

7 James Street, Argenton

Transport & Accessibility Impact Assessment



May 2019

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Client: Untapped Planning

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Quality Record

Issue	Date	Description	Prepared By	Approved By
A	06/05/19	Draft to client	JS	KK

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Chapter 1. Introduction

1.1 Background

Newy Engineering Consultants has been engaged by Untapped Planning to prepare a Transport & Accessibility Impact Assessment for a State Significant Development proposal involving the change of use of an existing building (gym) to an educational facility at 7 James Street, Argenton.

This Transport & Accessibility Impact Assessment has been prepared to address the requirements within Section 6 of the revised Planning Secretary's Environmental Assessment Requirements (SEAR's) issued on 5 April 2019.

1.2 Proposal

The proposal involves the change of use of an existing building being used as a gymnasium into Alesco Senior College. Alesco Senior College started in 2002 as Alesco Learning Centre - a registered and accredited, non-government independent school specifically designed for the inclusion of young people who cannot or will not complete their education within a traditional setting. The school offers grades 10-12 to young people of Newcastle, Lake Macquarie, Port Stephens and the Upper Hunter.

1.3 Purpose of this Report

This report sets out the findings of assessment of the anticipated transport and accessibility implications of the proposed development, including consideration of the following:

- i. existing traffic and parking conditions surrounding the site
- ii. suitability of the proposed parking in terms of supply (quantum) and layout
- iii. car parking and service vehicle requirements
- iv. the traffic generating characteristics of the proposed development
- v. the transport & accessibility impact of the proposal on the surrounding road network.

1.4 References

In preparing this report, reference has been made to the following:

- an inspection of the site and its surrounds
- traffic and parking surveys undertaken as referenced in the context of this report
- Lake Macquarie Development Control Plan 2014, Revision 20, Part 3 – Development within Residential Zones
- Lake Macquarie City Council Non-discriminatory Access Guideline 2013
- Lake Macquarie City Council Traffic Impact Statement and Vehicle Access Guideline 2013
- Lake Macquarie Local Environment Plan 2014
- Argenton Public School 2017 Annual Report
- Site Plan prepared by DEN-AD Design & Co., Revision C, dated 24 October 2018

- Floor Plan prepared by DEN-AD Design & Co., Revision B, dated 4 October 2018
- Roads and Maritime Services (RMS) Guide to Traffic Generating Developments, 2002
- RMS Technical Direction TDT 2013/ 04 Guide to Traffic Generating Developments Updated traffic surveys, 2013
- Australian Standard/ New Zealand Standard, Parking Facilities, Part 1: Off•Street Car Parking AS/NZS 2890.1:2004
- Australian Standard, Parking Facilities, Part 2: Off•Street Commercial Vehicle Facilities AS 2890.2:2018
- Australian Standard, Parking Facilities, Part 3: Bicycle parking AS 2890.3:2015.
- Australian Standard / New Zealand Standard, Parking Facilities, Part 6: Off•Street Parking for People with Disabilities AS/NZS 2890.6:2009.

Chapter 2. Existing Conditions

2.1 Site Location

The subject site is located at 7 James Street, Argenton NSW 2284. The site of approximately 1,504m² has an existing building footprint of approximately 400m². The site has a land use classification of 'R2' Low Density Residential Zone and is currently used as a gymnasium. The surrounding properties are predominantly residential with an exception of Argenton Public School and Argenton Community Hall located on Montgomery Street.

Argenton Public School is located approximately 250 metres northwest of the subject site and can be accessed from Montgomery Street. It is a small school catering 27 students from Kindergarten to Year 6 as per the school's 2017 annual report.

The location of the subject site, highlighted in yellow, and the environs is shown in Figure 1 and the land zoning is shown in Figure 2.

Figure 1: Subject Site and its Environs



Basemap Source: SIX Maps (website accessed April 2019)

Figure 2: Land Zoning Map



Basemap Source: <https://legislation.nsw.gov.au> (website accessed April 2019)

2.2 Public Transport

The subject site is located approximately 450 metres from the bus stops on Lake Road (B53). The bus stops are serviced by three routes (Route 44, 270 & 271). Route 44 (Warners Bay to Kotara) is operated by Newcastle Transport with an hourly frequency through the day. Route 270 (Toronto West to University of Newcastle) and Route 271 (Toronto to Glendale) are operated by Hunter Valley Buses with a frequency ranging from 30 – 60 minutes throughout the day.

The westbound bus stop on the southern side of Lake Road is located in the kerbside traffic lane east of Victoria Street traffic signals. The stop has a bus shelter and a seat and appears to be a DDA compliant stop with concrete platform, tactile ground surface indicators, ramp and handrails.

The eastbound bus stop on the northern side of Lake Road is located in the road shoulder east of the traffic signals. The stop has a bus shelter and a seat and does not appear to be a DDA compliant stop due to the lack of kerb, concrete platform and tactile ground surface indicators.

The location of bus stops in relation to the subject site is shown in Figure 3.

Figure 3: Bus Stop Location Map



Basemap Source: SIX Maps (website accessed April 2019)

Cockle Creek railway station is located approximately 1.3 km from the subject site in the south-west direction. The station is on the Sydney-Newcastle railway line providing frequent train services during peak periods between Newcastle Interchange and Central Station via Strathfield or Gordon.

The station is accessed via a short access road (Creek Reserve Road) located west of Lake Road. The access road leads to a small car park, with a capacity of approximately 15 marked parking spaces. There is also a stepped access for pedestrians directly off the Lake Road railway bridge to the northern side platform. Bus stops serviced by three routes (Route 44, 270 & 271) are located in close proximity to the station.

2.3 Walking and Cycling Facilities

A shared path exists along the western side of Lake Road between the railway station and Speers Point Park to the south. There is a footpath along the western side of Lake Road north of the railway station for approximately 250 metres. There is no footpath connection on either side of Lake Road from this location up to the Victoria Street traffic signals. Pedestrians are anticipated to walk on the wide verge within road reserve on this remaining section of Lake Road.

There is a footpath on the southern side of Lake Road east of Victoria Street traffic signals and a footpath on the eastern side of Victoria Street between Lake Road and Robert Street. The remaining distance, approximately 270 metres south of Robert Street up to the site does not have a footpath.

