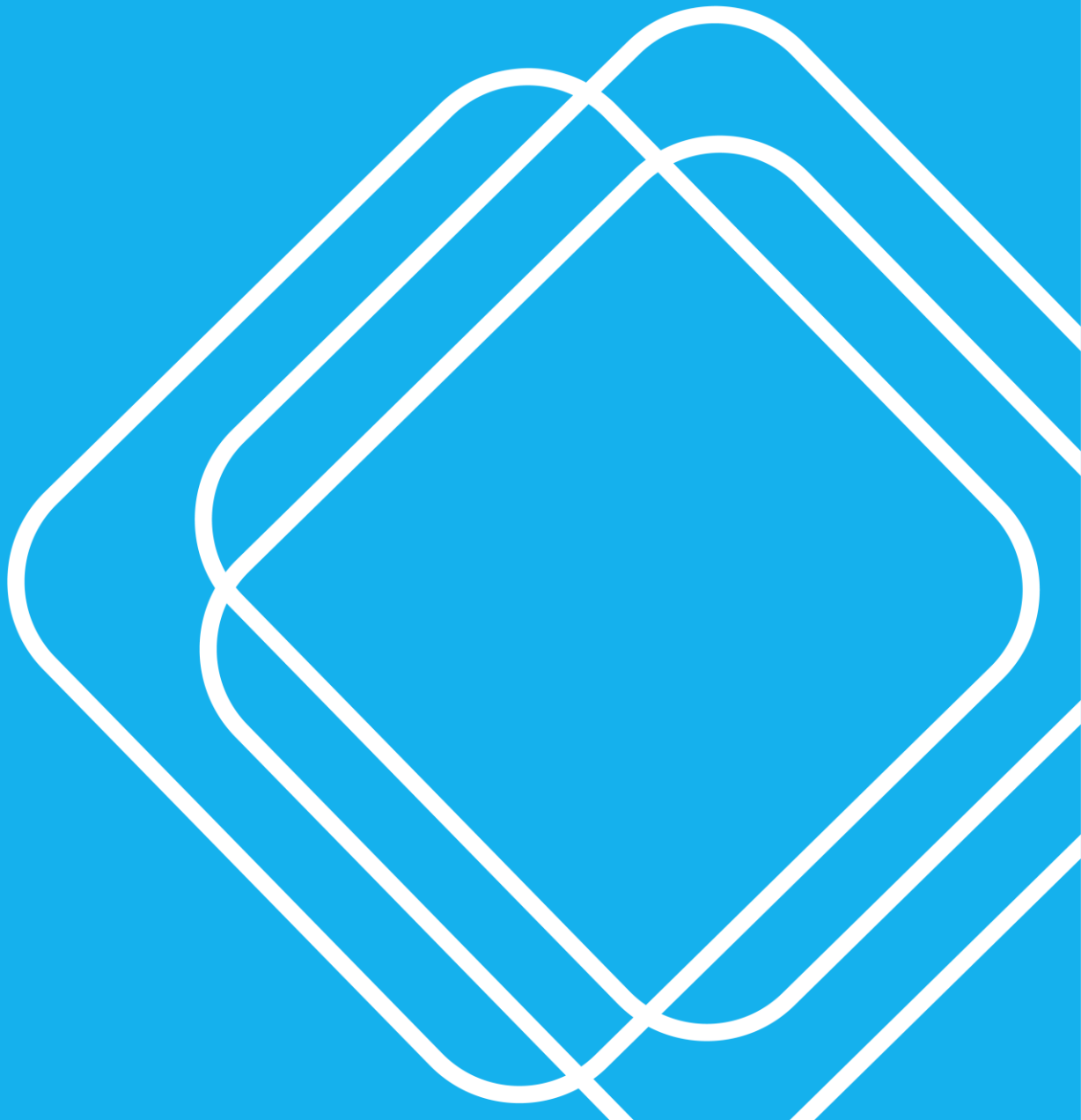
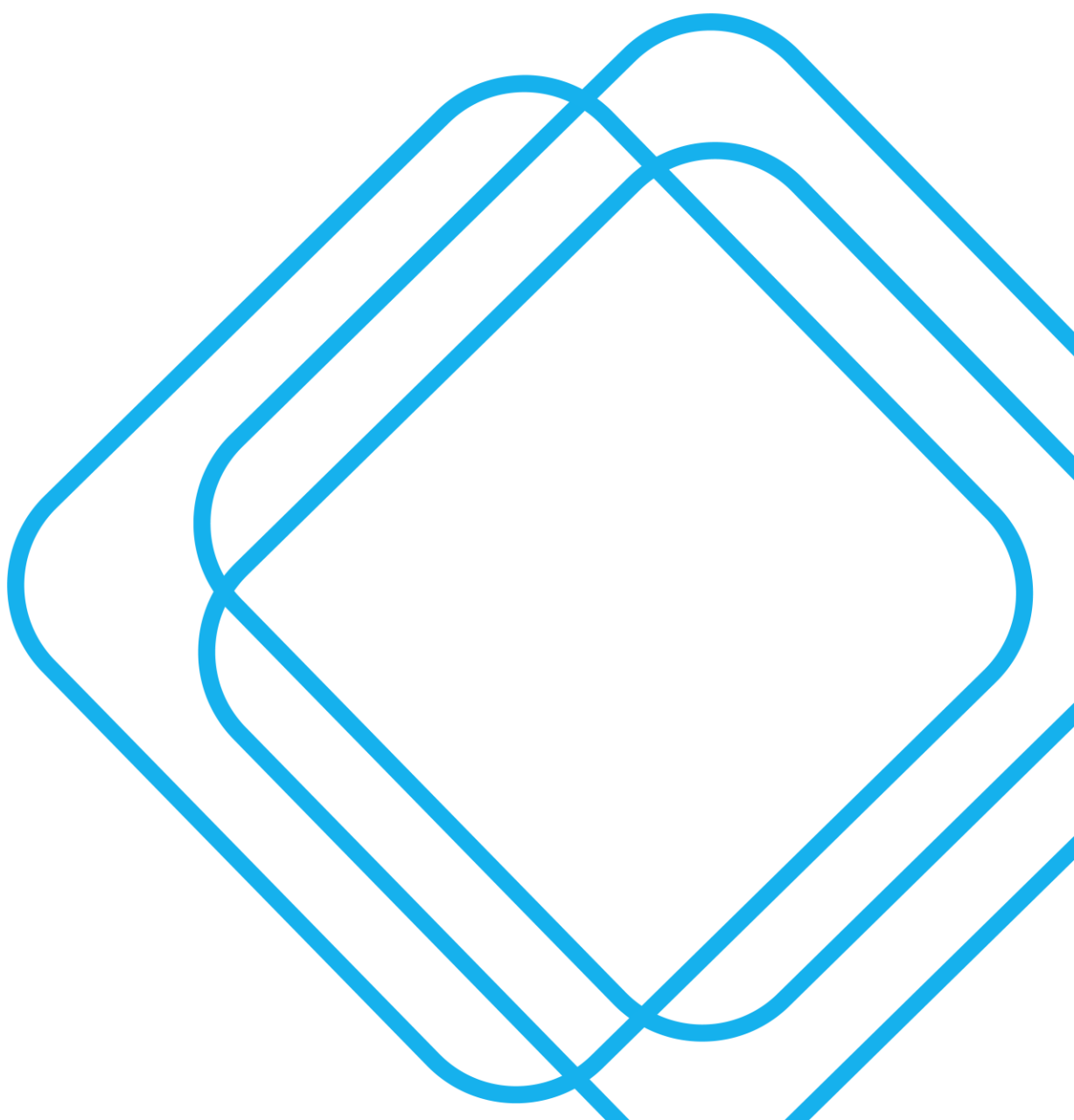


