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Traffic Impact Assessment

Appendix H

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Invermay – Combined rezoning and planning permit

Traffic Impact Assessment

Prepared for

LPD Developments Pty Ltd

Client representative

Rowan Larissey

Date

10 March 2023

Rev01

Table of Contents

List of figures

List of tables

Appendices

Appendix A — Site Plans
Appendix B — Swept Paths
Appendix C — SIDRA Traffic Modelling Results – Existing
Appendix D — SIDRA Traffic Modelling Results – Post Development 2023
Appendix E — SIDRA Traffic Modelling Results – 10-Year Post Development 2033

Prepared by — Leenah Ali-Lavroff		**Date —** 10 March 2023
Reviewed by — Leenah Ali-Lavroff		**Date —** 10 March 2023
Authorised by — Doug Fotheringham		**Date —** 10 March 2023

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00	Traffic Impact Assessment	LL	LA	DJF	23/01/2023
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1. Introduction

1.1 Project Background

LPD Developments Pty Ltd (LPD) are proposing a combined amendment to the Local Provisions Schedule (LPS) of the Tasmanian Planning Scheme – Launceston (the planning scheme), and a planning permit application for a proposed light industrial development.. The proposal is to:

- Rezone the following land from General Residential Zone to Light Industrial Zone:
    - Southern portion of 69A Mayne Street, Invermay
    - 26 and 28 Montagu Street, Invermay
    - 14, 16 & 18 Howard Street, Invermay
- Rezone the northern portion of 30 Montagu Street from Light Industrial to General Residential; and
- Seek a planning permit for a light industrial development (with the Storage land use) on 14, 16 & 18 Howard Street, 26, 28 & 30 Montagu Street and 69A Mayne Street.

An overview of the proposal is shown in Figure 1. The proposed plans are included in Appendix A.

The rezoning proposal is combined with a planning permit application for a proposed new light industrial development. As shown in Figure 1, this development will be located in the existing and the proposed Light Industrial Zone. The proposed land use is Storage, and this proposal must comply with the applicable parking and traffic requirements of the Planning Scheme. The proposed light industrial development site is assessed in Sections 2, 3, 4 and 5. Section 5 of this report demonstrates the light industrial development complies with these requirements and because of this, Section 7 demonstrates that the proposed rezoning to Light Industrial meets the requirements of the Northern Regional Land Use Strategy (NRLUS).

The overview plan in Figure 1 demonstrates that 1½ 'potential dwelling' footprints are on the land to be rezoned to General Residential, along with another potential 3½ 'potential dwellings' on the adjoining property to the south, all of these potential dwellings are part of a future staged development accessed from Mayne Street and are not proposed as part of the rezoning or permit application. The purpose of showing the potential dwellings is to demonstrate that it is feasible for residential development to be staged and consolidated from the Mayne Street access point. This potential residential development is assessed in Sections 6 and 7 below, to help demonstrate that proposed rezoning to General Residential meets the requirements of the NRLUS.

Figure 1: Overview of the proposal

1.2 Traffic Impact Assessment (TIA) Scope

LPD Developments Pty Ltd has engaged pitt&sherry to prepare a Traffic Impact Assessment that is to be included with the planning report for the combined rezoning and planning permit application.

This report has been prepared with reference to the Department of State Growth (State Growth)'s Publication *Traffic Impact Assessments (TIA) Guidelines* and the Planning Scheme.

2. Existing Conditions

This section explains the existing conditions of the site for the proposed light industrial development.

2.1 Site Location

The site for the proposed light industrial development, is located on the north-eastern corner of Montagu Street/ Howard Street intersection and encompasses the following properties:

- 14, 16 and 18 Howard Street
- 26, 28 and 30 Montagu Street; and
- 69A Mayne Street.

Under the current Planning Scheme, the above properties have land use classification of General Residential except for 30 Montagu Street which has land use classification of Light Industrial.

The proposed land use classification for the light industrial development is 'Storage'. The site is also surrounded by General Residential and Light Industrial zones.

Figure 2 shows the site location in the local context and Figure 3 shows the current zoning in the vicinity of the site.

Figure 2: Site location (basemap: site plans provided by LPD Developments Pty Ltd)

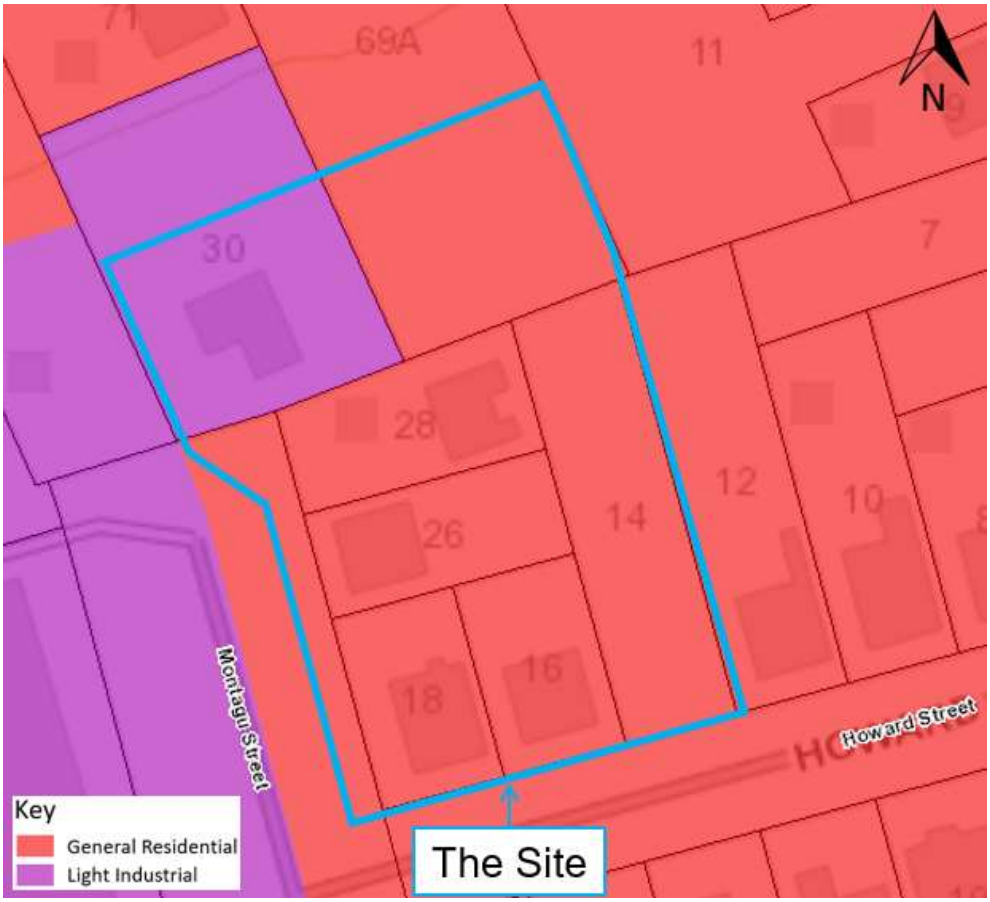


Figure 3: Applicable Planning Zones – Current (source: LISTmap)

2.2 Existing Operation

There are residential houses and sheds located in the following properties:

- 14, 16 and 18 Howard Street; and
- 28, 28 and 30 Montagu Street.

69A Mayne Street is currently a vacant land.

It is understood that the residential houses and sheds within the site will be demolished as part of the proposed development.

2.3 Surrounding Road Network

2.3.1 Montagu Street

Montagu Street is owned by City of Launceston (Council) and is classified as a Local Road[1]. Montagu Street runs in a north-south direction and is configured with one lane in each direction. Montagu Street is subject to the Tasmanian urban road default speed limit of 50 km/h. Montagu Street carries approximately 3,560[2] vehicles per day.

[1] Road hierarchy sourced from theLIST map "Road Centreline" layer.

[2] Daily vehicle volume calculated using traffic data collected in September 2022 and assuming a peak to daily ratio of 10%.

2.3.2 Howard Street

Howard Street is owned by Council and is classified as a Local Road[3]. Howard Street runs in an east-west direction and is configured with one lane in each direction. Howard Street is subject to the Tasmanian urban road default speed limit of 50 km/h.

2.3.3 Mayne Street

Mayne Street is owned by Council and is classified as a Local Road[4]. Mayne Street runs in an east-west direction and is configured with one lane in each direction. Mayne Street is subject to the Tasmanian urban road default speed limit of 50 km/h.

2.3.4 Goderich Street

Goderich Street is a State Growth owned National/State Highway[5].Goderich Street connects the East Tamar Highway with Lower Charles Street along the eastern side of the River Tamar. It runs in a north-south direction and is predominantly configured with two lanes in each direction. Goderich Street has a posted speed limit of 80km/h.

An Annual Average Daily Traffic (AADT) of approximately 28,500[6] vehicles a day with 7.5% proportion of heavy vehicles was record in 2019 at approximately 650m from the site.

2.4 Surrounding Intersections

The following intersections are located in the vicinity of the site:

- Montagu Street/ Howard Street 3-leg give-way intersection
- Montagu Street/ Moore Street 3-leg give-way intersection
- Montagu Street/ Darwin Street 3-leg give-way intersection; and
- Montagu Street/ Forster Street 4-leg roundabout.

2.5 Site Access

The properties within the site are currently accessed via the following streets:

- 14 and 16 Howard Street accessed via Howard Street
- 18 Howard Street accessed via both Howard Street and Mayne Street
- 26, 28 and 30 Montagu Street accessed via Montagu Street; and
- 69A Mayne Street accessed via Mayne Street.

[3] Road hierarchy sourced from theLIST map “Road Centreline” layer.
[4] Road hierarchy sourced from theLIST map “Road Centreline” layer.
[5] Road hierarchy sourced from theLIST map “Road Centreline” layer.
[6] Data sourced from State Growth’s traffic data website at counter station A0265100

2.6 Traffic Volumes

2.6.1 Traffic Data

Based on available traffic data Council collected in 2014 along Forster Street in the vicinity of the site, Council have provided AM and PM peak hours as follows:

- AM peak hour 8:00am to 9:00am; and
- PM peak hour 4:30pm to 5:30pm.

2.6.2 Traffic Volumes

Based on the provided peak hours, pitt&sherry staff undertook a traffic count at the Montagu Street/ Forster Street roundabout on Thursday, 1 September 2022.

Traffic data collected on 1 September 2022 has been adopted to represent traffic volumes in 2023 due to the following considerations:

- It is school holiday at the time of preparation of this report (January 2023), traffic data at this time is considered unsuitable to reflect worst-case traffic conditions in the surroundings of the site; and
- It is considered that the 2023 traffic volumes in the vicinity of the site have minimal difference than the traffic data collected on 1 September 2022.

The existing AM and PM peak hours traffic volumes at the Montagu Street/ Forster Street roundabout are shown below in Figure 4 and Figure 5.

It is noted that traffic counts have been completed at the Montagu Street/ Forster Street roundabout as the majority of traffic generated by the proposed development is expected to enter and exit the site via Montagu Street, travelling through the Montagu Street/ Forster Street roundabout.

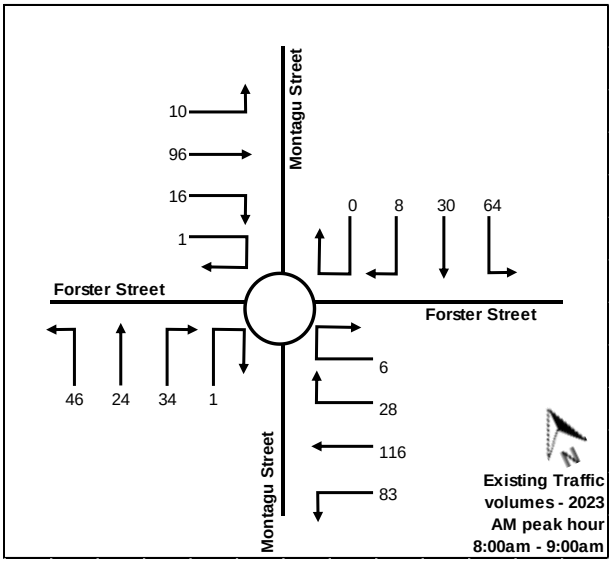


Figure 4: Existing traffic volumes – Existing AM peak hour

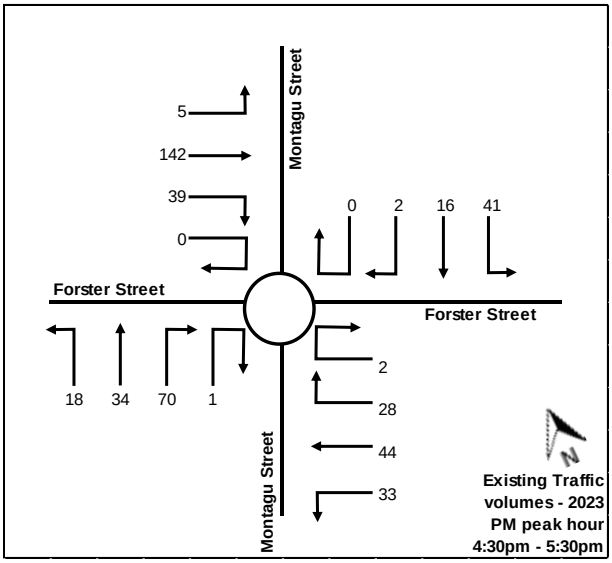


Figure 5: Existing traffic volumes – Existing PM peak hour

2.7 Existing Intersection Performance

2.7.1 Traffic Modelling Software

The operation of the Montagu Street/ Forster Street roundabout has been modelled using SIDRA Intersection 9.0 traffic modelling software. SIDRA Intersection rates the performance of the intersections based on the vehicle delay and the corresponding Level of Service (LOS). It is generally accepted that LOS D or better is an acceptable level of operation. Table 1 shows the criteria that SIDRA Intersection adopts in assessing the LOS.

Table 1: SIDRA Intersection Level of Service (LOS) criteria

LOS	Delay per Vehicle (secs)		
	Signals	**Roundabout**	**Sign Control**
A	10 or less	10 or less	10 or less
B	10 to 20	10 to 20	10 to 15
C	20 to 35	20 to 35	15 to 25
D	35 to 55	35 to 50	25 to 35
E	55 to 80	50 to 70	35 to 50
F	Greater than 80	Greater than 70	Greater than 50

2.7.2 Intersection Layouts

The geometry of the Montagu Street/ Forster Street roundabout used for the SIDRA Intersection 9.0 traffic model was developed with reference to aerial photography obtained for theLIST. The aerial photography informed the width and length of the trafficable lanes and the speed limits.

The geometry of the roundabout used in the model is shown below in Figure 6.

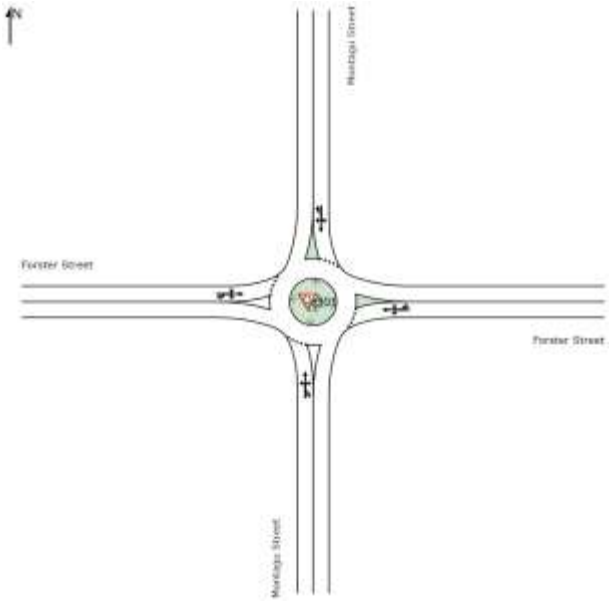


Figure 6: Geometric layout – Montagu Street/ Forster Street roundabout

2.7.3 Traffic Modelling Results

A summary of the traffic modelling results at the roundabout is shown in Table 2. Full results are presented in Appendix C.

Table 2: Existing operation - traffic modelling results

Peak Hour	Leg	Degree of Saturation	Average delay (secs)	95% Back of Queue (m)	Level of Service
AM	South: Montagu Street	0.10	7	4	A
	East: Forster Street	0.18	5	7	A
	North: Montagu Street	0.10	6	3	A
	West: Forster Street	0.11	6	4	A
	All Vehicles	***0.18***	***6***	***7***	***A***
PM	South: Montagu Street	0.10	7	4	A
	East: Forster Street	0.09	6	3	A
	North: Montagu Street	0.06	6	2	A
	West: Forster Street	0.17	6	7	A
	All Vehicles	***0.17***	***6***	***7***	***A***

Based on the results presented in Table 2, the modelled roundabout currently operates well with minimal queues and delays experienced on all approaches during both the AM and PM peak hour. The modelled results align with observations made on site.

2.8 Parking

It was observed that during the site visit on 1 September 2022 that the properties within the site generally have 1-2 parking spaces at each property. In the vicinity of the site, there was one car parked on the roadside along Montagu Street.

2.9 Road Safety

2.9.1 Crash History

State Growth have provided crash data for the most recent 10-year period in the vicinity of the site. The crash history shows that one crash was recorded in the vicinity of the site over the most recent 10-year period and the crash resulted in property damage only. Figure 7 below shows the crash location.

Figure 7: Crash history map

2.10 Public Transport

There are three bus stops located in the vicinity of the site. The following bus routes operate through all three bus stops:

- Route No. 110, 115-117, 770-772 operated by Metro Tasmania (Metro); and
- Route No. 775-777 operated by Redlines.

Figure 8 shows the locations of the bus stops in the local context.

Figure 8: Bus Stops location

2.11 Pedestrian and Cycling Infrastructure

Montagu Street is configured with pedestrian footpaths on one side of the road. Mayne Street and Howard Street is configured with pedestrian footpaths on both sides of the road.

No on-road cycling facilities are available within the road network in the vicinity of the site. It is noted that cyclists in Tasmania are allowed to ride on footpaths.

3. Proposed Development

This section describes the proposed light industrial development.

3.1 Overview

LPD propose to develop a light industrial development for storage/warehouse purposes at Montagu Street, Invermay. The development will include the following:

- A light industrial development that consists of 5 tenancies. Each tenancy has an area of 451.75m^2, resulting in a total gross floor area of 2,258.75m^2 for the facility. The total site area for the facility is 3,842m^2
- 15 45-degree general parking spaces and 1 90-degree Disability Discrimination Act (DDA) accessible parking space
- A sealed, one-way vehicle circulation roadway on the northern and eastern sides of the light industrial development; and
- A two-way parking aisle on the western side of the light industrial development.

An overview of the proposed development plan is shown below in Figure 9. Detailed plans are included in Appendix A.

Figure 9: Proposed development plan

3.2 Proposed Development Operation

As mentioned, the proposed development will be a light industrial development for storage/warehouse purposes. It will provide 5 tenancies. It is understood that each tenancy will be equipped with a roller door such that the loading and unloading of goods can occur from each tenancy.

It is understood that each tenancy will have less than or equal to three employees when they become operational.

3.3 Vehicular Access

Circulation Roadway

A one-way circulation roadway is proposed to be located on the eastern and northern side of the facility, allowing small vehicles to enter the facility via Howard Street and exit via Montagu Street. The width of the circulation roadway varies with the narrowest section having a width of 3.7m.

A two-way parking aisle will be located on the western side of the facility and will cater for both medium rigid vehicles and small vehicles manoeuvre within the site.

Site Access

Each tenancy in the light industrial development light industrial development will have a 6m-wide roller door for vehicle access and two smaller doors for pedestrian access. One of the smaller doors and the 6m-wide roller door will be accessed via Montagu Street and the two-way parking aisle, the other smaller door will be accessed via the circulation roadway located on the eastern side of the facility.

3.4 Parking

Based on the plans, it is proposed to locate the car park on the eastern and western sides of the light industrial development. 20 car parking spaces including 1 DDA accessible car parking space is proposed.

3.5 Deliveries and Rubbish Collection

The largest vehicles expected to make deliveries to and from the site are expected to be 12.5m heavy rigid vehicles (HRVs). It is envisaged that all commercial vehicle deliveries will occur directly within each tenancy.

The rubbish collection truck is expected to be similar to or smaller than a medium rigid vehicle (MRV) which is 8.8m long and 2.5m wide. It is understood that the rubbish collection will occur either within the tenancies or kerbside.

3.6 Pedestrian Paths

It is proposed to locate a 1.2m wide pedestrian path along the eastern side of the light industrial development. This will be separated from the vehicular area and will directly connect the eastern side car park with the light industrial development. Vehicle wheel stops will be used to eliminate vehicles encroaching onto the pedestrian path.

The footpath along Montagu Street on the western side of the light industrial development is owned and maintained by Council and will remain available.

Figure 10 show the locations of the propped pedestrian path on site and Council's footpaths.