Lake Road has a short section of marked on-road cycle lanes east of the traffic signals. Cyclists are able to use parking lane or wide shoulder for the remaining section of Lake Road. Victoria Street and James Street do not have cycling facilities and cyclists are expected to command the lane on these streets.

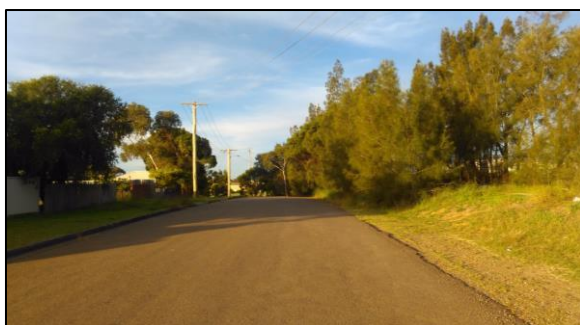
2.4 Road Network

James Street

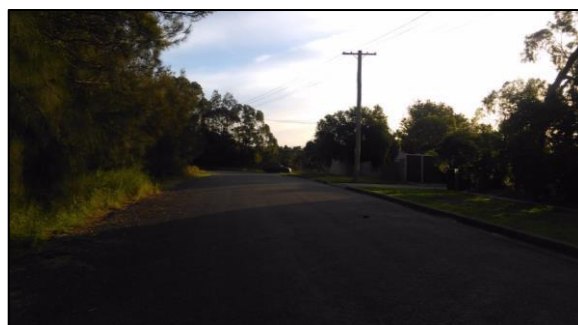
James Street functions as a two-way two lane local road and travels in an east-west direction along the southern boundary of the subject site. The street is approximately 120 metres in length, has approximately 8 metres wide carriageway and forms a cul-de-sac on the eastern end. Kerb and guttering is available on the northern side whereas there is a grassed verge on the southern side beside the railway corridor. There are no footpaths along the street.

The street provides access to a total of four properties – the subject site, two residential properties on the eastern side of the site and a residential side access on the western side. It has default urban speed limit of 50 km/h. James Street is shown in Figure 4.

Figure 4: Site Photographs – James Street



James Street (looking east)



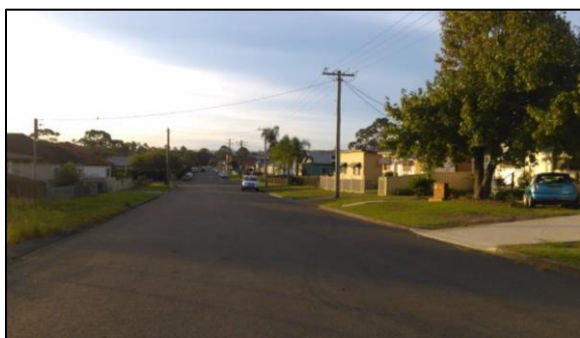
James Street (looking west)

Victoria Street

Victoria Street functions as a two-way two lane local road and travels in a north-south direction. The street is approximately 300 metres in length and connects James Street with Lake Road (B53). It has approximately 10-12 metres wide carriageway and is set within approximately 20 metres wide road reserve. It has kerb and guttering on both sides however there are no footpaths.

The street continues as Princess Street north of Lake Road and provides access to predominately residential properties with an exception of mixed-use (B4) properties located on the northern end. It has default urban speed limit of 50 km/h, except for approximately 50 metres long 40 km/h School Zone in southbound direction north of Montgomery Street. Victoria Street forms a four-way Stop controlled intersection with Montgomery Street and a signalised intersection with Lake Road. Victoria Street is shown in Figure 5.

Figure 5: Site Photographs – Victoria Street



Victoria Street (looking north)



Victoria Street (looking south)

Montgomery Street

Montgomery Street functions as a two-way two lane local road and generally travels in an east-west direction. The street is approximately 1.4 km in length and connects Mary Street to the west and forms a cul-de-sac beside the Glendale Shopping Centre to the east. It has approximately 9-10 metres wide carriageway and is set within approximately 20 metres wide road reserve.

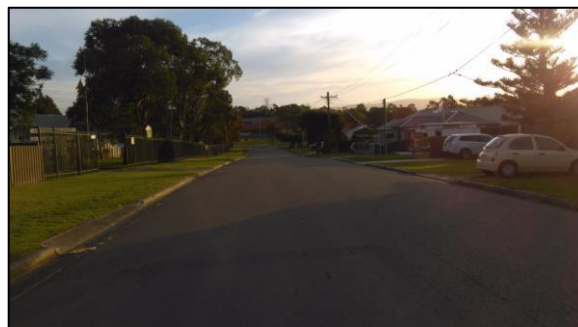
It provides access to predominately residential properties with an exception of Argenton Public School, Argenton Community Hall, Jack Edwards Oval, Lake Macquarie BMX Club and a council reserve. It has kerb and guttering on both sides along its full length however there are no footpaths.

It has default urban speed limit of 50 km/h, except for approximately 310 metres long 40 km/h School Zone in east-west direction between Mary and Elizabeth Streets. There is a children's crossing located on the street outside the school with associated part-time No Stopping restriction (8.00am – 9.30am / 2.30pm – 4.00pm School Days). Montgomery Street is shown in Figure 6.