# TRAFFIC AND PARKING REPORT

Broken Hill Health Service

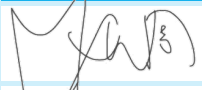


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## Quality Assurance

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## 1.0 Introduction

### 1.1 Background

The Broken Hill Health Service (BHHS) addresses the needs of the Far West Local Health District (FWLHD). It provides locally based services across acute, sub-acute, mental health and community health areas. The BHHS serves the largest referral catchment area of any hospital in NSW within a population that has the poorest health outcomes in the state.

BHHS is a 98-bed rural teaching hospital, providing a 10-bed Emergency Department as well as general medical, surgical, obstetric, paediatric, dialysis, oncology and acute mental health beds, operating theatres, specialist palliative care, intensive and coronary care units.

Support services include radiology and pathology departments, as well as a wide range of allied and primary health services. Inpatient beds comprise: 27 medical acute beds including palliative care priority; 21 surgical; five ICU/CCU; six maternity; six paediatric; six mental health inpatient; 10 sub-acute rehabilitation; and six dialysis chairs. The BHHS also accommodates three operating theatres and three recovery beds and two Special Care Nursery Level 2 cots.

The BHHS Redevelopment consists of an upgrade to the Emergency Department (ED) as well as a new purpose-built Mental Health Inpatient Unit (MHU) which will consist of eight beds. The reconfiguration and expansion of the existing ED will run concurrently with the MHU development.

This report reviews the impact of the redevelopment of traffic, access and parking in and around the Health Service site.

Figure 1-1 BHHS Site Overview



Source: \_planning; 2023

## 2.0 Existing conditions

### 2.1 Existing site access

#### 2.1.1 Road network

The BHHS, located to the north of the Broken Hill township, is bounded by Thomas Street to the south, Chloride Street to the east, Morgan Street to its north, and in part Bromide Street to the west.

