TS11 2007 and Australian Health Facility guidelines.

A new video intercom system will be provided for the Mental Health Building to permit audio and visual communication for visitors/contractors to gain access to restricted areas. The video intercom system will consist of door stations in the field and master stations at nominated reception desks, staff stations and the like. The new video intercom system will be capable of calling and escalating other master stations during after-hours periods. Video intercom door stations will be provided to all nominated after-hours access points in accordance with TS11 2007 guidelines.

4.14.6 Vertical Transportation

The Mental Health building will have two lifts serving ground to Level 1 to cater for bed transport and hospital staff in acute and non-acute areas.

4.15 MAINTENANCE OF PATIENT CARE

The DGRs state that the following items must be addressed:

- *The EA shall address the maintenance of patient care throughout the stages of construction.*

The Mental Health Building (which comprises the Phase 1 construction works) is a stand alone component of the hospital redevelopment. The interface with the existing hospital is limited to pedestrian and traffic circulation routes, and some existing services. The amendment of these items is discussed in detail in Sections 4.4, 4.9 and 4.14, and Appendices G and H. There is no physical interface between the existing hospital buildings and Phase 1 works.

However, a CMP has been prepared and is provided at Appendix N. The CMP makes reference to a Site Management Plan which will be provided prior to construction of subsequent project phases which directly interface with the existing hospital.

The SMP will describe the management of site activities and construction interfaces with hospital operations, and will outline the key intentions and constraints for construction delivery activities at the hospital to minimise disruption to the public and maintain a high level of patient care.

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