Figure 6: Site Photographs - Montgomery Street



Montgomery Street (looking east)



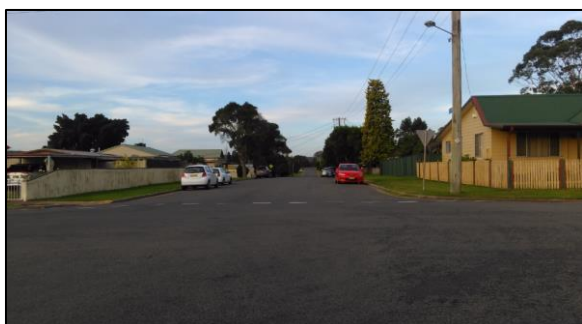
Montgomery Street (looking west)

Robert Street

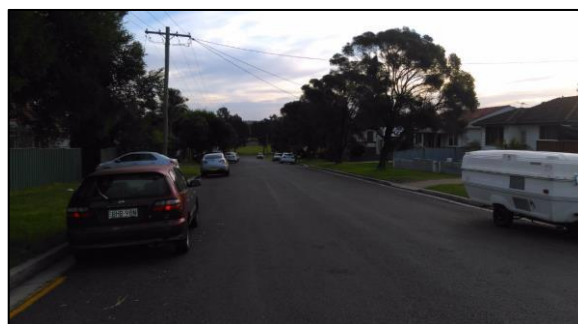
Robert Street functions as a two-way two lane local road and travels in an east-west direction. The street is approximately 900 metres in length and connects Mary Street with McLaughlin Street. It has approximately 10-12 metres wide carriageway and is set within approximately 20 metres wide road reserve. It has kerb and guttering on both sides however there are no footpaths.

It provides access to predominately residential properties with an exception of Argenton Playground on the corner of Elizabeth Street. It has default urban speed limit of 50 km/h. The street has give-way controls at the intersection with Victoria Street. Robert Street is shown in Figure 7.

Figure 7: Site Photographs – Robert Street



Robert Street (looking east)



Robert Street (looking west)

Mary Street

Mary Street functions as a two-way two lane local road and travels in a north-south direction. The street is approximately 180 metres in length and connects Montgomery Street with Lake Road (B53). It has approximately 8 metres wide carriageway and is set within approximately 20 metres wide road reserve. It has kerb and guttering on the eastern side and there are no footpaths.

The street provides access to predominately residential properties with an exception of Jack Edwards Oval and Lake Macquarie BMX Club which are accessed off an unnamed laneway south of Elizabeth Street.

It has default urban speed limit of 50 km/h, except for approximately 50 metres long 40 km/h School Zone in southbound direction north of Montgomery Street. The street has give-way controls at the intersection with Lake Road and permit turning movements in all directions. Mary Street is shown in Figure 8.

Figure 8: Site Photographs – Mary Street



Mary Street (looking north)



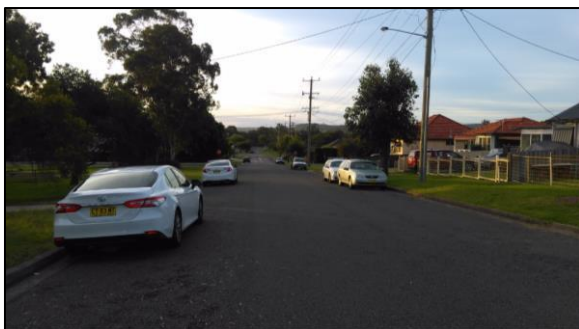
Mary Street (looking south - unnamed laneway)

Elizabeth Street

Elizabeth Street functions as a two-way two lane local road and travels in a north-south direction. The street is approximately 280 metres in length and connects Lake Road to the north and forms a cul-de-sac to the south. It has approximately 10 metres wide carriageway and is set within approximately 20 metres wide road reserve. It has kerb and guttering on both sides however there are no footpaths.

It provides access to predominately residential properties with an exception of Argenton Community Hall, Argenton Playground and mixed-use (B4) properties located on the northern end. It has default urban speed limit of 50 km/h. It forms a left-in/left-out intersection with Lake Road, stop-controlled intersection with Robert Street and give-way controlled intersection with Montgomery Street. Elizabeth Street is shown in Figure 9.

Figure 9: Site Photographs – Elizabeth Street



Elizabeth Street (looking north)



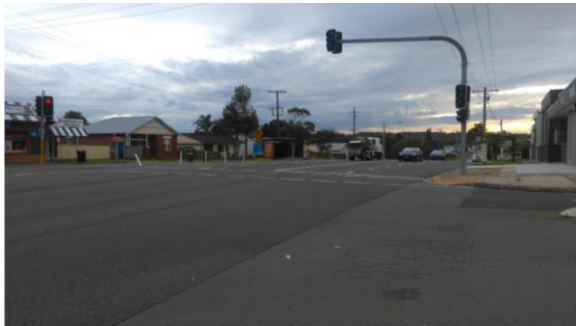
Elizabeth Street (looking south)

Lake Road (B53)

Lake Road is a classified (State) road under the care and control of Roads and Maritime Services (RMS). It acts as an important transport corridor between Lake Macquarie and Newcastle local government areas. It is a two-way two lane road in proximity to the subject site, with an exception of additional short lanes at the Victoria Street signalised intersection to improve the intersection capacity and through-put.

Lake Road has mixed-use (B4) land zoning between Mary and Elizabeth Streets and services developments such as Argenton Hotel, a service station and Waratah Golf Club. There is a footpath on the southern side that connects Glendale Shopping Centre with Victoria Street traffic signals. There is a pedestrian leg (pedestrian cross walk) on the eastern approach of the traffic signal which facilitates safe pedestrian and cyclist movements. It has a sign-posted speed limit of 60 km/h in the proximity of the subject site. Lake Road is shown in Figure 10.

Figure 10: Site Photographs – Lake Road (B53)



Lake Road (looking east)



Lake Road (looking west)

2.5 Traffic Survey

Turning movement counts were conducted at two intersections, Victoria Street / Montgomery Street intersection and Victoria Street / Robert Street intersection, on Wednesday 1 May 2019 during 8:00am – 9:30am and 2:30pm – 4:00pm. The chosen survey times are considered appropriate for this development as it will be operational between 8:00am and 4:00pm and also due to the close proximity to Argenton Public School.

The AM and PM peak hour traffic volumes during the surveyed period are summarised in

Figure 11.

Figure 11: Existing AM and PM Traffic Volumes



General observations noted during the traffic survey are as follows:

- Traffic volume and speed environment was observed to be low on the local road network
- Traffic on Victoria Street approach at Lake Road traffic signals experienced approximately 30 – 40 seconds delay
- Pedestrians predominantly used eastern and southern side footpaths
- Argenton Public School drop-off / pick-up activity occurred on Montgomery Street outside the school and did not cause any traffic and parking issues.

