From: "Sarah Jones" <sjones@milfordplanning.com.au>
Sent: Thu, 24 Apr 2025 17:30:02 +1000
To: "Development Assessment" <developmentassessment@townsville.qld.gov.au>
Cc: "Taryn Pace" <taryn.pace@townsville.qld.gov.au>
Subject: M2258 - MCU24/0092 - Response to Council's Information Request and SARA'a Further Advice Notice
Attachments: OM2258 - Final Information Request Response.pdf

Hi Taryn,

On behalf of the Applicant, Milford Planning refer to the abovementioned development application and to correspondence dated 1 October 2024, being the formal Information Request issued by Townsville City Council (Council) .

Further to the above, the State Assessment Referral Agency (SARA) issued a Further Advice Notice on 10 October 2024.

The development plans have been amended in response to the abovementioned correspondence (refer Attachment 3). It is requested that the amended plans are taken to supersede the previously submitted development plans.

In response to Council's Information Request, and in accordance with Section 13.2 of the Development Assessment Rules, we hereby provide the attached response to all of the information requested in Council's Information Request. The response also addresses SARA's Further Advice Notice.

Upon review should Council have any further questions please do not hesitate to contact us.

We will forward through the Notice of Intention to Commence Public Notification next week.

Kind regards,

Sarah Jones | SENIOR TOWN PLANNER

(07) 4724 0095 | www.milfordplanning.com.au

283, Flinders Street, Townsville Q 4810

MP ref: M2258
DA ref: MCU24/0092
QA: hw.sj.mc

24 April 2025

Assessment Manager
Townsville City Council
PO Box 1268
TOWNSVILLE QLD 4810
Via: *Email: developmentassessment@townsville.qld.gov.au*

Attention: Taryn Pace – Planning and Development

Dear Taryn,

Re: Information Request Response
Development Application seeking a Development Permit for Material Change of Use – Health Care Services (Medical Centre Extension) and Shop (Pharmacy) on land described as Lots 56 and 57 on RP703491 and located at 110-112 Bowen Road, Rosslea

On behalf of the Applicant, Milford Planning refer to the abovementioned development application and to correspondence dated **1 October 2024**, being the formal Information Request issued by Townsville City Council (Council) (refer **Attachment 1**).

Further to the above, the State Assessment Referral Agency (SARA) issued a Further Advice Notice on **10 October 2024** (refer **Attachment 2**).

The development plans have been amended in response to the abovementioned correspondence (refer **Attachment 3**). It is requested that the amended plans are taken to supersede the previously submitted development plans.

In response to Council's Information Request, and in accordance with Section 13.2 of the Development Assessment Rules, we hereby provide a response to all of the information requested in Council's Information Request as detailed in **Table 1** overleaf.

The response to SARA's Further Advice Notice is detailed in **Table 2** overleaf.

07 4724 0095
info@milfordplanning.com.au
283 Flinders Street
Townsville City Q 4810
PO Box 5463
Townsville City Q 4810
ABN 31 162 988 132
milfordplanning.com.au

Table 1 – Council Information Request	
Item	**Suggested Response**
Item 1 Demonstrated Need	This item requests further demonstration on the need for the proposed development on the subject site, specifically in relation to the Low Density Residential Zone and Strategic Framework of the planning scheme. In response to this item, we provide further written justification below to demonstrate there is a need for the proposed development and that it is compatible with the purpose and intent of the Low Density Residential Zone and complements the scale of the adjoining and surrounding built form. The proposed development mirrors the design and built form of the existing medical centre and it will achieve a better interface with the adjoining Motor Inn. The proposed development in terms of scale and it services the day to day needs of the local community, is not contrary to the community's expectations of what should occur in this zone on the subject site. The proposed development is not of a scale or size that is disproportionate to the servicing of the day to day needs of the local community and the impact of the proposed development on the existing hierarchy of centres is negligible. It is important to note that the proposed development generally only seeks to expand the provision of services that are already provided and servicing the needs of the community. Given the nature of the proposed development, it is not considered that an Economic Impact Assessment is required for the proposal. It is our view that: (a) there are currently limited health care services and retail opportunities within the Rosslea, immediate residential catchment area; (b) the Rosslea residential catchment population has grown since the existing medical centre was approved, meaning the proposed extension will service the day to day needs of the local community; (c) the proposed development will reduce wait times for existing and new patients, which the Applicant has advised is two to three weeks; (d) the provision of approximately 75 m^2 of retail space and an additional 233 m^2 (approximate total use area in terms of consult and surgery rooms and administration areas) of health care services is inconsequential and does not impact on the hierarchy of centres, both existing and planned; and (e) approval of the proposed development in this location will not undermine the planning scheme's purpose and intent for the existing centre hierarchy of the planning scheme. Appendix 5 of the Development Application includes a plan that illustrates the spatial/ locational context of the proposed development and the existing health care services (general practitioners) provided in Rosslea and the surrounding suburbs and existing centres. The plan provides clarity with respect to the service catchment and negligible

Table 1 – Council Information Request	
Item	**Suggested Response**
	impact on other centres, noting the following: (a) the immediate Rosslea service catchment contain enough dwellings and local population to support the proposed development; (b) the location of the existing medical centre has informed the location of the proposed extension and the proposed development is in a strategic location for residents to access; (c) there are no other health care services within the immediate Rosslea service catchment; (d) Idalia District Centre Precinct offers services tailored to a district and regional scale; (e) other nearby neighbourhood and local centres, such as The Precinct and Rising Sun Shopping Centre service a different catchment to the Rosslea catchment; and (f) other nearby medical centres including Clements Medical Fairfield Central and Clements Medical Veterans' Hub will continue to service the suburbs of Idalia, Oonoonba and surrounds. The proposed development will allow the existing medical centre to expand to better service the health and wellbeing needs of existing and new patients. It is further noted that a greater number of health and medical procedures can now be performed at medical centre, hence the need for additional room to cater for these additional services. In addition, to the justifications provided in the planning report, we note that the *2022 Health Workforce Needs Assessment* released by Health Workforce Queensland, continues to highlight the desired outcomes for higher rates of health workforce retention in regional areas. The proposed development provides the opportunity to contribute to achieving these outcomes. It is considered that the above response sufficiently addresses this item.
Item 2 Carparking and Access	This item requested the Applicant to provide an amended car parking and access plan to include the following changes: ▪ the consolidation of driveways on Viles Street; ▪ removal of tandem staff carparking at the front of the site; ▪ provision of a dedicated covered car space for the existing caretaker's accommodation, noting the carparking space shown appears to no longer be accessible to vehicles; ▪ provision of a dedicated ambulance bay; ▪ removal of the 4 tandem staff parks located on the north-eastern side of the proposed extension, noting these parking spaces would be required to reverse into oncoming traffic utilising the Bowen Road access without proper visibility, and are therefore unable to function safely; ▪ turning path diagrams for both cars and service vehicles, illustrating how vehicles will manoeuvre into and out of the staff and public parking spaces; ▪ confirmation that the proposed vehicle access from Bowen Road is free from services and other fixtures, noting that the proposed Site Plan (Plan 23-019) currently shows a pad/box within the driveway; and

Table 1 – Council Information Request	
Item	**Suggested Response**
	▪ detail of the connections between the internal pathway network and the existing Active Transportation Network. In response to this item, Langtree Consulting Engineers reviewed the proposed car parking layout and access arrangements for the proposed development, as a consequence both have been amended, refer to Attachment 3. Also, refer to Attachment 4 and the amended Traffic Impact Assessment (TIA). It is clear from the amended plans, the following changes have been made: ▪ consolidation of driveways on Viles Street; ▪ removal of tandem staff carparking at the front of the site; ▪ the design of the doors on the bin storage area have been amended to avoid conflict with the caretakers accommodation's parking space; ▪ provision of a dedicated ambulance bay; ▪ removal of the 4 tandem staff parks located on the north-eastern side of the proposed extension; ▪ turning path diagrams for both cars and service vehicles, illustrating how vehicles will manoeuvre into and out of the staff and public parking spaces; ▪ the existing Telstra pit will be relocated, with the appropriate authorisation sought from Telstra; and ▪ detail of the connections between the internal pathway network and the existing Active Transportation Network. The changes to the car parking layout and removal of the tandem spaces from the north western side of the proposed extension has resulted in the number of parking spaces reducing to 29, one service vehicle/ ambulance space and bicycle spaces. In addition to these car parking spaces, off-street parking is available within the vicinity (i.e. Viles Street and Bowen Road). Further, a percentage of patient will travel to the medical centre by bus, taxi or will get dropped off and picked up from the medical centre by family or friends. The medical centre is also well connected to the existing footpath network along the Bowen Road frontage and is in reasonable walking distance for some patients. It is considered that the above response, amended plans and revised TIA, sufficiently address this item.
Item 3 Waste Management and Collection	This item requested the Applicant provide further information on the proposed waste collection arrangement on site. In response to this item, the intended waste management collection arrangement, will be as per the current arrangements: ▪ JJ Waste and Recycling for all clinical waste; ▪ Shred X for classified documents; and ▪ 3 X 240L council waste bins for general waste and recycling. It is considered that the above response satisfactorily addresses this item.

