Woolacotts.
CONSULTING ENGINEERS

New Grafton Correctional Centre

Stage 2 – Transport and Accessibility Report

16-26 – PRO_CIV_CD_RPT-02_002 - Rev G

Contents

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Executive Summary

A new correctional centre is being developed at Grafton to help meet the State's need for increased inmate capacity. The new Grafton Correctional Centre (NGCC) will be built and operated as a public-private partnership (PPP) and will be retained in ownership by the NSW Government.

The site is located 23 kilometres by road to the south east of Grafton, 5 kilometres north east of Grafton Airport and 7 kilometres east of the Pacific Highway at 313 Avenue Road Lavadia on the Mid North Coast of New South Wales.

The purpose of this report is to provide details on proposed Stage 2 Transport and Accessibility aspects of the NGCC, inclusive of assessment of potential traffic impacts on the surrounding road network. The results are summarised as follows:

- Access to the NGCC has been developed in accordance with the Stage 1 development approval process
- The proposed new entry road and intersection with Avenue Road has been located to maximise sight distances and to comply with all relevant standards
- The new entry road has been carefully designed to minimise conflict between pedestrians and vehicles. Visitors arriving by either bus or car walk directly to the visitors centre without crossing main roads. Staff arriving by bus or car walk directly to staff training and amenities without crossing main roads. Service vehicles and prisoner transports travel to the relevant Gatehouses with minimum conflict with pedestrians
- During operation of the NGCC the Level of Service at each of the nearby intersections is maintained at LOS C which is acceptable to the RMS
- During construction the Level of Service at each of the nearby intersections is maintained at LOS C which is acceptable to the RMS, except for the junction of Pacific Highway and Old Six Mile Lane during the period from 6 – 7am during the peak construction period. This issue will be monitored and managed by the Construction team.

1.0 Introduction

1.1 Background

In 2016, the NSW Government called for Expressions of Interest from the private sector to design, build, operate and maintain the NGCC. Following a competitive tender process, NorthernPathways were announced as the preferred bidder. The project is being delivered a Public Private Partnership (PPP) which means NorthernPathways will design, construct, operate and maintain the new facility on behalf of the NSW Government for the next 20 years.

Infrastructure NSW (INSW) is the Proponent for the environmental impact statement and lodgement of an application for environmental and planning approval. INSW is working with NorthernPathways on the community consultation and public exhibition of this environmental impact statement.

NGCC will be the major multifunctional, regional correctional facility servicing the northern part of NSW and will be the primary correctional facility for all corrections operations from the Queensland border in the north to Kempsey in the south, and Tamworth in the southwest.

The vision for the project is to operate in accordance with innovative best practice, both in providing safety and security and providing dynamic, pro-social management of inmates.

1.2 Stage 1 Consent

On 14 March 2017 consent was granted to the concept proposal for the staged development of New Grafton Correctional Centre (NGCC) comprising:

- 1,700 maximum and minimum security beds, consisting of:
    - - 1,000 maximum security beds for male inmates;
    - - 300 maximum security beds for female inmates; and
    - - 400 minimum security beds for male inmates.
- core correctional facility buildings including: maximum and minimum accommodation units; special accommodation units; health facilities; education and programs areas; administration; workshops; staff amenities; and visitor facilities;
- a recreational oval within the perimeter of the facility;
- a six metre high fence or wall around the perimeter of the facility, with light and security camera poles up to 10 metres in height;
- store buildings, small ancillary facilities, a central energy plant, black-water treatment facilities and a drug dog detection unit and yard located outside the perimeter wall / fence;
- fire access roads on the inside and the outside of the perimeter wall/ fence of the facility;
- water, power, wastewater and communication utilities within the site;
- a maximum building height of 12 metres (approximately three storeys);

- total GFA of approximately 100,000 sqm;
- vegetative buffer of 50 metres along the northern boundary, 15 metres along the eastern boundary and 30 metres along the southern boundary; and
- asset protection zone of 100 metres from every boundary or vegetation buffer;
- one vehicular entry/exit point from Avenue Road;
- 500 car parking spaces;
- 1.5 metre high boundary fence; and
- landscaping of ground cover and /or shrubbery.

All development under the concept proposal consent (Stage 1 consent) is the be the subject of a subsequent development application with the exception of the Stage 1 works.

The approved Stage 1 works include:

- vegetation clearance and biodiversity management activities;
- bulk excavation and site stabilisation works;
- demolition of the existing house and sheds;
- construction of access roads including fire access roads to the extent required to conduct Stage 1 works
- construction of auxiliary facilities such as construction compound, construction staff parking facilities and stockpiles sites;
- temporary provision of water, power and communication services within the site to the extent required to conduct Stage 1 works; and
- landscaping.

These Stage 1 works will be undertaken to facilitate the subsequent development as envisaged in the concept proposals.

At the same time, Infrastructure New South Wales (INSW) is arranging for the delivery of services to the site including a mains water supply, electricity, telecommunications and access.

The subsequent development application (Stage 2 DA) will be generally consistent with the concept proposal as outlined on the previous page.

NGCC will be constructed and maintained by John Holland and Serco will operate the correctional centre.

1.3 Approvals framework

NGCC is a State significant development with planning approval being obtained in two stages:

- Stage 1 – for the concept proposal and Stage 1 works; and
- Stage 2 – for the design and construction of the facility.

The Stage 1 consent was obtained by the Infrastructure NSW (INSW) on behalf of Corrective Services NSW (CSNSW), a division of the Department of Justice, with approval perceived 14 March 2017.

INSW, on behalf of Corrective Services NSW (CSNSW), a division of the Department of Justice is the applicant for this Stage 2 development application.

The development to which the Stage 2 development application relates is also State significant development. Clause 8(1)(b) in Part 2 of State Environmental Planning Policy (State and Regional development) 2011 ("the SRD SEPP"), development is declared to be State significant development if the development is specified in Schedule 1 or 2 of the SRD SEPP. Schedule 1 includes paragraph 16:

16 Correctional centres

Development for the purpose of correctional centres that has a capital investment value of more than $30 million.

The proposed NGCC has a capital investment value of over $30 million and is State Significant Development.

The Minister for Planning is the consent authority for State Significant Development.

1.4 The Site and its context

1.4.1 Regional context

The site is located 23 kilometres by road to the south east of Grafton, 5 kilometres north east of Grafton Airport and 7 kilometres east of the Pacific Highway at 313 Avenue Road Lavadia on the Mid North Coast of New South Wales.

The Pacific Highway provides connections north towards Queensland and south towards the Hunter and Sydney. The Gwydir Highway provides a connection between the North Coast and the New England and Summerland Way extends north connecting Grafton, Casino and Kyogle to the Mt Lindesay Highway.

Grafton is a focal point for regional road, river and other transport networks and a focus for higher order services to the Clarence Valley sub-region. It is the sub-region's major employment centre and a centre for government administration.

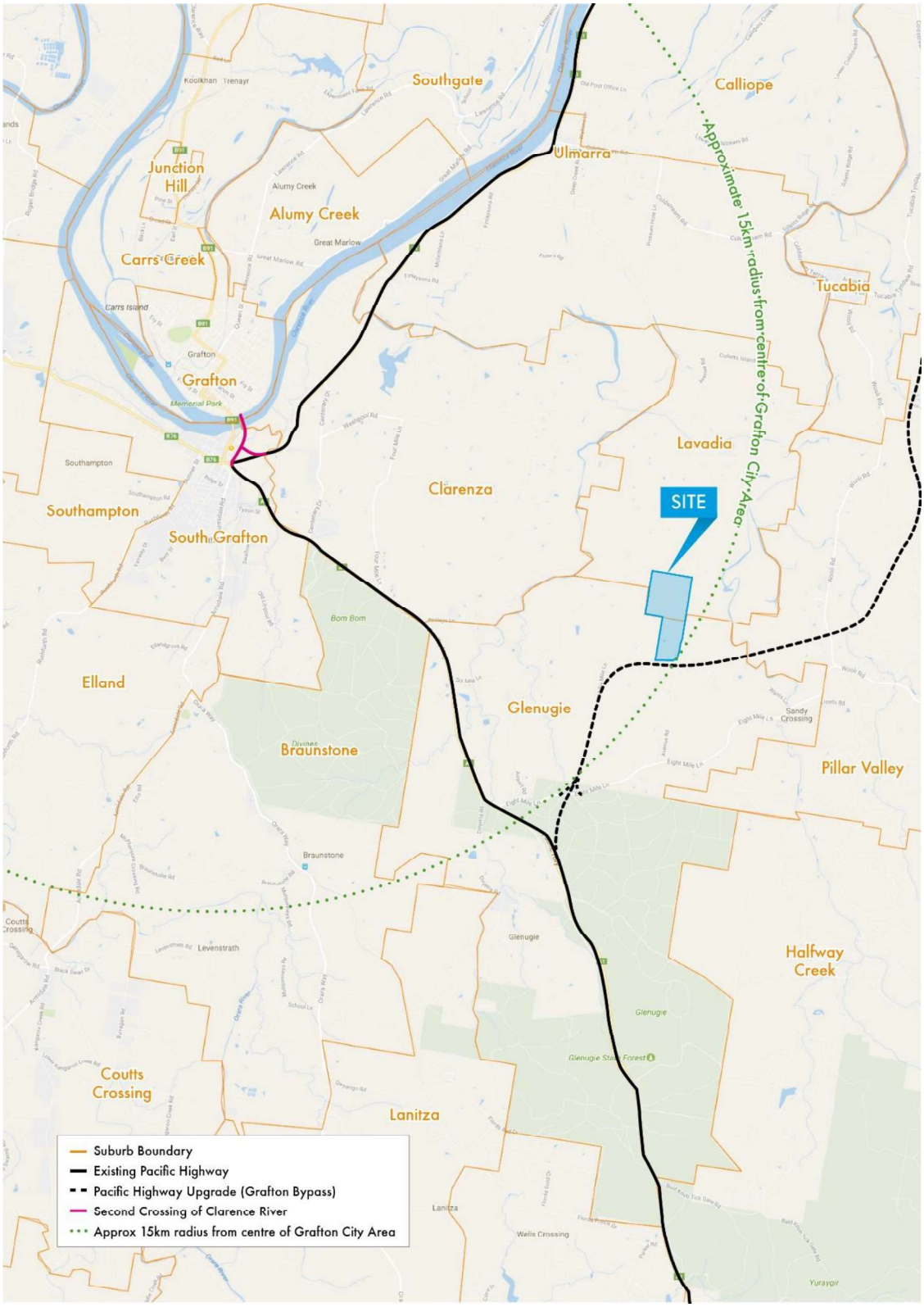


Figure 1.1 - Location

1.4.2 The site

The site comprises Lot 26 DP751376 and Lot 1 DP 1190399 each roughly rectangular with a total area of 195 hectares. It is known as 313 Avenue Road Lavadia although the site straddles the boundary between the localities of Lavadia and Glenugie.