An internal road runs diagonally between Thomas Street and Chloride Street, forming a diagonal connection through the site – bounded by car parking. This internal road is the primary access road to the site, facilitating access through the back of the Main Hospital Building.

#### 2.1.2 Public transport

Bus routes 592 and 592A service BHHS on Thomas Street adjacent to the hospital site. The routes are a loop service connecting Broken Hill CBD to Thomas, with nine buses a day. In addition to these services, a Menindee and Willcannia Intertown service also stops by BHHS.

All buses stop on Thomas Street, though during the COVID-19 pandemic, the Intertown services began routing through the internal roadway inside BHHS. Discussion with the service provider, CDC Broken Hill, has agreed that these services will revert to stopping on Thomas Street.

Due to the low frequency of services and limited catchment, the large majority of staff, patients and visitors are assumed to drive to and from the hospital instead of making use of the bus service.

#### 2.1.3 Walking and cycling

Broken Hill, in the vicinity of the BHHS, has a high level of footpath provision across the surrounding street network. There are no formal cycle facilities in proximity to the site, however, roads are wide and experience low volumes of traffic.

Due to Broken Hill's harsh climate the prevalence of walking and cycling to / from the site is minimal.

### 2.2 Broken Hill Health Service staff numbers

Health Service wide FTE data is not currently available and cannot be relied on to determine how many staff are on site throughout the day. Staff presence at BHHS will vary due to the nature of the work, and some staff on the roster are regularly based away from the facility but will visit the site from time to time.

Additionally, BHHS includes accommodation for staffing, most of which would walk to the facility from Morgan Street or Thomas Street where their accommodation is located. These staff are usually assigned cars from the hospital fleet and will not need to use the main carparks or on-street parking for travel to work.

As a result, this assessment will rely on observed data to determine regular parking demand as opposed to calculating this from available roster data.

While the cross-department FTE counts are unavailable. The ED has its own roster for which FTE counts are available. Current Full Time Equivalent (FTE) for the ED is 38.88, comprised primarily of nursing and senior medical staff. These are split into day, afternoon, and night shifts. Similarly, the MHU has its own roster, with a current FTE roster of 15.61.

### 2.3 Parking facilities and parking demand

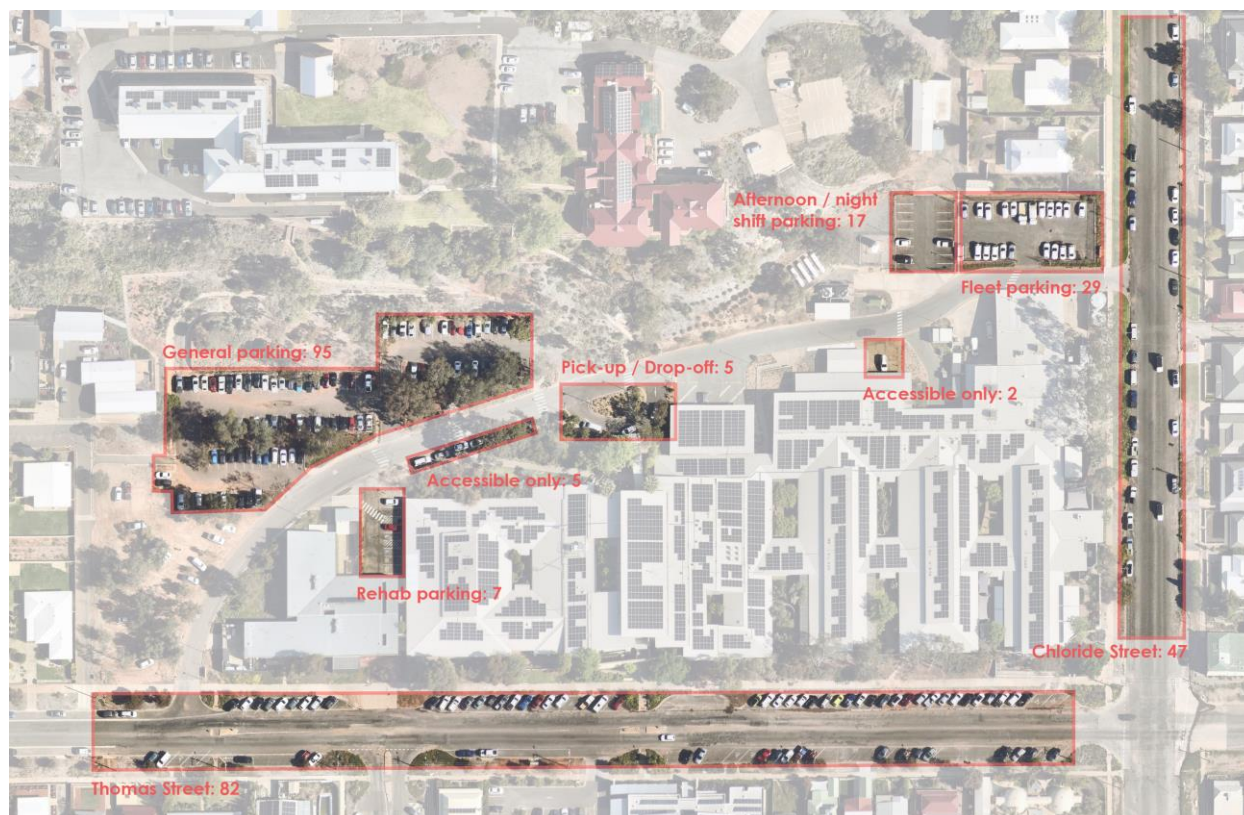
This report focuses on parking provision on lower campus. i.e. the portion of the campus that is public facing, accessed from Thomas Street and Chloride Street. The upper campus of Broken Hill Hospital (accessed from Morgan Street) is not considered in this report as it serves staff accommodation and education facilities only.