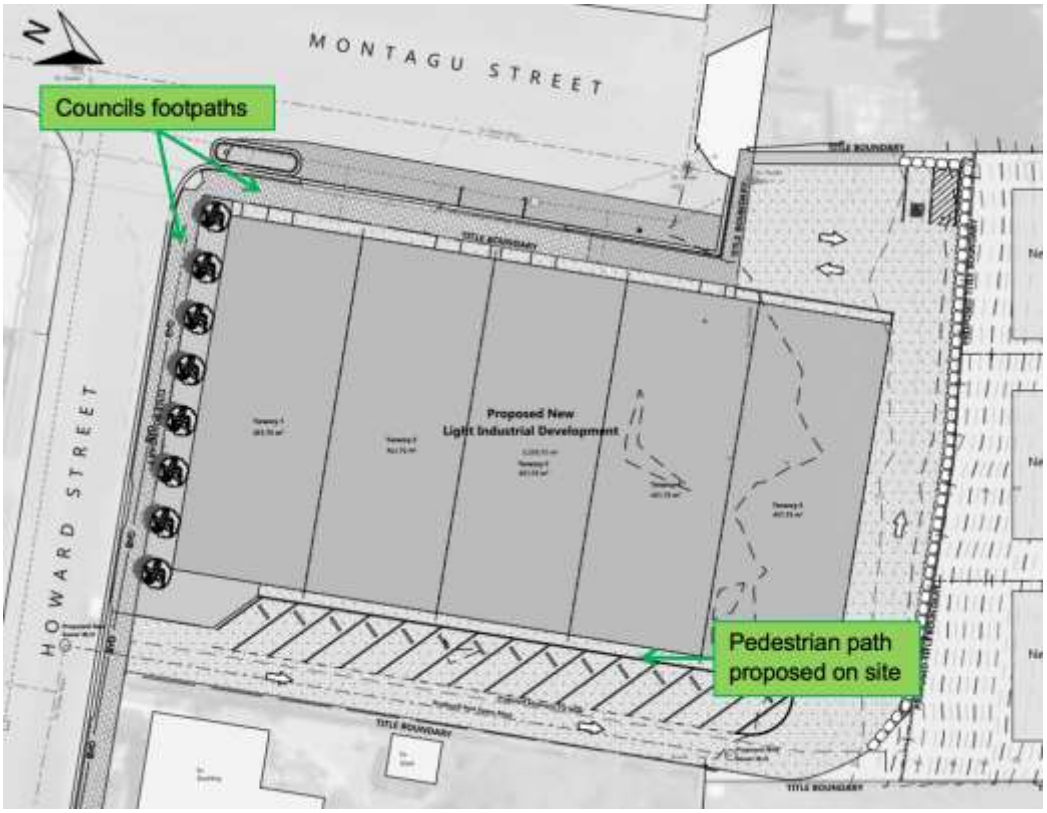


Figure 10: Pedestrian paths locations

4. Transport Assessment

This section provides a transport assessment for the proposed light industrial development.

4.1 Traffic Impact Assessment

4.1.1 Traffic Generation

The NSW Roads and Maritime Services publication *Guide to Traffic Generating Developments 2002* (RMS Guide) defines "Warehouse" as "*a building or place used for the storage of goods, merchandise or materials pending their sale and distribution to persons engaged in the retail trade*". Based on this, the proposed development that will be used for storage facility has been assessed using traffic generation rates for the land use warehouse.

The RMS Guide specifies the following generation rates for warehouses:

- Daily 4 per 100m^2 gross floor area; and
- AM and PM Peak Hour 0.5 per 100m^2 gross floor area.

Based on the above rates and a gross floor area of 2258.75m^2 for the proposed warehouse, the traffic generation during the AM and PM peak hours, as well as daily, is expected to be as follows:

- Daily 91 vehicle movements; and
- AM and PM Peak Hour 12 vehicle movements.

The directional split of the traffic (i.e. ratio between inbound and outbound movements) that has been adopted for the development was determined from the *ITE Trip Generation Manual* for the land use *warehousing*. The adopted directional split is as follows:

- AM Peak Hour 70% in/ 30% out; and
- PM Peak Hour 35% in/ 65% out.

4.1.2 Traffic Distribution and Assignment

The majority of traffic generated by the proposed development is expected to enter and exit the site via Montagu Street, travelling through the Montagu Street/ Forster Street roundabout. Traffic generated by the site is based on a number of factors including:

- The location of major distribution roads around the site
- The location of traffic generating developments; and
- Existing traffic patterns.

Based on the above, the expected distribution to and from the site is shown in Figure 11. The expected assignments for AM and PM peak hours are shown in Figure 12 and Figure 13 respectively.

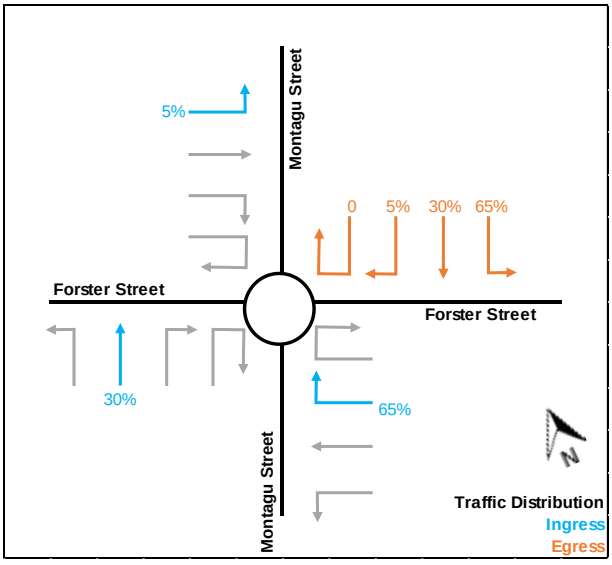


Figure 11: Traffic distribution

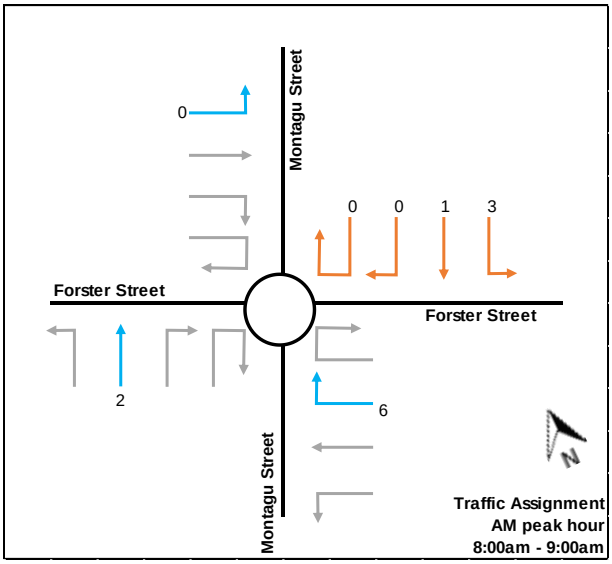


Figure 12: Traffic assignment – AM peak hour

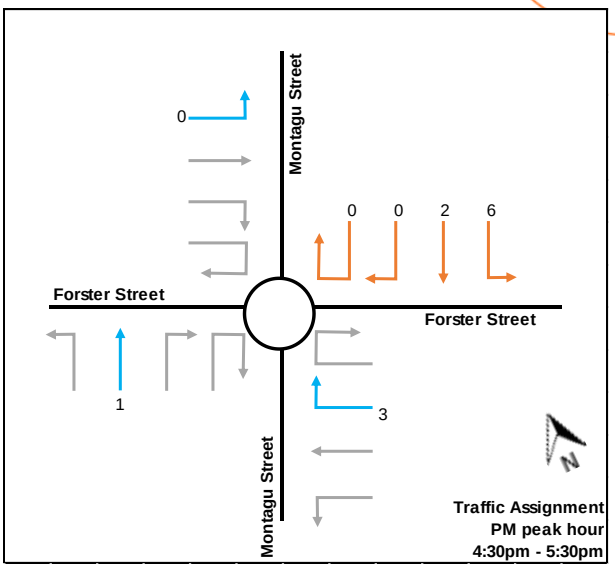


Figure 13: Traffic assignment – PM peak hour

4.1.3 Traffic Impact – Post Development 2023

Traffic volume

The traffic volumes of the facility on the Montagu Street/ Forster Street roundabout have been estimated for the immediate post development scenario. The expected post development traffic volumes for the weekday AM and PM peak hours are shown in Figure 14 and Figure 15.

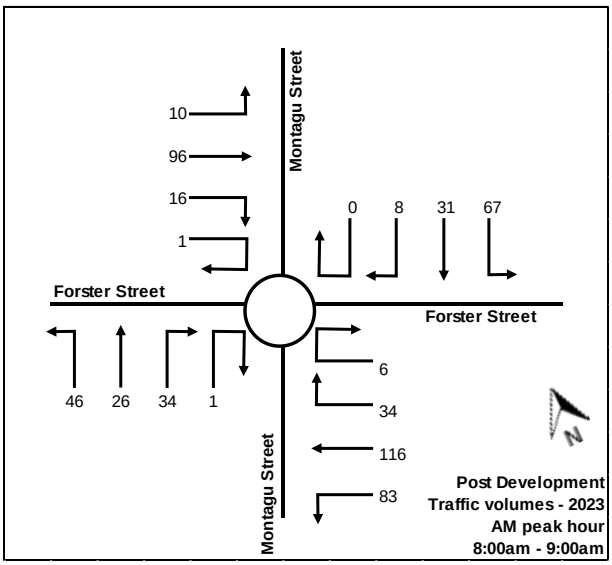


Figure 14: Post development traffic volumes – AM peak hour

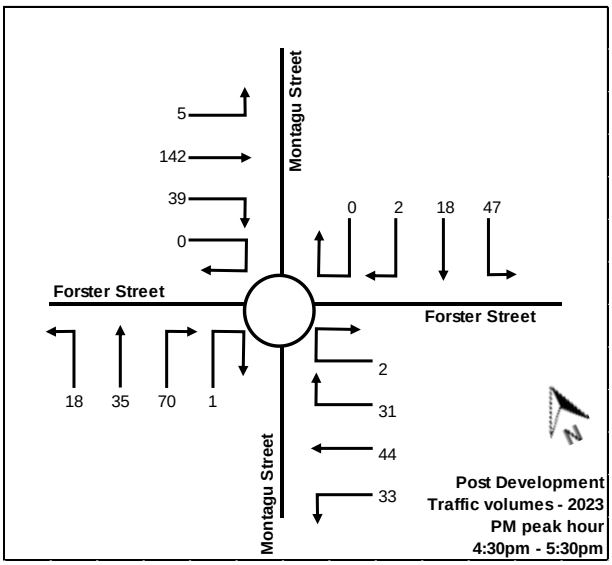


Figure 15: Post development traffic volumes – PM peak hour

Traffic Impacts

A summary of the traffic modelling results for the immediate post development scenario (2023) is provided in Table 3. Full results are presented in Appendix D.

Table 3: Post development operation – traffic modelling results

Peak Hour	Leg	Degree of Saturation	Average delay (secs)	95% Back of Queue (m)	Level of Service
AM	South: Montagu Street	0.10	7	4	A
	East: Forster Street	0.19	6	8	A
	North: Montagu Street	0.10	6	4	A
	West: Forster Street	0.11	6	4	A
	All Vehicles	***0.19***	***6***	***8***	***A***
PM	South: Montagu Street	0.11	7	4	A
	East: Forster Street	0.09	6	3	A
	North: Montagu Street	0.07	6	3	A
	West: Forster Street	0.17	6	7	A
	All Vehicles	***0.17***	***6***	***7***	***A***

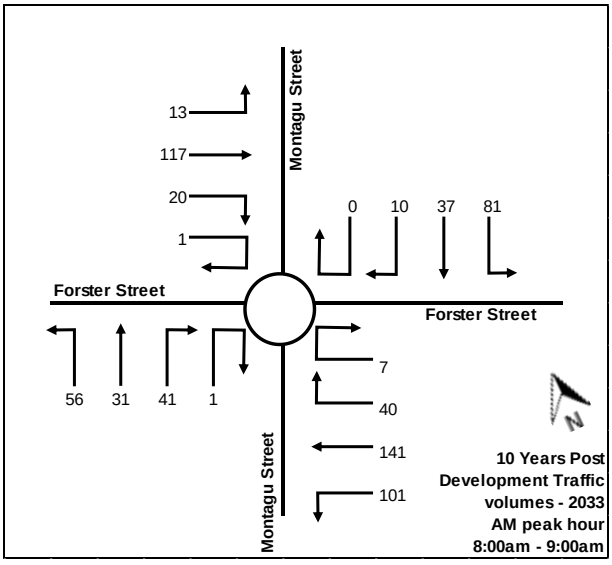
Based on the results presented in Table 3, the modelled roundabout is expected to continue to operate well post development with minimal queues and delays experienced on all approaches.

4.1.1 Traffic Impact – 10 Years Post Development 2033

Traffic volume

The traffic volumes of the facility on the Montagu Street/ Forster Street roundabout have been estimated for the year 2033. Based on State Growth's historical traffic data collected in the vicinity of the site, a 2% compounding growth rate has been applied to the existing traffic volumes to calculate 2033 traffic volumes.

It is noted that the traffic volumes from the light industrial development have not been increased beyond 2023 as the number of vehicle movements generated by the light industrial development is not expected to increase. The expected 10-years post development traffic volumes for the weekday AM and PM peak hours are shown in Figure 16 and Figure 17.



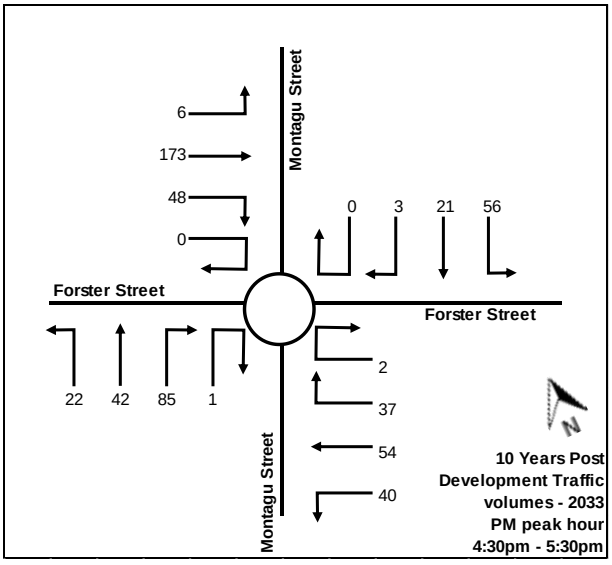


Figure 16: 10 years post development traffic volumes – AM peak hour

Figure 17: 10 years post development traffic volumes – PM peak hour

Traffic Impacts

A summary of the traffic modelling results for the 10-year post development scenario (2033) is provided in Table 4. Full results are presented in Appendix E.

Table 4: 10 years post development operation – traffic modelling results

Peak Hour	Leg	Degree of Saturation	Average Delay (secs)	95% Back of Queue (m)	Level of Service
AM	South: Montagu Street	0.12	7	5	A
	East: Forster Street	0.23	6	10	A
	North: Montagu Street	0.12	6	5	A
	West: Forster Street	0.14	6	5	A
	All Vehicles	***0.23***	***6***	***10***	***A***
PM	South: Montagu Street	0.13	7	5	A
	East: Forster Street	0.11	6	4	A
	North: Montagu Street	0.09	6	3	A
	West: Forster Street	0.21	7	9	A
	All Vehicles	***0.21***	***7***	***9***	***A***

Based on the results presented in Table 4, the modelled roundabout is expected to continue to operate well 10-year post development with minimal queues and delays experienced on all approaches.

4.1.1 Road Safety Impacts

The crash recorded in the vicinity of the site in the most recent 10 years is considered an isolated incident and does not indicate any crash patterns of concern.

The expected traffic generation of the proposed development both immediately post development and 10-years post development is not expected to increase the risk or severity of crashes in the vicinity of the site.

4.2 Site Layout Assessment

Circulation Roadway

The driveway designs have been assessed against the requirements set out in the Australian Standard *AS2890.2:2018 Parking facilities: Off-street commercial vehicle facilities* (AS 2890.2). AS 2890.2 states that "*Swept paths shall be used to check that the paths of vehicles travelling in the forward direction when negotiating access driveways and circulations roadways, can be accommodated within the proposed roadway. Swept paths shall also be used to check the movement in and out of a loading dock to establish that a sufficient apron width is provided for the vehicle swept path and manoeuvring clearances*".

As shown in Appendix B, a 12.5m HRV is able to navigate throughout the site safely and efficiently whilst maintaining relevant clearances to parking spaces and the light industrial development for each tenancy.

Site Access

As discussed, AS 2890.2 states that the site access widths shall be checked by the application of swept paths for the design vehicle.

As the largest vehicle expected to travel to and from site is expected to be 12.5m HRV's, swept paths modelling have been undertaken for 12.5m HRV's entering and exiting the site from each access point at each door of the tenancies. The swept paths are attached in Appendix B.

The swept paths show that a 12.5m HRV can safely and efficiently enter and exit the site in a forward and reverse direction.

4.3 Sight Distance Assessment

The Austroads *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* (AGRD Part 4A) specifies that "*Desirably, sight distances at accesses should comply with the sight distance requirements for intersection*".

The Safe Intersection Sight Distance (SISD) at both accesses has been assessed against the requirements of the AGRD Part 4A. The SISD was measured and recorded on site on 1 September 2022 in accordance with the Austroads Guide Part 4A.

It is noted that vehicle speed refers to the 85th percentile speed vehicles travel throughout the site, which was determined during the site visit. The speed varies from the posted speed limit due to the provision of turning movements from Howard Street.

Although there are multiple roller doors accessed from Montagu Street, sight distances at each side of the development along Montagu Street are considered the most restricted. As such, sight distances measurement has been undertaken from the two locations that are most restricted as shown in Figure 18.

The SISD requirements and the observed sight distance for location 1 and 2 are shown below Figure 18.

Figure 18: Locations of sight distances measurement taken

Table 5: Safe intersection sight distance assessment

Access location	Direction of Vehicle on Montagu Street	Speed	Sight Distance Requirement – Austroads (with desirable 2s reaction time)	Available Sight Distance	Meets Requirements
Location 1	Northbound	40km/h	73m	>250m	Yes
	Southbound	20km/h	35m	40m	Yes
Location 2	Northbound	40km/h	73m	>250m	Yes
	Eastbound(*)	10km/h	15m	20m	Yes

(*) based on vehicles coming out from other property access at the end of Montagu Street

Based on the above, the sight distance at the proposed accesses onto Montagu Street complies with the requirements of the Austroads Guide Part 4A.

4.4 Car Parking Assessment

4.4.1 Parking Provision

It is assumed that each tenancy is expected to have less than or equal to 3 employees on site. Thus, the number of car parking spaces has been assessed based on the light industrial development site area and the assumption made.

The assessment of the parking provision against the parking requirement is summarised in Table 6.

Table 6: Parking provision and requirements

Land Use	Parking Type	Planning Scheme Parking Rate	Parking Requirement	Parking Provision
Storage	General	1 space per 200m^2 or 1 space per 2 employees, whichever is greater	20	20
	Bicycle	No requirement	0	0
	Motorcycle	No requirement	0	0

As the light industrial development is proposing to provide 19 car parking spaces and 1 DDA accessible parking space, it complies with the requirements of the Planning Scheme.

It is also noted that, based on the Planning Scheme, the bicycle and motorcycle parking provisions are not applicable.

4.4.2 Parking Layout Assessment

The car parking layout has been reviewed against the Planning Scheme, the *Australian Standard AS/NZS2890.1:2004 Parking facilities: Off-Street car parking* (AS 2890.1) and the *Australian Standard AS/NZS2890.6:2009 Parking facilities: Off-street parking for people with disabilities* (AS 2890.6). In order to determine the class of parking, Table 1.1 of AS2890.1 has been reviewed. An excerpt of Table 1.1 of AS2890.1 is shown below in Figure 19.

TABLE 1.1

CLASSIFICATION OF OFF-STREET CAR PARKING FACILITIES

User class	Required door opening	Required aisle width	Examples of uses (Note 1)
1	Front door, first stop	Minimum for single manoeuvre entry and exit	Employee and commuter parking (generally, all-day parking)
1A	Front door, first stop	Three-point turn entry and exit into 90° parking spaces only, otherwise as for User Class 1	Residential, domestic and employee parking
2	Full opening, all doors	Minimum for single manoeuvre entry and exit	Long-term city and town centre parking, sports facilities, entertainment centres, hotels, motels, airport visitors (generally medium-term parking)
3	Full opening, all doors	Minimum for single manoeuvre entry and exit	Short-term city and town centre parking, parking stations, hospital and medical centres
3A	Full opening, all doors	Additional allowance above minimum single manoeuvre width to facilitate entry and exit	Short term, high turnover parking at shopping centres
4	Size requirements are specified in AS/NZS 2890.6 (Note 2)		Parking for people with disabilities

Figure 19: Table 1.1 of Australian Standard AS/NZS 2890.1:2004

As the tenancies are expected to generate medium-term visitor parking, the car park was assessed against the User Class 2 requirements of AS 2890.1.

The assessment is shown below in Table 7, noting that examples of angle parking spaces layouts from AS2890.1 for 90-degree parking and 45-degree parking are shown below in Figure 20 and Figure 21, respectively.

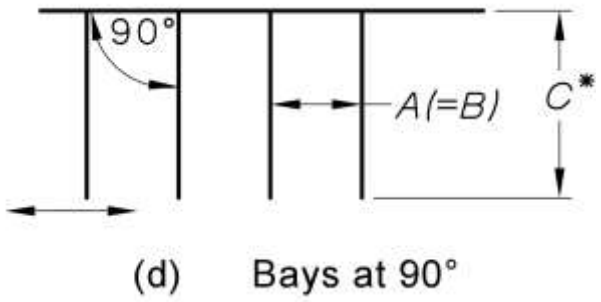


Figure 20: Excerpt of 90-degree parking spaces layout from AS2890.1 Figure 2.2

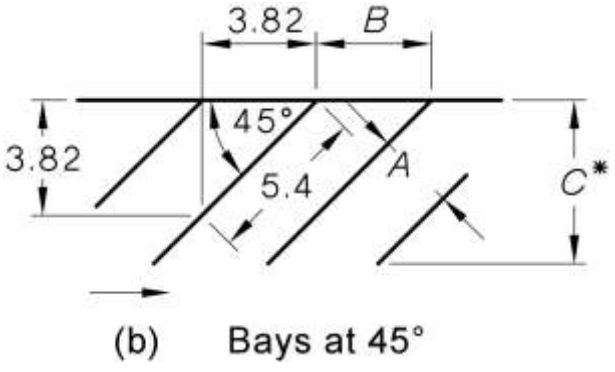


Figure 21: Excerpt of 45-degree parking spaces layout from AS2890.1 Figure 2.2

Table 7: Car parking dimensions

Car Park	Feature	Proposed	Minimum Requirement (AS 2890.1 and AS 2890.6)
User Class 2 – 45-degree parking	Parking Space Width (dimension A in Figure 21)	2.5m	2.5m
	Parking Space Length (dimension C in Figure 21)	5.6m	5.6m
	Parking Aisle Width (one-way)	4.3m (width varies with the narrowest section being 3.7m wide)	3.7m
Parallel Parking Spaces	Parking Space Width	2.4m	2.1m
	Parking Space Length	6.0m	5.9m
	Parking Space Length (obstructed)	6.2m	6.2m
	Parking Aisle Width (one-way)	4.0m	3.6m
DDA Accessible Parking – 90-degree parking	Parking Space Width (dimension A in Figure 20)	2.6m	2.4m
	Parking Space Length (dimension C in Figure 20)	5.4m	5.4m
	Shared Area (side)	2.5m wide, 5.4m long	2.4m wide, 5.4m long
	Parking Aisle Width	8.9m	5.8m

Based on the above, the proposed car parking dimensions meet the requirements of AS 2890.1 and AS 2890.6.