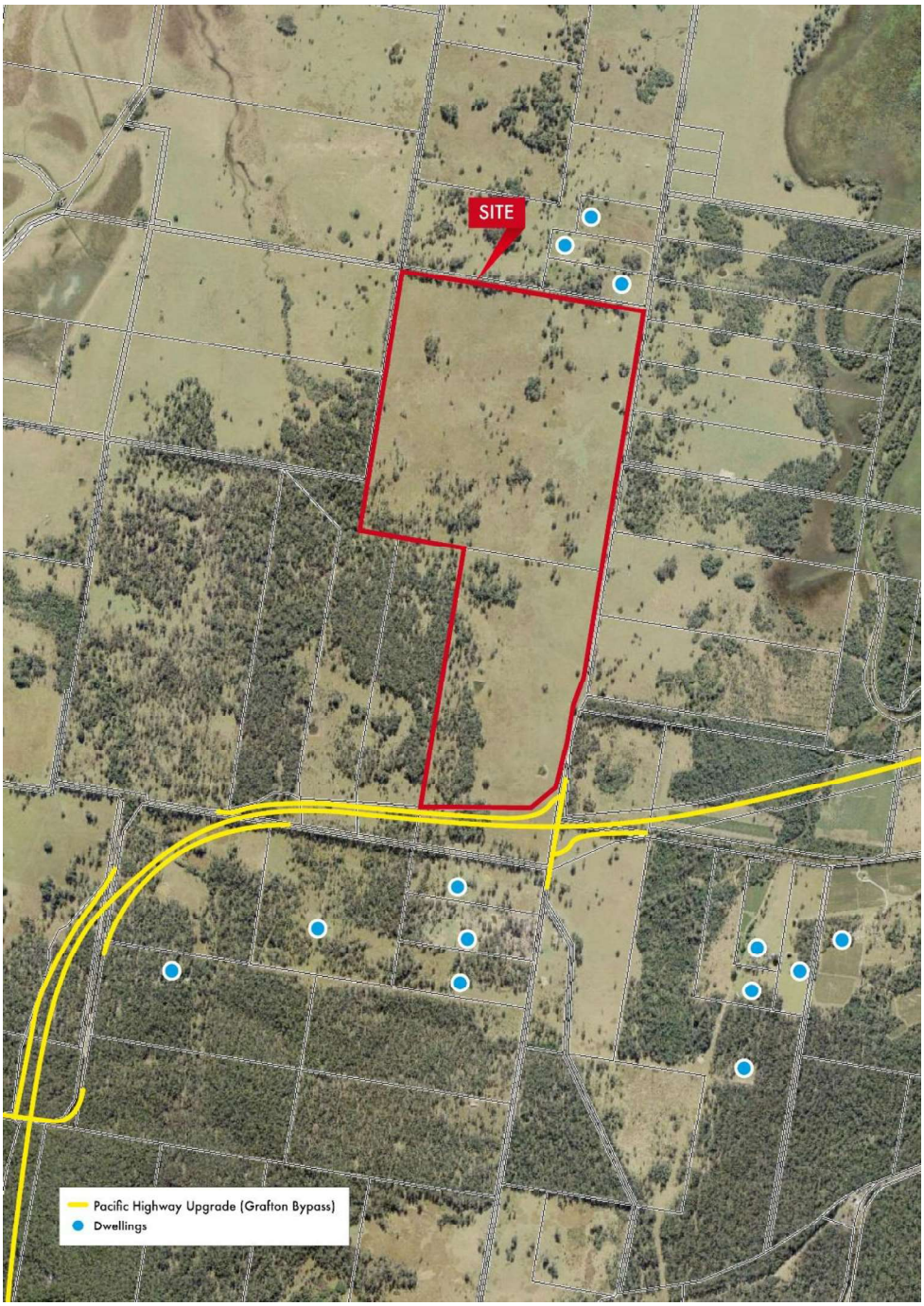


Figure 1.2 - Site

It has a frontage to Avenue Road of approximately 2.2 Kms, a northern boundary to an unformed Crown road of 1.1 Kms, a western boundary to adjoining private property and unformed Crown roads of 2.3 Kms and a southern boundary of 627 metres to the Pacific Highway under construction including the relocated Old Six Mile Lane.

1.5 The proposal

The proposed development comprises the construction of a new correctional centre designed to accommodate 1,700 male and female inmates comprising 14 different cohorts including but not limited to:

Classification	Number	Gender
Maximum Security Classification Inmates	1000	Male
Maximum Security Classification Inmates	300	Female
Minimum Security Classification Inmates	400	Male
Total	1,700	

Other associated facilities include but are not limited to:

- Recreational oval, special accommodation units, administration, industries and educational facilities, workshops, staff amenities, visitor facilities, prisoner reception and health facilities (including beds and some diagnostic facilities), access, parking and utilities:
- An overall Gross Floor Area (GFA) of approximately 90,700 square metres;
- Secure perimeter fences to the two correctional precincts comprising concrete and anti-climb mesh fences with a Sterile Zone;
- Additional beds for remand/reception management and management of unforeseen contingencies such as a requirement to separate inmates;
- Associated support and ancillary buildings for the delivery of services (other than functions);
- Provision of integrated power, fire, general infrastructure and security & communications backbone;
- Provision of furniture, fittings & equipment (FF&E) to deliver the services and other functions.

Two distinct correctional precincts for the management of maximum and minimum security inmate cohorts are proposed with movement of staff, inmates and visitors managed through individual gatehouses.

These are located either side of central facilities such as parking areas, visitor arrivals areas and staff amenities.

The facility has been designed to be legible for all users, engendering a feeling of personal safety. In providing the physical spaces requisite for the execution of day-to-day operations and achievement of high-level goals, the design results in efficiencies and minimised impact on the environment through the location of buildings and design of movement systems.

The design provides a campus-style layout for the three correctional centres – male maximum, female maximum and male minimum and positions each centre on either side of the existing ridgeline running on a north–south axis through the Site. This ridgeline offers views to Glenugie Peak in the distance to the south, captured by the proposed cultural centre located between the male maximum and female maximum centres. Views to this significant feature are symbolic and meaningful to locals, and particularly for the Indigenous community.

Each centre is designed with a 'spine' or 'street' of support facilities, and a number of neighbourhoods of residential accommodation. These spines are set out along a gentle curve, generated from the existing topography and natural landforms.

The male maximum and female maximum centres are enclosed by one maximum-security perimeter and designed with physical, visual and acoustic separation between male and female inmates. This is achieved through the natural ridgeline layering the support facilities spines for each centre on either side of a green space. A secure line between each of the centres prevents inmates from accessing the other.

Each centre is accessed from the support facilities spine through a series of managed secure officer posts in lieu of a central movement control post, facilitating ease of movement into the campus facilities (e.g. recreation, industries, programs and education). The facilities are set out along a curved communication spine determined by functional requirements, acting as the 'wayfinding' across the facility. This pathway network provides a functional solution aligned with operational needs and accommodates natural 'desire' lines of pedestrians. Movement areas are observed by staff points, and movement within the centres' shared spaces is controlled using buildings and landscape elements to define circulation routes.

The landscape design follows the campus style design approach being integrated into the existing local environmental context. Areas of existing vegetation are retained, wherever possible, and extensive screen planting of endemic trees, shrubs and grasses to the boundaries, the drainage lines, and the hill to the north. The entrance road planting of informal groves of local trees, retains the local rural character.

Secure perimeter fences would be provided to the two correctional precincts comprising 6.0m high concrete and anti-climb mesh fences with a secure sterile zone. Detection monitoring and CCTV coverage of perimeter security zones will be provided with security lighting.

A single point of entry and control would be provided from Avenue Road. Internal access roads and parking carparking for approximately 700 car spaces comprising:

- 350 staff car parking spaces and 10 motorcycles spaces
- 350 visitor car parking spaces and 10 motorcycles with a standover space with an overflow area accommodating a further 150 cars

A bus stop close to the visitor reception area would be provided with provision for bus

NorthernPathways propose to design, build and operate a Membrane Bioreactor (MBR) Waste Water Treatment Plant to accommodate inmates, staff and visitors and all peak load periods. The proposed MBR system is the combination of an activated sludge biological treatment plant with Ultra filtration membrane process utilising a suspended growth bioreactor producing Class A+ potable water. This water would be reticulated as recycle water through the facility, with excess directed to travelling surface irrigators. The plant would be fully automated and be remotely monitored for additional offsite technical support.

The facility would be constructed in one stage with occupancy managed by gradual ramp up to capacity over a period of 6 months. The facility will commence construction pursuant to the Stage 1 consent issued in March 2017 and, subject to works under a Stage 2 DA, is due for completion in early 2020 ready for occupation from July 2020.

The construction and delivery of the project will be undertaken in coordination with other major projects in the region, namely the Pacific Highway upgrade currently under construction by the Roads and Maritime Services and the additional bridge crossing of the Clarence River in Grafton.

Detailed consideration has been given to construction planning and management.

It is estimated that some 580 jobs would be provided at the facility with approximately 350 of these being custodial officers. During construction, some 1,100 jobs would be provided.

1.6 Purpose of this report

The purpose of this report is to provide details on proposed Stage 2 Transport and Accessibility aspects of the NGCC, inclusive of assessment of potential traffic impacts on the surrounding road network.