Table 1 – Council Information Request	
Item	**Suggested Response**
Item 4 Traffic Impact Assessment	This item requested the Applicant provide a revised Traffic Impact Assessment (TIA) report demonstrating that existing transport infrastructure is appropriate, in terms of safety and efficiency, for the expected traffic generated by the development. In response to this item, Langtree Consulting Engineers have revised the TIA to respond to this item, refer to **Attachment 4**. This revised TIA has assessed the impact of the proposed development on the existing road network including at intersections and accesses, including operational performance and road safety. The impact of the proposed development on the road network has been analysed using procedures set out in Austroads, Australian Standard AS2890, Parking facilities and in TMR's Guide to Traffic Impact Assessment. Whilst the level of performance of the left and right turn out from the Viles Street currently shown as operating at a LOS F, assessment has found that there is no significant worsening of the operational performance of the surrounding road network as a result of the proposed development. The turn warrant checked shows that the road networks has already implementing the recommended turn warrants for right turn in which is an CHR(s). However, the AUL(s) warranted turn treatment for left turn in is not existing and as such AUL(s) is to be implemented. A proposed AUL(s) have been provided. The proposed sight access has adequate SSID and ASD. Pedestrian sight distance was assessed and found to have suitable safe pedestrian sight line provided that landscape along the sight line are low level planting. In conclusion, the proposed development accesses have been found to be adequate and no significant adverse impact on the operational performance or safety of the surrounding road network has been identified thus, no other mitigation measures have been deemed necessary. It is considered that the above response and amended TIA, sufficiently address this item.
Item 5 Landscaping	This item requested the Applicant provide an amended site plan illustrating a 2 m wide landscape buffer along all boundaries shared with a residential zone. In response to this item, Concepts Building Design have amended the proposal plans to increase the width of the landscaping buffer to the neighbouring dual occupancy to 1.1 m, meaning a total setback of 8.6 m to the neighbouring dual occupancy. It is considered that this setback, boundary fencing, and planting is sufficient to protect the amenity of the neighbouring residential use. Reasonable and relevant conditions can be imposed for landscaping plans to be submitted through a Certificate of Compliance application. In terms of the 2 m landscape strip along the shared boundary to the driveway to the Spanish Lodge Motor Inn (the Motor Inn), whilst the land adjoining land is within a residential zone, the use whilst

Table 1 – Council Information Request	
Item	**Suggested Response**
	accommodation, is commercial in nature, providing serviced rooms for short term stays by travellers and visitors. There is an existing fence along the shared boundary with the Motor Inn and the Applicant intends to install a 1.8 m high fence or other suitable boundary treatment along the shared boundary with the Motor Inn. It is considered that the above response, amended plans and the impositions of standard reasonable and relevant conditions, sufficiently address this item.

Table 2 – NQSARA Information Request	
Item	**Suggested Response**
Item 1 State Controlled Road Access	This item requested the Applicant submit a swept path analysis plan to demonstrate ability for vehicles utilising the front tandem parking spaces to enter and exit the site in a forward motion. SARA advises that vehicles are not to reverse over the sidewalk and cause queueing to the state-controlled road. In response to this item and Council's Information Request the development plans have been amended and the tandem car parking spaces to the front of the proposed extension have been deleted. The deletion of the tandem spaces and amended plans sufficiently address this item.

Proceeding

We trust the above and attached information is sufficient to allow Council and SARA to assess the development application. If Council or SARA is of the view that the response does not appropriately address the Information Request, we request the opportunity to meet to discuss further.

If you have any questions regarding this correspondence, please contact the undersigned on TEL: (07) 4724 0095.

Yours sincerely,

MILFORD PLANNING

Electronic

Sarah Jones

SENIOR TOWN PLANNER

Encl: Attachment 1: Council Information Request
Attachment 2: SARA Further Advice Letter
Attachment 3: Amended Plans prepared by Concepts Building Design
Attachment 4: Amended TIA prepared by Langtree Consulting Engineers

MILFORD PLANNING

Attachment 1

RECEIVED
BY MILFORD PLANNING
1-10-24

Date >> 01 October 2024

PO BOX 1268, Townsville
Queensland 4810

13 48 10

enquiries@townsville.qld.gov.au
townsville.qld.gov.au

ABN: 44 741 992 072

Munoz Family Trust
C/- Milford Planning
Po Box 5463
TOWNSVILLE QLD 4810

Email >> info@milfordplanning.com.au

Dear Sir/Madam

Information Request
Planning Act 2016

As per our telephone conversation on 01 October 2024 please be advised that, upon review of the below mentioned development application, further information is required to undertake a comprehensive assessment. In accordance with section 12 of Development Assessment Rules under the *Planning Act 2016* the following information is requested.

Application Details

Application no:	MCU24/0092
Assessment no:	1806044
Proposal:	Health Care Services (Medical Centre Extension) and Shop (Pharmacy)
Street address:	110 Bowen Road ROSSLEA QLD 4812 112 Bowen Road ROSSLEA QLD 4812
Real property description:	Lot 57 RP 703491 Lot 56 RP 703491
Applicant's reference:	M2258

The information requested is set out below >>

Request Item 1 - Demonstrated Need

The applicant is requested to demonstrate how the proposed development aligns with the purpose of the Low density residential zone and Strategic Framework of the Townsville City Plan.

While it is noted that the Townsville City Plan does allow community uses, small-scale services and facilities within Low density residential zone, these activities are to be limited in scale and directly support local residents.

As stated in section 3.1 of the town planning report lodged as part of the application material, the catchment area of general practitioner medical centres is fluid and not easily defined, with clients "generally willing to travel to a specific facility for services". Based on this methodology, the proposed extension to the medical centre could be situated within an

established and appropriately zoned centre while still servicing its established client base and the local community.

While there may be a need for additional health care services in the Townsville area (as per table 3.1 of the town planning report), there is no demonstrated need for the proposed Health care services on the subject site despite the conflicts with the Townsville City Plan.

The applicant is therefore requested to provide further justification for the proposed development which examines the planning and local catchment need for the proposed development on the subject site. Further justification must also demonstrate why the proposed Health care services cannot be accommodated in the nearby Local centre or Mixed use zones.

Reason

To demonstrate compliance with the Strategic Framework and Low density residential zone code, including, 3.3.1, 3.3.4, 3.4.5.2, 3.6.1 of the Strategic Framework and Overall Outcome (3)(h) and Performance Outcome PO18 of the Low density residential zone code.

Request Item 2 – Amended Plans – Carparking and Access

The applicant is requested to provide amended plans illustrating a revised carparking and access layout addressing the following:

- Consolidation of the proposed crossovers/ driveways to Viles Street to provide a single vehicle crossover/driveway;
- Removal of the tandem staff carparking spaces located along the Bowen Road frontage of the site;
- Provision of a dedicated covered car space for the existing caretaker's accommodation, noting the carparking space shown appears to no longer be accessible to vehicles;
- Provision of a dedicated ambulance bay;
- Removal of the 4 tandem staff parks located on the north-eastern side of the proposed extension, noting these parking spaces would be required to reverse into oncoming traffic utilising the Bowen Road access without proper visibility, and are therefore unable to function safely;
- Turning path diagrams for both cars and service vehicles, illustrating how vehicles will manoeuvre into and out of the staff and public parking spaces;
- Confirmation that the proposed vehicle access from Bowen Road is free from services and other fixtures, noting that the proposed Site Plan (Plan 23-019) currently shows a pad/box within the driveway; and
- Detail of the connections between the internal pathway network and the existing Active Transportation Network.

Reason

To demonstrate compliance with the Transport impact, access and parking code and Low density residential zone code of the Townsville City Plan.

Advice

The applicant is advised that the number of practitioners may be required to be revised based on the ultimate number of carparking spaces able to be accommodated onsite.

Request Item 3 – Waste Management and Collection

The applicant is requested to provide further information on the proposed waste collection provisions in accordance with Section SC6.4.22 of the Waste Management Guidelines.

Reason

Waste collection provisions must comply with Section SC6.4.22 of the Waste Management Guidelines.

Request Item 4 – Traffic Impact Assessment

The applicant is requested to submit a revised Traffic Impact Assessment report (TIA) demonstrating that the existing transport infrastructure is appropriate for the nature of traffic generated, having regard to the safety and efficiency of the transport network, and the functions and characteristics identified of the road hierarchy. The revised TIA is to have particular regard to:

- All the extracts (Figures) in the TIA are of very low quality (particularly, Figures 6-11). These extracts are crucial as they represent the traffic data and traffic distribution. Due to the image quality Traffic data could not be reviewed satisfactorily. These extracts are therefore required to be updated.
- The TIA is based on 1% growth rate. A traffic growth rate on major arterial road of 2% is to be considered as per Council's TIA Guideline.
- Adopted peak hours traffic generation rate for existing medical centre must be considered in the TIA.
- AUL treatment is currently not implemented for Bowen Road/Viles Street (Section 6.4 of TIA). A Turn Warrant Assessment for this intersection is required for the existing conditions.
- The new proposed access on Viles Street must be designed to ensure sight triangles are kept clear of obstructions to visibility in accordance with the requirements of AS2890.1 and DTMR's "Treatment options to improve safety of pedestrians, bicycle riders and other path users at driveways."