Existing parking facilities on lower campus consist of fleet parking, general parking, dedicated afternoon / night shift staff parking as well as on-street parking adjacent to the site. This is illustrated in **Figure 2-1**. There are a total of 155 parking spaces (including fleet parking) within the site and approximately 129 on-street spaces on Thomas and Chloride Street adjacent to BHHS.



Of these spaces, there are 22 spaces marked for accessible users, just under eight per cent of supply. Aside from some spaces on Thomas Street that have '5-minute' parking limits, the available parking is largely unrestricted.

**Figure 2-1 Existing parking availability, within and adjacent to the site**



Source: SCT Consulting; 2023; modified from Nearmap

Peak parking demand occurs during the overlap between the morning and afternoon shift, where the maximum number of staff are expected on site. This overlap is a relatively short period of time, usually around two hours. Due to a lack of available data on staff rosters, the current peak parking demand at BHHS is estimated from spot checks conducted during a site visit on Wednesday and Thursday from 1-2 February 2023, with a peak parking demand of approximately 270 cars (excluding fleet). The spot checks are summarised in **Table 2.1**.

**Table 2.1 Observed parking demand – 1 and 2 February 2023**

Observed	On-site	Off-site (on-street)	Total	Time observed
Maximum demand <sup>1</sup>	113	155	268	11am
Minimum demand	39	1	40	9pm

Observed parking demand also includes on-street parking observed on Sulphide Street as well as cars parked on the dirt patch on the west side of the site. As the available on-site parking reaches capacity during the day, drivers are assumed to park their cars at the closest available alternative.

Parking occupancy rates decrease quickly away from the BHHS site which suggests that parking demand is mostly contained by the on-street parking immediately adjacent to the site.

As a conservative estimate, parking along Thomas and Chloride Street is assumed to be used for BHHS purposes rather than the nearby GP super clinic.

<sup>1</sup> Ground works being carried out during the time of the spot check meant that 19 spaces were unavailable within the site. This means that more demand was pushed out onto the adjacent streets and therefore on-street demand may be higher than normal.

## 2.4 Servicing / waste disposal

Servicing and waste disposal across the site in multiple locations. The maximum vehicle size the site must accommodate is a 19m articulated vehicle which, on separate occasions, facilitates oxygen deliveries and car fleet transportation. Service vehicles need to have access along the main internal roadway within the site, entering and exiting in a forward direction.

## 2.5 Emergency department

The ED is currently access via two locations, one through the ambulance bay for patients coming via emergency vehicles, and another through the main hospital entry for those arriving in cars. The access via the main hospital entry is shared with other patients and departments, adjacent to the public drop off area.

This is illustrated in **Figure 2-2**.