Information provided responds to Stage 2 SEARs as indicated in the following Table:

SEARs	Reference within this Report
6. Transport and Accessibility Include a transport and accessibility assessment, which details, but is not limited to, the following:	
• an estimate of the total daily and peak hour vehicle trips generated by the proposal	Sections 4.1 & 4.2
• measures to promote travel choices that support sustainable travel, such as a location-specific sustainable travel plan, provision of end-of-trip facilities, green travel plans and wayfinding strategies	Section 4.3
• the daily and peak (AM, PM) vehicle movements impact on nearby intersections and the need/associated funding for upgrading or road improvement works (if required), in particular the analysis should include the following intersections: o Avenue Road and Eight Mile Lane; o The existing Pacific Highway and Eight Mile Lane; o Old Six Mile Lane and the existing highway; and o Old Six Mile Lane and Avenue Road.	Section 4.4
• the proposed sustainable transport access arrangements and connections to public transport services, including consideration of provision of a regular bus service	Sections 3.1 & 4.3
• the proposed access arrangements, including car and bus pick-up/drop-off facilities, and measures to mitigate any associated traffic impacts	Section 3.1

• proposed car and bicycle parking provision, including consideration of the availability of public transport and the requirements of the relevant parking codes and Australian Standards	Section 3.1, 3.5
• service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times)	Sections 3.1 & 4.1
• construction and operational traffic impacts on stock routes	Sections 2.5 & 4.5
• traffic and transport impacts during construction, including cumulative impacts and/or conflict with the Pacific Highway upgrade works, and how these impacts will be mitigated for any associated traffic, including the preparation of a draft Construction Traffic Management Plan to demonstrate the proposed management of the impact.'	Sections 4.4 & 5.0

This Report also addresses the Schedule 2, Part B Conditions of Consent – refer following Table

Condition	Reference within this Report
B5 The development application for Stage 2 must include a detailed assessment of traffic impacts, traffic generation, cumulative traffic impacts and analysis of intersection performance. The assessment must include mitigation and management measures and recommendations on intersection / infrastructure upgrades, where this is deemed necessary. The analysis of intersection performance must include, but not be limited to, the following intersections: a) Avenue Road and Eight Mile Lane; b) The existing Pacific Highway and Eight Mile Lane; c) Old Six Mile Lane and the existing highway; and d) Old Six Mile Lane and Avenue Road	Section 4.0, 4.1, 4.4, 4.4.1, 4.4.2, 4.4.3, 4.4.4

B6 The development application for Stage 2 must demonstrate that Avenue Road and the intersection of Eight Mile Lane and Avenue Road are able to accommodate construction and operational traffic generated by this development	Section 4.4.1
B7 The development application for Stage 2 must include a traffic management plan and traffic control plan for the facility prepared in conjunction with the W2B contractor, RMS, Council and local residents to ensure traffic movements, vehicle access and car parking would be managed appropriately, including inmate transfers.	Appendix B
B8 The development application for Stage 2 must demonstrate adequate access, bus shelter and turning circle areas are incorporated in the design of the facility to ensure any bus services can enter, exit and manoeuvre through the site in accordance with the relevant standards.	Section 3.9

2.0 Existing conditions

Existing conditions were investigated by the state as part of the Stage 1 development approval process and the results are published in the Traffic Management Plan (Preliminary / V01) dated 1 June 2016, prepared by Jacobs. The existing conditions and results within the Jacobs report were internally reviewed and the findings have been independently validated as adequate for use in design. Refer copy of Jacobs report presented in Appendix B

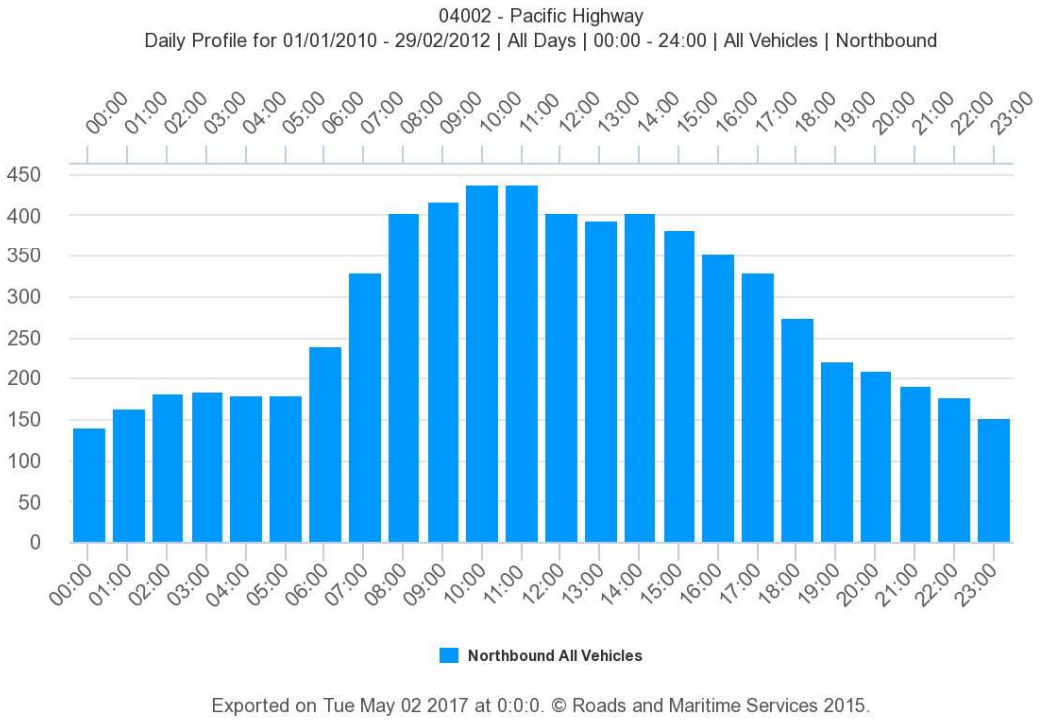
Based on the approved Stage 1 development consent, our inspection of the site and additional investigations, we summarise the existing transport and accessibility conditions as follows.

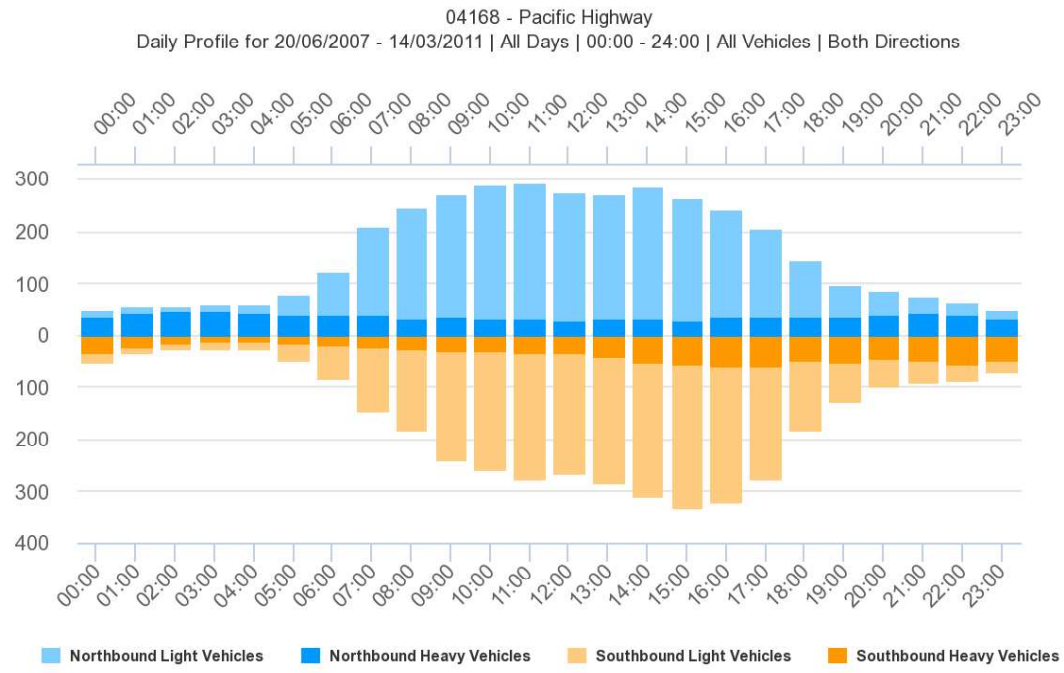
2.1 Local road network

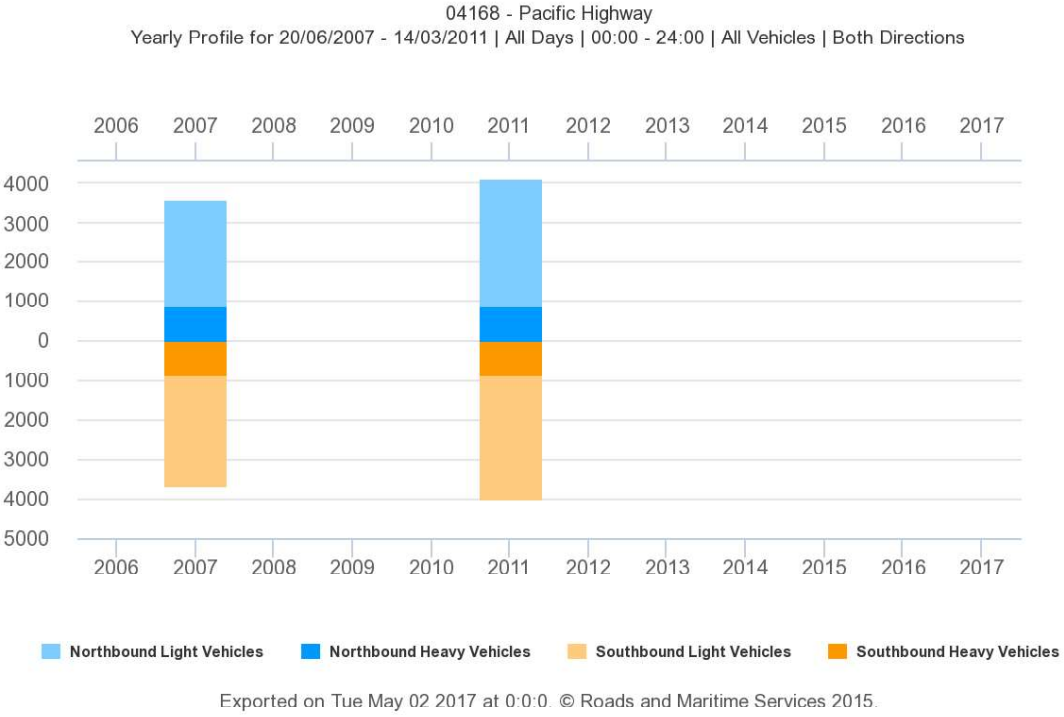
The local road network includes:

- The existing Pacific Highway is generally one lane in each direction with a sealed surface of approximately 10m width and a speed limit of 100 kmh. Passing lanes are provided for northbound traffic to avoid traffic turning right into Eight Mile Lane and Old Six Mile Lane and slip lanes are provided for southbound traffic turning left into Eight Mile Lane and Old Six Mile Lane.
  RMS has traffic count data for the existing Pacific Highway north of Old Six Mile Lane (counter 04002 northbound only) and approximately 20 km south of Eight Mile Lane (counter 04168 for both directions).