Reason

To demonstrate compliance with the Transport impact, access and parking code of the Townsville City Plan.

Advice

A 1.5m wide footpath along Viles Street for entre frontage of the development site required and will be conditioned accordingly.

Request Item 5 – Landscaping

The applicant is requested to provide an amended site plan illustrating a densely planted landscape buffer with a minimum width of 2m along all boundaries shared with a residential zone. Amended plans should also indicate the type of boundary screen fencing to be provided (including the proposed 'wall' between the subject site and adjoining property at 106-108 Bowen Road, Rosslea) and the provision of appropriate street trees to both road frontages.

Reason

To demonstrate compliance with PO10 and PO11 of the Low density residential zone code.

End of Information Request >>

Under the provisions of the Development Assessment Rules under the *Planning Act 2016*, you have three options available in response to this Information Request. You may give the assessment manager (in this instance Council):

(a) all of the information requested; **or**

(b) part of the information requested; **or**
(c) a notice that none of the information will be provided.

For any response given in accordance with items (b) and (c) above, you may also advise Council that it must proceed with its assessment of the development application.

Please be aware that under the Development Assessment Rules under the *Planning Act 2016*, the applicant is to respond to any Information Request within **3 months** of the request. If you do not respond to the Information Request within this time period, or, within a further period agreed between the applicant and Council, it will be taken that you have decided not to provide a response. In the event of no response being received, Council will continue with the assessment of the application without the information requested.

Council prefers that all of the information requested be submitted as one package. If any additional matters arise as a result of the information submitted, or, as a result of public notification (where applicable), you will be advised accordingly.

Should any referral agency make an information request, you are reminded of your obligation to provide council with a copy of the information response provided to that referral agency.

You may wish to follow the progress of this application using PD Online on Council's website www.townsville.qld.gov.au

If you have any further queries in relation to the above, please do not hesitate to contact Taryn Pace on telephone 07 4727 9426, or email developmentassessment@townsville.qld.gov.au.

Yours faithfully

For Assessment Manager
Planning and Development

MILFORD PLANNING

Attachment 2

Queensland Government

SARA reference: 2409-42502 SRA
Applicant reference: M2258
Council reference: MCU24/0092

10 October 2024

Munzo Family Trust
C/- Milford Planning
PO Box 5463
TOWNSVILLE CITY QLD 4810
info@milfordplanning.com.au

Attention: Ms Sarah Jones

Dear Ms Jones

SARA advice notice – 110-112 Bowen Road, Rosslea

(Advice notice given under section 35 of the Development Assessment Rules)

The State Assessment and Referral Agency (SARA) advises that your development application has not adequately demonstrated compliance with the State Development Assessment Provisions (SDAP).

SARA has reviewed your application material and further to the phone conversation with you on 10 October 2024, the following issue with the proposed development have been identified:

State-controlled road access	
1.	**Issue:** The proposed two staff parking spaces in front of the proposed medical practice extension may cause vehicles to reverse over the sidewalk, leading to safety issues and potential queuing along the state-controlled road. This compromises the safety and efficiency of state-controlled road access and network operation as per PO15 and PO16 of State code 1: Development in a state-controlled road environment of SDAP. **Action:** You are advised to demonstrate compliance with PO15 and PO16 of State code 1 by providing a swept path analysis. This analysis should show that the design vehicle can enter and exit the staff parking spaces in forward gear without negatively impacting the safety and operation of the state-controlled road.

Please note that unlike an information request, assessment timeframes do not stop when advice is provided by SARA.

How to respond

North and North West regional office
Level 11, 445 Flinders Street, Townsville
PO Box 5666, Townsville QLD 4810

It is recommended that you address these issues promptly and provide a response to SARA by **21 October 2024.** If you decide not to respond, your application will be assessed and decided based on the information provided to date.

Under the Development Assessment Rules (DA Rules), the issuing of advice does not stop the assessment timeframes. If you intend to provide additional information, it should be provided in a timely manner to allow sufficient time for the information to be considered. As such, you are strongly encouraged to consider using the 'stop the clock' provisions under s32 of the DA rules, to allow sufficient time for you to consider and respond to SARA's advice; and for SARA to consider any new or changed material provided.

If you wish to utilise the 'stop the clock' provisions, you should give notice to the assessing authority (assessment manager or referral agency) whose current period you wish to stop. This can be done through MyDAS2 or via correspondence.

You are requested to upload your response using the 'manage documents' function in MyDAS2.

If you require further information or have any questions about the above, please contact Helena Xu, Senior Planning Officer, on (07) 3452 6724 or via email NQSARA@dsdilgp.qld.gov.au who will be pleased to assist.

Yours sincerely

Javier Samanes
Principal Planner

cc Townsville City Council, developmentassessment@townsville.qld.gov.au

Development details		
Description:	Development permit	Material Change of Use for Health Care Services (Medical Centre Extension) and Shop (Pharmacy)
SARA role:	referral agency	
SARA trigger:	Schedule 10, Part 9, Division 4, Subdivision 2, Table 4, Item 1—Material Change of Use of premises within 25m of a state-controlled road and within 100m of a state-controlled road intersection	
SARA reference:	2409-42502 SRA	
Assessment criteria:	State Code 1: Development in a state-controlled road environment	

MILFORD PLANNING

Attachment 3

Sheet List	
Sheet No.	Sheet Name
sk_01	title sheet
sk_02	site & site area plans
sk_03	services, floor, aerial plan & detail survey plan
sk_04	existing & demolition plans
sk_05	proposed ground floor plan
sk_06	proposed first floor plan
sk_07	floor plans - by others
sk_08	TUA plans
sk_09	elevations - existing
sk_10	elevations - proposed

2 / sk_01 3D View 2

1 / sk_01 3D View 1

3 / sk_01 3D View 3

4 / sk_01 3D View 4

5 / sk_01 3D View 5

issued for planning
issue date: 24.06.11

MILFORD PLANNING

NOTES:
THIS DRAWING IS ONLY INTENDED TO OBTAIN A LOCAL AUTHORITY BUILDING PERMIT.
COMPLY WITH ALL RELEVANT AUTHORITY REG. & BSA. FIGURED DIMENSIONS TO TAKE PRECEDENCE OVER SCALED MEASUREMENTS. VERIFY ALL ON SITE DIMENSIONS & LEVELS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.

Revision Schedule

No	Description	Date

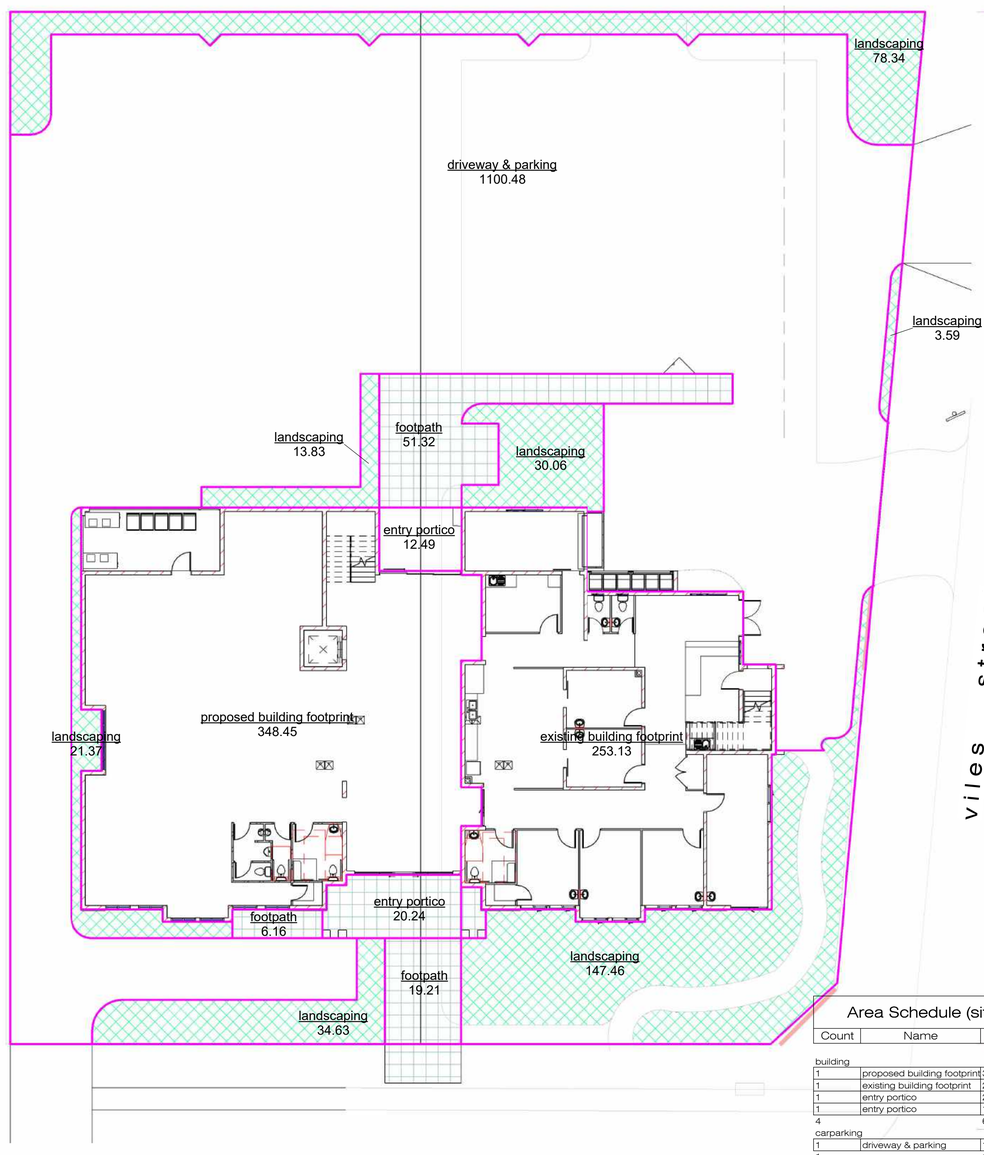
concepts Building Design
tel. 07 4728 3228

project:
Proposed Dental Practice
for:
Dr Paco Munoz
at:
110-112 Bowen Rd
Rosslea Qld

