NSW GOVERNMENT | Public Works

Proposed Alterations and Additions at TAFE Kurri Kurri Campus

Traffic Study

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1. Introduction

This report, prepared by *Samsa Consulting Pty Ltd – Transport Planning and Traffic Engineering Consultants*, addresses traffic issues for proposed alterations and additions at the TAFE Kurri Kurri Campus at McLeod Road, Kurri Kurri. The report supports a Statement of Environmental Effects (SEE) for the proposed land use.

1.1 Background

Cessnock City Council has requested a Traffic Study to supplement Development Application (DA) information, which was lodged some time ago for proposed amendments to the Plant & Heavy Vehicle Training Centre (PHV) at the TAFE Kurri Kurri Campus, particularly an increase in student numbers. The Department of Education & Communities (DEC) is proposing alterations and additions to the existing facilities for the teaching and maintenance of heavy vehicles, and the construction of a new two-storey classroom block at the campus.

Council's primary concern is the impact of the proposal on the surrounding road network as well as the potential to significantly impact upon nearby intersections.

The TAFE campus is located off McLeod Road and Bowditch Avenue, Kurri Kurri with the access to the subject area of the campus being off McLeod Road – refer to *Figure 1* below for the site location.

1.2 Assessment Scope & Methodology

The scope of the assessment included the following tasks:

- Review of existing available background information including DA information, traffic and parking information, existing land usage, etc.
- Discussions with TAFE Kurri Kurri staff to determine / confirm their operational requirements with respect to traffic, parking and access.
- Desktop review of the site and surrounding road network to assess adequacy of access issues and existing parking conditions.
- Determination of future usage including traffic generation and parking demand.
- Confirmation of the adequacy of future traffic, parking and access issues including impacts on the surrounding local road network including intersections.
- Recommend mitigation measures to reduce any impacts of the proposed development.
- Preparation of Traffic Study in support of the DA for the proposal.