4.5 Deliveries and Rubbish Collection

Deliveries

The Australian Standard AS2890.2:2018 Parking facilities: Off-street commercial vehicle facilities (AS 2890.2). AS 2890.2 states that "*Swept paths shall also be used to check the movement in and out of a loading dock to establish that a sufficient apron width is provided for the vehicle swept path and manoeuvring clearances*".

The largest vehicles expected to make deliveries to and from the site are expected to be 12.5m heavy rigid vehicles (HRVs). It is envisaged that all commercial vehicle deliveries will occur directly within each tenancy.

To ensure each of the tenancies are able to operate safely and efficiently, swept paths assessment has been completed as attached in Appendix B.

Based on the swept paths assessment, it is identified that a 12.5m HRV can safely and efficiently enter and exit all tenancies in both forward and reserve direction.

Rubbish Collection

The rubbish collection truck is expected to be similar to or smaller than a medium rigid vehicle (MRV) which is 8.8m long and 2.5m wide. Whether the rubbish collection occurs within the tenancies or kerbside, the proposed development is considered capable to accommodate rubbish collection trucks.

Furthermore, as rubbish will likely be collected once per week outside of the AM and PM peak hours, it is not anticipated to impact the operation of the proposed development as a whole or the surrounding road network.

4.6 Pedestrian Paths

As discussed, there will be a 1.2m wide pedestrian path separated from the vehicular area and reasonably located. The pedestrian path provided as part of the proposed development have widths in excess of the required width of 1m by the Planning Scheme.

As such, it is considered that the proposed pedestrian access meets the Planning Scheme requirements.

5. Planning Scheme Assessment

This section provides a planning scheme assessment for the proposed light industrial development.

5.1 C2 Use Standards

C2.5.1 Car parking numbers

Objective:

That an appropriate level of car parking spaces are provided to meet the needs of the use.

Acceptable Solution/ Performance Criteria	Comment
Acceptable Solution A1 The number of on-site car parking spaces must be no less than the number specified in Table C2.1, excluding if: a) The site is subject to a parking plan for the area adopted by council, in which case parking provision (spaces or cash-in-lieu) must be in accordance with that plan b) The site is contained within a parking precinct plan and subject to clause c2.7 c) The site is subject to clause c2.5.5 d) It relates to an intensification of an existing use or development or a change of use where: i. The number of on-site car parking spaces for the existing use or development specified in table c2.1 is greater than the number of car parking spaces specified in table c2.1 for the proposed use or development, in which case no additional on-site car parking is required; or ii. The number of on-site car parking spaces for the existing use or development specified in table c2.1 is less than the number of car parking spaces specified in table c2.1 for the proposed use or development, in which case on-site car parking must be calculated as follows: N = A + (C- B) N = Number of on-site car parking spaces required A = Number of existing on site car parking spaces	**Complies with Acceptable Solution A1** Under Table C2.1 Parking Space Requirements, the Storage use requires 1 space per 200m² of the site area or 1 space per 2 employees, whichever is greater. The number of employees is not known at this stage. Therefore, as the proposal includes approximately 3,842m² of site area, A1 requires 20 spaces. As 20 spaces are proposed, including 1 accessible space for persons with a disability, the proposed development complies with Acceptable Solution A1.

B = Number of on-site car parking spaces required for the existing use or development specified in Table C2.1 C = Number of on-site car parking spaces required for the proposed use or development specified in Table C2.1.	

C2.5.2 Bicycle parking numbers

Objective:

That an appropriate level of bicycle parking spaces are provided to meet the needs of the use.

Acceptable Solution/ Performance Criteria	Comment
Acceptable Solution A1 Bicycle parking spaces must: a) Be provided on the site or within 50m of the site; and b) Be no less than the number specified in table c2.1. **Performance Criteria P1** Bicycle parking spaces must be provided to meet the reasonable needs of the use, having regard to: a) The likely number of users of the site and their opportunities and likely need to travel by bicycle; and b) The availability and accessibility of existing and any planned parking facilities for bicycles in the surrounding area.	**Not Applicable** Based on Table 2.1, there is no requirement for bicycle parking to be provided on site. As such this standard is not applicable.

C2.5.3 Motorcycle parking numbers

Objective:

That the appropriate level of motorcycle parking is provided to meet the needs of the use.

Acceptable Solution/ Performance Criteria	Comment
Acceptable Solution A1 The number of on-site motorcycle parking spaces for all uses must: a) Be no less than the number specified in Table C2.4; and b) If an existing use or development is extended or intensified, the number of on-site motorcycle parking spaces must be based on the proposed extension or intensification, provided the existing number of motorcycle parking spaces is maintained.	**Not Applicable** As there are less than 20 car parking spaces provided on site, there is no requirement for motorcycle parking to be provided on site. As such this standard is not applicable.

C2.5.4 Loading bays	
Objective: That adequate access for goods delivery and collection is provided, and to avoid unreasonable loss of amenity and adverse impacts on traffic flows.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 A loading bay must be provided for uses with a floor area of more than 1000m² in a single occupancy. **Performance Criteria P1** Adequate space for loading and unloading of vehicles must be provided, having regard to: a) The type of vehicles associated with the use b) The nature of the use c) The frequency of loading and unloading d) The location of the site e) The nature of traffic in the surrounding area f) The area and dimensions of the site g) The topography of the site h) The location of existing buildings on the site; and i) Any constraints imposed by existing development.	**Complies with Acceptable Solution A1** As each occupancy will have a floor area of 451.75m^2, A1 is not applicable. However, there will be a loading bay provided at each tenancy. It is envisaged that all commercial vehicle deliveries will occur directly within each tenancy. Also, each tenancy will have a roller door catered for 12.5m delivery vehicles. As such, the proposed development complies with Acceptable Solutions A1.

5.2 C2 Development Standards

C2.6.1 Construction of parking areas	
Objective: That parking areas are constructed to an appropriate standard.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 All parking, access ways, manoeuvring and circulation spaces must: a) Be constructed with a durable all weather pavement b) Be drained to the public stormwater system, or contain stormwater on the site; and c) Excluding all uses in the rural zone, agriculture zone, landscape conservation zone, environmental management zone, recreation zone and open space zone, be surfaced by a spray seal, asphalt, concrete, pavers or equivalent material to restrict abrasion from traffic and minimise entry of water to the pavement.	**Will comply with Acceptable Solution A1** As asphalt is proposed, the car park and the circulation roadway will be treated with a durable all-weather pavement and will restrict abrasion from traffic and minimise entry of water to the pavement. It is also understood that a separate stormwater system will be designed and constructed as per Australian Standard. As such, the proposed development will comply with Acceptable Solutions A1.

C2.6.2 Design and layout of parking areas	
Objective: That parking areas are designed and laid out to provide convenient, safe and efficient parking.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1.1 Parking, access ways, manoeuvring and circulation spaces must either: a) Comply with the following: i. Have a gradient in accordance with *australian standard as 2890 - parking facilities, parts 1-6;* ii. Provide for vehicles to enter and exit the site in a forward direction where providing for more than 4 parking spaces; iii. Have an access width not less than the requirements in table c2.2; iv. Have car parking space dimensions which satisfy the requirements in table c2.3; v. Have a combined access and manoeuvring width adjacent to parking spaces not less than the requirements in table c2.3 where there are 3 or more car parking spaces; vi. Have a vertical clearance of not less than 2.1m above the parking surface level; and vii. Excluding a single dwelling, be delineated by line marking or other clear physical means; or	**Complies with Acceptable Solution A1.1** As the layout of the parking areas complies with Australian Standard AS 2890- Parking facilities, Parts 1-6, the proposed development complies with Acceptable Solution A1.1. **Complies with Acceptable Solution A1.2** As the accessible parking spaces are located as practicable to the main entry point, are incorporated into the overall car park design and designed in accordance with the Australian standard, the proposed development complies with Acceptable Solution A1.2.

C2.6.1 Construction of parking areas	
b) Comply with *Australian Standard AS 2890-Parking facilities, Parts 1-6.* **Acceptable Solution A1.2** Parking spaces provided for use by persons with a disability must satisfy the following: a) Be located as close as practicable to the main entry point to the building b) Be incorporated into the overall car park design; and c) Be designed and constructed in accordance with *australian/ new zealand standard as/nzs 2890.6:2009 parking facilities, off-street parking for people with disabilities.*	

C2.6.3 Number of accesses for vehicles	
Objective: That: a) Access to land is provided which is safe and efficient for users of the land and all road network users, including but not limited to drivers, passengers, pedestrians and cyclists by minimising the number of vehicle accesses b) Accesses do not cause an unreasonable loss of amenity of adjoining uses; and c) The number of accesses minimise impacts on the streetscape.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 The number of accesses provided for each frontage must: a) Be no more than 1; or b) No more than the existing number of accesses, whichever is the greater.	**Complies with Acceptable Solution A1** Due to the site encompassing several properties, the number of accesses will be reduced compared to existing. Also there will be one access on Montagu Street and one on Howard Street. As such it complies with Acceptable Solution A1.

C2.6.5 Pedestrian access	
Objective: That pedestrian access within parking areas is provided in a safe and convenient manner.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1.1 Uses that require 10 or more car parking spaces must: a) Have a 1m wide footpath that is separated from the access ways or parking aisles, excluding where crossing access ways or parking aisles, by: i. A horizontal distance of 2.5m between the edge of the footpath and the access way or parking aisle; or ii. Protective devices such as bollards, guard rails or planters between the footpath and the access way or parking aisle; and	**Complies with Acceptable Solution A1.1. Satisfies Performance Criteria in place of A1.2** As the proposed development will have a 1.2m wide footpath that is separated from the car park with vehicle wheel stops provided as protective devices between the footpath and the car parking spaces, the proposed development complies with Acceptable Solution A1.1. As a dedicated footpath is not proposed form the DDA accessible spaces to the main entry point to the building, it

C2.6.1 Construction of parking areas	
b) Be signed and line marked at points where pedestrians cross access ways or parking aisles. **Acceptable Solution A1.2** In parking areas containing accessible car parking spaces for use by persons with a disability, a footpath having a width not less than 1.5m and a gradient not steeper than 1 in 14 is required from those spaces to the main entry point to the building. **Performance Criteria P1** Safe and convenient pedestrian access must be provided within parking areas, having regard to: a) The characteristics of the site b) The nature of the use c) The number of parking spaces d) The frequency of vehicle movements e) The needs of persons with a disability f) The location and number of footpath crossings g) Vehicle and pedestrian traffic safety h) The location of any access ways or parking aisles; and i) Any protective devices proposed for pedestrian safety.	is unable to meet the Acceptable Solution A1.2. It does however satisfy Performance Criterial as follows: a) The proposed development will provide storage facilities for 5 tenancies, as such the number of DDA accessible parking users is expected to be minimal b) The site will predominantly be used by employees which will access the site via the footpath on the eastern side of the light industrial development, as well as delivery vehicles to deliver/ pick up goods from the tenancies c) There will be 15 general car parking spaces and 1 DDA accessible parking space supplied on site d) Being a commercial storage facility, the frequency of vehicle movements is expected to be low e) The proposed development is in a flat area and the parking aisle will be sealed. This provides ample access space for people with disability (i.e. Wheelchair users) f) The DDA accessible space is located close to the light industrial development. Also there is no footpath crossing between this space and the light industrial development g) The DDA accessible space will have ample sight distance to view any surrounding vehicle movements. Also the car park, one-way circulation roadway and the two-way parking aisle are considered a low-speed environment h) As mentioned, the DDA accessible space user will need to cross approximately 11m parking aisle to access the light industrial development, the location of the parking aisle is considered reasonable; and i) It is understood that there will be a bollard installed in the shared area immediately adjacent to the DDA accessible space.

C2.6.6 Loading bays	
Objective: That the area and dimensions of loading bays are adequate to provide safe and efficient delivery and collection of goods.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 The area and dimensions of loading bays and access way areas must be designed in accordance with *Australian Standard AS 2890.2–2002, Parking facilities, Part 2: Off-street commercial vehicle facilities*, for the type of vehicles likely to use the site.	**Complies with Acceptable Solution A1** The Australian Standard AS2890.2:2018 Parking facilities: Off-street commercial vehicle facilities (AS 2890.2). AS 2890.2 states that "*Swept paths shall also be used to check the movement in and out of a loading dock to establish that*

C2.6.1 Construction of parking areas	
	a sufficient apron width is provided for the vehicle swept path and manoeuvring clearances". Based on the swept paths assessment, it is identified that a 12.5m HRV can safely and efficiently enter and exit all tenancies in both forward and reserve direction. As such, the proposed development complies with Acceptable Solution A1.
Acceptable Solution A2 The type of commercial vehicles likely to use the site must be able to enter, park and exit the site in a forward direction in accordance with *Australian Standard AS 2890.2 – 2002, Parking Facilities, Part 2: Parking facilities - Off-street commercial vehicle facilities.*	**Complies with Acceptable Solution A2** The Australian Standard AS2890.2:2018 Parking facilities: Off-street commercial vehicle facilities (AS 2890.2). AS 2890.2 states that "*Swept paths shall also be used to check the movement in and out of a loading dock to establish that a sufficient apron width is provided for the vehicle swept path and manoeuvring clearances*". Based on the swept paths assessment, it is identified that a 12.5m HRV can safely and efficiently enter and exit all tenancies in both forward and reserve direction. As such, the proposed development complies with Acceptable Solution A2.

5.3 C3 Use Standards

C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction	
Objective: To minimise any adverse effects on the safety and efficiency of the road or rail network from vehicular traffic generated from the site at an existing or new vehicle crossing or level crossing or new junction.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1.1 For a category 1 road or a limited access road, vehicular traffic to and from the site will not require: a) A new junction b) A new vehicle crossing; or c) A new level crossing. **Acceptable Solution A1.2** For a road, excluding a category 1 road or a limited access road, written consent for a new junction, vehicle crossing, or level crossing to serve the use and development has been issued by the road authority.	**Acceptable Solution A1.1, A1.2 and A1.3 are not applicable. Satisfies Performance Criteria P1 in place of A1.4. Complies with A1.5** As the proposed development will generate approximately 91 vehicle movements per day, it is unable to comply with Acceptable Solution A1.4. It does however satisfy Performance Criteria P1 as follows: a) Based on traffic modelling presented in this report, traffic generated by the proposed development is expected to have minimal impact on the operation of the surrounding road network both post development and 10-years post development

Acceptable Solution A1.3

For the rail network, written consent for a new private level crossing to serve the use and development has been issued by the rail authority.

Acceptable Solution A1.4

Vehicular traffic to and from the site, using an existing vehicle crossing or private level crossing, will not increase by more than:

a) the amounts in Table C3.1; or

b) allowed by a licence issued under Part IVA of the *Roads and Jetties Act 1935* in respect to a limited access road.

Acceptable Solution A1.5

Vehicular traffic must be able to enter and leave a major road in a forward direction.

Performance Criteria P1

Vehicular traffic to and from the site must minimise any adverse effects on the safety of a junction, vehicle crossing or level crossing or safety or efficiency of the road or rail network, having regard to:

- Any increase in traffic caused by the use
- The nature of the traffic generated by the use
- The nature of the road
- The speed limit and traffic flow of the road
- Any alternative access to a road
- The need for the use
- Any traffic impact assessment; and
- Any advice received from the rail or road authority.

b) The proposed development is expected to generate commercial vehicles and light vehicles. These vehicle types are currently catered for in the surrounding road network

c) The frontage road, Montagu Street, is classified as a Local Road and carries low volumes of traffic each day

d) Howard Street is classified as a Local Road and carries low volumes of traffic each day

e) Montagu and Howard Street are subject to the Tasmanian urban road default speed limit of 50km/h. It was observed during the site visit that the traffic flows well along these streets

f) There is no alternative access to any other roads

g) The proposed development will provide commercial storage facilities for businesses

h) This Traffic Impact Assessment has been prepared for the proposed development and identifies that the proposed development is not expected to have any negative impacts on the safety and operation of the road network; and

i) City of Launceston own and maintain the local road network in the vicinity of the site. No written advice has been received from the Council at this stage.

As vehicles can exit and enter the site in a forward direction to and from Montagu Street and Howard Street Access will be used as forward entry only, as such the proposed development complies with Acceptable Solution A1.5.

6. Access Assessment for the Potential Residential Development

This section provides an assessment of the potential residential development, which would be accessed from Mayne Street, to help demonstrate that the proposed rezoning of the northern portion of 30 Montagu Street leads to a strategic and orderly development of the area.

6.1 Overview

This section demonstrates that the proposed rezoning to General Residential leads to the strategic and orderly development of the area, in accordance with the requirements of Part D.2.1.1, of the NRLUS. It does this by assessing the functionality of the potential residential development (Appendix A), which encompasses the following properties:

- 30 Montagu Street; and
- 69A Mayne Street.

Although not being included in the extent of the potential residential development, the driveway width assessment includes an existing 71 Mayne Street. This is because 69A Mayne Street has a right of way over this access.

It is proposed to build 5 new dwellings in the residential development. The dwellings will share a driveway with Mayne Street being their frontage road. The proposed driveway has a width of 3.0m and a length of 43.5m. it is envisaged that each dwelling will serve one parking space, resulting in a total of 5 spaces served in this proposed residential development.

Figure 22 shows the driveway location in the local context.

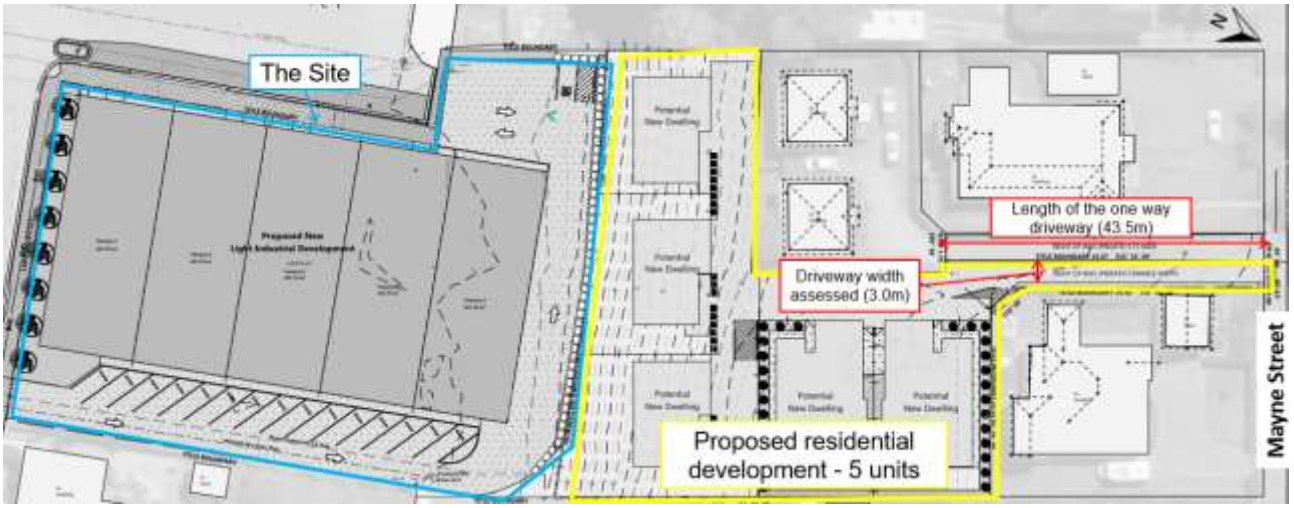


Figure 22: Driveway width assessment

6.2 Driveway Width Assessment

The driveway width has been reviewed against the Australian Standard for Off Street Car Parking (AS/NZS28901.1:2004). In order to determine the user class of the car parking spaces, the access facility category and the access driveway widths, Table 1.1, Table 3.1 and Table 3.2 of the Australian Standard have been reviewed.

Excerpts of Table 1.1, Table 3.1 and Table 3.2 from the Australian Standard AS2890.1:2004 are shown in Figure 23, Figure 24 and Figure 25.