  This data is presented below:




04168 - Pacific Highway
Daily Profile for 20/06/2007 - 14/03/2011 | All Days | 00:00 - 24:00 | All Vehicles | Both Directions
00:00 01:00 02:00 03:00 04:00 05:00 06:00 07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00
300 200 100 0 100 200 300 400
Northbound Light Vehicles
Northbound Heavy Vehicles
Southbound Light Vehicles
Southbound Heavy Vehicles
Exported on Tue May 02 2017 at 0:0:0. © Roads and Maritime Services 2015.


04168 - Pacific Highway
Yearly Profile for 20/06/2007 - 14/03/2011 | All Days | 00:00 - 24:00 | All Vehicles | Both Directions
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017
4000 3000 2000 1000 0 1000 2000 3000 4000 5000
Northbound Light Vehicles
Northbound Heavy Vehicles
Southbound Light Vehicles
Southbound Heavy Vehicles
Exported on Tue May 02 2017 at 0:0:0. © Roads and Maritime Services 2015.

Based on this information we estimate the following traffic on the existing Pacific Highway (excluding construction or operation traffic) in the local area during the peak periods for construction and operation of the NGCC as:

- 2018 AM peak (6 – 7am) for construction: 395 vph northbound; 290 vph southbound
- 2020 AM peak (8 – 9am) for operation shift change: 178 vph northbound; 130 vph southbound

- Avenue Road which runs along the east boundary of the site from Eight Mile Lane to the south and Deep Creek Road to the north. It has a sealed surface of approximately 4m width with grassed verges on each side. The intersection with Eight Mile Lane is a well formed T-intersection with good sight distances

  Based on information provided by Council we estimate the following traffic on Avenue Road (excluding construction or operation traffic) in the local area during the peak periods for construction and operation of the NGCC as:

  - 2018 AM peak (6 – 7am) for construction: 4 vph northbound; 6 vph southbound
  - 2020 AM peak (8 – 9am) for operation shift change: 6 vph northbound; 8 vph southbound

- Eight Mile Lane which runs from the Pacific Highway to Wooli in the east. It is a surfaced two-way road. At the intersection of Eight Mile Lane and the Pacific Highway, the Pacific Highway has a dedicated northbound right turn lane into Eight Mile Lane and a southbound left turn lane into Eight Mile Lane

  Based on information provided by Council we estimate the following traffic on Eight Mile Lane (excluding construction or operation traffic) in the local area during the peak periods for construction and operation of the NGCC as:

  - 2018 AM peak (6 – 7am) for construction: 55 vph eastbound; 75 vph westbound
  - 2020 AM peak (8 – 9am) for operation shift change: 70 vph eastbound; 95 vph westbound

- Old Six Mile Lane which runs along the south boundary of the site and also links Avenue road to the Pacific Highway. However this lane is unformed and very narrow between the Avenue and the Airport.

  Based on information provided by Council we estimate the following traffic on Old Six Mile Lane (excluding construction or operation traffic) in the local area during the peak periods for construction and operation of the NGCC as:

  - 2018 AM peak (6 – 7am) for construction: 2 vph eastbound; 3 vph westbound
  - 2020 AM peak (8 – 9am) for operation shift change: 3 vph eastbound; 4 vph westbound

2.2 Current and future roadworks

The anticipated future traffic conditions are summarised as follows;

- The upgraded Pacific Highway between Woolgoolga and Ballina will run past the southern boundary of the site. As part of this upgrade Avenue Road will pass over the Pacific Highway and the intersections with Old Six Mile Lane and Wants Lane will be modified.

- An interchange will be provided at the junction of the upgraded Pacific Highway and Eight Mile Lane which will allow southbound traffic to exit onto Eight Mile Lane and traffic on Eight Mile Lane to head north on the Pacific Highway.

- An interchange will also be provided at the junction of the upgraded Pacific Highway and the old Pacific Highway south of Eight Mile Lane. This will allow northbound traffic to exit onto the old Pacific Highway and then turn into Eight Mile Lane and traffic from the old Pacific Highway to head south on the upgraded Pacific Highway.

Refer Figure 2.1 for layout.

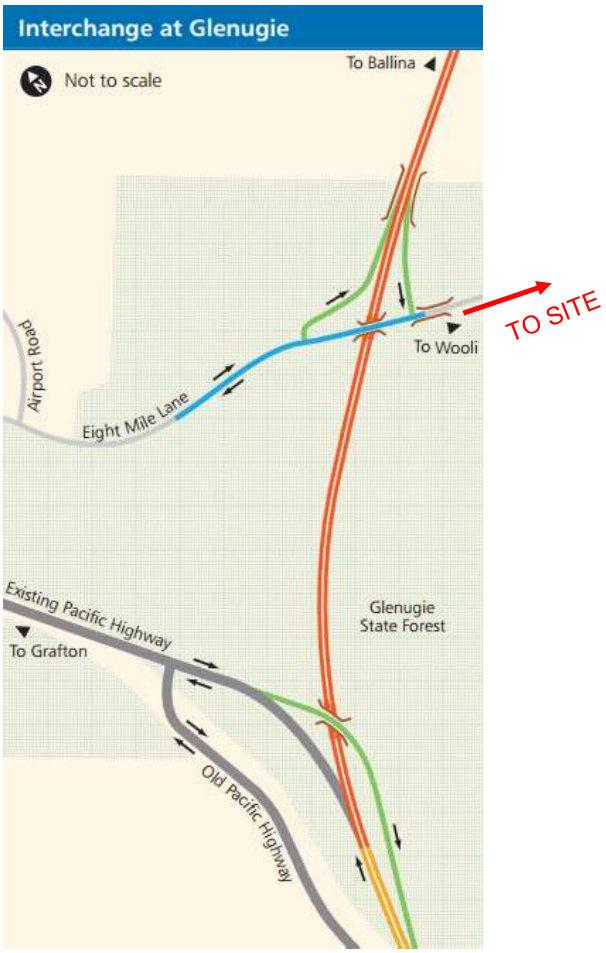


Figure 2.1 – Future Roadworks Layout

As part of this project, works by others will be implemented for the Pacific Highway upgrade inclusive of the following:

- Construction of the new Woolgoolga to Ballina section of the Pacific Highway upgrade by Pacific Complete. Refer brochure presented in Appendix D.
- Construction of a new overpass on Avenue Road over the new Pacific Highway by Pacific Complete.
- Upgrade of Avenue Road south from the new overpass to Eight Mile Lane to meet RMS standards for a 2 way rural road by Pacific Complete.

Additionally, an upgrade of Avenue Road north from the new overpass to the northern boundary of the NGCC site will be facilitated by Infrastructure NSW as part of the Infrastructure Works for the NGCC.

Funding arrangements are in place for the implementation of the upgrade works.

2.3 Public transport

At present there is no public transport from Grafton to the site. Public transport does exist from regional areas to Grafton via the rail line and bus services.

Busways operates services within the Grafton CBD and surrounding areas as shown in Figure 2.2.

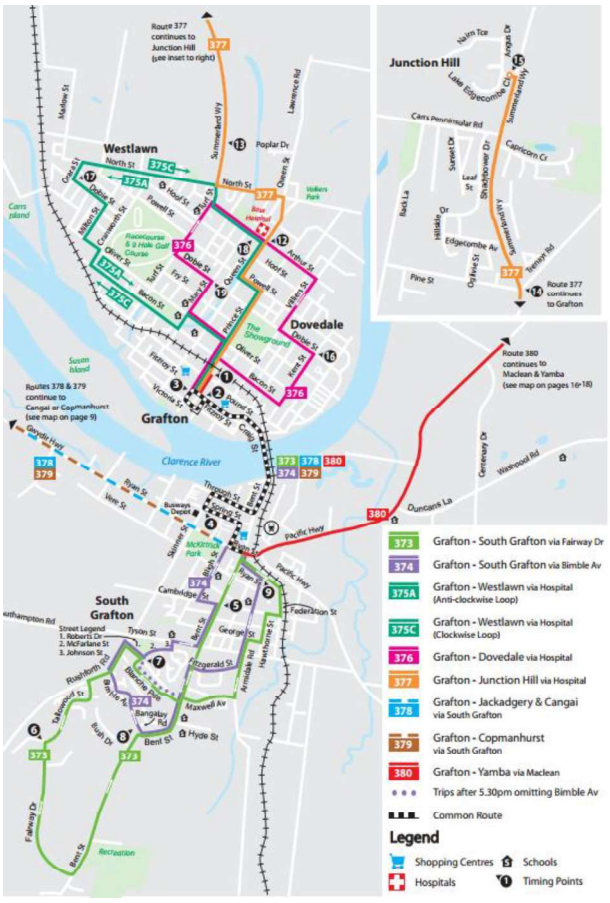


Figure 2.2 – Busways Routes

2.4 Foot and bicycle transport

At present there are no footpaths or establish bicycle routes to the site.

2.5 Stock routes

Avenue Road is an important route for local stock movement, both via truck and on foot.

Stock movements are generally seasonal, before / after local cattle sales and during emergencies, e.g. flooding of low lying surrounding areas.

3.0 Proposed development

3.1 Transport and accessibility for centre operation

During operation of the NGCC, staff, visitors and service resources will travel to the centre from Grafton and further away primarily by vehicular transport.

Transport to Grafton can be achieved by road, rail and air. Flights are available to the nearby Clarence Valley Regional Airport.

Transport to other close regional centres such as Coffs Harbour (90km) and the Tweed area (225km) is available by road, rail and air

Proposed traffic routes to the centre were agreed as part of the Stage 1 development approval process and are outlined in the Stage 1 Traffic Management Plan (Preliminary / V01) dated 1 June 2016, prepared by Jacobs. Alternate routes have also been indicated.