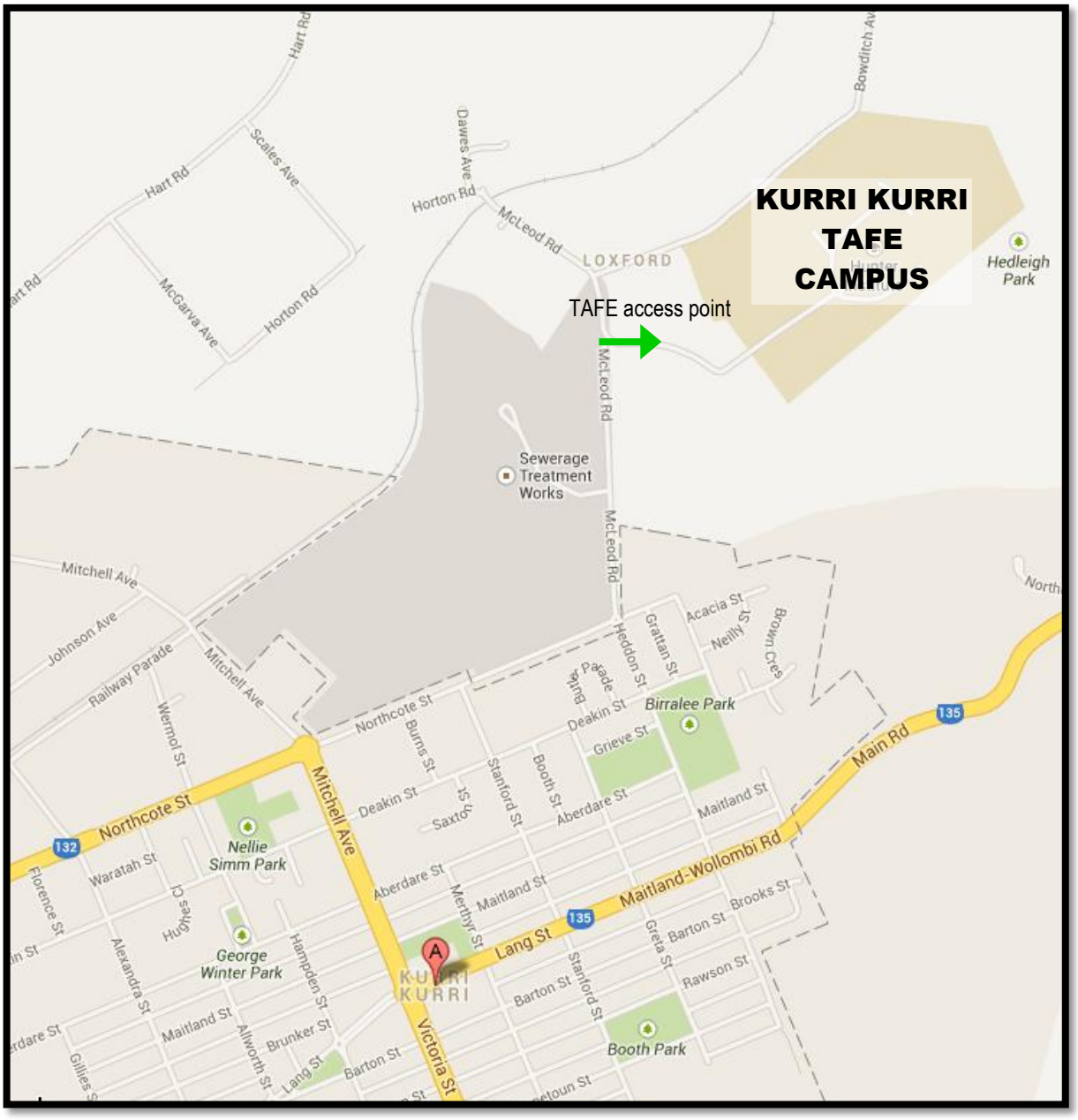

Figure 1: Site Location

1.3 Report Structure

The remainder of this assessment report is presented as follows:

Chapter 2 describes the existing transport conditions including traffic operations, parking availability and site access.

Chapter 3 identifies traffic, parking and site access impacts as well as detailing possible mitigation measures.

Chapter 4 provides a summary and conclusions to the assessment.

2. Existing Conditions

2.1 Area Characteristics

The TAFE Kurri Kurri campus is located just beyond the northern edge of Kurri Kurri residential development and less than half a kilometre west of Heddon Greta.

To the west of the site and to the west of McLeod Road is Council's Sewerage Treatment Plant. To the north-west of the site is Loxford, to the east is Heddon Greta, and to the south is the town of Kurri Kurri. The land to the north of the site is rural.

Hunter Expressway is currently being constructed and runs through the southern portion of the site, isolating a significant parcel of land. There will be a future access ramp between the expressway and the TAFE campus onto McLeod Road.

2.2 Existing Road Network & Traffic Operations

The main access to the TAFE is from McLeod Road which crosses over Hunter Expressway, currently under construction. There is also an emergency / contingent access via Bowditch Avenue, which is currently closed and locked.

Bowditch Avenue connects directly into McLeod Road and has movement priority from McLeod Road to the north. It is partially sealed with the unsealed section in relatively good condition. It is an effective 'dead-end' at its northern end providing access to only a few properties.

McLeod Road provides the connection into the town of Kurri Kurri via Heddon Street or Northcote Street (refer to *Figure 1* above). It is sealed with an approximate width of 6 m to 7 m including centreline marking.

McLeod Road has a 60 km/h speed limit, which reduces to an urban area 50 km/h speed zone at the Heddon Street / Northcote Street roundabout.

The major routes into and through Kurri Kurri include Lang Street (connecting north-east to Heddon Greta), Victoria Street (linking to John Renshaw Drive to the east), Northcote Street (eventually connecting west to Maitland-Wollombi Road / Cessnock Road) and Mitchell Avenue connecting Northcote Street to Victoria Street at Lang Street.

The major nearby intersections and their traffic controls include McLeod Road / Heddon Street / Northcote Street (roundabout), Heddon Street / Lang Street (Give Way), Northcote Street / Mitchell Avenue (roundabout), and Mitchell Avenue / Lang Street / Victoria Street (signalised roundabout). The latter in particular is a busy intersection with relatively high traffic volumes of between 15,000 to 16,000 vehicles per day (vpd) in the north-south direction as well as almost 10,000 vpd along Lang Street in the east-west direction[1].

In general, traffic operations through Kurri Kurri are adequate. There are periods of heavier traffic flows during traditional morning and afternoon peaks and to a lesser extent around midday. During these times, the through routes along Northcote Street, Mitchell Avenue, Lang Street and Victoria Street in particular, experience some congestion and queuing.

1. 2004 traffic volume data from RMS count stations 05.010 (Mitchell Avenue, north of Aberdare Street), 05.458 (Victoria Street, south of Lang Street) and 05.530 (Lang Street, east of Victoria Street)

The signalised roundabout at the Mitchell Avenue / Lang Street / Victoria Street junction operates when congestion and queuing increases due to unbalanced flows (low traffic from the western leg of Lang Street).

The main routes to the TAFE campus (Northcote Street, east of Mitchell Avenue, Heddon Street and McLeod Road) all operate with spare capacity and relatively high levels of service, even during background peak periods.

2.3 Existing Parking

The TAFE Campus currently provides some 329 parking spaces on site in several parking areas around the campus. Apart from designated accessible parking spaces, all parking is available for both students and staff on-site.

Overflow parking for big events (up to 300 additional vehicles) is directed to the oval area and open grounds, if weather conditions permit.