2.6 Parking Survey

Spot parking demand surveys were conducted on James Street, Victoria Street (James Street – Robert Street) and Montgomery Street (Mary Street – Elizabeth Street) sections at 9:30am and 2:00pm. The length of the surveyed sections of Victoria Street (approximately 200 metres) and Montgomery Street (300 metres) is considered appropriate for the subject development site. All parking spaces in these sections permit unrestricted parking, except for short sections of part-time No Stopping restrictions (8.00am – 9.30am / 2.30pm – 4.00pm School Days) on both sides of Montgomery Street associated with the children’s crossing. The parking inventory and demand survey result is shown in Figure 12.

Figure 12: Parking Inventory and Demand Survey Result

2.7 Crash History

The review of Centre for Road Safety's crash data for the five-year period (2013 – 2017) indicates that there have been no recorded crashes on James Street, Montgomery Street (Mary Street – Elizabeth Street) and Victoria Street (Lake Road – James Street).

There have been two recorded crashes on Robert Street, one crash involved a vehicle making a U-turn west of Victoria Street and the second crash was a cross-traffic crash at Elizabeth Street intersection. Both crashes were non-casualty tow-away crashes.

There have been a total of 16 crashes on Lake Road between Mary Street and Elizabeth Street, a length of approximately 370 metres. Majority of these crashes are concentrated on Mary Street and Victoria Street intersections.

Out of the total 16 crashes on Lake Road, seven crashes occurred at Mary Street intersection out of which five crashes were injury crashes and the remaining were tow-away crashes. Five crashes were right-rear crashes which reflect the lack of separate eastbound right-turning lane for traffic entering Mary Street. The other two crashes were a right-through crash and an off-left/right-bend crash.

Out of the total 16 crashes on Lake Road, four crashes occurred at Victoria Street signalised intersection, all of which injury crashes. Two crashes were rear-end crashes which typically occur at traffic signals. The other two crashes were right-rear and right-through which reflect the lack of separate right-turning lane and right-turn phase at the traffic signals.

Chapter 3. Development Proposal

The proposal involves the change of use of an existing building being used as a gymnasium into Alesco Senior College. Alesco Senior College started in 2002 as Alesco Learning Centre - a registered and accredited, non-government independent school specifically designed for the inclusion of young people who cannot or will not complete their education within a traditional setting. The school offers grades 10-12 to young people of Newcastle, Lake Macquarie, Port Stephens and the Upper Hunter. The school is anticipated to cater for 45 – 80 students with 9 staff and an operational time of 8.00am to 4.00pm weekdays.

Alesco Senior College aims to offer education to young people whose circumstances have previously prohibited them from finding success in education and to provide opportunities for these young people to prove their capabilities; that their potential is endless and they can succeed in an environment that is designed specifically for their inclusion and experiences.

Alesco Senior College is a secondary school, set within an adult learning environment. It offers students the opportunity to complete their Higher School Certificate in a supportive environment which focuses on programs to meet individual students learning needs. Alesco also has the FLEX program for students looking for success but who need a little bit more flexibility. Graduates of Alesco Senior College will most likely move onto further vocational training or sustainable employment. Some of the students who have an identified and targeted vocational pathway may pursue a future in tertiary education or University.

The proposed development includes the following:

- Four classrooms, two office spaces, staffroom, kitchen and a store
- Two outdoor student areas
- Separate male and female toilets and an accessible (disabled) toilet
- 16 parking spaces, including one accessible (disabled) parking space
- Separate entry and exit driveways with an eastbound one-way aisle
- Associated landscaping improvements.

Chapter 4. Parking Assessment

The car parking provision requirements for different development types are set out in Section 4.11, Table 7 of Lake Macquarie Development Control Plan 2014, Revision 20, Part 3 – Development within Residential Zones.

4.1 Car Parking Requirement

The school offers Years 10–12 and is anticipated to cater for 45-80 students and 9 staff. A review of the car parking requirement rates and the student/staff numbers results in a parking requirement for the proposed development as summarised in Table 1.

Table 1: Car Parking Requirements

Type of Education Establishment	Car Parking Rate	Parking Requirement (spaces)
Primary or secondary school	One space per 1.5 full-time equivalent staff, plus 1 space per 50 students	8

Based on the above, the proposed development is required to provide eight (8) parking spaces. The development proposes 16 parking spaces, including one disabled parking space, and therefore meets the DCP requirements.

The proposed development is not anticipated to adversely impact existing parking conditions in the vicinity of the site.

4.2 Motorcycle & Bicycle Parking Requirement

The DCP does not specify requirements for motor bike and bicycle parking. The development does not propose provision of motor bike and bicycle parking. It is recommended that a Class 'C' bicycle parking facility with a capacity to accommodate at least two bicycles is provided to encourage the use of sustainable transport. A Class 'C' parking facility is defined as *"A bicycle parking space, where the bicycle frame and both wheels can be locked to a bicycle parking device using the owner's own locking device"* in accordance with AS 2890.3.

4.3 Service Vehicle Requirement

LMCC Traffic Impact Statement and Vehicle Access Guideline require that the development access and service areas are designed to accommodate the largest vehicle likely to access the site. It identifies 'Coach' (Inter-city 12.2 metre Tourist Bus) as the design vehicle for an educational establishment.

It is not expected that the proposed school will organise regular excursions (if any) for students and staff. The proposal involves the change of use of existing building and therefore is constrained by the existing site layout. It is expected students/staff will use existing public transport facilities (bus stops

and railway station) located on Lake Road for occasional excursions (if any). If a chartered bus/coach is required for any excursions then it is anticipated that the bus/coach would drop-off/pick-up students/staff from Montgomery Road outside the public school. This location has part-time No Stopping restrictions (8:00am – 9:30am / 2:30pm – 4:00pm School Days) and it is anticipated to remain vacant outside of these hours.

General servicing of the site, such as consumable deliveries, is expected to occur by private light vehicles. Other occasional deliveries (once or twice a week) may occur using small right vehicles (SRV) which could utilise a normal car parking space within the car park. Such deliveries could also be undertaken by using on-street parking outside the site. These deliveries are expected to occur outside of the school's morning and afternoon peak periods and will therefore not impact its operations.