We have independently validated and summarised these traffic routes as follows, and are shown diagrammatically in Figure 3.1;

- From upgraded Pacific Highway south, exit to old Pacific Highway, turn into Eight Mile Lane and then Avenue Road
- From upgraded Pacific Highway north, exit to Eight Mile Lane and then Avenue Road
- From Grafton use old Pacific Highway, exit to Eight Mile Lane and then Avenue Road
- From NGCC use Avenue Road, then Eight Mile Lane and ramp to upgraded Pacific Highway north, old Pacific Highway to Grafton or ramp to upgraded pacific Highway south

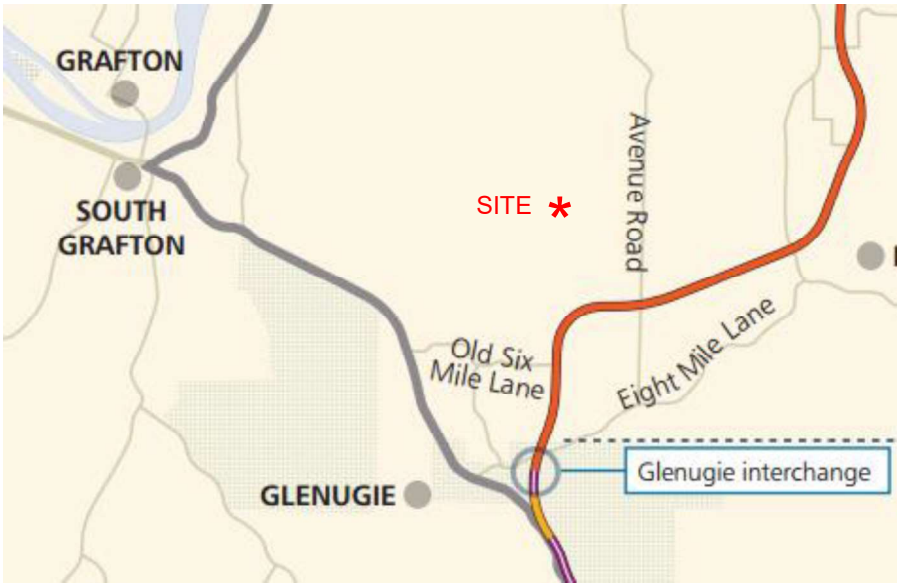


Figure 3.1 – Traffic Routes to NGCC

The operator of the NGCC will advise all staff and visitors that they are required to use Eight Mile Lane and then Avenue Road as their route to the centre. This direct route is the subject of road capacity and traffic controls upgrades and minimises conflicts with local traffic.

From Avenue Road vehicular access is provided to the project by an intersection to the new entry road within the project site located approximately 750m from the northern boundary of the site at a crest in the road. This location was chosen to avoid the sections of Avenue Road with steep level change and to achieve maximum site distance for vehicles leaving the site.

This entry road is constructed in typical country road style with a 7m wide sealed pavement, gravel shoulders and catch drains each side. Deceleration and right turn lanes have been included in Avenue Road at the intersection with the new entry road.

The new entry road layout and route is shown in Figure 3.2 and described as follows:

- From Avenue Road drive up to an area before the main pedestrian link between Minimum and Maximum Security Gatehouses and either turn right to the bus turning and stop area / visitor parking area, turn left into the Minimum Security Gatehouse sally port or continue straight to other facilities
- Once through the Minimum Security Gatehouse, proceed straight to Reception / Health and Industries
- Proceed around the entry road and turn right into the staff carpark, left into the utilities area or straight to the Maximum Security Gatehouse
- Once through the Maximum Security Gatehouse, turn left to Industries / Laundry / Kitchen facilities or straight to Reception Health, Woman's Reception / Health / Visits and Industries / Staff Dining
- Visitor cars entering site to follow sign posted public carpark and follow to Visitor Reception
- Staff parking will be utilised during employee induction with protocols for entry to staff facilities (Building 2 immediately adjacent to staff carpark) or the respective gatehouses
- Bus bay and bus stop structure located between the staff and visitor car park
- Visitor reception building (01) is adjacent to bus bay and visitor parking and contains amenities facilities

Section 4.0 of the Report identifies that the routes to the NGCC will provide a level of service to accommodate forecast traffic numbers. Further mitigation measures could include re-scheduling of deliveries, change of shift arrangements for staff or off-set visits periods.

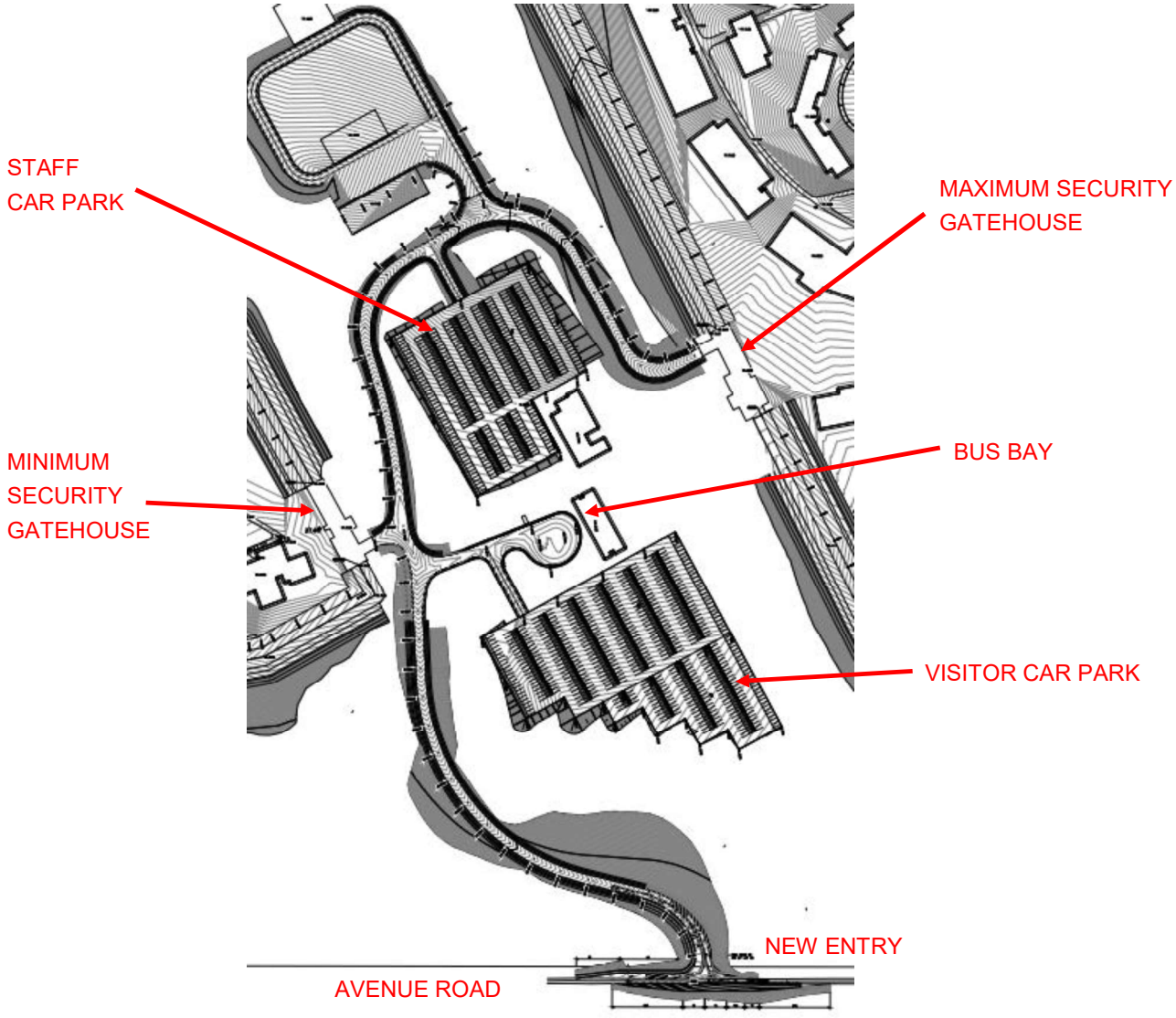


Figure 3.2 – Entry Road Layout and Routes

3.2 Transport and accessibility during construction

Traffic routes during construction will be the same as for operation of the centre. Refer section 3.1

The new entry road and car parking areas are to be constructed under the Stage 1 development consent.

During Stage 2, construction vehicular access will generally be via the new entry road as follows:

- Construction workers will either arrive by private vehicle and park in nominated locations within the new car parking areas OR arrive by private bus. Car-pooling will be promoted and local bus services from Grafton and areas proximate to the project will be provided for construction workers.

- Heavy vehicles supplying construction materials and equipment will use the new entry road to access nominated work areas through access control gates with established construction exits.

- Precast panels and modules will be transported along internal haul road and the external perimeter road from the on-site precast storage yard to each building site

- The project will seek expressions of interest from the workforce / incoming contractors / local bus services for expression of interest for provision of a bus service relative to prescribed times and destinations

For initial site establishment works vehicular access will be provided by a construction road built adjacent to the old residence. This will also be used for deliveries to the proposed concrete batch plant, until the new entry road is provided.

3.3 Sustainable and Green Travel Plans

The NGCC is being developed on a rural site and existing local infrastructure has met the requirements for pre-development operations. Although the upgrades of the Pacific Highway, Avenue Road and associated intersections will provide a capacity and level of service for vehicular traffic, there are no footpaths or established bicycle routes under the road infrastructure upgrades. Additionally, there are no bus public services servicing the development or neighbouring sites. Taxi services could be available to the site from Grafton, and means of contact for local taxi services will be available as required.

During the operation of the NGCC as a Corrections Complex, there will be a demand for access to the site for staff, visitors and deliveries, in addition to any emergency vehicles etc. Information will be provided to all staff during staff induction regarding access to the site. The NGCC website will contain information for staff and visitors on access to the site.

Provision is made onsite within the development to receive bus services. A bus bay and bus stop structure are located between the staff and visitor carparks. This provides for proximate access to the development:

- Staff will access the Staff Facilities Building or respective Gatehouse – both contain amenities for staff use;

- The Visitor Reception Building is adjacent to the bus bay and contains facilities such as vending machines, child play areas and amenities.

Northern Pathways will work with Transport for NSW and local bus operators to further investigate the potential for bus services to the facility prior to the date for opening in 2020.

In the event that bicycles paths are provided to local infrastructure in the future, but also for use of bicycles on the Complex, parking of bicycles will be provided at site. Change rooms are included in the Staff Facilities Building for staff.

Car pooling will be encouraged during the construction and operations phases. Information will be provided to staff about car-pooling schemes operating in the area such as Northern Rivers Carpool.

While both are proximate and unambiguous in their function, there will be wayfinding and instruction in accordance with management to meet strict Corrections protocols.