TABLE 1.1

CLASSIFICATION OF OFF-STREET CAR PARKING FACILITIES

User class	Required door opening	Required aisle width	Examples of uses (Note 1)
1	Front door, first stop	Minimum for single manoeuvre entry and exit	Employee and commuter parking (generally, all-day parking)
1A	Front door, first stop	Three-point turn entry and exit into 90° parking spaces only, otherwise as for User Class 1	Residential, domestic and employee parking
2	Full opening, all doors	Minimum for single manoeuvre entry and exit	Long-term city and town centre parking, sports facilities, entertainment centres, hotels, motels, airport visitors (generally medium-term parking)
3	Full opening, all doors	Minimum for single manoeuvre entry and exit	Short-term city and town centre parking, parking stations, hospital and medical centres
3A	Full opening, all doors	Additional allowance above minimum single manoeuvre width to facilitate entry and exit	Short term, high turnover parking at shopping centres
4	Size requirements are specified in AS/NZS 2890.6 (Note 2)		Parking for people with disabilities

Figure 23: Excerpt of Table 1.1 from Australian Standard AS2890.1:2004

TABLE 3.1

SELECTION OF ACCESS FACILITY CATEGORY

Class of parking facility (see Table 1.1)	Frontage road type	Access facility category				
		Number of parking spaces (Note 1)				
		<25	25 to 100	101 to 300	301 to 600	>600
1,1A	Arterial	1	2	3	4	5
	Local	1	1	2	3	4
2	Arterial	2	2	3	4	5
	Local	1	2	3	4	4
3,3A	Arterial	2	3	4	4	5
	Local	1	2	3	4	4

Figure 24: Excerpt of Table 3.1 from Australian Standard AS2890.1:2004

TABLE 3.2

ACCESS DRIVEWAY WIDTHS

metres

Category	Entry width	Exit width	Separation of driveways
1	3.0 to 5.5	(Combined) (see Note)	N/A
2	6.0 to 9.0	(Combined) (see Note)	N/A
3	6.0	4.0 to 6.0	1 to 3
4	6.0 to 8.0	6.0 to 8.0	1 to 3
5	To be provided as an intersection, not an access driveway, see Clause 3.1.1.		

Figure 25: Excerpt of Table 3.2 from Australian Standard AS2890.1:2004

As seen in Figure 23, due to the proposed development generating residential traffic, Table 1.1 classes the facility as a User Class 1A car park.

It is envisaged that the proposed development will provide less than 25 car parking spaces. As seen in Figure 24, Table 3.1 of the Australian Standard shows that a User Class 1A parking facility with less than 25 car parking spaces, accessed off a local road is a classified as a Category 1 access.

Figure 25 shows the Table 3.2 of the Australian Standard which specifies the proposed development for a Category 1 parking facilities, a combined entry and exit width of 3.0m to 5.5m is required.

The provided driveway width is 3.0m and meets the requirement of the Australian Standards.

6.3 Passing Opportunities Assessment

AS/NZS28901.1:2004 Section 3.2.2 specifies that "*…subject to consideration of traffic volumes on a case-by-case basis, less width, down to a minimum of 3.0m at a domestic property, may be provided. As a guide, 30 or more movements in a peak hour (in and out combined) would usually require provision for two vehicles to pass on the driveway, i.e. a minimum width of 5.5m. On long driveways, passing opportunities should be proposed at least every 30m*".

It is noted that the proposed residential development includes 5 units, resulting in approximately 5 vehicles movements (in or out) during peak hours.

Should sufficiently sight distance at both ends of the 3.0m wide driveway be provided and drivers are able to identify any opposing vehicles at either end of the driveway, this arrangement without any passing opportunities may be considered acceptable. A detailed assessment of the suitability of the arrangement will need to be completed once detailed site plans are available.

7. Assessment of the Rezoning's Impact on State Road and Rail Networks

Under the Northern Regional Land Use Strategy, the land to be rezoned is contiguous with an Urban Growth area. Before such land can be rezoned, Part D.2.1.1 of the NRLUS requires that the potential impact on the efficiency of the State road and rail be assessed.

7.1 Land to be Rezoned to Light Industrial

The proposed light industrial development will be located on the land which is proposed to be rezoned from General Residential to Light Industrial. Based on the Planning Scheme Assessment above, the proposed light industrial development complies with the requirements of the scheme. Therefore, it can reasonably be considered that the land which is to be rezoned from General Residential to Light Industrial will lead to the strategic and orderly development of the area and will have no adverse impacts on the State Road network. As the land is not adjacent the State rail network, this network will not be affected. Therefore, with regard to the State road and rail network, the proposed rezoning to Light Industrial meets the requirements of Part D.2.1.1 of the NRLUS.

7.2 Land to be rezoned to General Residential

The proposed plans demonstrate that land which is proposed to be rezoned from Light Industrial to General Residential can accommodate up to 1½ dwellings. As this is at a density that is consistent with the General Residential Zone and would be less than the 5 dwellings that will be replaced by the proposed light industrial development, it can reasonably be considered that, in terms of traffic generation, that there will be no significant impacts on the State road network. As the land is not adjacent the State rail network, this network will not be affected. Therefore, with regard to the State road and rail network, the proposed rezoning to General Residential meets the requirements of Part D.2.1.1 of the NRLUS.

8. Conclusion

LPD Developments Pty Ltd have engaged pitt&sherry to undertake a Traffic Impact Assessment (TIA) for a commercial development (with the Storage land use) on 14, 16 & 18 Howard Street, 26, 28 & 30 Montagu Street and 69A Mayne Street. The analysis and discussion presented in this report can be summarised as follows:

- As the light industrial development is proposing to provide 20 car parking spaces including 1 DDA accessible parking spaces, the requirements of the Planning Scheme are met
- A 12.5m HRV is able to navigate safely and efficiently throughout the site whilst maintaining relevant clearances to parking spaces and the building for each tenancy
- Based on the swept paths assessment, it is identified that a 12.5m HRV can enter and exit all tenancies safely and efficiently in both forward and reserve direction
- The proposed car parking dimensions meet the requirements of AS 2890.1 and AS 2890.6
- The sight distance at the proposed accesses onto Montagu Street complies with the requirements of the Planning Scheme and the Austroads Guide Part 4A
- The residential development driveway width complies with the Australian Standard
- Should the residential development provide sufficient sight distance at each end of the one-way driveway, the lack of passing opportunities may be considered acceptable
- The proposed light industrial development complies with the planning scheme's applicable parking and traffic requirements; and
- With regard to the strategic and orderly planning of the area and the State road and rail network, the proposed rezoning to Light Industrial meets the requirements of Part D.2.1.1 of the NRLUS; and with regard to the strategic and orderly planning of the area and the State road and rail network, the proposed rezoning to General Residential meets the requirements of Part D.2.1.1 of the NRLUS.

Important information about your report

In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints. The Report may only be used and relied on by the Client for the purpose set out in the Report. Any use which a third party makes of this document, or any reliance on or decisions to be made based on it, is the responsibility of the Client or such third parties.

The services undertaken by pitt&sherry in connection with preparing the Report were limited to those specifically detailed in the report and are subject to the restrictions, limitations and exclusions set out in the Report. The Report's accuracy is limited to the time period and circumstances existing at the time the Report was prepared. The opinions, conclusions and any recommendations in the Report are based on conditions encountered and information reviewed at the date of preparation of the Report. pitt&sherry has no responsibility or obligation to update the Report to account for events or changes occurring after the date that the report was prepared. If such events or changes occurred after the date that the report was prepared render the Report inaccurate, in whole or in part, pitt&sherry accepts no responsibility, and disclaims any liability whatsoever for any injury, loss or damage suffered by anyone arising from or in connection with their use of, reliance upon, or decisions or actions based on the Report, in whole or in part, for whatever purpose.

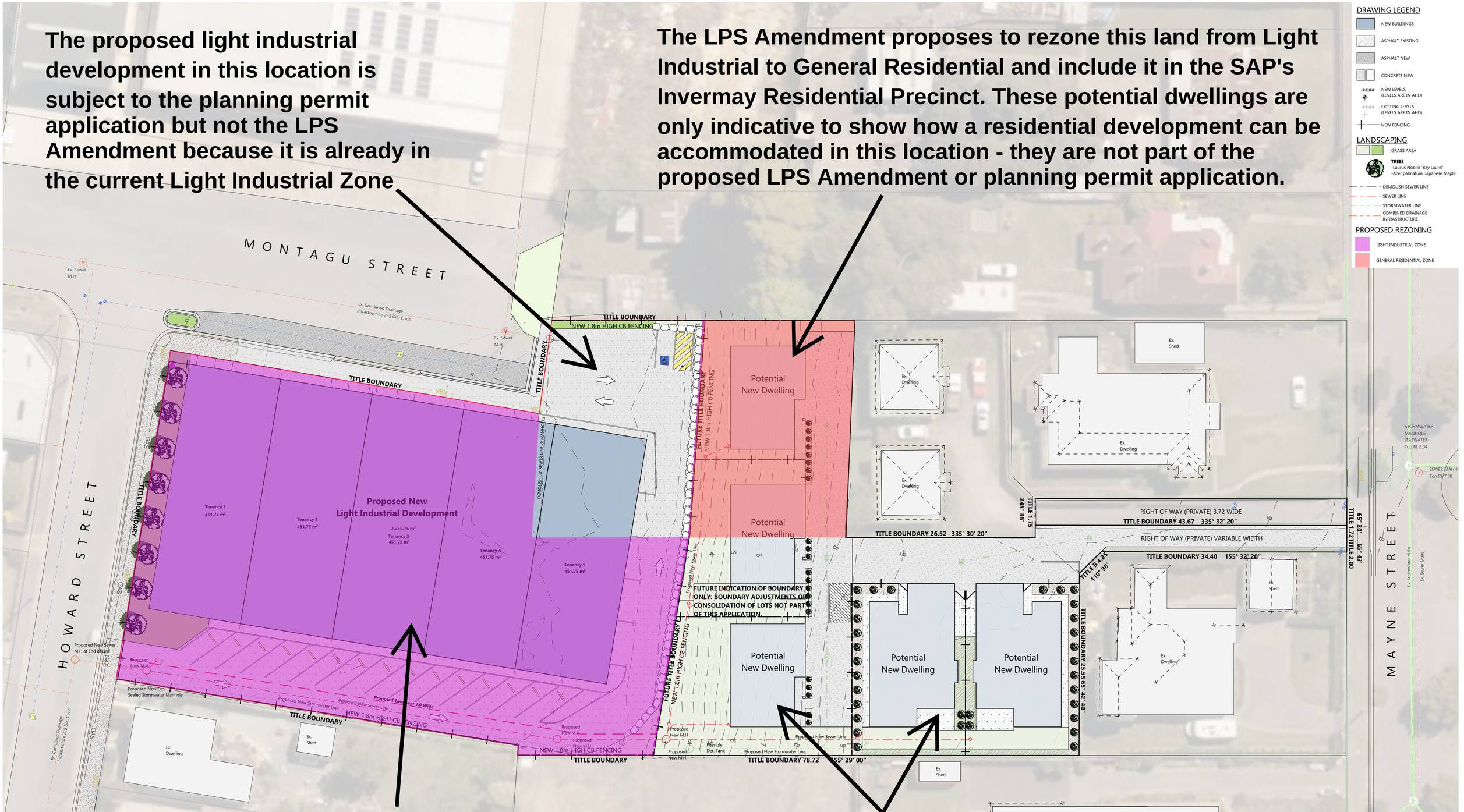
Site Plans

Appendix A

pitt&sherry

The proposed light industrial development in this location is subject to the planning permit application but not the LPS Amendment because it is already in the current Light Industrial Zone

The LPS Amendment proposes to rezone this land from Light Industrial to General Residential and include it in the SAP's Invermay Residential Precinct. These potential dwellings are only indicative to show how a residential development can be accommodated in this location - they are not part of the proposed LPS Amendment or planning permit application.



This land is to be rezoned from General Residential to Light Industrial and included in the SAP's Riveredge Industrial Precinct. The proposed light industrial development is partly located on this land.

These potential dwellings are only indicative to show how a residential development can be accommodated in this location - they are not part of the proposed LPS Amendment or planning permit application.

DRAWING LEGEND

- NEW BUILDINGS
- ASPHALT EXISTING
- ASPHALT NEW
- CONCRETE NEW
- #### NEW LEVELS (LEVELS ARE IN AHD)
- #### EXISTING LEVELS (LEVELS ARE IN AHD)
- NEW FENCING

LANDSCAPING

- GRASS AREA
- TREES -Laurus Nobilis 'Bay Laurel' -Acer palmatum 'Japanese Maple'
- DEMOLISH SEWER LINE
- SEWER LINE
- STORMWATER LINE
- COMBINED DRAINAGE INFRASTRUCTURE

PROPOSED REZONING

- LIGHT INDUSTRIAL ZONE
- GENERAL RESIDENTIAL ZONE

Site Master Plan
SCALE 1:250
North
0mm 2500 5000 7500 10000 12500

Rev	Description	Date	Int	App
DA2	ISSUED FOR APPROVAL	9/03/2023	DA2	DA2

REVISION

Cataract Designs
A | 65 Basin Rd | West Launceston | TAS 7250
E | phil@cataractdesigns.com.au
M | 0400 094 643
Licence No. | 870617396

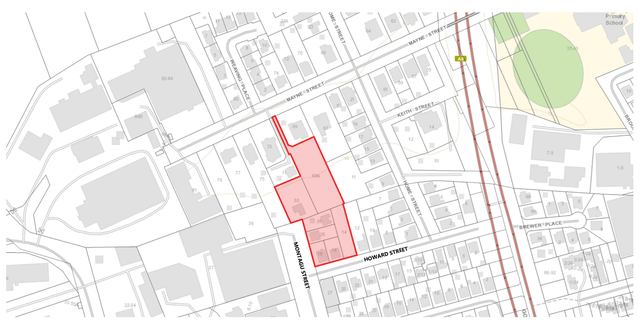
Drawn	P Ludbey
Approved	P Ludbey
Status	APPROVAL
Original size	A2 (Landscape)
Drawing No. /Revision	SK 001-DA2

New Light Industrial Development & Layout of Potential Residential Development
Montagu, Howard & Mayne Street, Invermay

Project No. 22019

New Light Industrial Development
Montagu & Howard Street, Invermay

Project No. 22019



Drawing Schedule

SK030	Cover Page
SK031	Site Survey
SK032	Existing & Proposed Zoning
SK033	Existing/Demolition Plan
SK034	Site Plan
SK035	Building Floor Plan
SK036	Building Elevations

Project details

Council	Launceston City Council
Zone	General Residential, Light Industrial
Planning Overlay	Landslip Hazard Low, Invermay/Inveresk Flood Inundation Specific Area Plan Local Area Objective: Invermay Residential Precinct
PID	Multiple
Title Folio	Multiple
Title Volume	Multiple
Climate Zone	7
Design Wind Speed	-
Soil Class	-
BAL Rating	-
Energy Rating	-
Corrosive Environment	-
Other	-

Area Schedule

Name	Area m²
Site Area (Propsed New Lot 1)	3842m²
Building Floor Area:	2258m²
Permeable Area	208m²
Impervious Surfaces Area	1,376m²

Rev	Description	Date	Int	App
DA1	ISSUED FOR APPROVAL	12/01/2023	DA1	DA1

REVISION

Cataract Designs
A | 65 Basin Rd | West Launceston | TAS 7250
E | phil@cataractdesigns.com.au
M | 0400 094 643
Licence No. | 870617396

Drawn	P Ludbey
Approved	P Ludbey
Status	DEVELOPMENT APPLICATION
Original size	A1 (Landscape)
Drawing No. /Revision	SK030-DA1

All of Site Survey
SCALE 1:250
North
0mm 2500 5000 7500 10000 12500

Rev	Description	Date	Int	App
DA1	ISSUED FOR APPROVAL	12/07/2023	DA1	DA1

REVISION

Cataract Designs
A | 65 Basin Rd | West Launceston | TAS 7250
E | phil@cataractdesigns.com.au
M | 0400 094 643
Licence No. | 870617396

New Light Industrial Development
Montagu & Howard Street, Invermay

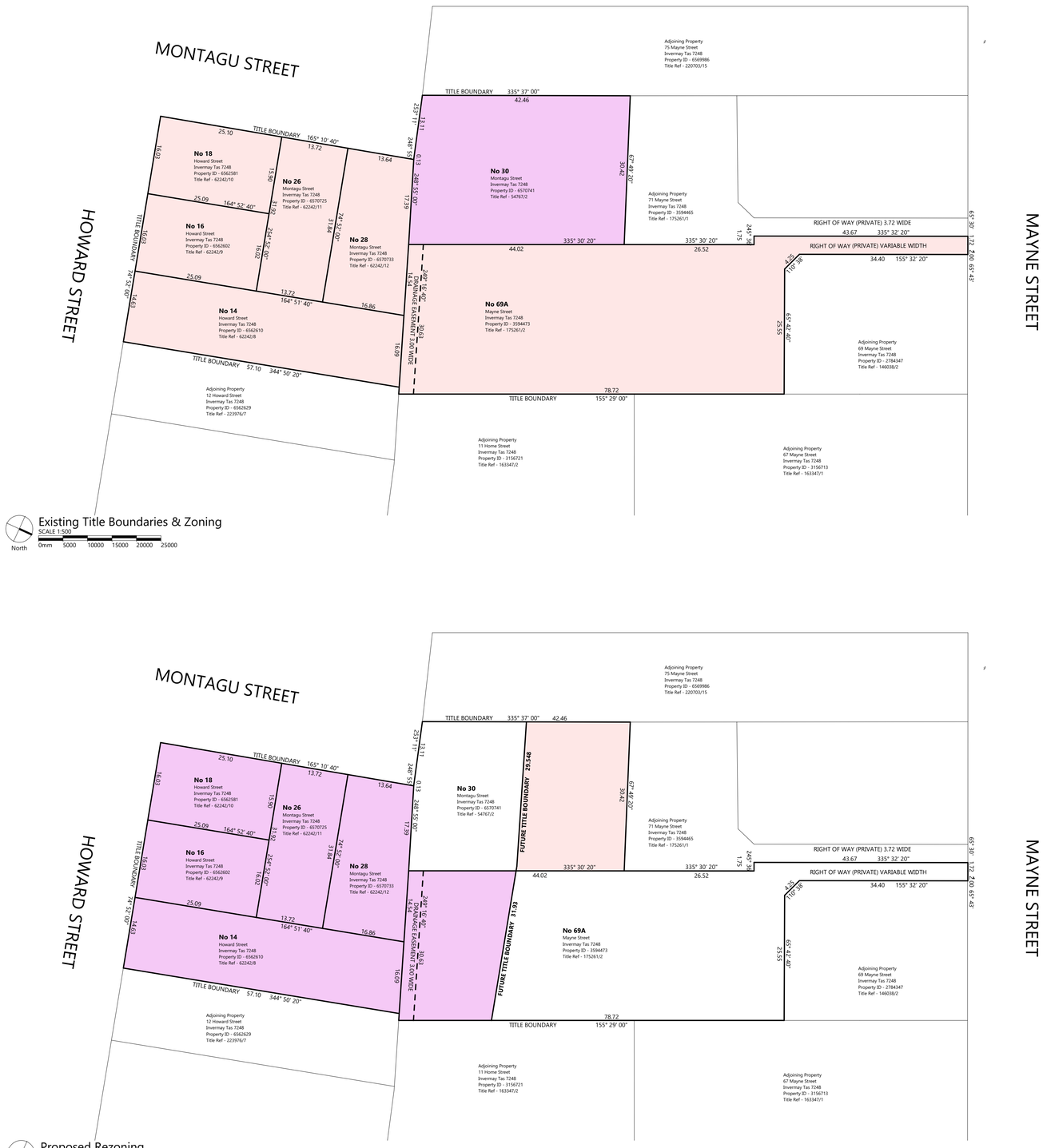
Project No. 22019

Drawn	P Ludbey
Approved	P Ludbey
Status	DEVELOPMENT APPLICATION
Original size	A2 (Landscape)
Drawing No. /Revision	SK031-DA1

Legend

General Residensial Zone

Light Industrial Zone



Existing Title Boundaries & Zoning
SCALE 1:500
North
0mm 5000 10000 15000 20000 25000

Proposed Rezoning
SCALE 1:500
North
0mm 5000 10000 15000 20000 25000

Rev	Description	Date	Int	App
DA2	ISSUED FOR APPROVAL	9/03/2023	DA2	DA2

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E | phil@cataractdesigns.com.au
M | 0400 094 643
Licence No. | 870617396

New Light Industrial Development
Montagu & Howard Street, Invermay

Project No. 22019

Drawn	P Ludbey
Approved	P Ludbey
Status	APPROVAL
Original size	A2 (Landscape)
Drawing No. /Revision	SK032-DA2

Demolition Plan
SCALE 1:200

DEMOLITION NOTES

THE CONTRACTOR SHALL CARRY OUT THE REQUIRED DEMOLITON OF NOMINATED ON THIS PLAN IN STRICT ACCORDANCE WITH THE DOCUMENTATION & AS2601 - THE DEMOLITION OF STRUCTURES.

DEMOLITION WORKS SHALL BE UNDERTAKEN IN A SAFE & ENVIRONMENTALLY ACCEPTABLE MANNER.

CONTRACTOR SHALL MAKE ALL ALLOWANCES AS REQUIRED FOR DEMOLITION, REMOVALS & RELOCATIONS TO SUIT THE NEW WORKS. ALL ITEMS TO BE DEMOLISHED SHOWN DOTTED RED TYPICALLY.

REMOVE & DISCONNECT ALL REDUNDANT MECHANICAL, ELECTRICAL, HYDRAULIC SERVICES & THE LIKE AS REQUIRED WITHIN THE NEW WORKS. ALLOW TO CAP & SEAL EXISTING CONNECTIONS BELOW/ BEHIND FINISHED SURFACE LEVELS. ALLOW TO RELOCATE & MAKE GOOD WHERE REQUIRED.

MAKE GOOD TO ALL PENETRATONS WHERE ITEMS REMOVED. INFILL SHALL MATCH EXISTING SURFACE.

ASBESTOS MAY BE LOCATED IN AREAS OF EXISTING BUILDINGS. ASBESTOS IS TO BE REMOVED IN ACCORDANCE WITH WORK SAFE TASMANIA 'HOW TO SAFELY REMOVE ASBESTOS' CODE OF PRACTICE & STATUTORY REGULATIONS.