Issue Date	07/04/23
Drawn	Author
scale	
sheet	sk_01

23-019

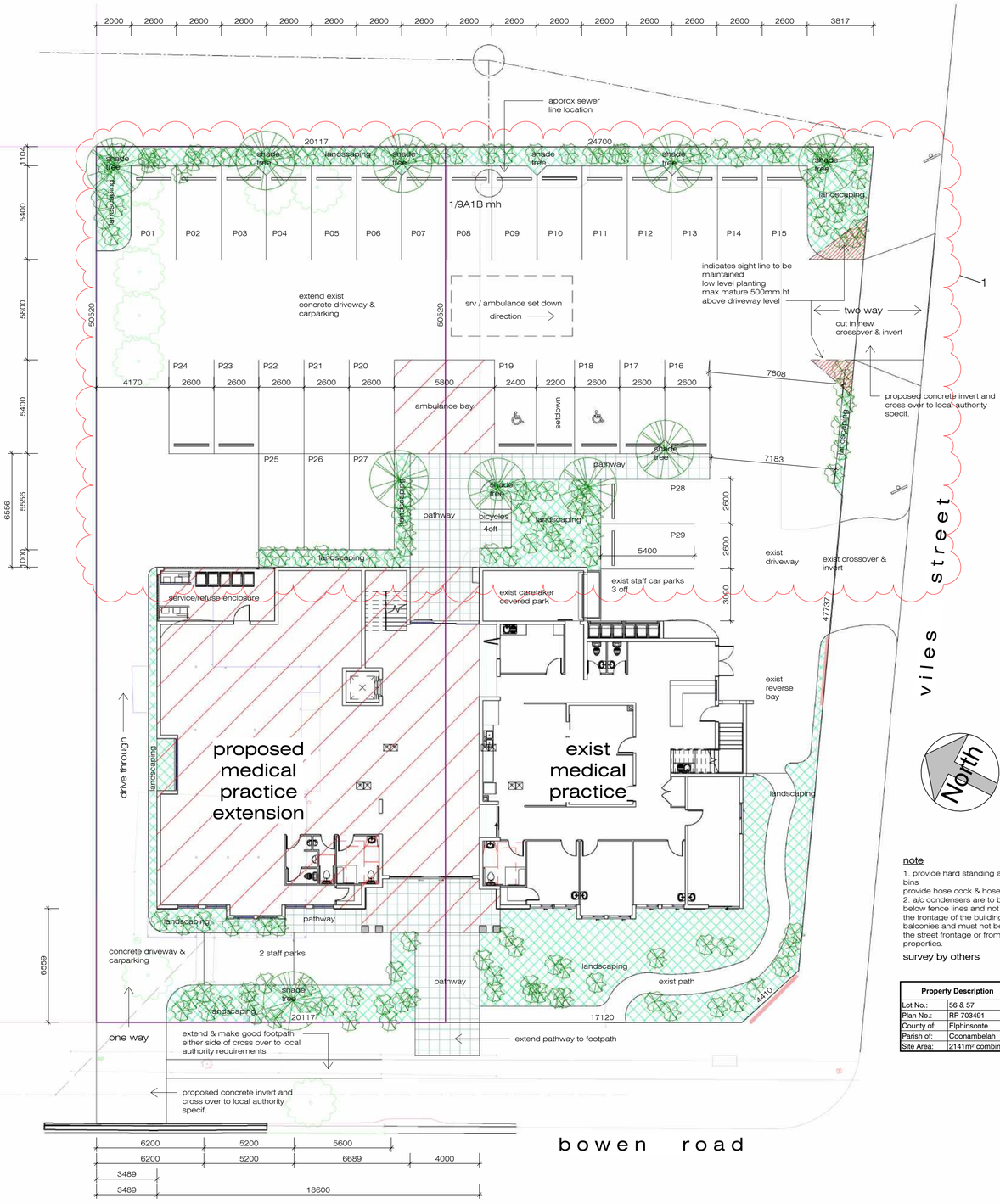
printed 3/04/2025 10:58:30 AM



2 sk_02 site area plan

1 : 150

Area Schedule (site area)			
Count	Name	Area	%
building			
1	proposed building footprint	348.45	16%
1	existing building footprint	253.13	12%
1	entry portico	20.24	1%
1	entry portico	12.49	1%
4		634.30	30%
carparking			
1	driveway & parking	1100.48	51%
1		1100.48	51%
landscaping			
1	landscaping	13.83	1%
1	landscaping	21.37	1%
1	landscaping	34.63	2%
1	landscaping	147.46	7%
1	landscaping	3.59	0%
1	landscaping	78.34	4%
1	landscaping	30.06	1%
7		329.27	15%
pathway			
1	footpath	51.32	2%
1	footpath	19.21	1%
1	footpath	6.16	0%
3		76.69	4%
15		2140.74	100%



1 sk_02 proposed site plan

1 : 150

North

note

1. provide hard standing area refuse bins
provide hose cock & hose
2. a/c condensers are to be located below fence lines and not located on the frontage of the buildings or on balconies and must not be visible from the street frontage or from adjoining properties.

survey by others

Property Description	
Lot No.:	56 & 57
Plan No.:	RP 703491
County of:	Elphinsonte
Parish of:	Coonambelah
Site Area:	2141m² combined

issued for planning
issue date: 24.06.11

MILFORD PLANNING

NOTES:
THIS DRAWING IS ONLY INTENDED TO OBTAIN A LOCAL AUTHORITY BUILDING PERMIT.
COMPLY WITH ALL RELEVANT AUTHORITY REG. & BSA. FIGURED DIMENSIONS TO TAKE PRECEDENCE OVER SCALED MEASUREMENTS. VERIFY ALL ON SITE DIMENSIONS & LEVELS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.