Whilst not considered a destination for others outside those described above, any public arrivals at the Complex will be provided use of facilities and information regarding travel from the development.

3.4 Site access and wayfinding

The intersection of the main entry to NGCC and Avenue Road has been designed in accordance with Austroads 2010 'Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections'.

Avenue Road has been upgraded to have a Basic Right Turn facility plus a Basic Left Turn facility and slip lanes as detailed in Figure 3.3.

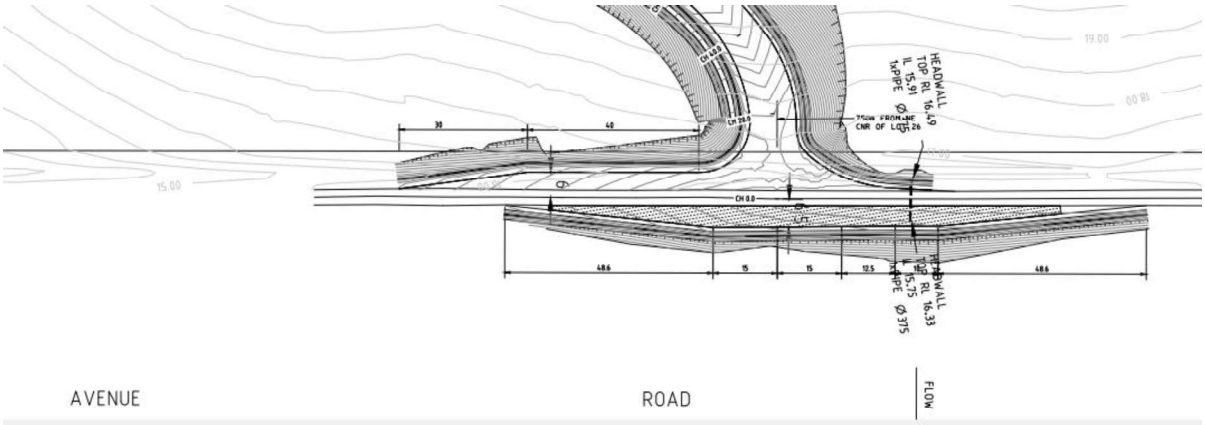


Figure 3.3 - Avenue Road upgrade at new Entry

This intersection will accommodate all vehicle movements for deliveries and buses as well as passenger vehicles. Provision to curtail access by stock during movement along Avenue Road will be incorporated.

Wayfinding will be located on the Pacific Highway to direct traffic to the NGCC. This will be coordinated in conjunction with RMS. Wayfinding will direct traffic for visitors and deliveries to the NGCC along the most direct paths.

3.5 Parking

Based on previous work Woolacotts completed for the Victorian Department of Justice on the Ravenhall Prison project, the ratio of car parking to inmate population was:

- Staff parking equal to 33% of inmate population. (based on a total staff equal to 55% of inmate population)
- Visitor parking equal to 20% of inmate population

We have been advised by the Operator that the total staff numbers at the NGCC are likely to be around 580 which equates to approximately 34% of the inmate population, and comparable to the car parking ratio used at the Ravenhall Prison project.

Based on this information we calculate the following parking requirements for the NGCC:

- Staff parking equal to 0.33*34/55*1700 = 347 spaces, say 350 spaces
- Visitor parking equal to 0.20*1700 = 340 spaces

Figure 3.2 shows the proposed car parking layout with 350 staff car parking spaces beyond the central pedestrian spine between gatehouses and 350 permanent visitor car parking spaces plus 150 overflow visitor car parking spaces prior to the pedestrian spine between gatehouses.

Provisions will be made for bicycle parking adjacent to the visits reception and staff facilities.

Parking set out and dimensions have been carried out in accordance with AS2890.1 *Parking Facilities Part 1: Off-street carparking.*

3.6 Internal pedestrian access

Internal pedestrian access has been design to meet the requirements for disabled access.

Accessways will be provided:

- From the main point of entry at the visitor or staff carparks (there are no accessways outside the site boundary and set-down will be at the respective carpark locations)
- Between accessible buildings connected by a pedestrian link, and
- From accessible car parking spaces on the allotment.

Paths and pedestrian links are generally of concrete construction.

3.7 Internal vehicular access

All internal roads for vehicular access have been designed to cater for Large Rigid Vehicle swept paths.

Road details are summarised as follows:

- Entry road – 7m wide sealed carriageway with 1m wide gravel shoulders each side to table drains.
- External perimeter road – 3.5m wide sealed carriageway with 1m wide gravel shoulder to table drain and 2m wide gravel shoulder to perimeter security

- Internal perimeter road – 3.5m wide sealed carriageway with 1m wide gravel shoulder to table drain and 2m wide gravel shoulder to perimeter security

- Internal concrete road pavement for vehicular access to Reception, Health, Industries, Laundry and Kitchen facilities

3.8 Delivery and service vehicle

All internal roads for vehicular access have been designed to cater for Large Rigid Vehicle swept paths, which satisfy service and delivery vehicles permitted on the site.

Due to the strict control of vehicle movements to and from the NGCC during operations, delivery and service vehicle movements are scheduled within discrete sessions outside peak hours of visiting hours or staff change of shift. Additionally, under the strict control conditions of the Corrections Complex, delivery and loading activities are highly regulated and supervised by custodial staff. Protocols will be in please to effectively search vehicles.

3.9 Bus service provisions

Provisions will be made onsite to receive bus services. Bus services will be introduced for the workforce during the construction phase.

All internal roads for vehicular access have been designed to cater for Large Rigid Vehicle swept paths, allowing bus services to enter, exit and manoeuvre through the site in accordance with the relevant standards.

4.0 Impact of proposed development

4.1 Traffic generation during centre operation

The peak traffic generated during full operation of the NGCC will occur during the change over from night shift to day shift between 7 – 7-30am.

Based on the data provided in table 4.1 below we estimate peak traffic flow of 100 vph leaving the centre plus 200 vph entering the centre in the morning peak of 7 – 7-30am. We have used these values for assessment of nearby intersections as this is the conservative peak load condition for the day.

Delivery vehicles will be scheduled to consider peak traffic hours relative to the centres operation inclusive of staff arrival/ departure times as well as visiting hours, e.g. delivery scheduled for out of peak hours to assist in reducing traffic loads

Figure 4.1 outlines the estimated traffic generation during centre operation.

Refer architectural drawings for details of 'Circulation – Vehicle Materials Handling' (ARC_DA2_00_030 and ARC_DA2_040)

Row	Visitors	Numbers	Vehicles	Spread	Cars per 10 minutes	Assumptions	Comments
1	Male Max	200	80	30 minutes	Up to 30	60% sharing	Public transport will possibly lower the vehicle numbers. For modelling the visits will be between 8.30 to 9.30am, 10.00 to 11.00am, 1.00 to 2.00pm, and 2.30 to 3.30pm and in between the major staff movements. These numbers will arrive before sessions. A similar number will leave at the end of the 4 sessions
2	Female	60	24	30 minutes	8	60% sharing	Public transport will possibly lower the vehicle numbers. The visits will be between 9.00 to 10.00am, 10.30 to 11.30am, 1.30 to 2.30pm, and 3.00 to 4.00pm in between the major staff movements. These numbers will arrive before sessions. A similar number will leave at the end of the 4 sessions. These will occur on the half hour separated from the male maximum security visits to ease congestion
3	Male Minimum	30 per hour	12 per hour	As per session times	2	60% sharing	These will be a free visit session with small numbers able to come and go throughout the visit day. Numbers are the per hour estimates. These metrics are based on 2 general sessions of 9.00 to 11.00am, and 1.00 to 4.00pm between these hours. A similar number will leave at the end of the sessions
	Staff	Numbers	Vehicles	Spread	Car per 10 minutes	Assumptions	Comments
4	Day shift - Officers	77	60	20 minutes	30	20% sharing	These will be 10 hour shifts largely with some 12 hour shifts. These movements will occur before and after the movements to an from the Complex by programs, industries and administration staff. These movements will occur between 7.10 and 7.30am. With the similar leaving between 5.00 and 5.20pm
5	Day shift - non-officers	120	95	90	11	20% sharing	As above, these will largely occur at hours inside the officers outlined hours. Arriving between 7.45 to 9.15am and largely leaving 3.45 to 5.00pm
6	Night shift - Officers	20	16	20 minutes	8	20% sharing	Arriving 6.25 to 6.45pm and leaving 7.05 to 7.25am
7	Escort vehicles		Up to 6 per hour		1		These will largely occur early morning (6.00am to 7.00am and late afternoon (after 4.00pm until up to 8.00pm). There will be some small numbers of scheduled movement during the day at low movement hours. On a week day there could be up to 14 vehicles in a day
8	Delivery vehicles						These will be scheduled to low movement times compatible low impact on the Complex's operating day
9	General traffic						There will be some general traffic to and from the Complex. Where issues arose, scheduling would be adopted.

Figure 4.1 – Estimated Operations Traffic

4.2 Traffic generation during construction

The traffic generated during construction is based on the data presented in Figure 4.2 below.

It is assumed 90% of the cars and trucks will arrive on site between 6 – 7am and leave between 3 – 6pm. As such this makes the morning peak most critical at approximately 850 vph. An additional 50 vph have been added to these NGCC construction traffic flows to cater for construction traffic flow from the nearby Pacific Complete work site for the Pacific Highway upgrade giving a peak total of 900 vph.

We have assumed that 90% of these vehicles will arrive from Grafton via Eight Mile Lane and Avenue Road giving peak traffic flows at these intersections of 810 vph.

Bus service for the workforce from Grafton and other regional centres will be utilised.

John Holland

New Grafton Correctional Centre- Estimated Project Vehicle Movements

Stage 1

Month	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17
People	30	30	60	60	80	80
Cars (80% of Estimated People)	24	24	48	48	64	64
Trucks (10% of Estimated People)	3	3	6	6	8	8
Total	27	27	54	54	72	72

Stage 2

Month	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18
People	106	196	326	526	724	860	962	1032
Cars (80% of Estimated People)	85	157	261	421	580	688	770	826
Trucks (10% of Estimated People)	11	20	33	53	73	86	97	104
Total	96	177	294	474	653	774	867	930

Month	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19
People	1048	972	940	894	862	704	646	568
Cars (80% of Estimated People)	839	778	752	716	690	564	517	455
Trucks (10% of Estimated People)	105	98	94	90	87	71	65	57
Total	944	876	846	806	777	635	582	512

Month	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19
People	504	430	406	286	206	130	130	130
Cars (80% of Estimated People)	404	344	325	229	165	104	104	104
Trucks (10% of Estimated People)	51	43	41	29	21	13	13	13
Total	455	387	366	258	186	117	117	117

Figure 4.2 – Estimated Construction Traffic

4.3 Impact on public transport

There is currently no public transport to the area, however provisions will be made onsite to receive bus services. Bus services will be introduced for the workforce during the construction phase.