DEMOLITION PLAN SHALL BE READ IN CONJUNCTION WITH SITE PLAN AND NEW WORKS PLANS. CONTRACTOR TO ENSURE DIAL BEFORE YOU DIG IS COMPLETED & RECIEVED PRIOR TO COMMENCEMENT OF ANY EARTH WORKS

DIAL BEFORE YOU DIG www.1100.com.au

Rev	Description	Date	Int	App
DA1	ISSUED FOR APPROVAL	12/07/2023	DA1	DA1

REVISION

Cataract Designs
A : 65 Basin Rd : West Launceston : TAS 7250
E : phil@cataractdesigns.com.au
M : 0400 094 643
Licence No. : 870617396

Drawn	P Ludbey
Approved	P Ludbey
Status	DEVELOPMENT APPLICATION
Original size	A2 (Landscape)
Drawing No. /Revision	SK033-DA1

New Light Industrial Development
Montagu & Howard Street, Invermay

Project No. 22019

MONTAGU STREET

HOWARD STREET

Ex. Sewer M.H

EX. STREET SIGN

KC's KERB

NEW OUTSTAND

Ex. Combined Drainage Infrastructure 225 Dia. Conc.

EXISTING POWER POLES AND CONNECTIONS TO BE REMOVED.

EX. PIT

EX. POLE

Ex. Sewer M.H

PROPOSED NEW PRIVATE POWER POLE.

EX. S/E PIT

EX. KC KERB

KC CROSS OVER

NEW ON-STREET PARKING SPACE

EX. KC KERB

EX. POLE

KC CROSSOVER

KC CROSS OVER

TITLE BOUNDARY

NEW 1.8m HIGH CB FENCING

TITLE BOUNDARY

NEW 2400mm HIGH STEEL SECURITY FENCE PAINT FINISH.

LINE MARKED WALKWAY

DEMOLISH EX. SEWER LINE & MANHOLES

Proposed Masonry Retain Wall

FUTURE TITLE BOUNDARY

NEW 1.8m HIGH CB FENCING

1 Space

Ex. Dwelling

No 71

Ex. Dwelling

No 30

No 69a

TITLE BOUNDARY 26.52 335° 30' 20"

TITLE 21.75 245° 36'

STAGE 2
(NOT PART OF THIS DA)

FUTURE INDICATION OF BOUNDARY ONLY. BOUNDARY ADJUSTMENTS OR CONSOLIDATION OF LOTS NOT PART OF THIS APPLICATION.

STAGE 1
(NOT PART OF THIS DA)

Tenancy 1
451.75 m²

Tenancy 2
451.75 m²

Proposed New
Light Industrial Development
2,258.75 m²

Tenancy 3
451.75 m²

Tenancy 4
451.75 m²

Tenancy 5
451.75 m²

Parallel Parking
4 Spaces

NEW 2400mm HIGH STEEL SECURITY GATE. WITH SLIDING MECHANISM PAINT FINISH.

Proposed New Sewer M.H at End of Line

Proposed New M.H

Proposed New Gas Sealed Stormwater Manhole
REFER DD.01 DETAIL.

45° Angle Parking
15 Spaces

Proposed Easement 3.0 Wide

Proposed New Stormwater Line

Proposed New Sewer Line

NEW 1.8m HIGH CB FENCING

TITLE BOUNDARY

Ex. Dwelling

Ex. Shed

Proposed New M.H

Proposed New M.H

NEW 1.8m HIGH CB FENCING

TITLE BOUNDARY

Proposed New M.H

Possible Dirt. Tank

Proposed New Sewer Line

Proposed New Stormwater Line

TITLE BOUNDARY 78.72 155° 29' 00"

Ex. Shed

Ex. Combined Drainage Infrastructure 225 Dia. Conc.

DRAWING LEGEND

- NEW BUILDINGS
- ASPHALT EXISTING
- ASPHALT NEW
- CONCRETE NEW
- #### NEW LEVELS (LEVELS ARE IN AHD)
- #### EXISTING LEVELS (LEVELS ARE IN AHD)
- NEW FENCING

LANDSCAPING

- GRASS AREA
- TREES -Laurus Nobilis 'Bay Laurel' -Acer palmatum 'Japanese Maple'
- DEMOLISH SEWER LINE
- SEWER LINE
- STORMWATER LINE
- COMBINED DRAINAGE INFRASTRUCTURE

Site Plan Stage 3
SCALE 1:200

North

0mm 2000 4000 6000 8000 10000

Rev	Description	Date	Int	App
DA2	ISSUED FOR APPROVAL	9/03/2023	DA2	DA2

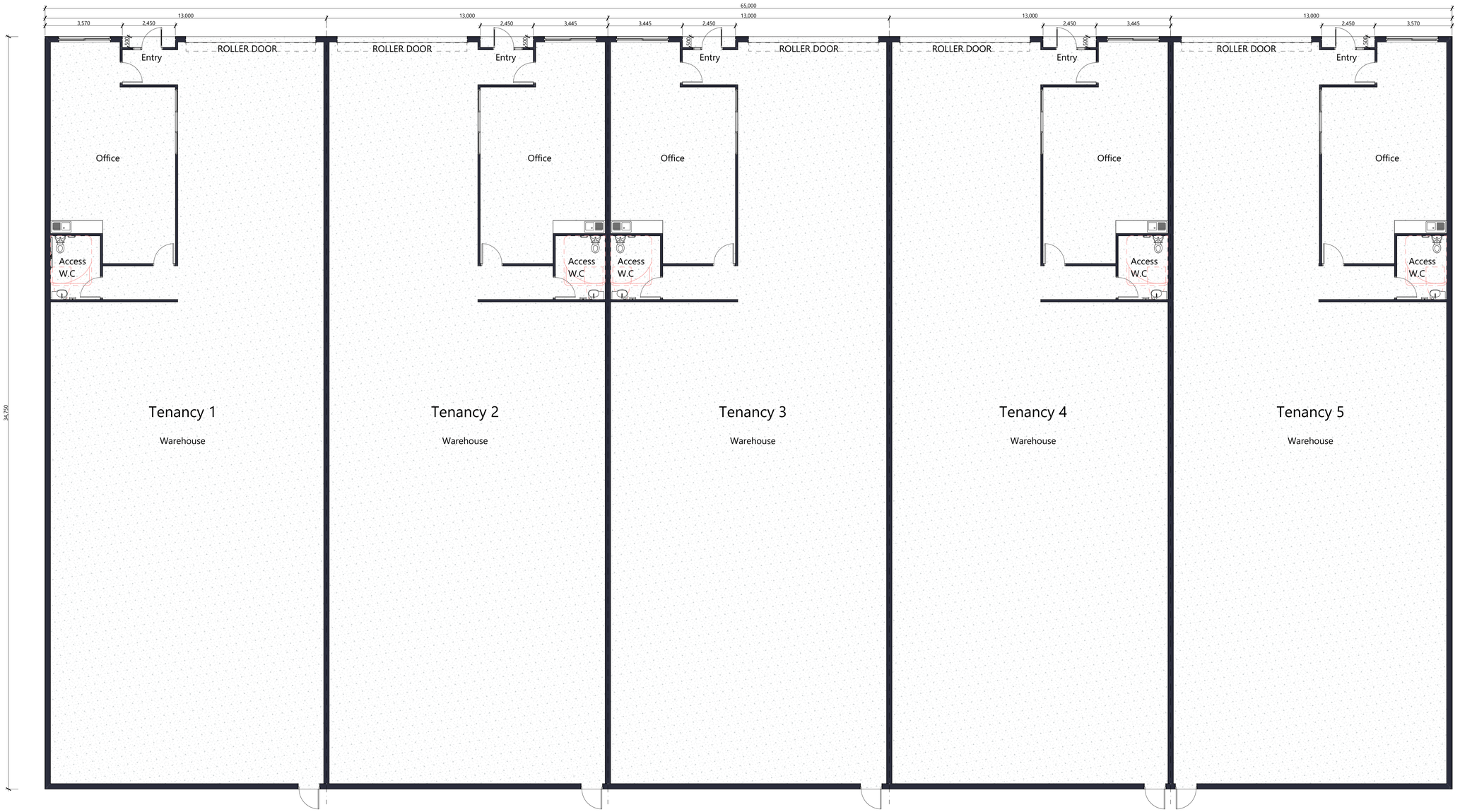
REVISION

Cataract Designs
A | 65 Basin Rd | West Launceston | TAS 7250
E | phil@cataractdesigns.com.au
M | 0400 094 643
Licence No. | 87061796

Drawn	P Ludbey
Approved	P Ludbey
Status	APPROVAL
Original size	A2 (Landscape)
Drawing No. /Revision	SK034-DA2

New Light Industrial Development
Montagu & Howard Street, Invermay

Project No. 22019



Light Industrial Building Floor Plan
SCALE 1:100

Project North 0mm 1000 2000 3000 4000 5000

Rev	Description	Date	Int	App
DA1	ISSUED FOR APPROVAL	12/01/2023	DA1	DA1

REVISION

Cataract Designs
A | 65 Basin Rd | West Launceston | TAS 7250
E | phil@cataractdesigns.com.au
M | 0400 094 643
Licence No. | 870617396

New Light Industrial Development
Montagu & Howard Street, Invermay

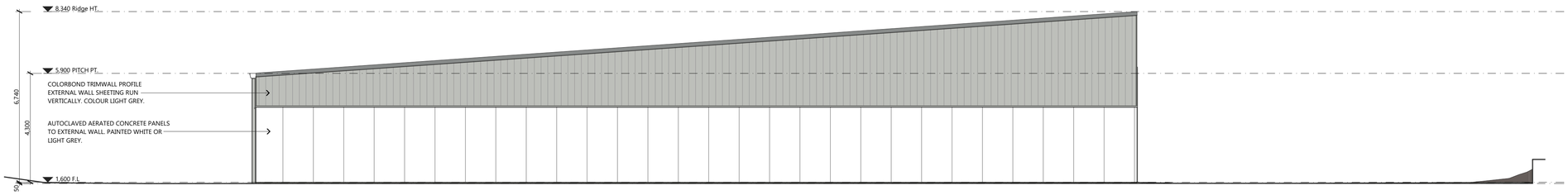
Project No. 22019

Drawn	P Ludbey
Approved	P Ludbey
Status	DEVELOPMENT APPLICATION
Original size	A2 (Landscape)
Drawing No. /Revision	SK035-DA1

E1 SK035 **Western Elevation (Montagu St)**

SCALE 1:100

0mm 1000 2000 3000 4000 5000



E2 SK035 **Northern Elevation**

SCALE 1:100

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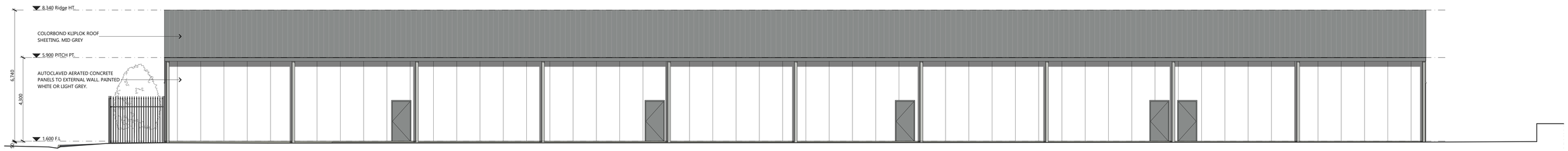

E3 SK035 **Eastern Elevation**

SCALE 1:100

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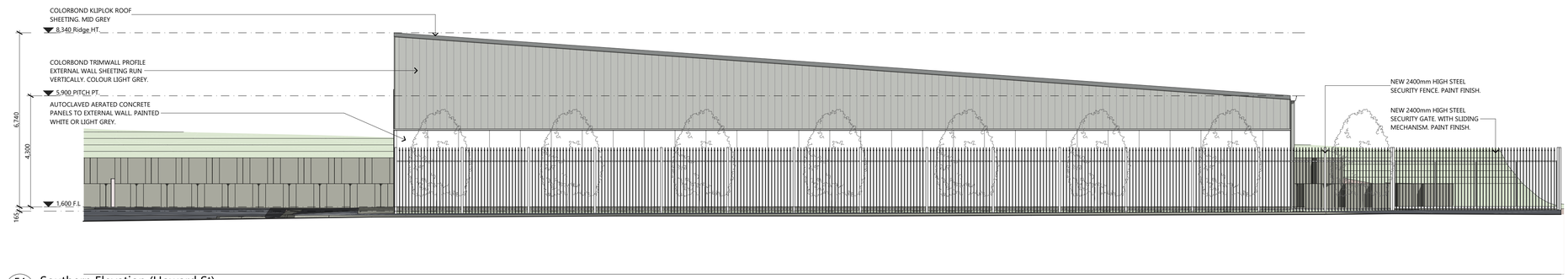

E4 SK035 **Southern Elevation (Howard St)**

SCALE 1:100

0mm 1000 2000 3000 4000 5000

Rev	Description	Date	Int	App
DA1	ISSUED FOR APPROVAL	12/01/2023	DA1	DA1

REVISION

Cataract Designs

A | 65 Basin Rd | West Launceston | TAS 7250
E | phil@cataractdesigns.com.au
M | 0400 094 643
Licence No. | 870617396

New Light Industrial Development
Montagu & Howard Street, Invermay

Project No. 22019

Drawn	P Ludbey
Approved	P Ludbey
Status	DEVELOPMENT APPLICATION
Original size	A2 (Landscape)
Drawing No. /Revision	SK036-DA1

Swept Paths

Appendix B

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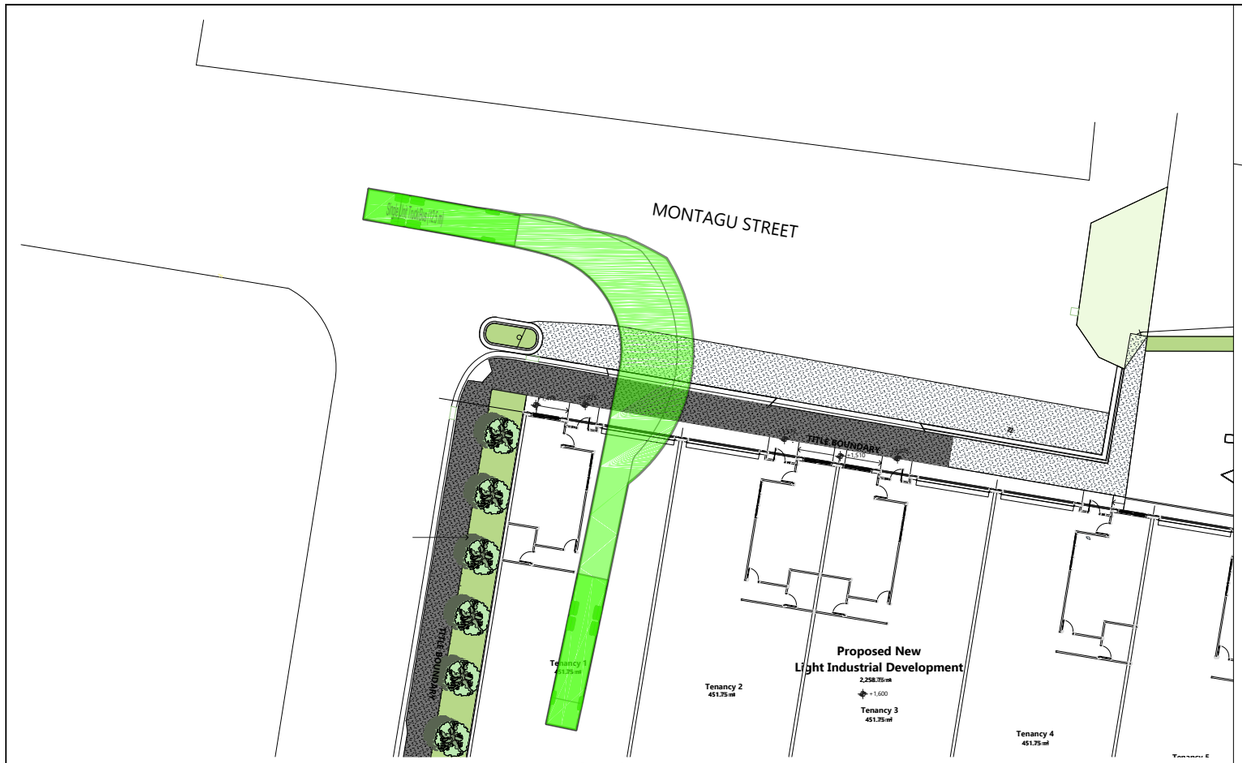

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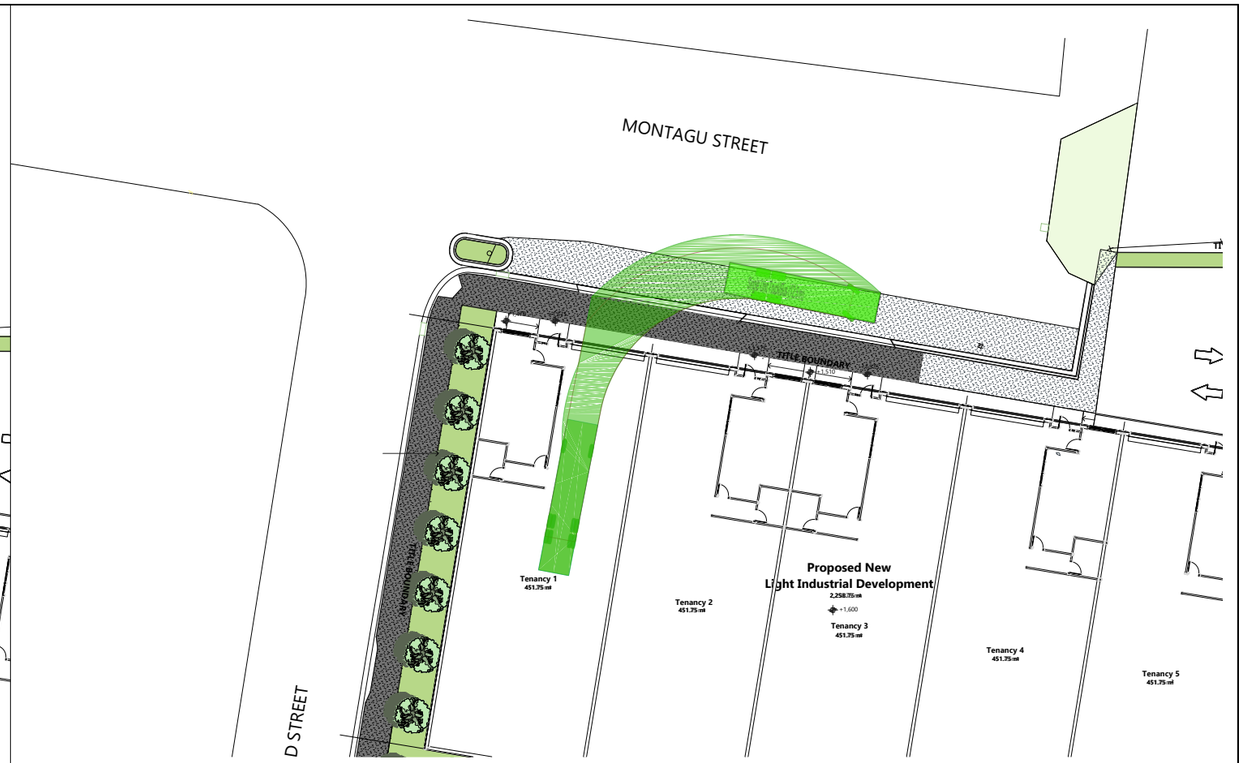

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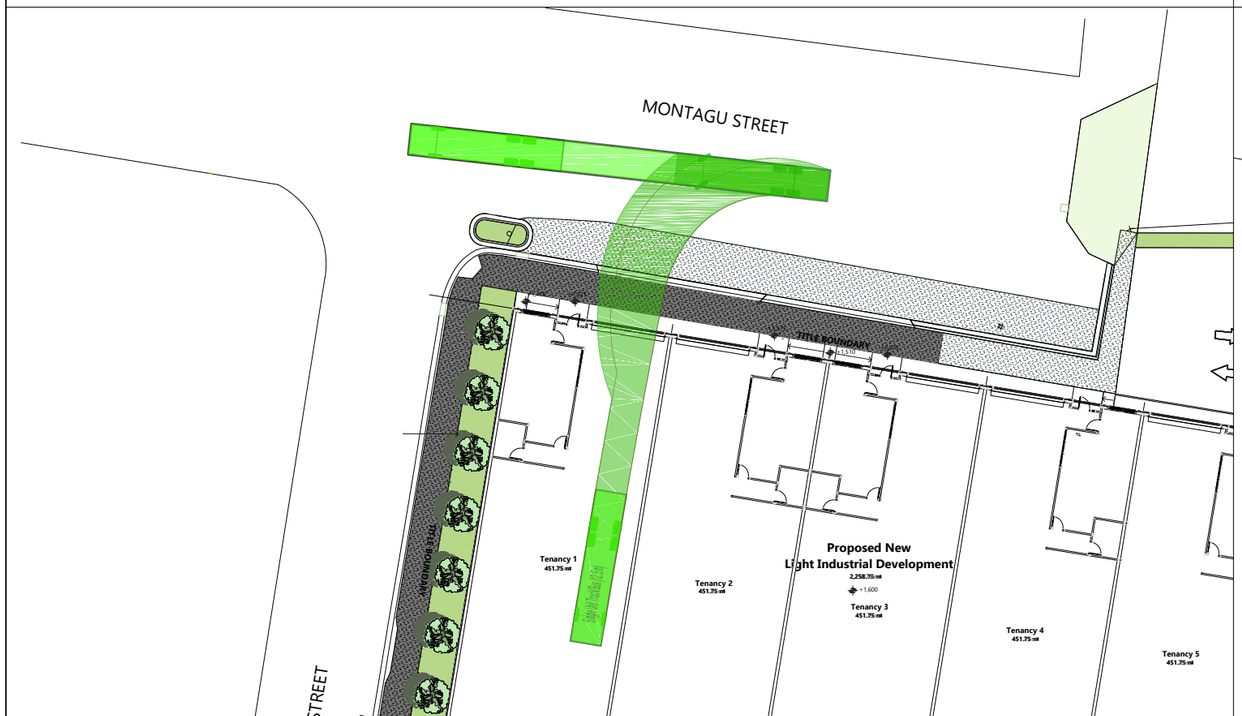