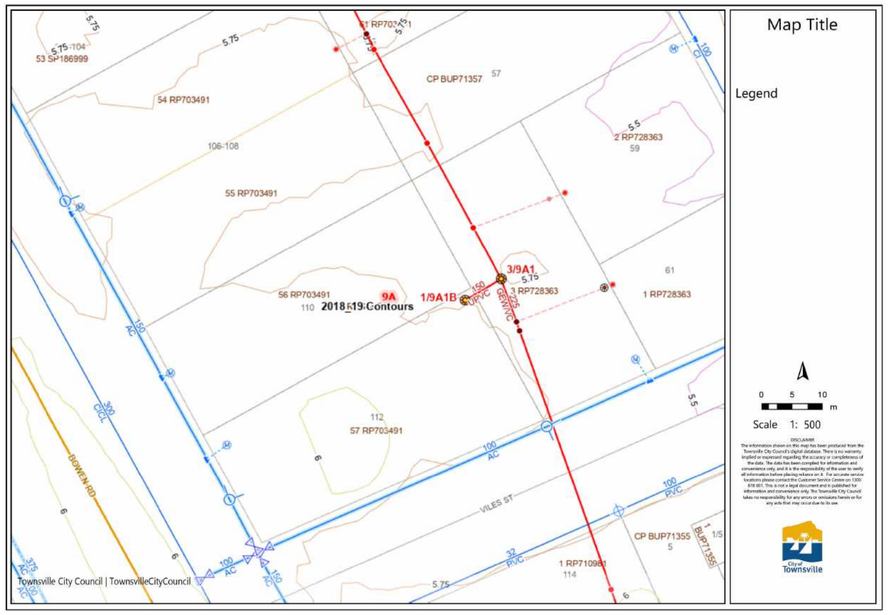
Revision Schedule

No	Description	Date
1	revised parking layout	25.02.11

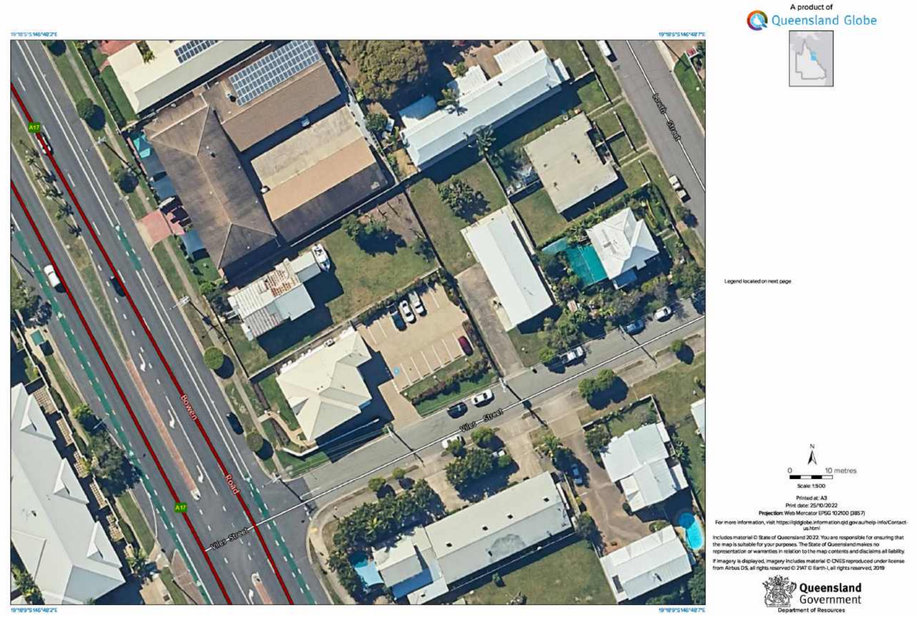
concepts Building Design
tel: 07 4728 3228

project:
Proposed Dental Practice
for:
Dr Paco Munoz
at:
110-112 Bowen Rd
Rosslea Qld

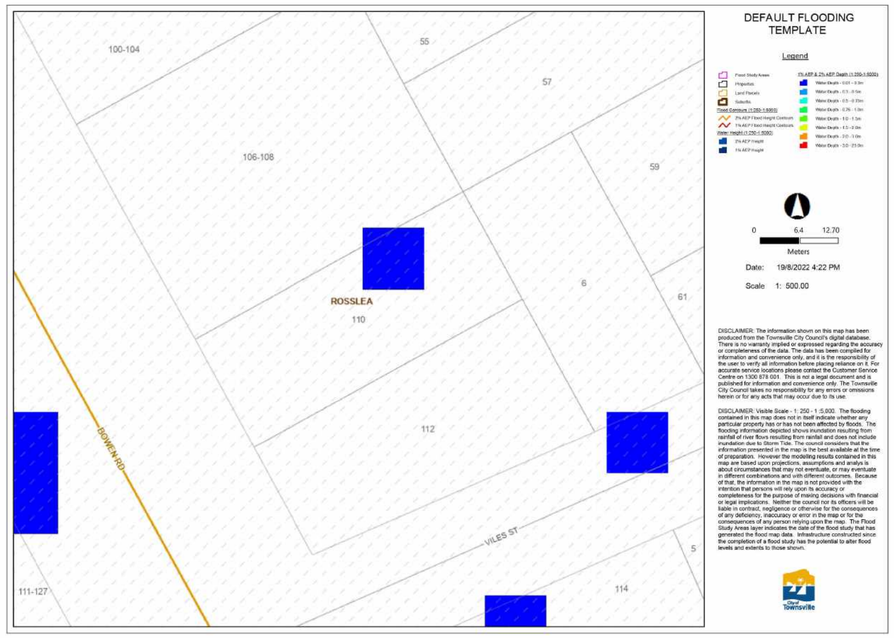
issue Date	09/09/21
Drawn	S.PARENTI
scale	1 : 150
sheet	sk_02
	23-019
printed	3/04/2025 10:58:32 AM



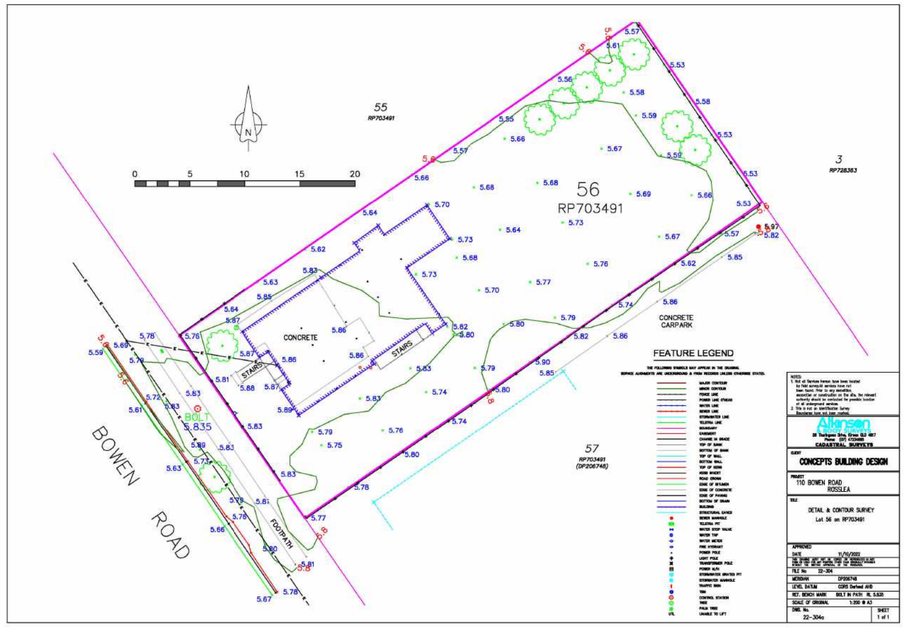
service plan



aerial plan



flood plan



survey by others

issued for planning
issue date: 24.06.11

MILFORD PLANNING

NOTES:
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Revision Schedule

No	Description	Date
1	revised parking layout	25.02.11

concepts Building Design
tel: 07 4728 3228

project:
Proposed Dental Practice
for:
Dr Paco Munoz
at:
110-112 Bowen Rd
Rosslea Qld

Issue Date	10/25/22
Drawn	S.PARENTI
scale	1 : 100
sheet	sk 03

23-019

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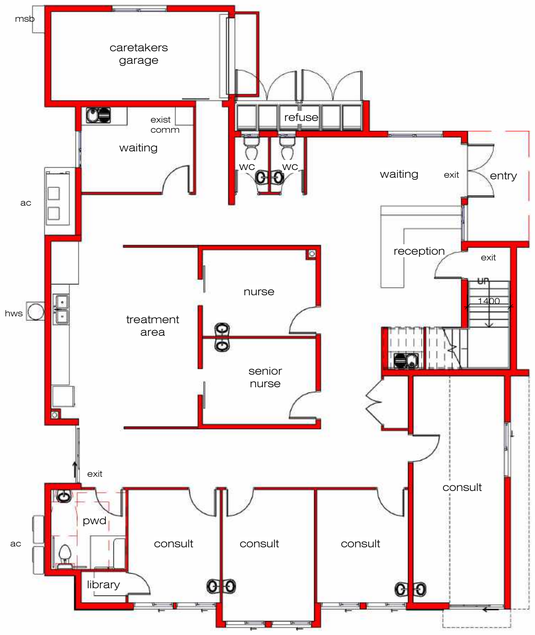

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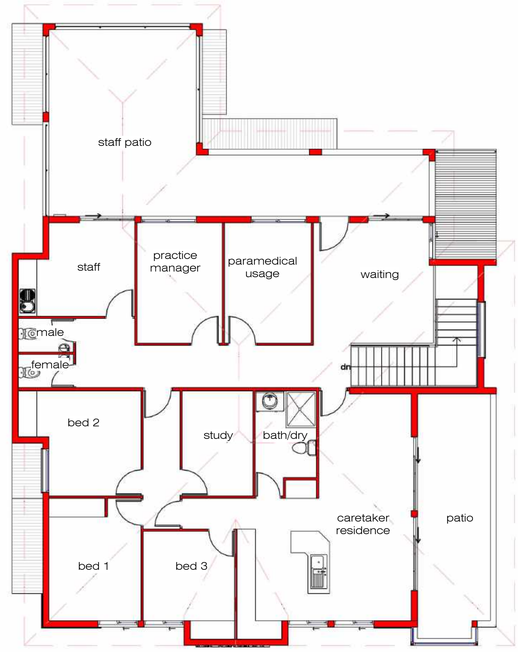