NorthernPathways will work with Transport for NSW and local bus operators to further investigate the potential for bus services to the facility prior to the date for opening in 2020. The NGCC Visitors' Centre, located between the Maximum and Minimum Centres, has been designed with a suitable bus stand located adjacent to it.

Provisions have been incorporated for possible use of bicycles and car-pooling will be supported.

4.4 Impact on nearby intersections

As required by Stage 2 SEARs condition 6 we have analysed 4 adjacent intersections based on anticipated future conditions and vehicular movements generated during construction and operation of the completed NGCC.

For the purposes of this analysis we have assumed:

- The Pacific Highway upgrade will not be complete during construction of the NGCC, but will be complete and reduce traffic on the existing Pacific Highway to 50% of the 2007 data for opening of the NGCC and its ongoing operation.
- Local traffic on Eight Mile Lane, Six Mile Lane and Avenue Road will increase by 3% per annum from published data.
- Construction traffic associated with the Pacific Highway upgrade will contribute 50 vph from Grafton into Eight Mile Lane and then Avenue Road between 6 – 7am.

A draft Traffic Management Plan will be covered under the Construction Traffic Management Plan, and the Operation Traffic Management Plan will contain similar provisions.

We summarise the results as follows:

4.4.1 Avenue Road and Eight Mile Lane

The intersection at Avenue Road and Eight Mile Lane is and un-signalised at grade intersection. Avenue Road is currently a narrow country road with a sealed pavement width of approximately 4m. Eight Mile Lane is a two-lane rural road with a sealed pavement width of approximately 9m. Good sight distance is available from Avenue Road both east and west along Eight Mile Lane.

The intersection is represented diagrammatically in Figure 4.3 below.

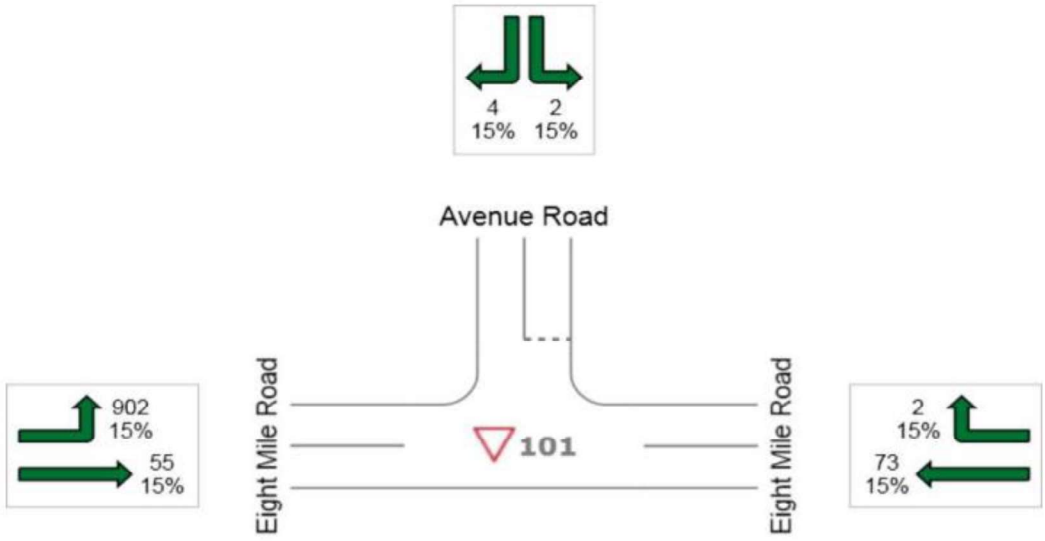


Figure 4.3 – Intersection of Avenue Road and Eight Mile Lane

Traffic movements at the intersection during the AM peak in 2020 with the NGCC in full operation are estimated as:

- Avenue Road: northbound – 356 vph; southbound – 358 vph with 3 turning left and 355 turning right into Eight Mile Road
- Eight Mile Lane: eastbound – 424 vph with 354 vph turning left into Avenue Road; westbound – 450 with 93 vph through traffic and 355 vph turning right from Avenue Road

Traffic movements at the intersection during the AM peak in 2018 with the NGCC under construction are estimated as:

- Avenue Road: northbound – 904 vph; southbound – 6 vph with 2 turning left and 4 turning right into Eight Mile Road
- Eight Mile Lane: eastbound – 955 vph with 902 vph turning left into Avenue Road; westbound with 73 vph through traffic and 2 vph turning right from Avenue Road

Sidra analysis of the intersection (refer Appendix E for output) shows Level of Service (LOS) A during NGCC operation and LOS A during construction.

This will result in optimum operating conditions (free flow), meeting the requirements of RMS for rural roads.

4.4.2 The existing Pacific Highway and Eight Mile Lane

The intersection at the existing Pacific Highway and Eight Mile Lane is and un-signalised at grade intersection. The existing Pacific Highway is currently a two-lane rural highway with a sealed pavement width of approximately 10m. Eight Mile Lane is a two-lane rural road with a sealed pavement width of approximately 9m. Passing and slip lanes are provided on the existing Pacific Highway to facilitate left turn into Eight Mile Lane from the north and right turn into Eight Mile Lane from the south. Good sight distance is available from Eight Mile Lane both north and south along the existing Pacific Highway.

The intersection is represented diagrammatically in Figure 4.4 below.

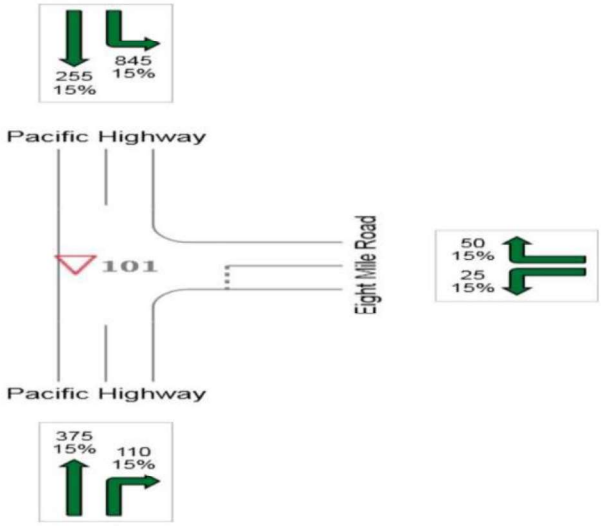


Figure 4.4 – Intersection of existing Pacific Highway and Eight Mile Lane

Traffic movements at the intersection during the AM peak in 2020 with the NGCC in full operation are estimated as:

- Existing Pacific Highway: northbound – 178 vph with 35 vph turning right into Eight Mile Lane; southbound – 480 vph with 385 vph turning left into Eight Mile Lane
- Eight Mile Lane: eastbound – 420 vph; westbound – 445 vph with 30 vph turning left into existing Pacific Highway and 415 vph turning right into existing Pacific Highway

Traffic movements at the intersection during the AM peak in 2018 with the NGCC under construction are estimated as:

- Existing Pacific Highway: northbound – 485 vph with 110 vph turning right into Eight Mile Lane; southbound – 1,100 vph with 845 vph turning left into Eight Mile Lane
- Eight Mile Lane: eastbound – 955 vph; westbound –75 vph with 25 vph turning left into existing Pacific Highway and 50 vph turning right into existing Pacific Highway

Sidra analysis of the intersection (refer Appendix E for output) shows Level of Service (LOS) C during NGCC operation and LOS C during construction.

This will result in satisfactory operating conditions, meeting the requirements of RMS for rural roads.

4.4.3 The existing Pacific Highway and Old Six Mile Lane

The intersection at the existing Pacific Highway and Old Six Mile Lane is and un-signalised at grade intersection. The existing Pacific Highway is currently a two-lane rural highway with a sealed pavement width of approximately 10m. Old Six Mile Lane is a two-lane rural road with a sealed pavement width of approximately 9m. Passing and slip lanes are provided on the existing Pacific Highway to facilitate left turn into Old Six Mile Lane from the north and right turn into Old Six Mile Lane from the south. Good sight distance is available from Old Six Mile Lane both north and south along the existing Pacific Highway.

The intersection is represented diagrammatically in Figure 4.5 below.

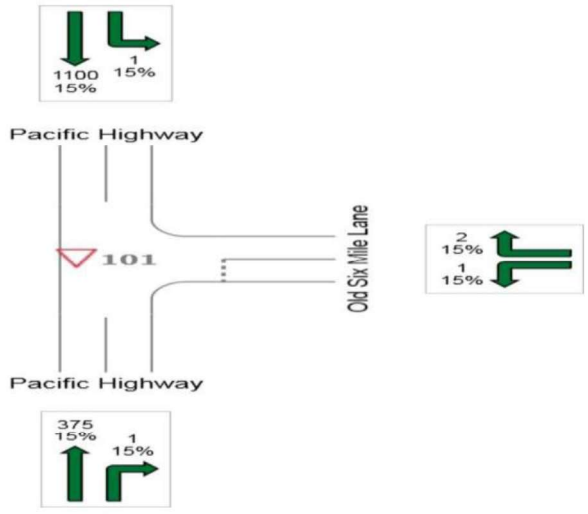


Figure 4.5 – Intersection of existing Pacific Highway and Old Six Mile Lane

Traffic movements at the intersection during the AM peak in 2020 with the NGCC in full operation are estimated as:

- Existing Pacific Highway: northbound – 143 vph with 1 vph turning right into Old Six Mile Lane; southbound – 482 vph with 2 vph turning left into Old Six Mile Lane
- Old Six Mile Lane: eastbound – 3 vph; westbound – 4 vph with 1 vph turning left into existing Pacific Highway and 3 vph turning right into existing Pacific Highway

Traffic movements at the intersection during the AM peak in 2018 with the NGCC under construction are estimated as:

- Existing Pacific Highway: northbound – 376 vph with 1 vph turning right into Old Six Mile Lane; southbound – 1,101 vph with 1 vph turning left into Old Six Mile Lane
- Old Six Mile Lane: eastbound – 2 vph; westbound – 3 vph with 1 vph turning left into existing Pacific Highway and 2 vph turning right into existing Pacific Highway

Sidra analysis of the intersection (refer Appendix E for output) shows Level of Service (LOS) A during NGCC operation and LOS F during construction. The reason this intersection has a poor LOS during construction is that the peak AM flow of construction workers from Grafton to site from 6 -7 am effectively minimises the opportunity for residents on Old Six Mile Lane to turn right onto Pacific Highway

The result during NGCC operation meets the requirements of RMS for rural roads, however the result during construction will need additional management by offsetting of commencement times and other traffic management initiatives. Refer Section 5.0 for additional information.