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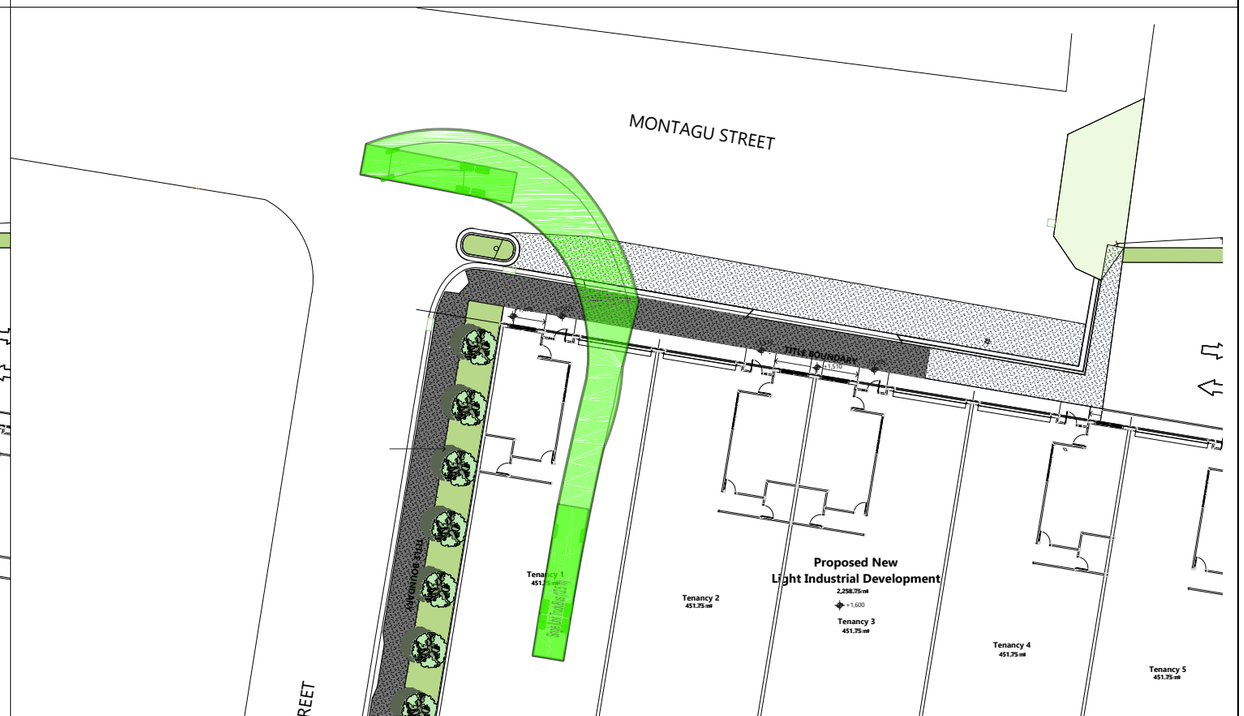

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REFERENCE FILES ATTACHED:

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
A	PLAN UPDATED	OVH	OVH	DF	17/01/2023
		OVH	OVH	LA	02/09/2022

APPROVED

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SIGNED

DATE

SCALE (PLOTTED FULL SIZE) AS SHOWN (A3)

SHEET SIZE A3

5 0 5 10 15 20

SCALE IN METRES - 1:500

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pittsh.com.au Phone 1300 748 874 ABN 67 140 184 309

CLIENT: LPD - DEVELOPMENTS P

PROJECT: MONTAGU STREET COMMERCIAL DEVELOPMENT

STATUS: PRELIMINARY

DRAWING TITLE: SWEPT PATHS 12.5m RIGID TRUCK - SHEET 1

DATUMS: AHD / MGA

CLIENT No. -

DRAWING No. P.22.1785-00-TRA-SKT-001

REVISION A

PRINT IN COLOUR

Jan. 17, 23 - 09:30:58 Name: P.22.1785-00-TRA-SKT-001.dwg

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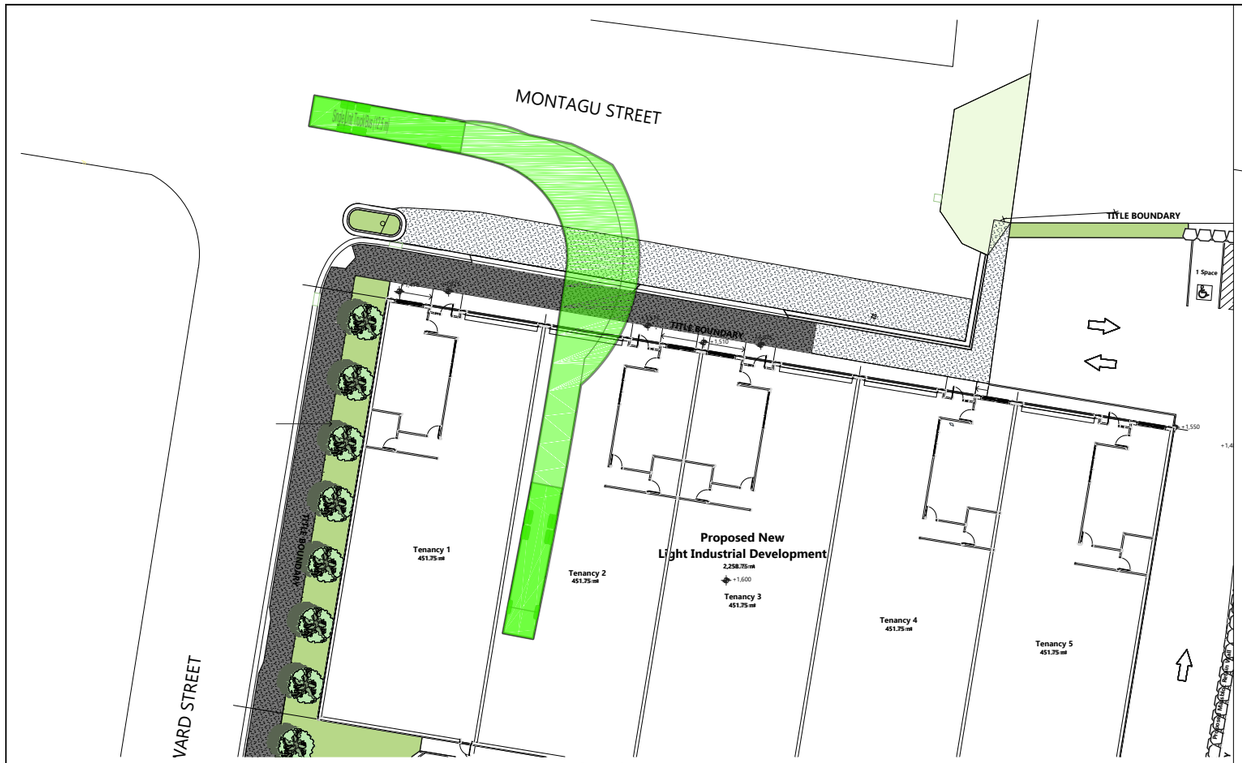

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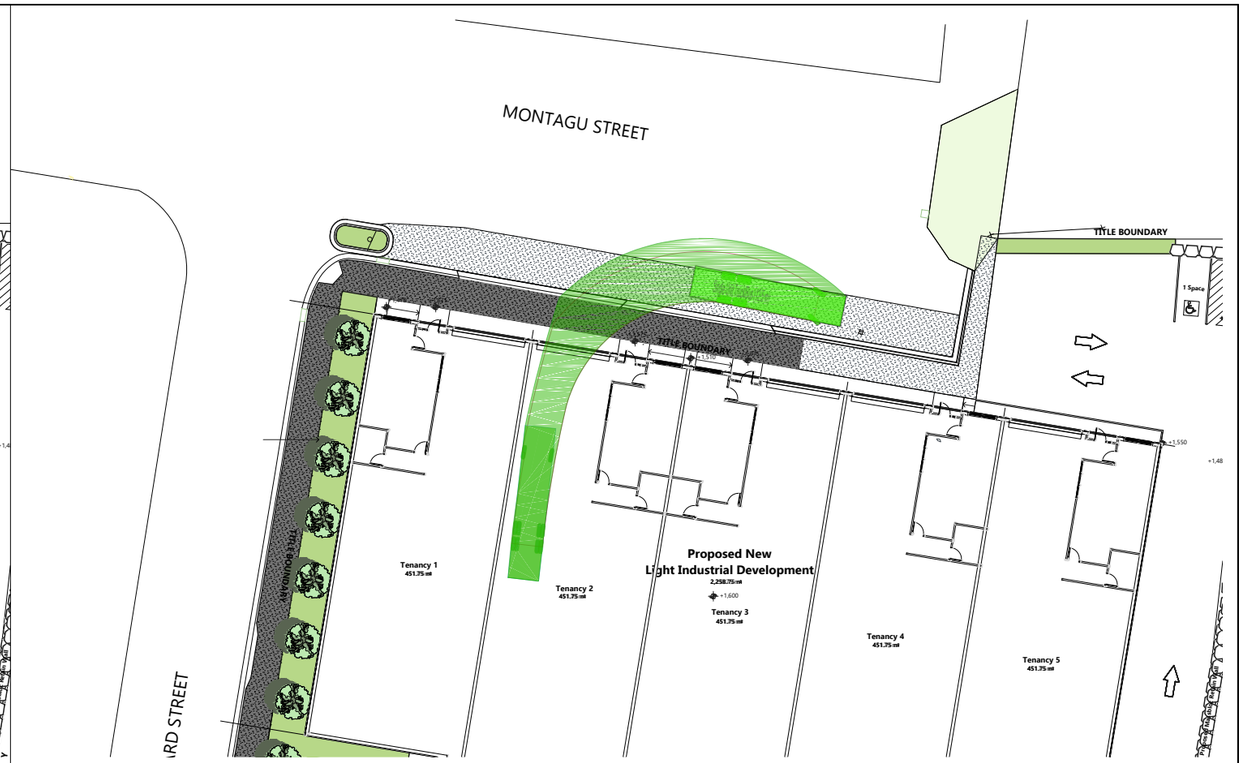

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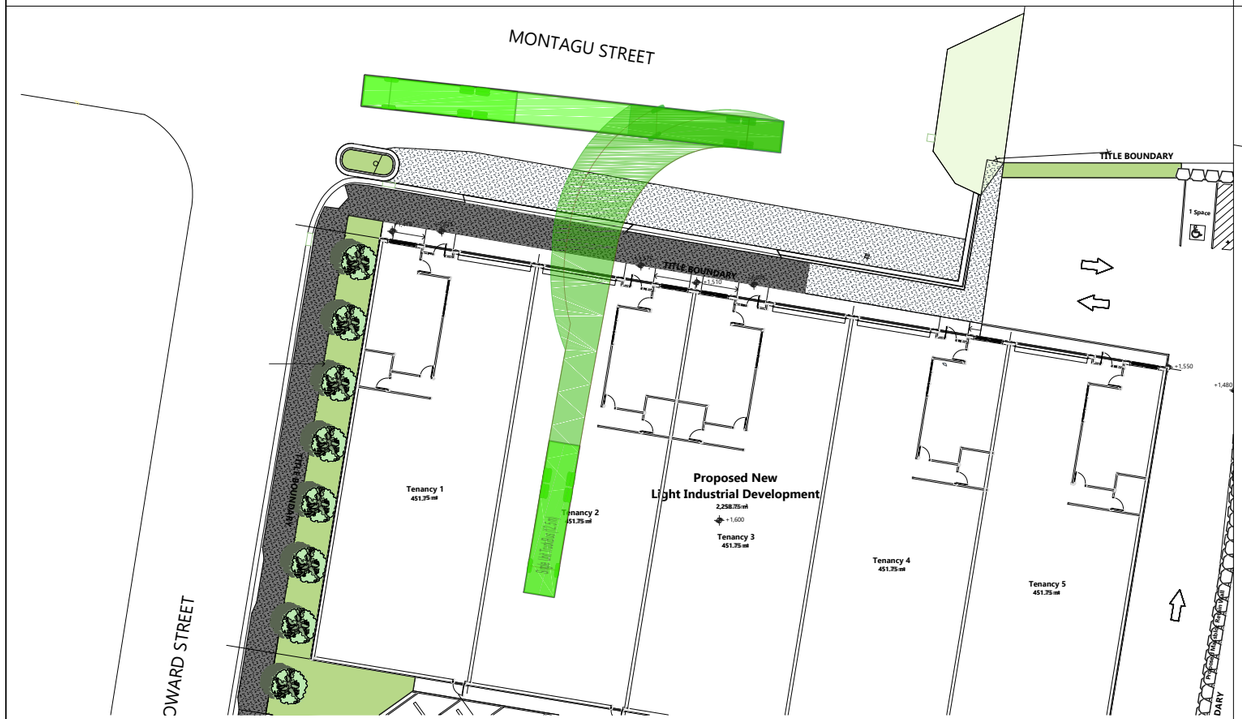

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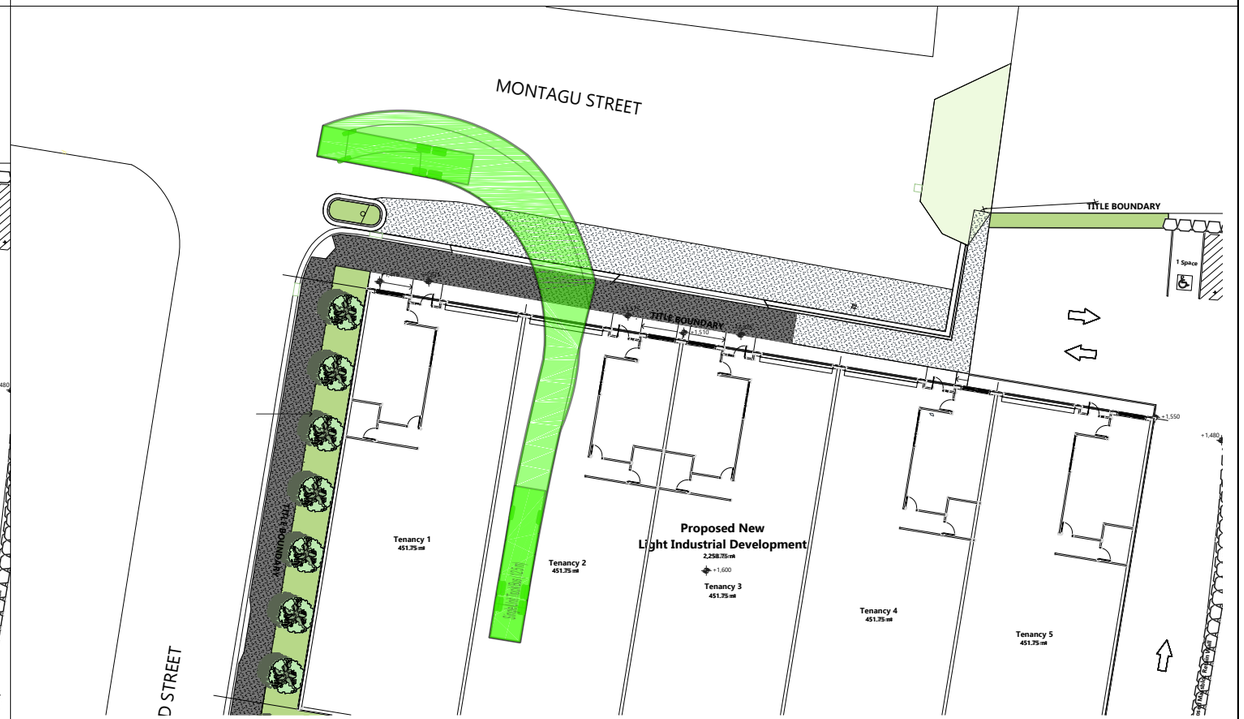

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REFERENCE FILES ATTACHED:

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
A	UPDATED PLAN	OVH	OVH	DF	17/01/2023
		OVH	OVH	LA	02/09/2022

APPROVED

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SIGNED

DATE

SCALE (PLOTTED FULL SIZE) AS SHOWN (A3)

SHEET SIZE A3

5 0 5 10 15 20

SCALE IN METRES - 1:500

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pittsh.com.au Phone 1300 748 874 ABN 67 140 184 309

CLIENT: LPD - DEVELOPMENTS P

PROJECT: MONTAGU STREET COMMERCIAL DEVELOPMENT

STATUS: PRELIMINARY

DRAWING TITLE: SWEPT PATHS 12.5m RIGID TRUCK - SHEET 2

DATUMS: AHD / MGA

CLIENT No.: -

DRAWING No.: P.22.1785-00-TRA-SKT-001

REVISION: A

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Jan. 17, 23 - 09:31:21 Name: P.22.1785-00-TRA-SKT-001.dwg

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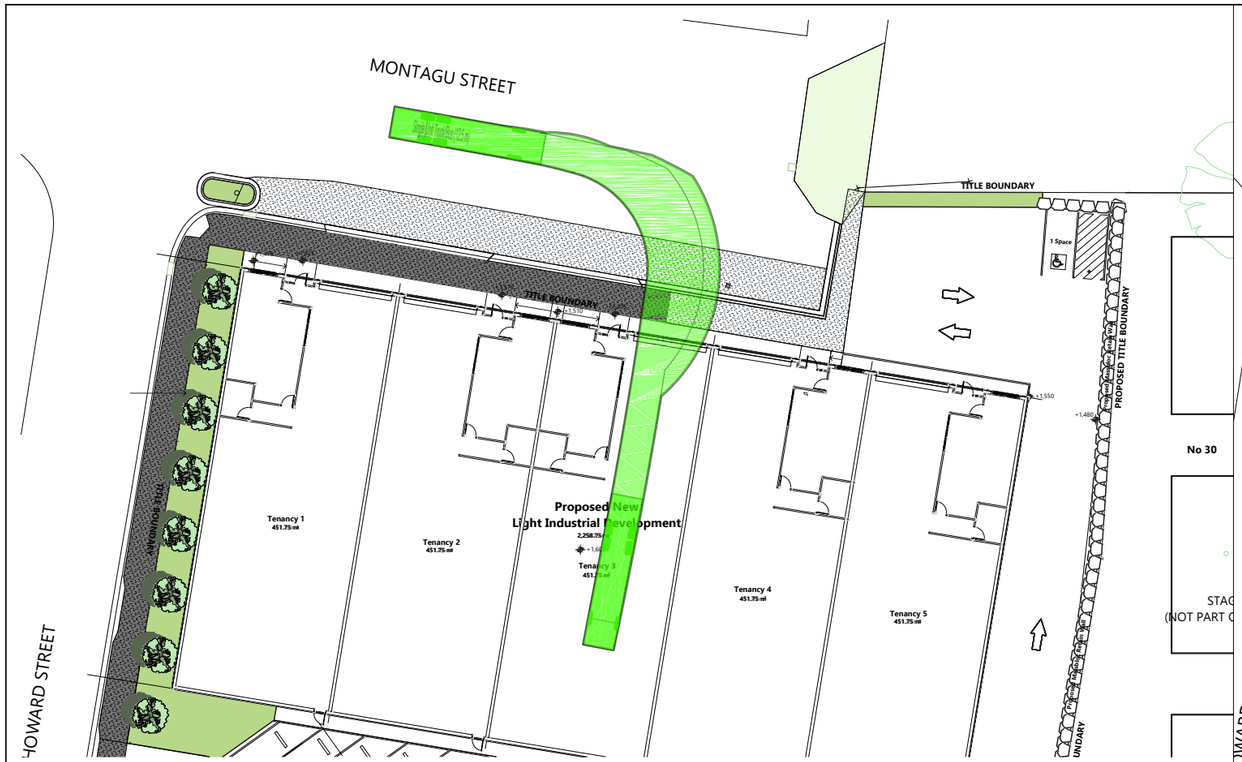

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ENTERING - REVERSE

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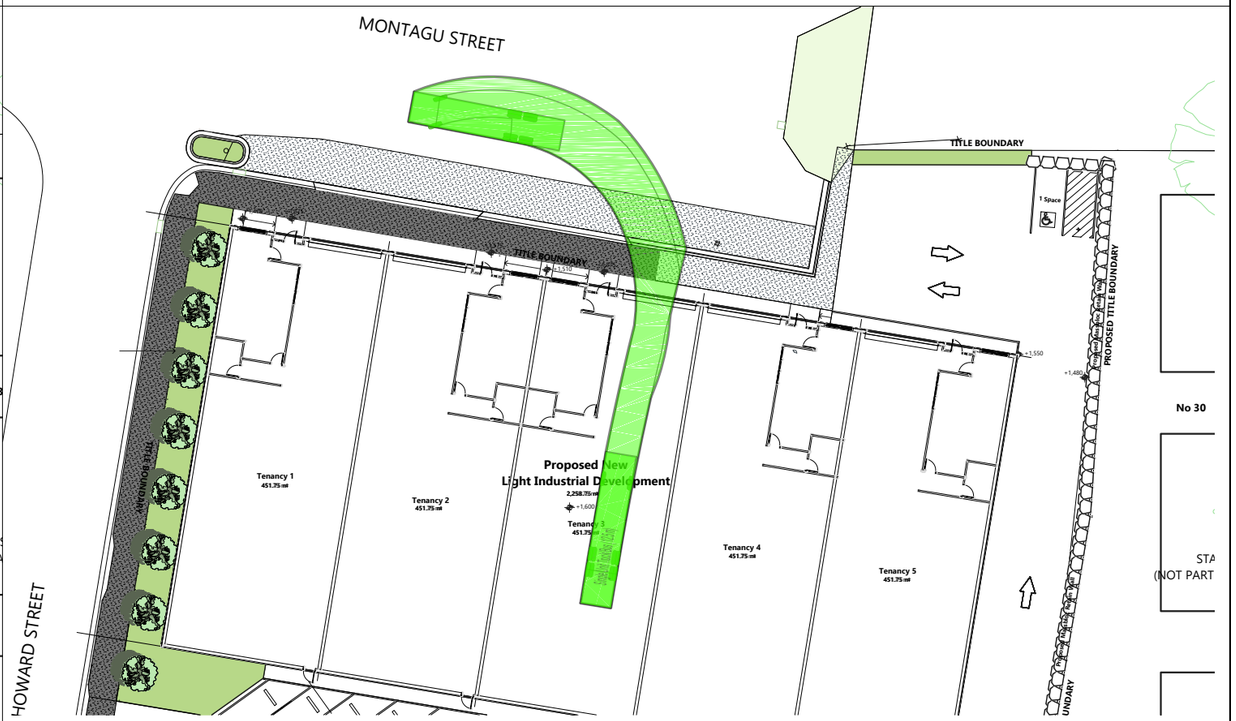