### Figure 2-2 Existing ED layout and access



Source: STH, 2023



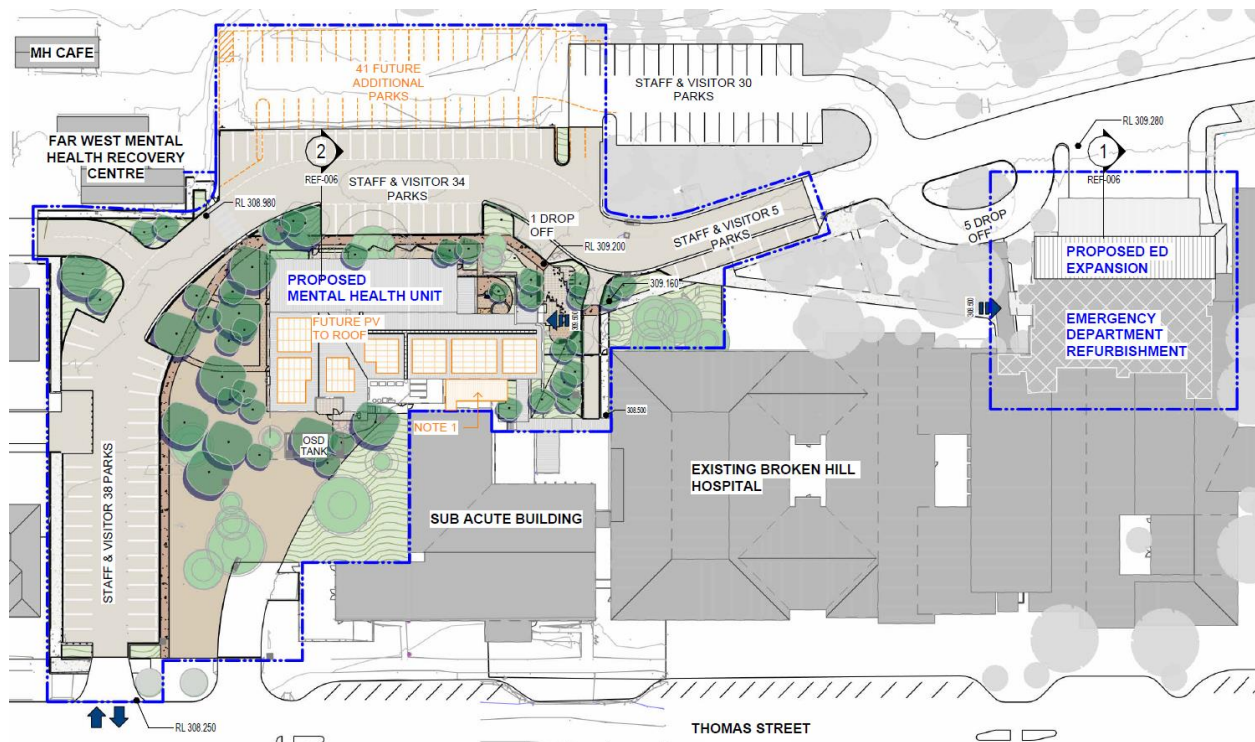
## 3.0 Proposed redevelopment

### 3.1 Overview

The redevelopment consists of the new MHU facility to the west of the existing Broken Hill Hospital, as well as an expansion of the ED in its existing location. This is illustrated in **Figure 3-1**.

The new build necessitates a realignment of the existing internal roadway along the west of the proposed MHU, and through the northern parking module, connecting to existing circulation roadway once past the MHU. This roadway will be sized to accommodate movement of the required service vehicles as well as fire brigade access.