4.4.4 Avenue Road and Old Six Mile Lane

The intersection at Avenue Road and Old Six Mile Lane is and un-signalised at grade intersection. Avenue Road is currently a narrow country road with a sealed pavement width of approximately 4m. Old Six Mile Lane is sealed from the intersection at the Pacific Highway and Aerodome Road. The remainder of the road between the Aerodone intersection and Avenue Road intersection is unsealed. Good sight distance is available from Avenue Road both east and west along Old Six Mile Lane. This intersection will be substantially re-built as part of the Pacific Highway upgrade works, however as a worst case scenario we have analysed the current intersection only.

The current intersection is represented diagrammatically in Figure 4.6 below.

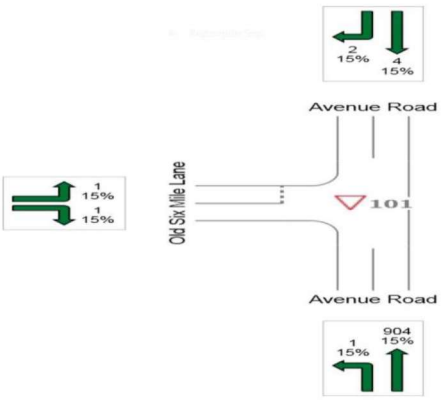


Figure 4.6 – Intersection of Avenue Road and Old Six Mile Lane

Traffic movements at the intersection during the AM peak in 2020 with the NGCC in full operation are estimated as:

- Avenue Road: northbound – 356 vph with 2 vph turning left into Old Six Mile Lane; southbound – 358 vph with 2 vph turning right into Old Six Mile Lane
- Old Six Mile Lane: eastbound – 3 vph with 1 vph turning left into Avenue Road and 2 vph turning right into Avenue Road; westbound - 4 vph

Traffic movements at the intersection during the AM peak in 2018 with the NGCC under construction are estimated as:

- Avenue Road: northbound – 905 vph with 1 vph turning left into Old Six Mile Lane; southbound – 6 vph with 2 vph turning right into Old Six Mile Lane
- Old Six Mile Lane: eastbound – 2 vph with 1 vph turning left into Avenue Road and 1 vph turning right into Avenue Road; westbound - 3 vph

Sidra analysis of the intersection (refer Appendix E for output) shows Level of Service (LOS) A during NGCC operation and LOS B during construction.

This will result in optimum operating conditions (free flow), meeting the requirements of RMS for rural roads.

4.5 Impact on stock routes

Stock movements on Avenue Road are generally seasonal, before / after local cattle sales and during emergencies, such as flooding of low lying surrounding areas.

Several of the landholders have raised concerns about being able to access paddocks via Avenue Road during construction and operations of the NGCC. Through this engagement with neighbouring landowners, inputs to the design development of the project has determined the need for gates, in addition to previously planned cattle-grates. Other passive berms etc are also being considered to divert cattle from the entry to site.

The Construction Traffic Management Plan and Operations Traffic Management Plan will establish a process to liaise with stakeholders to schedule traffic management measures to best accommodate the capacity of existing stock movements. A high level of engagement between operator and affected landholders will allow reconsideration of scheduled deliveries.

4.6 Amenity Impacts

Potential visual and acoustic impacts associated with the operation and construction stages are addressed within the EIS, but are mitigated through substantial set backs and buffer zones to property boundaries.

5.0 Recommended mitigation measures and monitoring

Based on the impacts outlined in previous sections we recommend the following mitigation measures and monitoring for the construction and operation phases. We note the draft Traffic Management Plan will be covered under the CMP.

Recommended Mitigation Measures and Monitoring		Timing	Source / Reference	Responsibility
General				
TM1	All designs will be according with relevant Council, RMS and Australian Standard (including AS 2890.1 -2004 and AS 2890.2 -2002)	Prior to construction commencing and ongoing	Traffic Impact Assessment	Designer
Construction Phase				
TM2	Site induction (including environmental due diligence training) to include driver training on use of approved routes and a transport code of conduct for the Project site.	Prior to construction commencing and ongoing	Best practice	Contractor
TM3	Vehicles will be maintained in good working order in accordance with manufacturer's requirements to minimise noise and exhaust emissions.	Ongoing	Best practice	Contractor
TM4	All reasonable and practicable, noise controls (e.g. low-noise mufflers) will be installed and maintained on plant and equipment.	Ongoing	Best practice	Contractor
TM5	All heavy vehicles entering and leaving the site that are carrying loads will be covered.	Ongoing	Construction Environmental Management	Contractor
TM6	Drivers will only use approved routes and comply with the speed limits and road rules both on site and within the local road network.	Ongoing	Best practice	Contractor
TM7	Traffic to the site will obey curfew times and driver instructions.	Ongoing	Best practice	Contractor
TM8	Vehicles will not park or queue on local roads in the vicinity of the Project site.	Ongoing	Best practice	Contractor
TM9	Traffic entering the site will be directed to the appropriate area for example staff and visitors to the car park by appropriate signage or traffic control.	Ongoing	Best practice	Contractor
TM10	Traffic Control Plans (TCP) will be developed to manage traffic movements to and from the Project with the aim of avoiding queuing at local intersections (a queue consists of more than three vehicles waiting consecutively at an intersection).	As required	Best Practice	Contractor
TM11	All TCP's used during the construction activity will be developed by the Contractor in accordance with *Australian Standard 1742.3 -2002 Manual of uniform traffic control devices Part 3 Traffic control*	As required	Best practice	Contractor

	devices for works on roads and the RMS's *Guide to Traffic Control at Worksites* Version 4, 2010. It should be noted that a TCP can only be prepared by a person who has undertaken and passed the RMS's "Traffic Control at Worksites Manual" training course and holds a current certification.			
TM12	All TCP's will be implemented by suitably qualified personnel in accordance with the RMS's "Guide to Traffic Control at Worksites" with particular attention paid to the spacing of traffic control devices.	As required	Best practice	Contractor
TM13	Daily pre-start and pre-closedown inspections of the short term traffic control will be completed using the checklist in the RMS's "Traffic Control at Worksites Manual".	Daily	Section 6 of the RMS's "Traffic Control at Worksites Manual" Appendix A of Australian Standard 1742.3	Contractor
TM14	Weekly inspections of long term traffic control will be completed using the checklist in the RMS's "Traffic Control at Woksites Manual". Additional notes may also be included on the Environmental Site Inspection Checklist.	Weekly		Contractor
TM15	Night inspections of any long term traffic controls will be completed using the checklist in the RMS's "Traffic Control at Worksites Manual".	Once during the first week and then at least every 2 months		Contractor
TM16	The community and stakeholder consultation process in relation to construction traffic information and road safety matters will be undertaken in accordance with the Community Consultation Strategy (CCS).	As required	Best Practice	Contractor
Operations Phase				
TM17	Site induction (including environmental due diligence training) to include driver training on use of approved routes and a transport code of conduct for the Project site.	Prior to construction commencing and ongoing	Best practice	Operator
TM18	Vehicles will be maintained in good working order in accordance with manufacturer's requirements to minimise noise and exhaust emissions.	Ongoing	Best practice	Operator
TM19	All reasonable and practicable, noise controls (e.g. low-noise mufflers) will be installed and maintained on plant and equipment.	Ongoing	Best practice	Operator
TM20	All heavy vehicles entering and leaving the site that are carrying loads will be covered.	Ongoing	Construction Environmental Management	Operator
TM21	Drivers will only use approved routes and comply with the speed limits and road rules both on site and within the local road network.	Ongoing	Best practice	Operator
TM22	Traffic to the site will obey curfew times and driver instructions.	Ongoing	Best practice	Operator
TM23	Vehicles will not park or queue on local roads in the vicinity of the Project site.	Ongoing	Best practice	Operator
TM24	Traffic entering the site will be directed to the appropriate area for example staff and visitors to the car park by appropriate signage or traffic control.	Ongoing	Best practice	Operator
TM25	Traffic Control Plans (TCP) will be developed to manage traffic movements to and from the Project with the aim of avoiding queuing at local intersections (a queue consists of more than three vehicles waiting consecutively at an intersection).	As required	Best Practice	Operator

TM26	The community and stakeholder consultation process in relation to construction traffic information and road safety matters will be undertaken in accordance with the Community Consultation Strategy (CCS).	As required	Best Practice	Operator
TM27	Traffic access and stock movements to be coordinated to best satisfy requirements of neighbour (stock movements) and Operator (traffic access)	As required		Operator

6.0 Conclusion

Details of the proposed Stage 2 Transport and Accessibility aspects of the NGCC, inclusive of assessment of potential traffic impacts on the surrounding road network as required within the SEARS, have been addressed within the design and results summarised as follows:

Access to the NGCC has been developed in accordance with the Stage 1 development approval process

The proposed new entry road and intersection with Avenue Road has been located to maximise sight distances and to comply with all relevant standards

The new entry road has been carefully designed to minimise conflict between pedestrians and vehicles. Visitors arriving by either bus or car walk directly to the visitors centre without crossing main roads. Staff arriving by bus or car walk directly to staff training and amenities without crossing main roads. Service vehicles and prisoner transports travel to the relevant Gatehouses with minimum conflict with pedestrians

The proposed parking is sufficient for both the construction and operation phases.

During operation of the NGCC the Level of Service at each of the nearby intersections is maintained at LOS C, satisfactory operating conditions, which is acceptable to the RMS.

During construction the Level of Service at each of the nearby intersections is maintained at LOS C which is acceptable to the RMS, except for the junction of Pacific Highway and Old Six Mile Lane during the period from 6 – 7am during the peak construction period. This issue will be monitored and managed by the Construction team through additional management by offsetting of commencement times and other traffic management initiatives.

Provision is made onsite within the development to receive bus services and opportunity for sustainable traffic plan.