On-street parking surrounding the site is available informally but is not utilised due to the location and convenience of available parking on site. There are no parking activities on the roads surrounding the site.

2.4 Existing Site Access

Existing vehicular access to the PHV is available off McLeod Road. Sight distance to/from the site access is adequate for the road environment. There is a closer access point off Bowditch Avenue, but this is not used at present and will not be used until Bowditch Avenue is sealed. The Bowditch Avenue access is only used for emergency access / egress or significant deliveries. All other access to the campus is via the McLeod Road entry.

While pedestrian access to the campus is available informally off McLeod Road, the main pedestrian access is internal from car park areas to on-site buildings and facilities.

2.5 Public Transport

Public transport serving the subject site is limited. The closest bus route runs along Heddon Street and Northcote Street serving the Kurri Kurri and Weston areas: Rover bus route 171. The bus stops along Heddon Street and Northcote Street are at least 20 mins walk (almost 2 km) from the main TAFE access and even further to the PHV area.

2.6 Pedestrian and Bicycle Facilities

Pedestrian and bicycle facilities serving the site are limited with no roadside paths.

Because the of the relatively low traffic volumes along McLeod Road and Bowditch Street, the immediate local road network would seem to be conducive to on-road cycling.

3. Traffic, Parking & Access Assessment

3.1 Proposed PHV Operations

The Department of Education and Communities have lodged a DA for proposed alterations and additions to the existing facilities for the teaching and maintenance of heavy vehicles, and the construction of a new two-storey classroom block.

Details of the proposal are as follows.

Block O existing building

- Retention of existing roof & structure.
- Extensive demolition and reconstruction of external walls.
- Demolition of the majority of internal walls and construction of new internal fitout.
- Enclosure of existing verandah.

Block P existing building

- Demolition of some internal walls.
- Demolition walls to seminar rooms and mezzanine slab over.
- Extension to include 340 m^2 automotive electrical learning workshop, 80 m^2 laboratory and 80 m^2 lecture room.

Block PP existing building

- Extension to include 495 m^2 equipment store and learning workshop.

Block Q new building

- Eight 45 m^2 lecture rooms.
- Six 80 m^2 learning laboratories.
- Student amenities 80 m^2 and 32 m^2.
- Two accessible toilets with showers, male and female toilets.
- Communications room, cleaner's store, lift and covered link connecting to Block O.

The total number of students currently at the PHV on any one day ranges between 150 to 200 students per day. This is predicted to increase by approximately 100 students per day once works are complete to between 250 and 300 students per day (by 2015).

It is understood that there are approximately 25 to 35 block release students staying on site at any one time. These students do not leave the site on a daily basis.

In addition to the increase in student numbers, there will be an additional four teachers for the PHV.

Scheduled times are Monday to Thursday from 8.00 am to 5.00 pm and Friday with only one class from 8.00 am to 4.40 pm. There are additional classes that run from 2.00 pm to 6.00 pm or 7:30 pm. Classes run over four semesters in the year either nine or ten weeks in length.

3.2 Traffic Impacts

3.2.1 Traffic Generation

General traffic generation for land uses is available from the RMS document "*Guide to Traffic Generating Developments*"[2]. This document provides average rates across a wide range of scenarios and so is not as accurate as having forecast user numbers at a particular land use, such as for the proposed PHV operations amendments at Kurri Kurri TAFE. In this case, the Guide has been ignored in favour of using actual student and teacher increases for the subject land use.

As a worst case, maximum additional traffic generation from the proposed PHV operations amendments is based on the number of additional students and teachers. Because traffic generation from these two user groups would not necessarily coincide (classes are held at night as well as during the day so there is a broad spread of student arrivals and departures), the following conservative (ie. high traffic generation) assumptions have been adopted for the purposes of this assessment:

- Of the additional 100 students, all are assumed to be located off-site and thus would need to travel to the campus. This is not necessarily the case as some of the students are on residential blocks and do not leave the site on a daily basis.
- Of the additional 100 students, there can be expected to be some car-sharing and/or non-car trips, eg. cycling. It is conservatively estimated that 20% of trips would be non-single person car trips. This equates to some 160 two-way trips per day on any given day (80 car trips arriving and 80 return car trips departing).
- For peak hourly traffic generation, the spread of class times needs to be considered. It is assumed that of the 160 trips per day that 75% may arrive or depart in any given hour. This equates to some 60 one-way car trips arriving or departing during any one hour.
- For the four additional teachers, it is assumed as a worst case that all would drive (which may or may not be the case). This would generate 8 two-way trips per day or 4 one-way trips per hour.
- Teachers are likely to arrive and depart before and after classes and therefore, outside student arrival and departure times. Nonetheless, it has been assumed as a worst case that all additional teacher traffic generation would occur during the hourly period as student arrivals / departures.