**Figure 3-1 Proposed BHHS redevelopment plan**



Source: STH, 2023

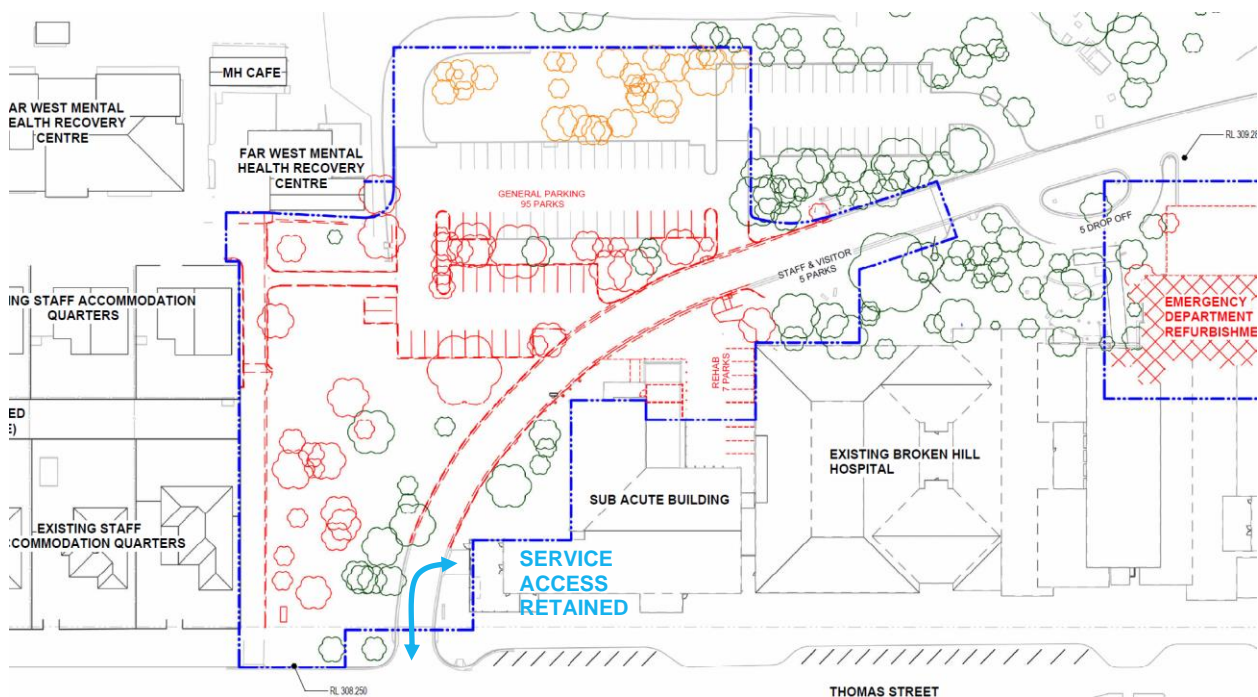
## 3.2 MHU

The BHHR new build MHU proposes increasing the current mental health bed allocation from six to eight beds (six adult beds, one paediatric bed, one bed expansion). The FWLHD has requested a two bed vulnerable population concept that would provide an appropriate space for children and adolescents, Indigenous persons, the aged, people with a disability and those deemed to be at risk of harm from others.

The new build will result in an increased staff roster of 6.84 FTE, to a new total of 22.45. Some of this roster will be part of the night shift. For the purpose of this assessment, it is assumed that there will be a growth of six parking spaces demanded as a result of the new MHU.

This location of the new MHU is directly on top of the existing circulation roadway and will require a realignment of the road. Demolition includes part of the existing roadway and 38 parking spaces (of which three are accessible spaces), illustrated in **Figure 3-2**. The lost parking spaces include those in the general parking modules as well as the dedicated sub-acute car park.