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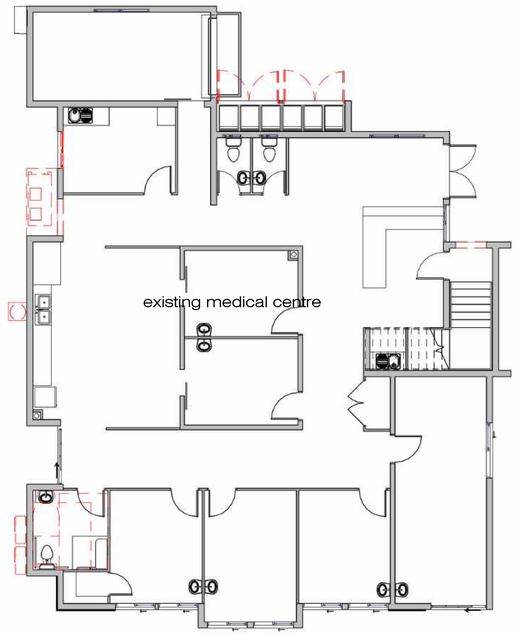
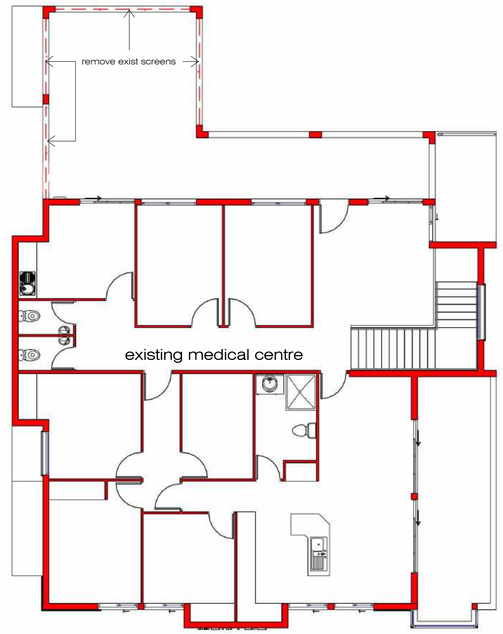


4 sk_04 ground floor demolition plan

1 : 100



3 sk_04 first floor demolition plan

1 : 100

issued for planning

issue date: 24.06.11

MILFORD PLANNING

0 5 10 m

1:100 @ a1

NOTES:

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Revision Schedule

No	Description	Date
1		

concepts Building Design

tel: 07 4728 3228

project:
Proposed Dental Practice

for:
Dr Paco Munoz

at:
110-112 Bowen Rd
Rosslea Qld

Issue Date	09/09/21
Drawn	S.PARENTI
scale	1 : 100
sheet	sk_04

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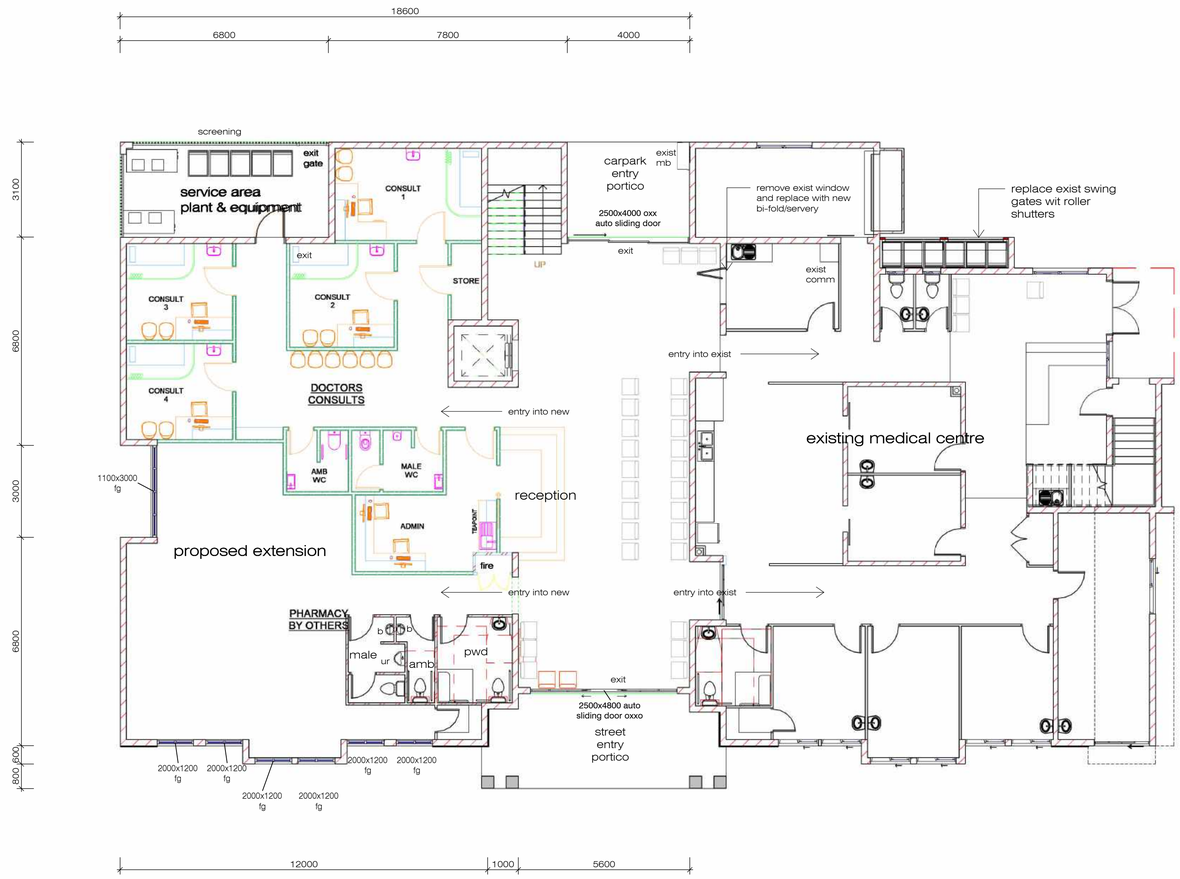

1
sk_05

proposed ground floor plan

1 : 100

Area Schedule (building area)

Count	Level	Name	Area	%
1	first floor level	void	16.50	1%
1			16.50	1%
existing				
1	ground floor level	existing ground floor	255.41	20%
1	ground floor level	existing entry portico	5.76	0%
1	first floor level	existing first floor	252.88	20%
3			514.05	41%
proposed				
1	first floor level	proposed first floor	334.54	27%
1	ground floor level	proposed service area, plant & equipment	21.08	2%
1	ground floor level	proposed pharmacy entry portico	12.40	1%
1	ground floor level	proposed street entry portico	23.02	2%
1	ground floor level	proposed ground floor	327.36	26%
5			718.40	58%
9			1248.95	100%

issued for planning
issue date: 24.06.11

MILFORD PLANNING

0 5 10 m
1:100 @ a1

NOTES:
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Revision Schedule

No	Description	Date
1		

concepts Building Design
tel: 07 4728 3228

project:
Proposed Dental Practice
for:
Dr Paco Munoz
at:
110-112 Bowen Rd
Rosslea Qld

Issue Date	09/09/21
Drawn	S.PARENTI
scale	1 : 100
sheet	sk_05

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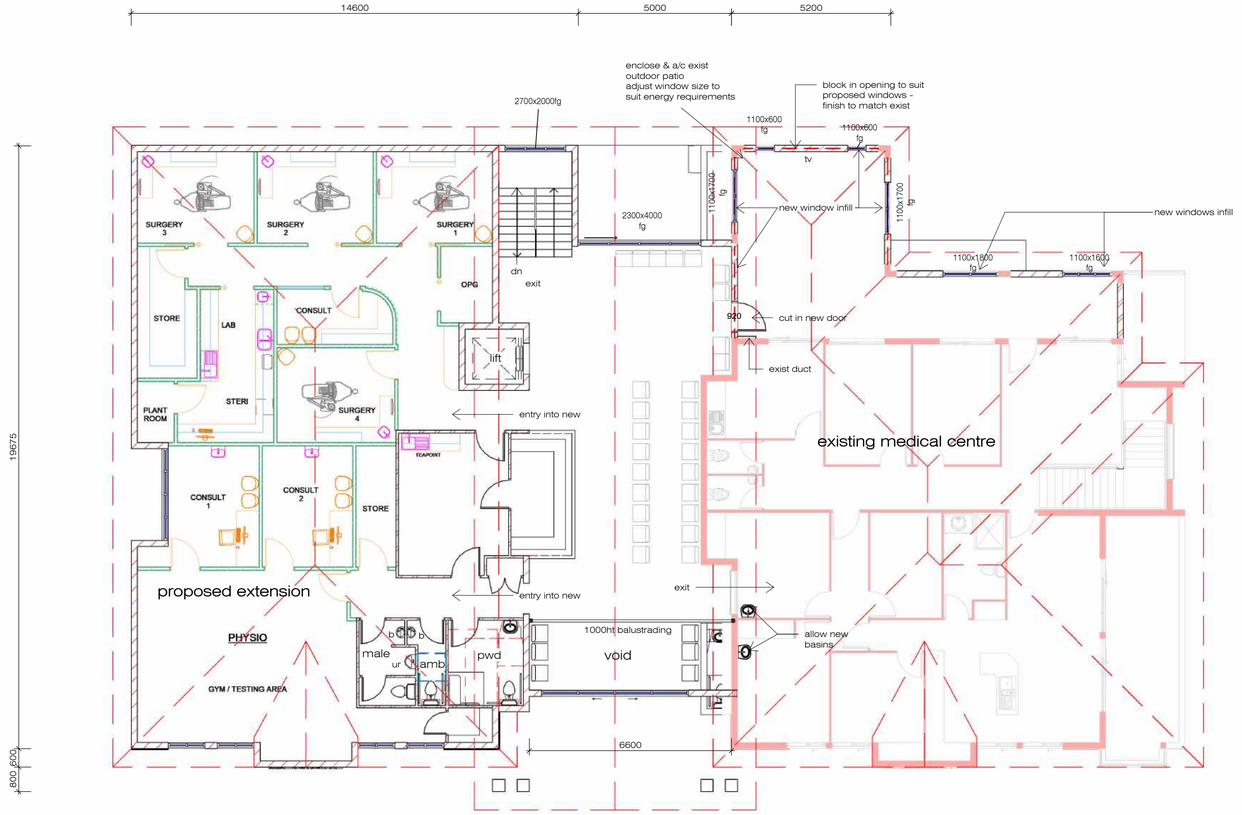