Using the above assumptions, additional traffic generation attributable to the proposed PHV operations amendments would be 168 two-way trips per day and 64 one-way trips per hour.

3.2.2 Traffic Operations

The majority of traffic generation from the proposed PHV operational amendments would be spread across the surrounding road network via McLeod Road and then Heddon Street and Northcote Street to the major routes through Kurri Kurri, ie. Northcote Street, Mitchell Avenue, Lang Street and Victoria Street.

As discussed previously, traffic volumes along Mitchell Avenue and Victoria Street are over 15,000 vpd while along Lang Street they are almost 10,000 vpd. For the McLeod Road / Heddon Street / Northcote Street minor road network, there is significant spare capacity.

2 RTA "*Guide to Traffic Generating Developments (Version 2.2)*", October 2002

Based on existing traffic operations and intersection performance, it is considered that the addition of at most some 168 trips per day and 64 trips per hour would be readily absorbed into the existing traffic flows. Significantly, this level of traffic increase would be within any daily variations that currently exist along the major road network and its intersections, eg. this is approximately 1% of traffic along Mitchell Avenue / Victoria Street and less than 2% of traffic along Lang Street.

Therefore, traffic impacts from the proposed PHV operational amendments are considered to be minimal with only a minor affect on road network and intersection operations.

3.3 Parking Impacts

3.3.1 Council Parking Requirements

Cessnock City Council provides guideline parking rates for various land uses in "*Cessnock Development Control Plan 2010: Part C1 – Parking & Access*", 23 December 2011. For educational establishments, the guideline parking rate is one space per two staff and one space per five students.

The TAFE campus has some 135 staff and 495 students. With the proposed PHV operations amendments, there would be approximately 139 staff and 595 students. This would require approximately 189 parking spaces to comply with Council's DCP. Therefore, the 329 parking spaces on site satisfy Council parking requirements.

3.3.2 Parking Demand

Based on the additional four teachers and 100 students for the proposed PHV operations amendments and Council's guideline parking rates, there can be expected to be parking demand for 22 parking spaces (100 students @ one space per five students and four teachers @ one space per two staff). As described above, the existing parking provision is ample and would be able to accommodate the increase in student and teacher numbers.

In summary, it is considered that there is adequate on-site parking provision and that there would not be any parking impacts.

3.4 Site Access

The existing vehicular access off McLeod Road is straightforward and has no significant road safety issues, particularly as it is used by regular users (staff and students within the campus) who are familiar with its operations.

3.5 Construction Traffic Management & Access

A Construction Traffic Management Plan (CTMP) will need to be prepared by the chosen contractor to manage traffic during the construction of the building. The plan will enable assessment of how the site is to be utilised for the construction of the proposed development. It will include the following:

- Construction access to / from the site via Bowditch Avenue including identification of suitable heavy vehicle transport routes through the Kurri Kurri urban area onto the major road network.

- Where possible truck movements would avoid peak traffic flow periods as well as school drop-off / pick-up times if passing nearby to school areas.
- Inconvenience to Bowditch Avenue users and nearby communities would be minimised through best construction and management practices and include the requirement for safe and efficient access for all local vehicles and pedestrians.
- Traffic during construction would be managed in accordance with the requirements of *Australian Standard 1742.3 – 1996 Manual of Uniform Traffic Control Devices Part 3: Traffic Control Devices for Works on Roads* as well as the RMS "*Traffic Control at Worksites Manual*".
- Access will be maintained at all times to other parts of the campus and surrounding private properties.

4. Conclusions

The following pertinent issues have been concluded from the traffic assessment for the proposed alterations and additions to the Kurri Kurri TAFE campus site:

- The proposed PHV operations amendments are to occur within the TAFE Kurri Kurri Campus located off McLeod Road, Kurri Kurri.
- Operations at the PHV are predicted to increase by 100 students and four teachers.
- In general, traffic operations on the surrounding major road network are adequate with some congestion (queuing) during the peak commuter periods. The minor road network serving the TAFE campus has spare capacity and relatively high levels of service.
- As a worst case, maximum additional traffic generation from the proposed PHV operations amendments would be 64 one-way trips per hour with a maximum daily traffic generation of approximately 164 two-way trips per day.
- Traffic generated from the proposed PHV operations amendments would be readily absorbed into the existing traffic flows on the surrounding road network and the level of traffic increase would be within any daily variations that currently exist. Therefore, traffic impacts from the proposed PHV operations amendments are considered to be insignificant.
- The TAFE campus has ample existing parking provision, which would cater to the increase in parking demand from the proposed PHV operations amendments. Therefore, parking impacts would be minimal.
- Existing site access is satisfactory.

In conclusion, it is considered the proposed alterations and additions to the Plant & Heavy Vehicle Training Centre at the Kurri Kurri TAFE campus site would not create any significant adverse impacts with respect to traffic operations, parking, and site access.