**Figure 3-2 Demolition plan for the new MHU build**



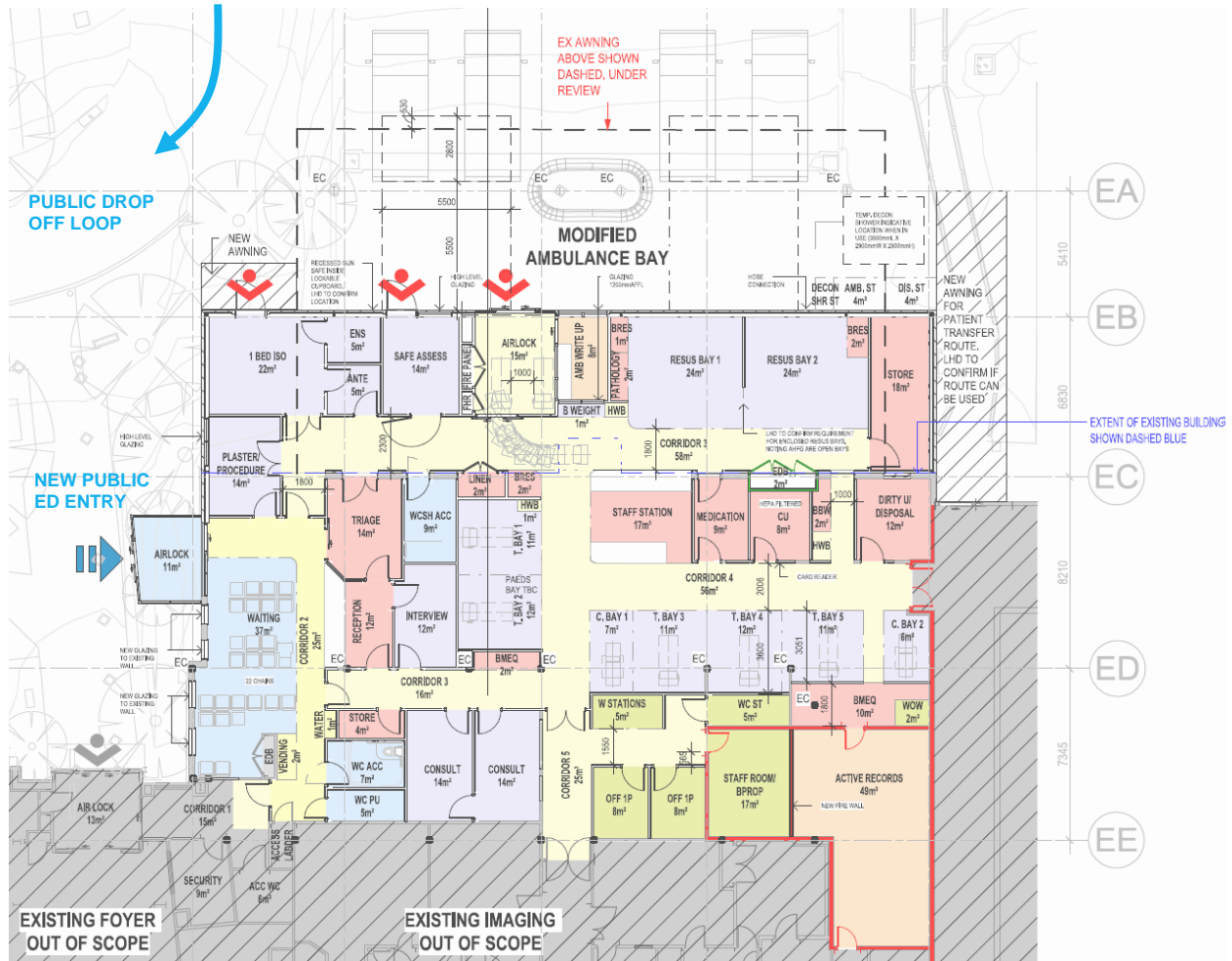
Source: STH, 2023

A small section of the existing circulation roadway will be retained so that service vehicles are still able to access the Sub Acute Building's back of house area, as marked in **Figure 3-2**. The Health Service operates Small Rigid Vehicles (SRVs) for back of house use, and these will be able to enter and exit Thomas Street in a forward direction.

### 3.3 ED

The expanded ED will increase the number of acute treatment patient bays from three to five, include a new interview room, an emergency patient room for special acute treatment and a virtual car room. The additional space is achieved by expanding the ED to the north, into the existing ambulance bay. This is illustrated in **Figure 3-3**.

**Figure 3-3 Proposed ED layout**



Source: STH, 2023

The expansion of the ED would see the staff roster FTE increase by 18.67 to a new total 57.55. A portion of this increase in FTE are assigned to afternoon and night shifts, and will have a lower impact on parking and trip generation during the hospital peak hours. For the purpose of this assessment, it is assumed that the ED expansion will result in a demand growth of 16 parking spaces.

#### 3.3.1 Emergency Department access

A new public entrance point is proposed closer to the drop off loop. This is anticipated to reduce the number of patients using the ambulance bays to park and access the ED. These measures will improve accessibility for patients. It will ensure that access for emergency vehicles will not be impeded by public users.

### 3.3.2 Ambulance bay

The ED expansion will reduce the length of the ambulance bay by 4m (as shown in **Figure 3-3**). Ambulances will no longer be able to unload patients between the median columns and the ED entry and will instead be required to reverse into the bay and park 90 degrees to the building.

This configuration will allow four ambulances to park at one time, at a reduced bay width of 4.2m per ambulance. NSW Ambulance have confirmed suitability of this reduced width through testing conducted by the local NSW Ambulance team and multiple consultation sessions with the design team.

## 3.4 Parking

38 new parking spaces are proposed along the new circulation roadway as a replacement for the number demolished. This will ensure there is no net loss of parking on-site. A new short-stay pick-up/drop-off space will be delivered adjacent to the MHU entry.

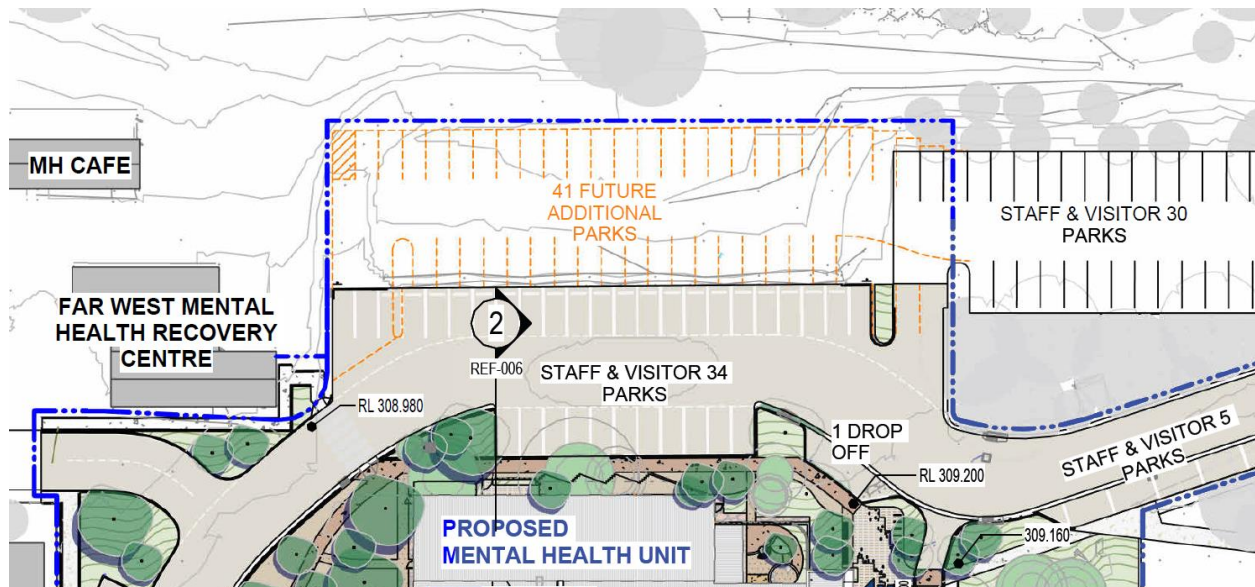
A footpath on the east side of the new circulation roadway will connect Thomas Street and the new parking spaces to the MHU and the existing hospital.