1
sk_06

proposed first floor plan

1 : 100

issued for planning
issue date: 24.06.11

MILFORD PLANNING

0 5 10 m

1:100 @ a1

NOTES:
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Revision Schedule

No	Description	Date

concepts Building Design
tel: 07 4728 3228

project:
Proposed Dental Practice
for:
Dr Paco Munoz
at:
110-112 Bowen Rd
Rosslea Qld

Issue Date	07/04/23
Drawn	Author
scale	1 : 100
sheet	sk_06

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DRAFT
FOR DISCUSSION PURPOSES ONLY

2 Lower Floor Plan
1 : 100

PO BOX 3781, CALOUNDRA DC
QLD 4551
MOB: 0408 960 593
ABN 85 923 612 599
mckibbindesign
VIC - Reg BUILDING PRACTITIONERS - No. DP-ID 44363
TAS - BUILDING SERVICES PROVIDER - No. CC7262

No.	Description	Date
A	Updated Plan	08.11.23
B	Updated Plan	17.01.24

Dr PACO MUNOZ

110 BOWEN RD, ROSSLEA, QLD

CONCEPT FLOOR PLAN - LOWER LEVEL

Project number	MD 805	100 B	Client Approval For Construction
Date	22.05.22		
Drawn by	Mark McKibbin		
Checked by	Mark McKibbin	Scale 1 : 100 @ A3	

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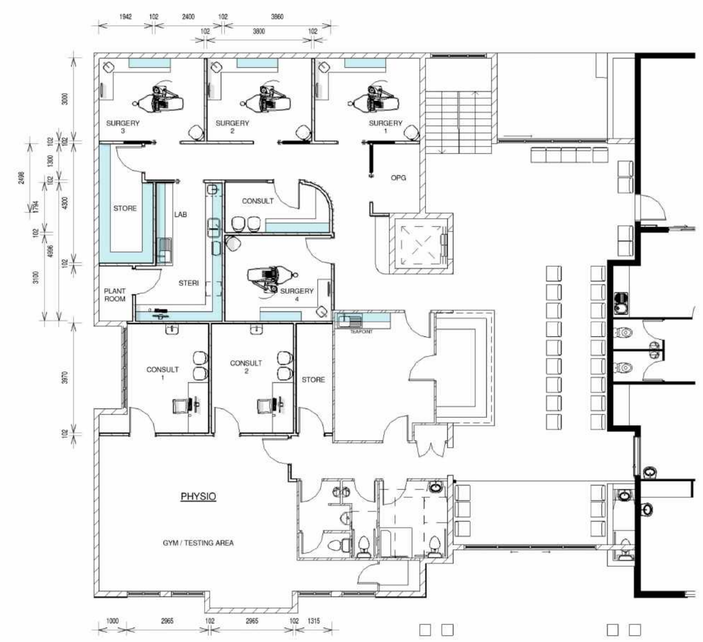
FOR DISCUSSION PURPOSES ONLY



1 Upper Floor Plan
1 : 100

PO BOX 3781, CALOUNDRA DC
QLD 4551
MOB: 0408 960 593
ABN 85 923 612 599
mckibbindesign
VIC - Reg BUILDING PRACTITIONERS - No. DP-ID 44363
TAS - BUILDING SERVICES PROVIDER - No. CC7262

No.	Description	Date
A	Updated Plan	08.11.23

Dr PACO MUNOZ

110 BOWEN RD, ROSSLEA, QLD

CONCEPT FLOOR PLAN - UPPER LEVEL

Project number	MD 805	101 A	Client Approval For Construction
Date	22.05.22		
Drawn by	Author		
Checked by	Mark McKibbin	Scale 1 : 100 @ A3	

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1
sk_07

floor plans by others
1 : 100

issued for planning
issue date: 24.06.11

MILFORD PLANNING

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Revision Schedule

No	Description	Date

concepts Building Design
tel: 07 4728 3228

project:
Proposed Dental Practice
for:
Dr Paco Munoz
at:
110-112 Bowen Rd
Rosslea Qld

Issue Date	06/11/24
Drawn	Author
scale	1 : 100
sheet	sk_07

23-019

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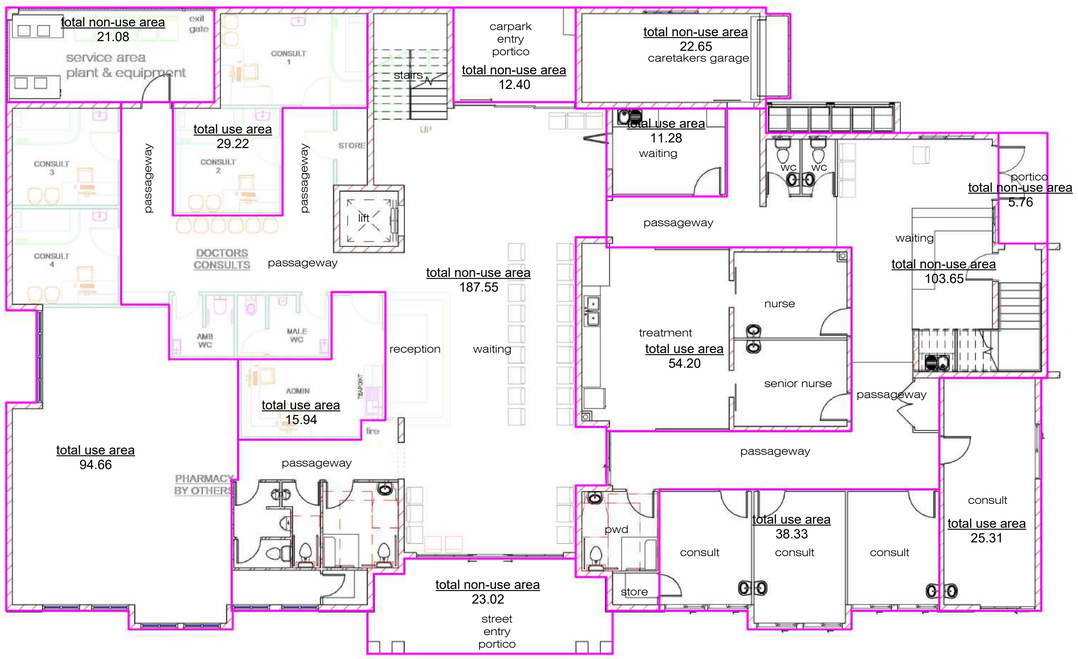
Area Schedule (Total Use Area)				
Count	Level	Name	Area	%
residential use area				
1	first floor level	residential use area	120.60	10%
1			120.60	10%
total non-use area				
1	ground floor level	total non-use area	187.55	15%
1	ground floor level	total non-use area	103.65	8%
1	ground floor level	total non-use area	5.76	0%
1	ground floor level	total non-use area	23.02	2%
1	ground floor level	total non-use area	12.40	1%
1	ground floor level	total non-use area	22.65	2%
1	ground floor level	total non-use area	21.08	2%
1	first floor level	total non-use area	183.27	15%
1	first floor level	total non-use area	49.48	4%
1	first floor level	total non-use area	58.34	5%
10			667.18	53%
total use area				
1	ground floor level	total use area	54.20	4%
1	ground floor level	total use area	38.33	3%
1	ground floor level	total use area	11.28	1%
1	ground floor level	total use area	94.66	8%
1	ground floor level	total use area	15.94	1%
1	ground floor level	total use area	29.22	2%
1	ground floor level	total use area	25.31	2%
1	first floor level	total use area	61.86	5%
1	first floor level	total use area	45.03	4%
1	first floor level	total use area	43.30	3%
1	first floor level	total use area	17.58	1%
1	first floor level	total use area	24.47	2%
12			461.17	37%
23			1248.95	100%

Parking Schedule					
Levels	Car parks		Service Vechicle/Ambulance (combined)	bicycles	Motor Bikes
Ground floor	37		1	4	nil
First floor					
Sub-total	37		1	4	0
Total parks provided	42				