Waste collection is proposed using standard mobile garbage bins stored in the car park and collected by council's garbage trucks.

Considering the above, a separate service bay within the car park is not considered necessary. Therefore, the proposed servicing arrangements for the development are considered satisfactory.

4.4 Car Parking Layout Review

The car park layout has been reviewed against the requirements of the Australian Standards (AS/NZS 2890.1:2004 and AS/NZS 2890.6:2009). The proposed car park can be classified as User Class 1 which is provided for employee and commuter parking (generally all-day parking).

One-way eastbound traffic flow is proposed in the car park aisle however it has been designed for two-way movement with a width of 6.5 metres. The proposed car park meets the minimum requirements for bay width (2.4 metres), bay length (5.4 metres) and aisle width (6.2 metres) for 90° angle parking.

The car park is proposed to have one (1) disabled parking space. The Lake Macquarie Non-discriminatory Access Guideline recommends 1-3% ratio of disabled parking spaces for a school's car park. The proposed one disabled parking space exceeds the council requirements. The disabled parking space is located nearest to the entrance walkway and will have a wheel-stop, accessible parking logo and a minimum 2.4 metres wide hatched shared space.

The review indicates that the proposed car parking layout is expected to operate satisfactorily, subject to the adoption of recommendations identified below:

- A bollard in the shared space of disabled parking space in accordance with AS 2890.6
- North-facing 'No Exit' sign at the western entry driveway
- South-facing 'No Entry' sign at the eastern exit driveway.

Chapter 5. Traffic Impact Assessment

5.1 Traffic Generation

RMS Guide to Traffic Generating Developments does not provide traffic generation rates for schools. It is therefore considered appropriate that traffic generation for the proposed change in land use is determined based on observations at other Alesco Senior Colleges.

It is understood that students from Alesco Senior College are not permitted to drive to school themselves. Based client observations at other Alesco College facilities, it is anticipated that 80% of students will utilise public transport out of which 40% will use train services and the remaining will use bus services. The students using public transport are expected to walk from the bus stops located on Lake Road and Cockle Creek railway station to reach the school. The students travelling by train could also utilise bus services between the station and the bus stops located on Lake Road.

The school is anticipated to cater for 45 – 80 students and 9 staff. Considering the above, Table 2 outlines estimated traffic generation of the proposed school in AM and PM peak hours.

Table 2: Estimated Traffic Generation

Category	Type of Transport	Estimated Number
Student	Bus/Walk	18-32
Student	Train/Walk	18-32
Student	Parent Drop-off/Pick-up using vehicle	9-16
Staff	Vehicle	9

Adopting a conservative approach of the school operating at its maximum capacity of 80 students, it can be expected that 16 students will be dropped-off/picked-up by parents in vehicles and all 9 staff will use vehicles to access the school in AM and PM peak hours.

It is therefore estimated that a total of 25 inbound trips and 16 outbound trips will be generated by the school in AM peak hour. The 16 outbound trips relate to the return trips made by the parents after dropping-off students at the school. Similarly, it is estimated that 16 inbound trips and 25 outbound trips will be generated by the school in PM peak hour.

5.2 Traffic Distribution and Assignment

The directional distribution and assignment of traffic generated by the proposed development will be influenced by a number of factors, including the:

- configuration of the arterial road network in the immediate vicinity of the site
- existing operation of intersections providing access between the local and arterial road network and
- configuration of access points to the site.

It is expected that 50% of the vehicle movements will originate from the north-east region (towards Glendale) whereas the remaining will originate from the south-west region (towards Boolaroo).

Having consideration to the above, for the purposes of estimating vehicle movements, the following directional distributions have been assumed.

- James Street and Victoria Street, south of Montgomery Street, will accommodate all vehicle movements as it is the sole access point to the site.
- 50% of the vehicle movements originating from the north-east region will turn left into Elizabeth Street whereas the remaining will turn left into Victoria Street. However, 100% of the vehicle movements destined to the north-east will turn right at Victoria Street traffic signals as the Elizabeth Street intersection with Lake Road only permits left-in/left-out movements.
- 50% of the vehicle movements originating from the south-west region will turn right into Mary Street whereas the remaining will turn right into Victoria Street. Vehicle movements destined to the south-west region are anticipated to use both Mary Street and Victoria Street equally.

5.3 Traffic Impact

Figure 13 presents the AM and PM peak hour traffic volumes, including development traffic, at Victoria Street / Montgomery Street intersection and Victoria Street / Robert Street intersection once the school commences operation in 2019.

Figure 13: Future AM and PM Traffic Volumes (including development traffic)

Table 3 presents the AM and PM peak hour two-way midblock traffic volumes on the local road network derived from Figure 13.

Table 3: Future Two-way Mid-block Traffic Volumes on Local Road Network

Street Section	Two-way Mid-block Traffic Volume (Vehicles/Hour)	
	AM Peak Hour	PM Peak Hour
James Street	65	52
Victoria Street (north of Montgomery Street)	52	48
Montgomery Street (west of Victoria Street)	56	38
Montgomery Street (east of Victoria Street)	45	30
Victoria Street (north of Robert Street)	77	89
Robert Street (west of Victoria Street)	37	40
Robert Street (east of Victoria Street)	48	69

An important consideration in assessing the impact of a development proposal on the road network is to ascertain the effect on traffic efficiency, with an aim to maintain the existing level of service. The level of service is a qualitative assessment and is used as a performance standard. Table 4.3 and Table 4.4 of the RMS Guide to Traffic Generating Developments provide guidance on mid-block capacities for urban roads and likely levels of service. These tables have been reproduced in Table 4

and Table 5 to ascertain existing road network capacity and assess the likely impact of the proposed development.