### 3.4.1 Provision for future parking expansion

There is a provision for the future expansion of the existing car park to the north, which will add 41 on-site parking spaces to the hospital. This new parking module will be an extension of the existing staff and visitor car park that is separated from the circulation roadway.

The future car park expansion is not included in this stage of proposed works.

Figure 3-4 Provision for future additional parking



Source: STH, 2023

## 3.5 Sub-acute building car park and access

The MHU development will impact the footprint of the dedicated sub-acute car park, which will be replaced with landscaping and an access driveway. Vehicle access will be retained through a single-lane driveway that connects the internal roadway to the entry of the sub-acute building.

Due to the constrained manoeuvring space, delivery vehicles will need to reverse to enter and drive out in a forward direction without turning around. The route will pass through pedestrian walkways and will therefore require a managed approach to ensure safety of those moving across the driveway.



## 4.0 Traffic Impact Assessment

### 4.1 Network performance

Growth in traffic accessing the site will comprise of increase in staffing during peak hospital hours, which is expected to be approximately 22 FTE, as well as a small growth in patient and visitor volume. This increase is expected to have negligible impact on the network performance of Thomas Street, Chloride Street, and the surrounding intersections, especially considering that current traffic volumes are low.

### 4.2 Parking

Total supply of long-term on-site parking remains unchanged. Around 22 additional staff cars are expected during the peak parking demand (i.e. the overlap of the morning and afternoon shift) along with a small increase in patient and visitor demand. This is a result of growth in both the MHU and the ED capacities.

The additional parking demand would not significantly impact the overall operation of car parking utilisation on site or within the surrounding street network. Street parking may be occupied slightly further from the hospital, amounting to an additional 15-25m walk, which is considered acceptable.

#### 4.2.1 Future parking expansion

The provision for an additional 41 on-site parking spaces will not be delivered in this package of works. When delivered in the future, the spaces will have the effect of reducing the spread of car parking demand on the adjacent streets.

While it will not generate any additional traffic for the Health Service, there may be a small increase in vehicles using the internal road network as more drivers park on-site rather than on-street.

### 4.3 ED Access

The new dedicated public ED entry has a positive impact on access as it will encourage public users to drop off patients at the drop-off loop rather than using the ambulance bay. This will reduce the chance of private cars parking in the ambulance bay and impeding emergency vehicle movement.

The new entry location also decreases the walking distance between the drop-off loop to triage which is a positive change for patients who are likely very unwell and requiring urgent medical attention.

### 4.4 Emergency vehicles / patient transport

The proposed ambulance bay configuration will increase the capacity of the bay area to four spaces. This is an increase from the one space currently provided by the port-cochere configuration. Regrading will allow ambulances to be level when parked in this configuration, with a reduced 4.5m clearance behind the parked ambulances. The Broken Hill NSW Ambulance team have tested and confirmed that this reduced clearance is suitable for loading/unloading of patients in this context.

### 4.5 Walking and cycling

There are currently no footpaths leading into the hospital and the new footpath connecting Thomas Street to the MHU will bring a positive impact to walkability within the site. External infrastructure remains in place to support site access to and from the site, however, the climate drivers behind poor mode share to the site remain.

### 4.6 Public transport

The redevelopment has no impact on existing public transport operations.



## **4.7 Construction impacts**

A Construction Traffic Management Plan (CTMP) would be developed prior to the start of construction. The CTMP would be prepared in consultation with Transport for NSW and Broken Hill Council and would seek to minimise traffic, transport and parking impacts during the construction stages of the project, especially while the health service remains operational. The CTMP would address aspects such as type of construction vehicles, construction transport routes, dilapidation surveys, traffic control plans, including detours and signage, and details of measures to minimise conflicts with other road users or users of the site.

## 5.0 Summary and next steps

### 5.1 Summary

The BHHS redevelopment will deliver an increase in two mental health beds, and improve capacity and operations at the ED. It will grow the Health Service roster by approximately 26 FTE, though not all of this new roster will be at the hospital during the peak demand periods. The proposed location of the new MHU building will require the realignment of internal roadway that currently runs through the hospital site.

This assessment finds that the redevelopment:

- Has a negligible impact on the road network performance.
- Will increase parking demand by 22 cars during the peak period, which will have a minimal impact on existing parking operations.
- Will continue to accommodate access of the required service vehicles (maximum size is 19m articulated truck).
- Has a positive impact to walkability throughout the site due to the new footpath that connects Thomas Street to the hospital's internal footpaths.
- Will improve public access to the ED, reducing the distance from the public drop off.
- Will reduce the probability of private cars using the ambulance bay for drop off.
- Has no impacts to cycling, public transport and emergency vehicle access as a result of the MHU.