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REFERENCE FILES ATTACHED:

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
A	UPDATED PLAN	OVH	OVH	DF	17/01/2023
		OVH	OVH	LA	02/09/2022

APPROVED

ORIGINAL COPY ON FILE
"e" SIGNED BY

SIGNED

DATE

SCALE (PLOTTED FULL SIZE) AS SHOWN (A3)

SHEET SIZE A3

5 0 5 10 15 20

SCALE IN METRES - 1:500

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pittsh.com.au Phone 1300 748 874 ABN 67 140 184 309

CLIENT: LPD - DEVELOPMENTS P

PROJECT: MONTAGU STREET COMMERCIAL DEVELOPMENT

STATUS: PRELIMINARY

DRAWING TITLE: SWEPT PATHS 12.5m RIGID TRUCK - SHEET 3

DATUMS: AHD / MGA

CLIENT No. -

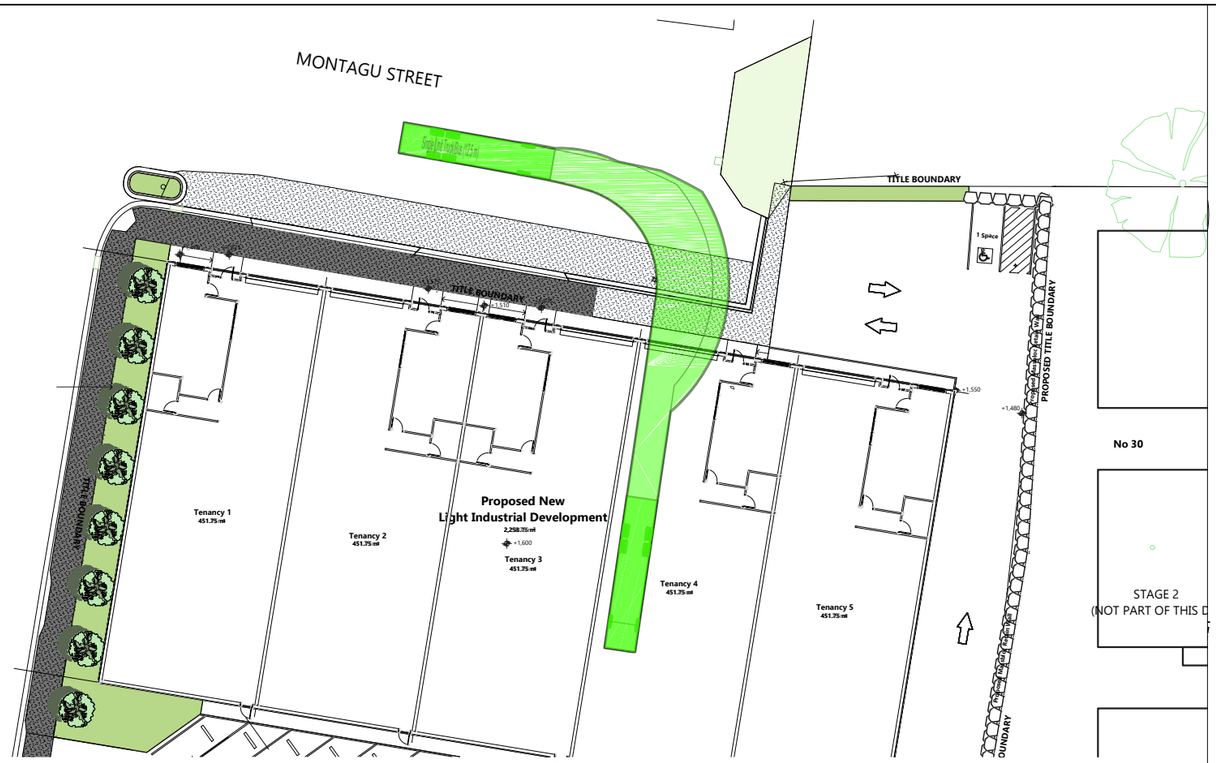
DRAWING No. P.22.1785-00-TRA-SKT-001

REVISION A

PRINT IN COLOUR

Jan. 17, 23 - 09:31:46 Name: P.22.1785-00-TRA-SKT-001.dwg

P&S FORM DRG-A3 REV - 10



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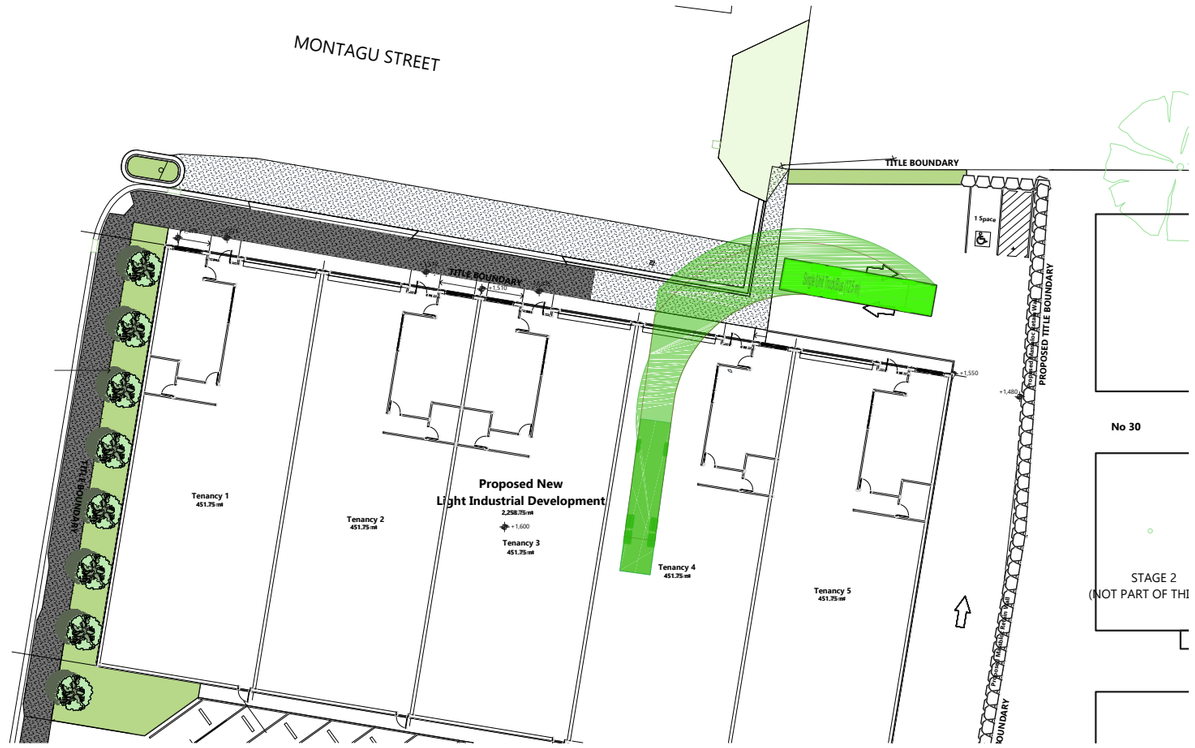

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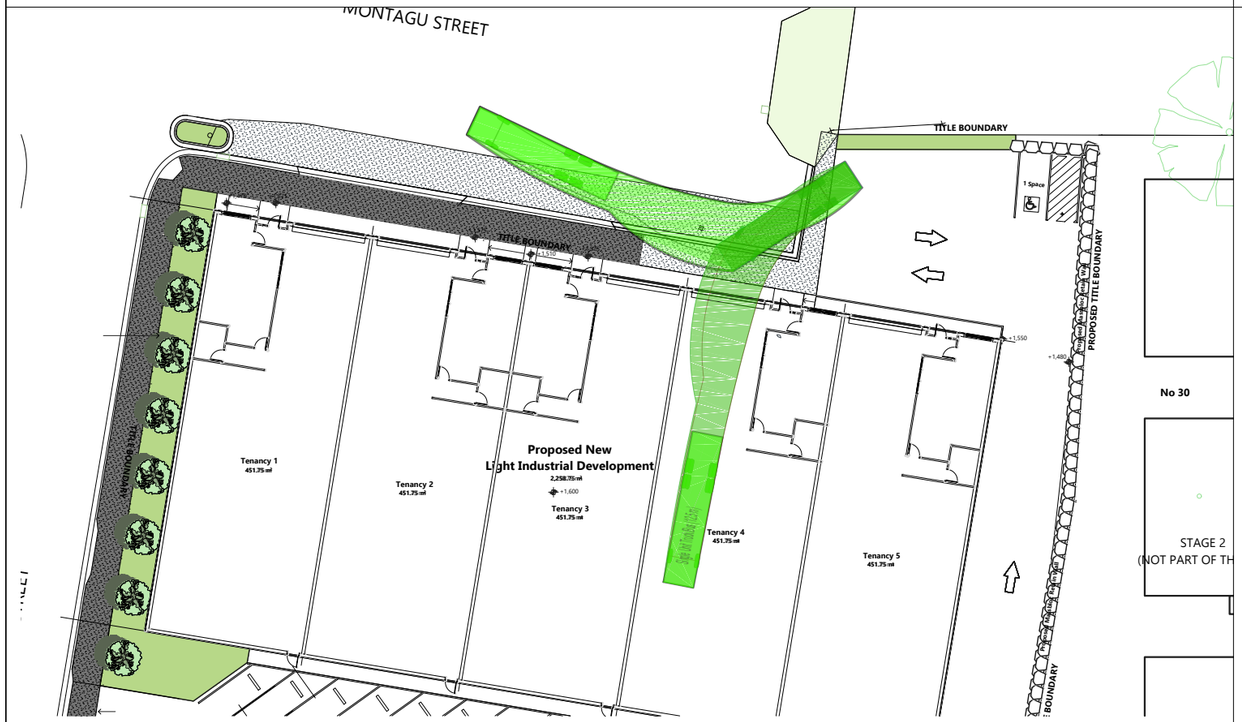


EXITING - REVERSE

EXITING - FORWARD

REFERENCE FILES ATTACHED:

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
A	UPDATED PLAN	OVH	OVH	DF	17/01/2023
		OVH	OVH	LA	02/09/2022

APPROVED

ORIGINAL COPY ON FILE
"e" SIGNED BY

SIGNED

DATE

SCALE (PLOTTED FULL SIZE) AS SHOWN (A3)

SHEET SIZE A3

5 0 5 10 15 20

SCALE IN METRES - 1:500

pitt&sherry

pittsh.com.au Phone 1300 748 874 ABN 67 140 184 309

CLIENT: LPD - DEVELOPMENTS P

PROJECT: MONTAGU STREET COMMERCIAL DEVELOPMENT

STATUS: PRELIMINARY

DRAWING TITLE: SWEPT PATHS
12.5m RIGID TRUCK - SHEET 4

DATUMS: AHD / MGA

CLIENT No. -

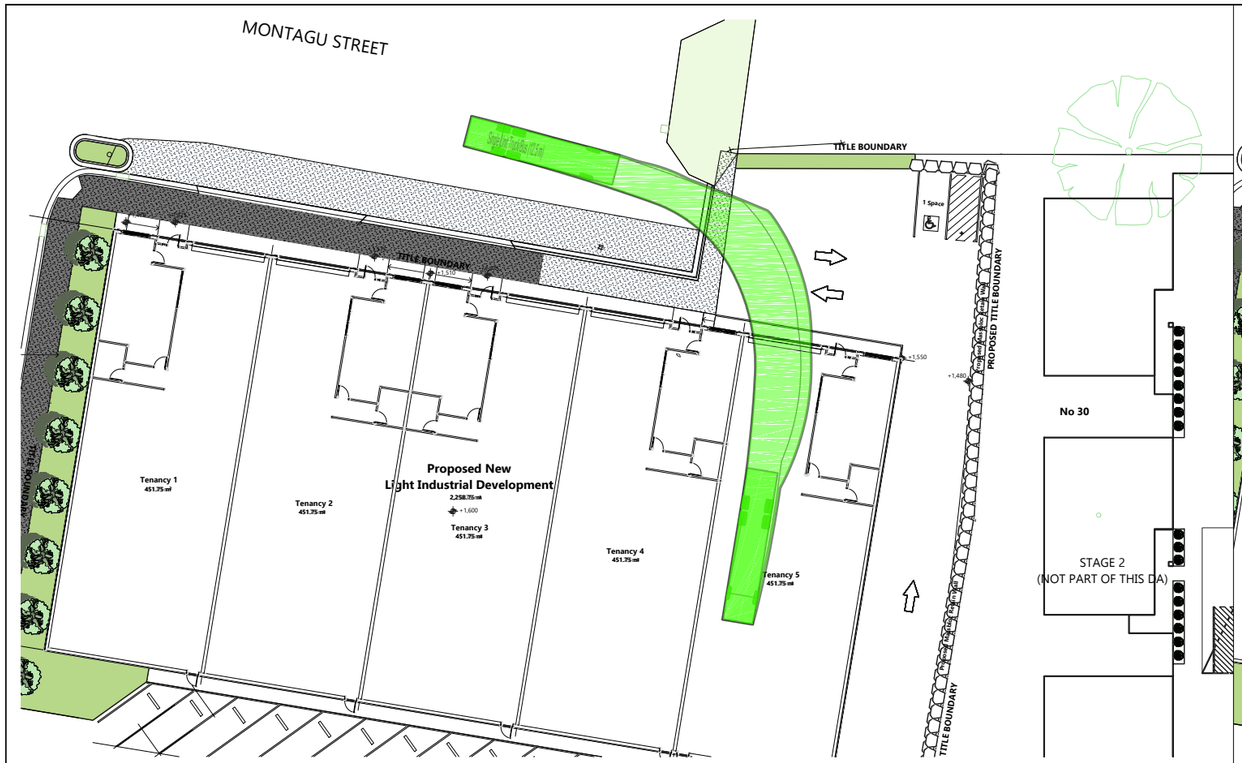
DRAWING No. P.22.1785-00-TRA-SKT-001

REVISION A

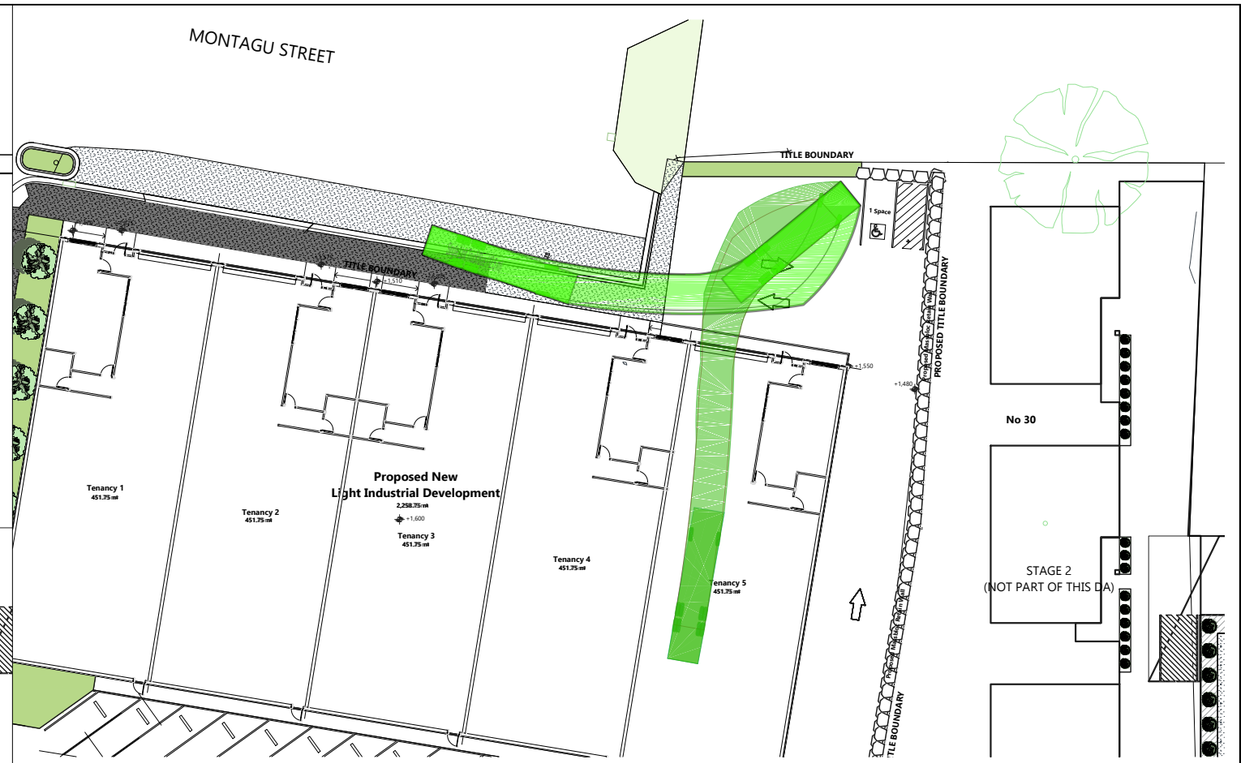
PRINT IN COLOUR

Jan. 17, 23 - 09:32:11 Name: P.22.1785-00-TRA-SKT-001.dwg

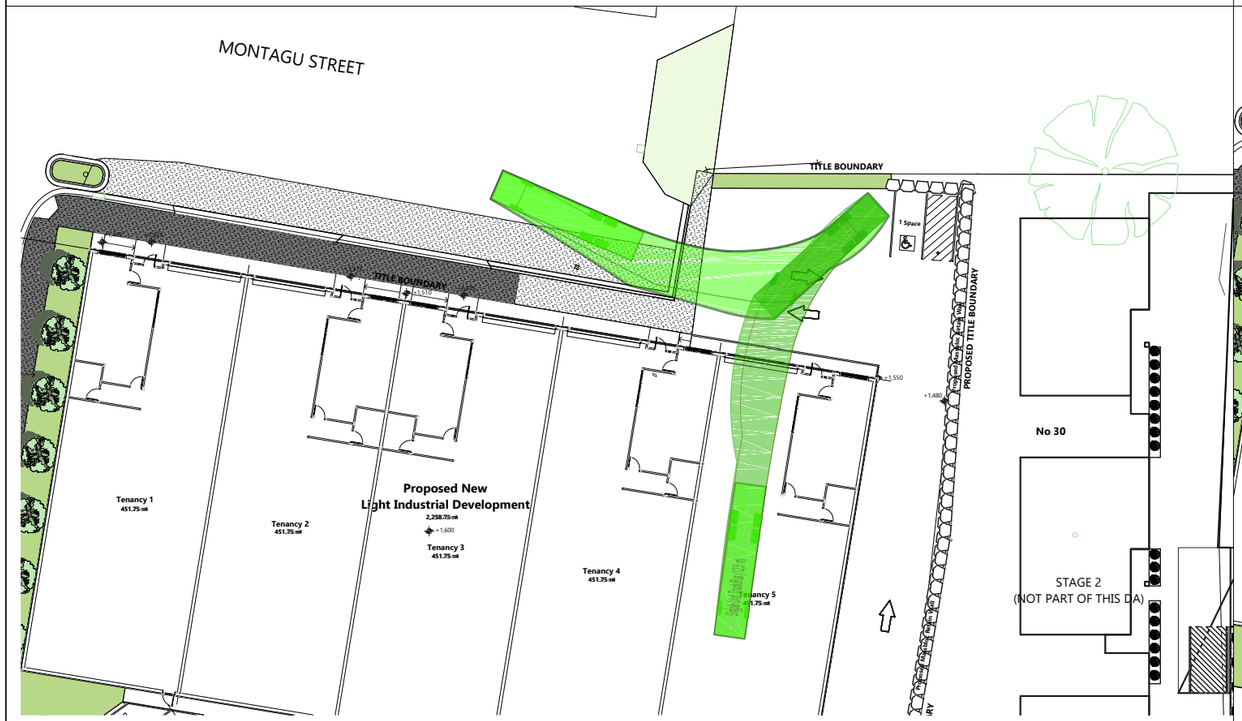
P&S FORM DRG-A3 REV - 10



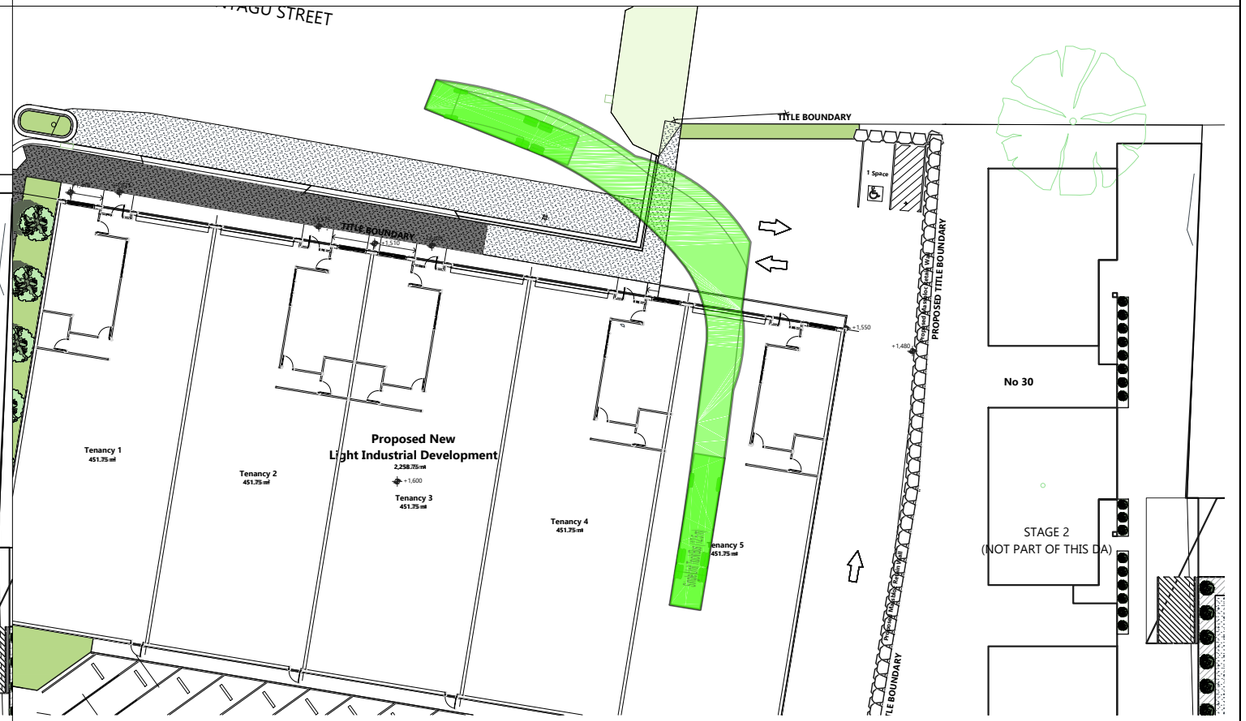
ENTERING - FORWARD



ENTERING - REVERSE



EXITING - REVERSE



EXITING - FORWARD

REFERENCE FILES ATTACHED:

DRAWING REVISION HISTORY

No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
A	UPDATED PLAN	OVH	OVH	DF	17/01/2023
		OVH	OVH	LA	02/09/2022

APPROVED

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SIGNED

DATE

SCALE (PLOTTED FULL SIZE) AS SHOWN (A3)

SHEET SIZE A3

5 0 5 10 15 20

SCALE IN METRES - 1:500

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CLIENT: LPD - DEVELOPMENTS P

PROJECT: MONTAGU STREET COMMERCIAL DEVELOPMENT

STATUS: PRELIMINARY

DRAWING TITLE: SWEPT PATHS 12.5m RIGID TRUCK - SHEET 5

DATUMS: AHD / MGA

CLIENT No. -

DRAWING No. P.22.1785-00-TRA-SKT-001

REVISION A

PRINT IN COLOUR

Jan. 17, 23 - 09:32:49 Name: P.22.1785-00-TRA-SKT-001.dwg

P&S FORM DRG-A3 REV - 10

SIDRA Traffic Modelling Results – Existing

Appendix C

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MOVEMENT SUMMARY

Site: 101 [Montagu Street/ Forster Street intersection - AM peak hour - Existing (Site Folder: General)]

8:00am - 9:00am
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Montagu Street														
1	L2	46	3.0	48	3.0	0.098	5.3	LOS A	0.5	3.5	0.34	0.57	0.34	52.5
2	T1	24	3.0	25	3.0	0.098	5.5	LOS A	0.5	3.5	0.34	0.57	0.34	53.6
3	R2	34	3.0	36	3.0	0.098	9.1	LOS A	0.5	3.5	0.34	0.57	0.34	53.2
3u	U	1	3.0	1	3.0	0.098	10.9	LOS B	0.5	3.5	0.34	0.57	0.34	53.9
Approach		105	3.0	111	3.0	0.098	6.6	LOS A	0.5	3.5	0.34	0.57	0.34	53.0
East: Forster Street														
4	L2	83	3.0	87	3.0	0.183	4.7	LOS A	1.0	7.3	0.21	0.50	0.21	53.3
5	T1	116	3.0	122	3.0	0.183	5.0	LOS A	1.0	7.3	0.21	0.50	0.21	54.4
6	R2	28	3.0	29	3.0	0.183	8.6	LOS A	1.0	7.3	0.21	0.50	0.21	54.1
6u	U	6	3.0	6	3.0	0.183	10.4	LOS B	1.0	7.3	0.21	0.50	0.21	54.8
Approach		233	3.0	245	3.0	0.183	5.4	LOS A	1.0	7.3	0.21	0.50	0.21	54.0
North: Montagu Street														
7	L2	64	3.0	67	3.0	0.095	5.2	LOS A	0.5	3.4	0.34	0.54	0.34	53.1
8	T1	30	3.0	32	3.0	0.095	5.5	LOS A	0.5	3.4	0.34	0.54	0.34	54.3
9	R2	8	3.0	8	3.0	0.095	9.1	LOS A	0.5	3.4	0.34	0.54	0.34	53.9
9u	U	1	3.0	1	3.0	0.095	10.9	LOS B	0.5	3.4	0.34	0.54	0.34	54.6
Approach		103	3.0	108	3.0	0.095	5.7	LOS A	0.5	3.4	0.34	0.54	0.34	53.5
West: Forster Street														
10	L2	10	3.0	11	3.0	0.107	4.9	LOS A	0.5	3.9	0.26	0.50	0.26	53.0
11	T1	96	3.0	101	3.0	0.107	5.2	LOS A	0.5	3.9	0.26	0.50	0.26	54.1
12	R2	16	3.0	17	3.0	0.107	8.8	LOS A	0.5	3.9	0.26	0.50	0.26	53.8
12u	U	1	3.0	1	3.0	0.107	10.6	LOS B	0.5	3.9	0.26	0.50	0.26	54.5
Approach		123	3.0	129	3.0	0.107	5.7	LOS A	0.5	3.9	0.26	0.50	0.26	54.0
All Vehicles		564	3.0	594	3.0	0.183	5.7	LOS A	1.0	7.3	0.27	0.52	0.27	53.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: C:\Users\llyu\pitt&sherry\P.22.1785 - Combined rezoning and planning permit Invermay - Project Site Documents\20 Investigation and Design\Traffic\Montagu Street traffic model.sip9

MOVEMENT SUMMARY

Site: 101 [Montagu Street/ Forster Street intersection - PM peak hour - Existing (Site Folder: General)]

4:30pm - 5:30pm
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Montagu Street														
1	L2	18	3.0	19	3.0	0.104	4.8	LOS A	0.5	3.8	0.24	0.57	0.24	52.2
2	T1	34	3.0	36	3.0	0.104	5.1	LOS A	0.5	3.8	0.24	0.57	0.24	53.2
3	R2	70	3.0	74	3.0	0.104	8.7	LOS A	0.5	3.8	0.24	0.57	0.24	52.9
3u	U	1	3.0	1	3.0	0.104	10.5	LOS B	0.5	3.8	0.24	0.57	0.24	53.5
Approach		123	3.0	129	3.0	0.104	7.1	LOS A	0.5	3.8	0.24	0.57	0.24	52.9
East: Forster Street														
4	L2	33	3.0	35	3.0	0.088	4.7	LOS A	0.4	3.2	0.20	0.53	0.20	53.0
5	T1	44	3.0	46	3.0	0.088	5.0	LOS A	0.4	3.2	0.20	0.53	0.20	54.1
6	R2	28	3.0	29	3.0	0.088	8.6	LOS A	0.4	3.2	0.20	0.53	0.20	53.7
6u	U	2	3.0	2	3.0	0.088	10.4	LOS B	0.4	3.2	0.20	0.53	0.20	54.4
Approach		107	3.0	113	3.0	0.088	5.9	LOS A	0.4	3.2	0.20	0.53	0.20	53.7
North: Montagu Street														
7	L2	41	3.0	43	3.0	0.061	5.7	LOS A	0.3	2.2	0.42	0.56	0.42	53.0
8	T1	16	3.0	17	3.0	0.061	6.0	LOS A	0.3	2.2	0.42	0.56	0.42	54.1
9	R2	2	3.0	2	3.0	0.061	9.6	LOS A	0.3	2.2	0.42	0.56	0.42	53.7
9u	U	1	3.0	1	3.0	0.061	11.4	LOS B	0.3	2.2	0.42	0.56	0.42	54.4
Approach		60	3.0	63	3.0	0.061	6.0	LOS A	0.3	2.2	0.42	0.56	0.42	53.3
West: Forster Street														
10	L2	5	3.0	5	3.0	0.169	5.2	LOS A	0.9	6.5	0.33	0.54	0.33	52.6
11	T1	142	3.0	149	3.0	0.169	5.5	LOS A	0.9	6.5	0.33	0.54	0.33	53.7
12	R2	39	3.0	41	3.0	0.169	9.1	LOS A	0.9	6.5	0.33	0.54	0.33	53.3
12u	U	1	3.0	1	3.0	0.169	10.9	LOS B	0.9	6.5	0.33	0.54	0.33	54.0
Approach		187	3.0	197	3.0	0.169	6.2	LOS A	0.9	6.5	0.33	0.54	0.33	53.6
All Vehicles		477	3.0	502	3.0	0.169	6.4	LOS A	0.9	6.5	0.29	0.55	0.29	53.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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SIDRA Traffic Modelling Results – Post Development 2023

Appendix D

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MOVEMENT SUMMARY

Site: 101 [Montagu Street/ Forster Street intersection - AM peak hour - Post Development 2023 (Site Folder: General)]

8:00am - 9:00am
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Montagu Street														
1	L2	46	3.0	48	3.0	0.100	5.3	LOS A	0.5	3.6	0.35	0.57	0.35	52.5
2	T1	26	3.0	27	3.0	0.100	5.6	LOS A	0.5	3.6	0.35	0.57	0.35	53.6
3	R2	34	3.0	36	3.0	0.100	9.2	LOS A	0.5	3.6	0.35	0.57	0.35	53.2
3u	U	1	3.0	1	3.0	0.100	11.0	LOS B	0.5	3.6	0.35	0.57	0.35	53.9
Approach		107	3.0	113	3.0	0.100	6.7	LOS A	0.5	3.6	0.35	0.57	0.35	53.0
East: Forster Street														
4	L2	83	3.0	87	3.0	0.188	4.7	LOS A	1.1	7.5	0.21	0.51	0.21	53.2
5	T1	116	3.0	122	3.0	0.188	5.0	LOS A	1.1	7.5	0.21	0.51	0.21	54.3
6	R2	34	3.0	36	3.0	0.188	8.6	LOS A	1.1	7.5	0.21	0.51	0.21	54.0
6u	U	6	3.0	6	3.0	0.188	10.4	LOS B	1.1	7.5	0.21	0.51	0.21	54.7
Approach		239	3.0	252	3.0	0.188	5.5	LOS A	1.1	7.5	0.21	0.51	0.21	53.9
North: Montagu Street														
7	L2	67	3.0	71	3.0	0.099	5.2	LOS A	0.5	3.6	0.34	0.54	0.34	53.1
8	T1	31	3.0	33	3.0	0.099	5.5	LOS A	0.5	3.6	0.34	0.54	0.34	54.3
9	R2	8	3.0	8	3.0	0.099	9.1	LOS A	0.5	3.6	0.34	0.54	0.34	53.9
9u	U	1	3.0	1	3.0	0.099	10.9	LOS B	0.5	3.6	0.34	0.54	0.34	54.6
Approach		107	3.0	113	3.0	0.099	5.7	LOS A	0.5	3.6	0.34	0.54	0.34	53.5
West: Forster Street														
10	L2	10	3.0	11	3.0	0.108	4.9	LOS A	0.6	4.0	0.28	0.50	0.28	53.0
11	T1	96	3.0	101	3.0	0.108	5.2	LOS A	0.6	4.0	0.28	0.50	0.28	54.1
12	R2	16	3.0	17	3.0	0.108	8.8	LOS A	0.6	4.0	0.28	0.50	0.28	53.7
12u	U	1	3.0	1	3.0	0.108	10.6	LOS B	0.6	4.0	0.28	0.50	0.28	54.4
Approach		123	3.0	129	3.0	0.108	5.7	LOS A	0.6	4.0	0.28	0.50	0.28	54.0
All Vehicles		576	3.0	606	3.0	0.188	5.8	LOS A	1.1	7.5	0.27	0.52	0.27	53.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Montagu Street/ Forster Street intersection - PM peak hour - Post Development 2023 (Site Folder: General)]

4:30pm - 5:30pm
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Montagu Street														
1	L2	18	3.0	19	3.0	0.106	4.8	LOS A	0.5	3.9	0.24	0.57	0.24	52.2
2	T1	35	3.0	37	3.0	0.106	5.1	LOS A	0.5	3.9	0.24	0.57	0.24	53.2
3	R2	70	3.0	74	3.0	0.106	8.7	LOS A	0.5	3.9	0.24	0.57	0.24	52.9
3u	U	1	3.0	1	3.0	0.106	10.5	LOS B	0.5	3.9	0.24	0.57	0.24	53.5
Approach		124	3.0	131	3.0	0.106	7.1	LOS A	0.5	3.9	0.24	0.57	0.24	52.9
East: Forster Street														
4	L2	33	3.0	35	3.0	0.091	4.7	LOS A	0.5	3.3	0.21	0.53	0.21	52.9
5	T1	44	3.0	46	3.0	0.091	5.0	LOS A	0.5	3.3	0.21	0.53	0.21	54.0
6	R2	31	3.0	33	3.0	0.091	8.6	LOS A	0.5	3.3	0.21	0.53	0.21	53.7
6u	U	2	3.0	2	3.0	0.091	10.4	LOS B	0.5	3.3	0.21	0.53	0.21	54.4
Approach		110	3.0	116	3.0	0.091	6.0	LOS A	0.5	3.3	0.21	0.53	0.21	53.6
North: Montagu Street														
7	L2	47	3.0	49	3.0	0.069	5.8	LOS A	0.3	2.5	0.43	0.57	0.43	53.0
8	T1	18	3.0	19	3.0	0.069	6.0	LOS A	0.3	2.5	0.43	0.57	0.43	54.1
9	R2	2	3.0	2	3.0	0.069	9.6	LOS A	0.3	2.5	0.43	0.57	0.43	53.7
9u	U	1	3.0	1	3.0	0.069	11.4	LOS B	0.3	2.5	0.43	0.57	0.43	54.4
Approach		68	3.0	72	3.0	0.069	6.0	LOS A	0.3	2.5	0.43	0.57	0.43	53.3
West: Forster Street														
10	L2	5	3.0	5	3.0	0.169	5.2	LOS A	0.9	6.5	0.34	0.54	0.34	52.6
11	T1	142	3.0	149	3.0	0.169	5.5	LOS A	0.9	6.5	0.34	0.54	0.34	53.7
12	R2	39	3.0	41	3.0	0.169	9.1	LOS A	0.9	6.5	0.34	0.54	0.34	53.3
12u	U	1	3.0	1	3.0	0.169	10.9	LOS B	0.9	6.5	0.34	0.54	0.34	54.0
Approach		187	3.0	197	3.0	0.169	6.3	LOS A	0.9	6.5	0.34	0.54	0.34	53.6
All Vehicles		489	3.0	515	3.0	0.169	6.4	LOS A	0.9	6.5	0.30	0.55	0.30	53.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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SIDRA Traffic Modelling Results – 10-Year Post Development 2033

Appendix E

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MOVEMENT SUMMARY

Site: 101 [Montagu Street/ Forster Street intersection - AM peak hour - 10 Years Post Development 2033 (Site Folder: General)]

8:00am - 9:00am
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Montagu Street														
1	L2	56	3.0	59	3.0	0.124	5.5	LOS A	0.6	4.6	0.39	0.59	0.39	52.4
2	T1	31	3.0	33	3.0	0.124	5.8	LOS A	0.6	4.6	0.39	0.59	0.39	53.4
3	R2	41	3.0	43	3.0	0.124	9.4	LOS A	0.6	4.6	0.39	0.59	0.39	53.1
3u	U	1	3.0	1	3.0	0.124	11.2	LOS B	0.6	4.6	0.39	0.59	0.39	53.8
Approach		129	3.0	136	3.0	0.124	6.9	LOS A	0.6	4.6	0.39	0.59	0.39	52.9
East: Forster Street														
4	L2	101	3.0	106	3.0	0.230	4.8	LOS A	1.3	9.7	0.25	0.51	0.25	53.1
5	T1	141	3.0	148	3.0	0.230	5.1	LOS A	1.3	9.7	0.25	0.51	0.25	54.2
6	R2	40	3.0	42	3.0	0.230	8.7	LOS A	1.3	9.7	0.25	0.51	0.25	53.9
6u	U	7	3.0	7	3.0	0.230	10.5	LOS B	1.3	9.7	0.25	0.51	0.25	54.6
Approach		289	3.0	304	3.0	0.230	5.6	LOS A	1.3	9.7	0.25	0.51	0.25	53.8
North: Montagu Street														
7	L2	81	3.0	85	3.0	0.123	5.4	LOS A	0.6	4.6	0.38	0.56	0.38	53.0
8	T1	37	3.0	39	3.0	0.123	5.7	LOS A	0.6	4.6	0.38	0.56	0.38	54.1
9	R2	10	3.0	11	3.0	0.123	9.3	LOS A	0.6	4.6	0.38	0.56	0.38	53.8
9u	U	1	3.0	1	3.0	0.123	11.1	LOS B	0.6	4.6	0.38	0.56	0.38	54.5
Approach		129	3.0	136	3.0	0.123	5.9	LOS A	0.6	4.6	0.38	0.56	0.38	53.4
West: Forster Street														
10	L2	13	3.0	14	3.0	0.135	5.1	LOS A	0.7	5.1	0.31	0.51	0.31	52.9
11	T1	117	3.0	123	3.0	0.135	5.3	LOS A	0.7	5.1	0.31	0.51	0.31	54.0
12	R2	20	3.0	21	3.0	0.135	8.9	LOS A	0.7	5.1	0.31	0.51	0.31	53.6
12u	U	1	3.0	1	3.0	0.135	10.7	LOS B	0.7	5.1	0.31	0.51	0.31	54.3
Approach		151	3.0	159	3.0	0.135	5.8	LOS A	0.7	5.1	0.31	0.51	0.31	53.8
All Vehicles		698	3.0	735	3.0	0.230	5.9	LOS A	1.3	9.7	0.31	0.54	0.31	53.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Montagu Street/ Forster Street intersection - PM peak hour - 10 Years Post Development 2033 (Site Folder: General)]

4:30pm - 5:30pm
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Montagu Street														
1	L2	22	3.0	23	3.0	0.130	4.9	LOS A	0.7	4.9	0.27	0.58	0.27	52.1
2	T1	42	3.0	44	3.0	0.130	5.2	LOS A	0.7	4.9	0.27	0.58	0.27	53.1
3	R2	85	3.0	89	3.0	0.130	8.8	LOS A	0.7	4.9	0.27	0.58	0.27	52.8
3u	U	1	3.0	1	3.0	0.130	10.6	LOS B	0.7	4.9	0.27	0.58	0.27	53.4
Approach		150	3.0	158	3.0	0.130	7.2	LOS A	0.7	4.9	0.27	0.58	0.27	52.8
East: Forster Street														
4	L2	40	3.0	42	3.0	0.112	4.8	LOS A	0.6	4.2	0.24	0.53	0.24	52.9
5	T1	54	3.0	57	3.0	0.112	5.1	LOS A	0.6	4.2	0.24	0.53	0.24	54.0
6	R2	37	3.0	39	3.0	0.112	8.7	LOS A	0.6	4.2	0.24	0.53	0.24	53.6
6u	U	2	3.0	2	3.0	0.112	10.5	LOS B	0.6	4.2	0.24	0.53	0.24	54.3
Approach		133	3.0	140	3.0	0.112	6.1	LOS A	0.6	4.2	0.24	0.53	0.24	53.5
North: Montagu Street														
7	L2	56	3.0	59	3.0	0.086	6.1	LOS A	0.4	3.2	0.48	0.60	0.48	52.8
8	T1	21	3.0	22	3.0	0.086	6.4	LOS A	0.4	3.2	0.48	0.60	0.48	53.9
9	R2	3	3.0	3	3.0	0.086	10.0	LOS A	0.4	3.2	0.48	0.60	0.48	53.5
9u	U	1	3.0	1	3.0	0.086	11.8	LOS B	0.4	3.2	0.48	0.60	0.48	54.2
Approach		81	3.0	85	3.0	0.086	6.4	LOS A	0.4	3.2	0.48	0.60	0.48	53.1
West: Forster Street														
10	L2	6	3.0	6	3.0	0.212	5.4	LOS A	1.2	8.5	0.39	0.56	0.39	52.4
11	T1	173	3.0	182	3.0	0.212	5.7	LOS A	1.2	8.5	0.39	0.56	0.39	53.5
12	R2	48	3.0	51	3.0	0.212	9.3	LOS A	1.2	8.5	0.39	0.56	0.39	53.1
12u	U	1	3.0	1	3.0	0.212	11.1	LOS B	1.2	8.5	0.39	0.56	0.39	53.8
Approach		228	3.0	240	3.0	0.212	6.5	LOS A	1.2	8.5	0.39	0.56	0.39	53.4
All Vehicles		592	3.0	623	3.0	0.212	6.6	LOS A	1.2	8.5	0.34	0.56	0.34	53.2

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Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

pitt&sherry

Traffic Impact Assessment – Invermay – Combined rezoning and planning permit

Pitt & Sherry (Operations) Pty Ltd
ABN 67 140 184 309

Phone 1300 748 874
info@pittsh.com.au
pittsh.com.au

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