Table 4: Typical mid-block capacities for urban roads with interrupted flow

Type of Road	One-Way Mid-block Lane Capacity (PCU/Hour)	
Median or inner lane	Divided Road	1,000
	Undivided Road	900
Outer or kerb lane	With Adjacent Parking Lane	900
	Clearway Conditions	900
	Occasional Parked Cars	600
4 lane undivided	Occasional Parked Cars	1,500
	Clearway Conditions	1,800
4 lane divided	Clearway Conditions	1,900

Source: Table 4.3 of RMS Guide to Traffic Generating Developments

Common vehicle types are assigned a conversion factor so that an equivalent Passenger Car Unit (PCU) can be determined. A Passenger Car is allocated PCU of '1'. All local streets surrounding the subject site are two-way two-lane streets and witness occasional parked cars on both sides. Based on the above table, all local streets in proximity of the site have a capacity to accommodate 600 vehicles per hour in each direction i.e. 1,200 vehicles per hour in both directions.

Table 5: Urban road peak hour flows per direction

Level of Service	One Lane (Vehicles/Hour)	Two Lanes (Vehicles/Hour)
A	200	900
B	380	1,400
C	600	1,800
D	900	2,200
E	1,400	2,800

Source: Table 4.4 of RMS Guide to Traffic Generating Developments

The desirable level of service on an urban road is generally considered to be a Level of Service (LoS) 'C'. Based on Table 3 and Table 5, all local streets in proximity of the site will continue to operate at LoS 'A' post development.

Traffic on Victoria Street approach at Lake Road traffic signals experienced approximately 30 – 40 seconds delay as per site observations during the traffic survey. This indicates that the Victoria Street approach operates at LoS 'C' as per Table 4.2 of RMS Guide to Traffic Generating Developments. LoS 'C' for the Victoria Street approach is considered acceptable given that Lake Road is a State Road and the traffic on it is prioritised through the intersection.

The surrounding local road network is operating within its technical capacity and can cater for the additional traffic generated by the proposed development. The additional development traffic is not anticipated to compromise the safety or function of the surrounding local road network.

5.4 Pedestrian and Road Safety

This section provides an assessment of road and pedestrian safety adjacent to the proposed development and the details of required road safety measures (if any) and personal safety in line with Crime Prevention Through Environmental Design (CPTED).

As discussed earlier, it is estimated that 16 students will be dropped-off/picked-up by parents in vehicles at the proposed school. The site's car park has the capacity to accommodate 16 vehicles, including one disabled space. All nine staff, if arriving by vehicles, will use the car park to park their vehicles. This will still leave seven vacant spaces for the use of visitors and parents. It is therefore anticipated that drop-off/pick-up of students will occur in the car park and will not pose any detrimental impact on road safety.

The northern side of James Street, between the site's two driveways, is approximately 25 metres and can accommodate up to four vehicles. These spaces are considered sufficient to accommodate any spill-over parking or drop-off/pickup activity associated with the school without affecting amenity of nearby residents.

If any traffic and parking issues are observed on James Street once the school becomes operational, consideration could be given to implement School Drop-off/Pick-up Zone (No Parking, 8:00am – 9:30am / 2:30pm – 4:00pm School Days) fronting the site to encourage parking turnover. These restrictions are required to be approved by LMCC's local traffic committee.

The school will cater for Year 10 – 12 students and will be operational between 8:00am and 4:00pm during daylight hours. The subject site, and the adjoining residential frontages, is considered to provide appropriate passive surveillance for students walking to/from bus stops and the railway station. Passive surveillance is also maintained on Lake Road since it has numerous mixed use developments and regular traffic movements.

There are no footpaths on the surrounding local road network, except for the short section on the eastern side of Victoria Street between Robert Street and Lake Road. However, the local streets have wide verges (3-5 metres) which can be used by pedestrians. It is generally accepted that children until at least the age of 10 years need assistance in dealing with the traffic environment as they are not physically or developmentally equipped to make the crucial decisions to keep them safe. The school is proposed to cater Year 10 – 12 students who would be at least 15 years old and are anticipated to be capable of dealing with the traffic environment without parental supervision to/from the bus stops and railway station located on Lake Road. The lack of footpaths on local road network and State road (Lake Road) is an existing deficiency.

It is considered that road and pedestrian safety will not be adversely affected by the proposed change of land use and therefore no improvement measures on local road network are required in line with CPTED.

5.5 Construction Traffic Impact

The proposal involves the change of use of existing site from gymnasium into a school. The school is proposed to operate from existing building and car park. Therefore, it is anticipated that construction traffic associated with the proposal will be minimal and limited to facilitate minor internal alterations and refurbishments.

It is anticipated that construction vehicles, no longer than a 12.5 metre standard rigid truck, will access the subject site using a direct travel route from Lake Road and Victoria Street to reach James Street. The contractor will be responsible to monitor construction traffic movements and parking impact on the local road network to minimise impact on residents.

LMCC may require submission of a Construction Traffic Management Plan (CTMP) prior to the commencement of work on the subject site.

Chapter 6. Conclusion

- Existing two-way mid-block traffic volumes on the surrounding local road network are within the technical capacity thresholds recommended in the RMS Guide to Traffic Generating Developments.
- It is estimated that a total of 25 inbound trips and 16 outbound trips will be generated by the school in AM peak hour. Similarly, 16 inbound trips and 25 outbound trips will be generated in PM peak hour.
- There is adequate capacity in the surrounding road network to cater for the traffic generated by the proposed change of land use and therefore it is considered that no infrastructure upgrades are required.
- The site proposes 16 off-street parking spaces, including one disabled parking space, which exceeds the DCP requirements by eight spaces. The proposed development is not anticipated to adversely impact existing parking conditions in the vicinity of the site.
- The DCP does not require provision of motorbike or bicycle parking. It is however recommended that a Class 'C' bicycle parking facility with a capacity to accommodate at least two bicycles is provided to encourage the use of sustainable transport.
- The off-street car park generally complies with the requirements of Australian Standard AS2890, subject to the adoption of recommended measures.
- The proposed servicing arrangements for the development are considered satisfactory.
- The surrounding local road network will continue to operate at LoS 'A' post development. The additional development traffic is not anticipated to compromise the safety or function of the surrounding local road network.
- The proposal use will generate additional pedestrian movements on the local road network. The lack of footpaths on local road network and State road (Lake Road) is an existing deficiency and it is considered that there is no nexus for provision of any new pedestrian infrastructure at the cost of the school.
- The proposal will generate additional patronage, albeit minor, on the existing public transport services (buses and trains). However, the quantum of additional demand does not warrant any changes to the existing public transport service or infrastructure.
- It is considered that road and pedestrian safety will not be adversely affected by the proposal and therefore no improvement measures on local road network are required in line with CPTED.

Appendix A

SURVEY RESULTS

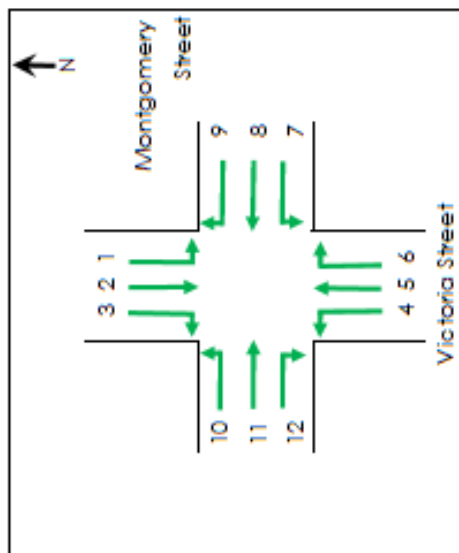
TRAFFIC SURVEY

LOCATION: Victoria Street / Montgomery Street, Argenton

DAY / DATE: Wednesday, 1 May 2019

PERIOD: 8:00am - 9:30am

WEATHER: Fine



TIME	1	2	3	4	5	6	7	8	9	10	11	12
8:00	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	1	4	1	1	1	1	2	1	0	1	2
8:30	0	1	0	0	3	0	1	2	0	0	3	0
8:45	0	1	1	0	0	0	1	6	2	2	1	1
9:00	0	4	3	0	4	0	0	6	1	0	3	1
9:15	0	2	2	1	1	0	1	5	0	0	7	2
9:30	0	3	0	1	0	0	0	0	0	1	1	1

PEAK HOUR

TIME	1	2	3	4	5	6	7	8	9	10	11	12	Total
8:00-9:00	0	7	8	1	8	1	3	16	4	2	8	4	62
8:15-9:15	0	8	6	1	8	0	3	19	3	2	14	4	68
8:30-9:30	0	10	6	2	5	0	2	17	3	3	12	5	65

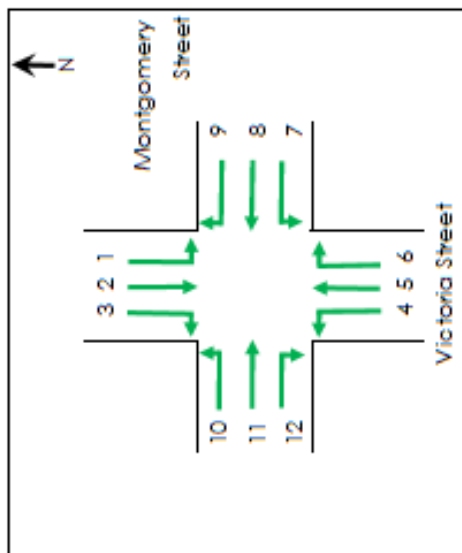
TRAFFIC SURVEY

LOCATION: Victoria Street / Montgomery Street, Argenton

DAY / DATE: Wednesday, 1 May 2019

PERIOD: 2:30pm - 4:00pm

WEATHER: Fine



TIME	1	2	3	4	5	6	7	8	9	10	11	12
2:30	0	0	0	0	0	0	0	0	0	0	0	0
2:45	1	1	1	0	2	1	1	2	0	3	2	0
3:00	0	0	2	0	2	0	0	7	2	0	0	0
3:15	0	0	1	0	0	1	1	3	0	3	3	0
3:30	0	1	0	0	0	0	0	0	2	0	0	1
3:45	2	0	0	0	0	1	1	2	4	0	0	0
4:00	3	1	0	0	2	0	0	1	1	1	1	0

PEAK HOUR

TIME	1	2	3	4	5	6	7	8	9	10	11	12	Total
2:30-3:30	1	2	4	0	4	2	2	12	4	6	5	1	43
2:45-3:45	2	1	3	0	2	2	2	12	8	3	3	1	39
3:00-4:00	5	2	1	0	2	2	2	6	7	4	4	1	36

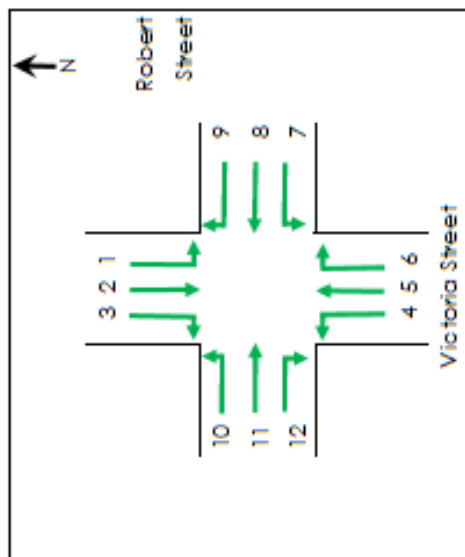
TRAFFIC SURVEY

LOCATION: Victoria Street / Robert Street, Argenton

DAY / DATE: Wednesday, 1 May 2019

PERIOD: 8:00am - 9:30am

WEATHER: Fine



TIME	1	2	3	4	5	6	7	8	9	10	11	12
8:00	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	1	1	2	1	2	3	2	0
8:30	0	0	0	0	5	0	1	1	0	1	4	0
8:45	3	2	0	0	0	0	0	5	2	1	2	0
9:00	2	8	0	0	4	0	0	4	3	5	3	0
9:15	3	1	1	0	1	0	1	2	3	2	4	0
9:30	3	4	1	0	0	0	0	2	1	0	5	0

PEAK HOUR

TIME	1	2	3	4	5	6	7	8	9	10	11	12	Total
8:00-9:00	5	10	0	0	10	1	3	11	7	10	11	0	68
8:15-9:15	8	11	1	0	13	0	2	12	8	9	13	0	77
8:30-9:30	11	15	2	0	5	0	1	13	9	8	14	0	78

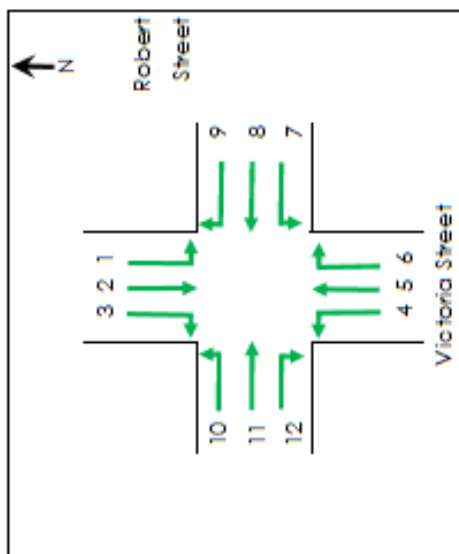
TRAFFIC SURVEY

LOCATION: Victoria Street / Robert Street, Argenton

DAY / DATE: Wednesday, 1 May 2019

PERIOD: 2:30pm - 4:00pm

WEATHER: Fine



TIME	1	2	3	4	5	6	7	8	9	10	11	12
2:30	0	0	0	0	0	0	0	0	0	0	0	0
2:45	1	2	1	0	5	0	0	1	5	2	0	1
3:00	3	1	0	0	4	0	1	9	4	2	2	0
3:15	0	1	0	0	3	0	0	2	7	2	8	0
3:30	2	1	1	0	2	0	0	1	5	1	4	0
3:45	5	2	2	0	3	1	0	1	10	1	4	0
4:00	2	3	1	1	2	0	0	3	7	1	3	0

PEAK HOUR

TIME	1	2	3	4	5	6	7	8	9	10	11	12	Total
2:30-3:30	6	5	2	0	14	0	1	13	21	7	14	1	84
2:45-3:45	10	5	3	0	12	1	1	13	26	6	18	0	95
3:00-4:00	9	7	4	1	10	1	0	7	29	5	19	0	92

Appendix B

SITE PLANS

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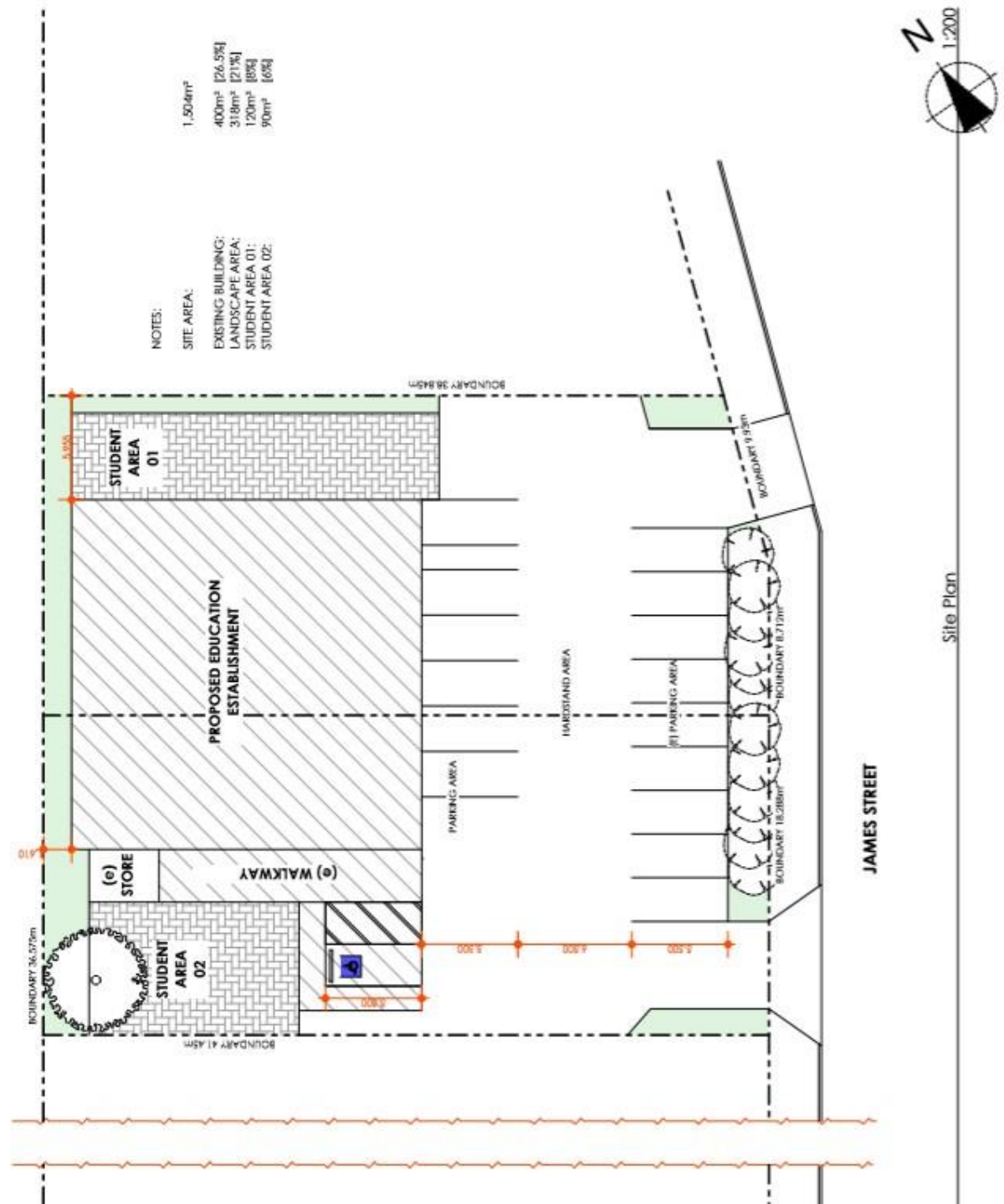
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P. JAMES S. STEWART, ASSISTANT VICE PRESIDENT

Client: UNDATED PLANNING		Sheet: A-01
From: By: [Signature]	Date: 1/20/2018	Project No: C
To: [Signature]		Project No: 2018-100
DATE PLAN		



Site Plan