1 / sk_08 ground floor level

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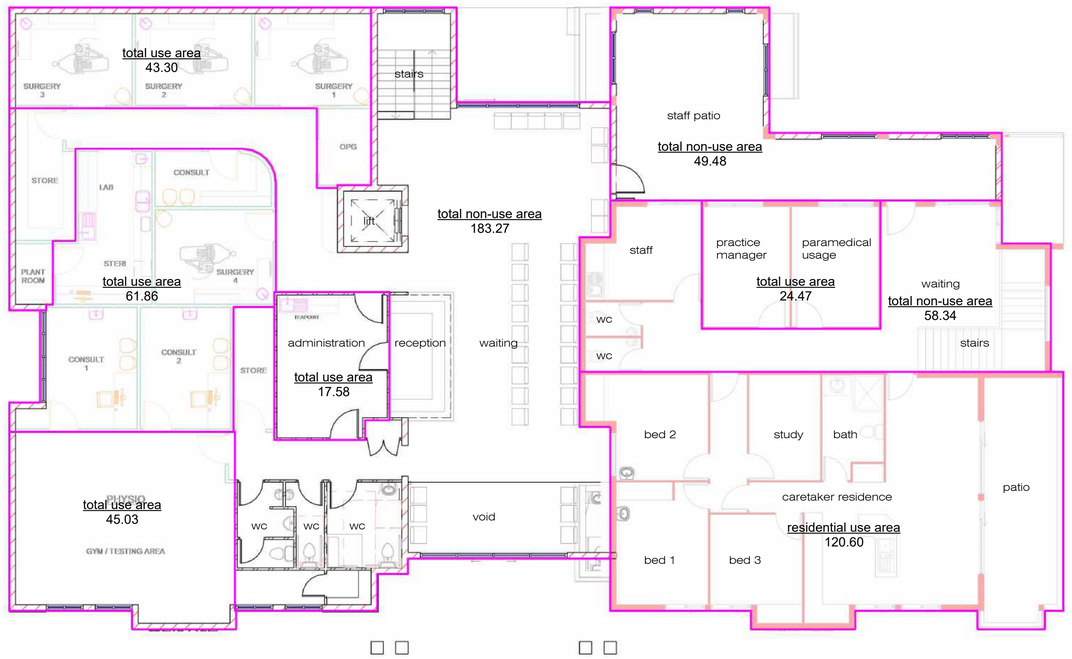

2 / sk_08 first floor level

1 : 100

issued for planning

issue date: 24.06.11

MILFORD PLANNING

0 5 10 m

1:100 @ a1

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Revision Schedule

No	Description	Date

concepts Building Design
tel: 07 4728 3228

project:
Proposed Dental Practice
for:
Dr Paco Munoz
at:
110-112 Bowen Rd
Rosslea Qld

Issue Date	06/11/24
Drawn	Author
scale	1 : 100
sheet	sk_08

23-019

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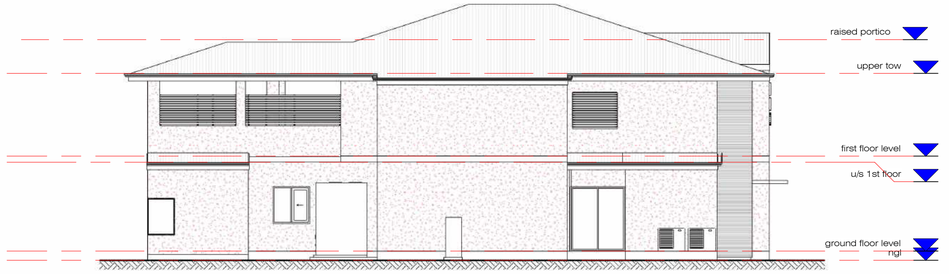
3 / sk_09 exist south-west elevation

1 : 100



2 / sk_09 exist north-west elevation

1 : 100

1 / sk_09 existing north-east elevation

1 : 100

4 / sk_09 existing south-east elevation

1 : 100

issued for planning
issue date: 24.06.11

MILFORD PLANNING

0 5 10 m

1:100 @ a1

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Revision Schedule

No	Description	Date
1		

concepts Building Design
tel. 07 4728 3228

project:
Proposed Dental Practice
for:
Dr Paco Munoz
at:
110-112 Bowen Rd
Rosslea Qld

Issue Date	09/09/22
Drawn	S.PARENTI
scale	1 : 100
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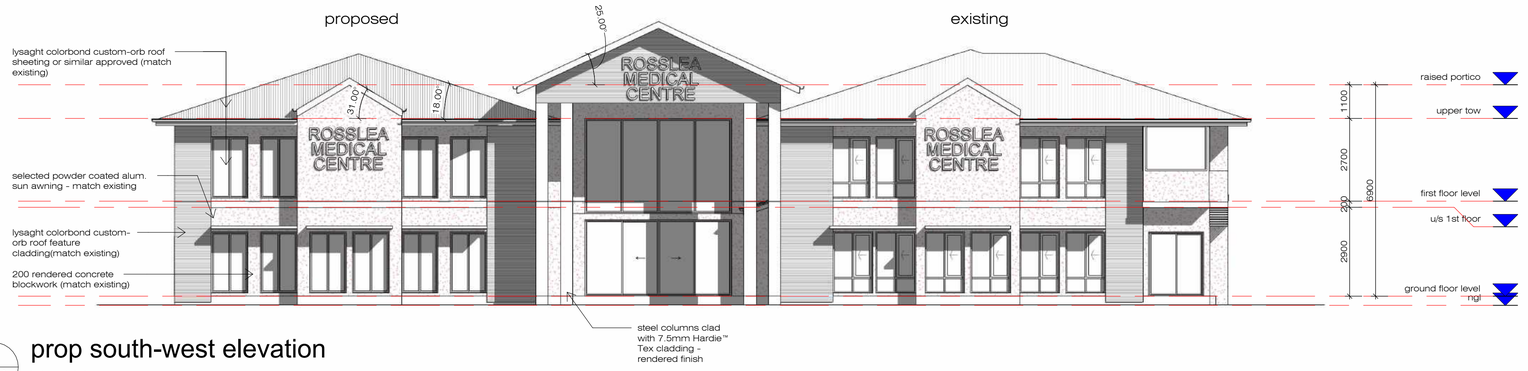

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prop south-west elevation

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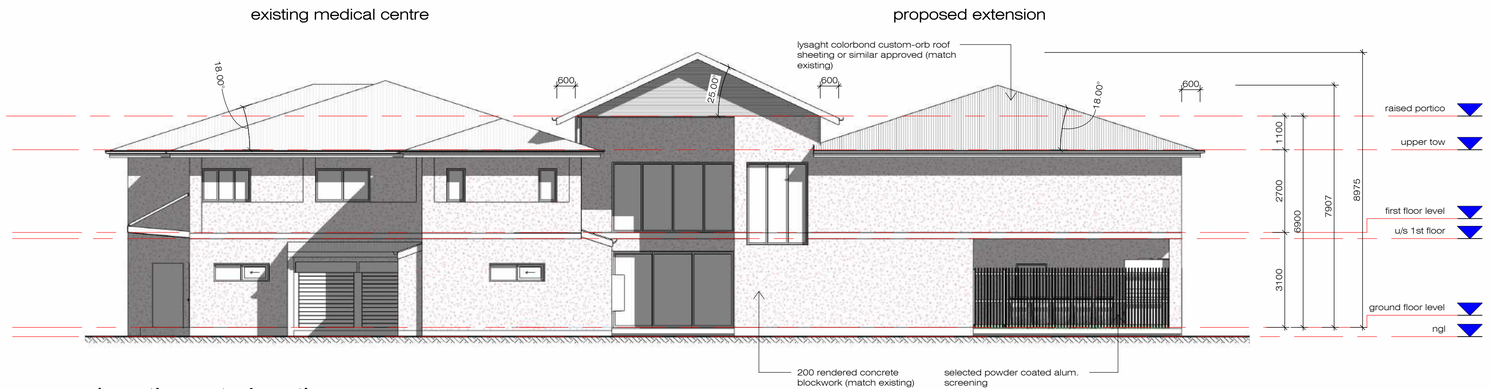

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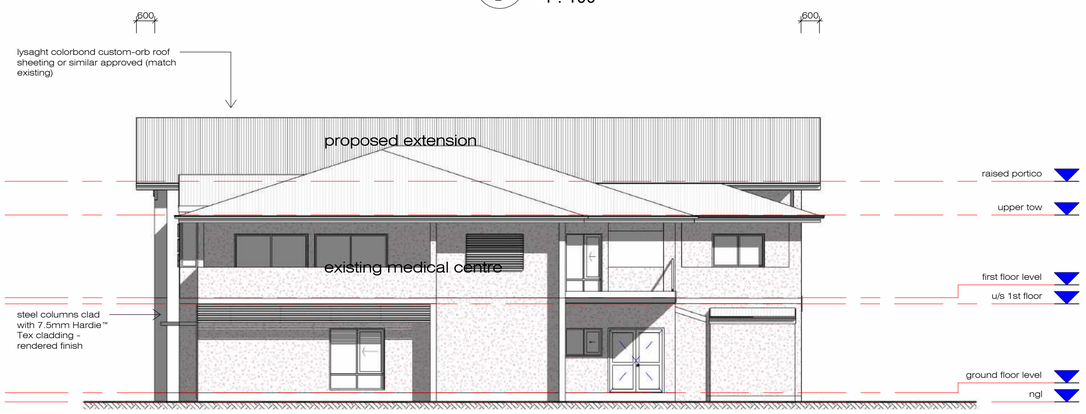

3 / sk_10

proposed south-east elevation

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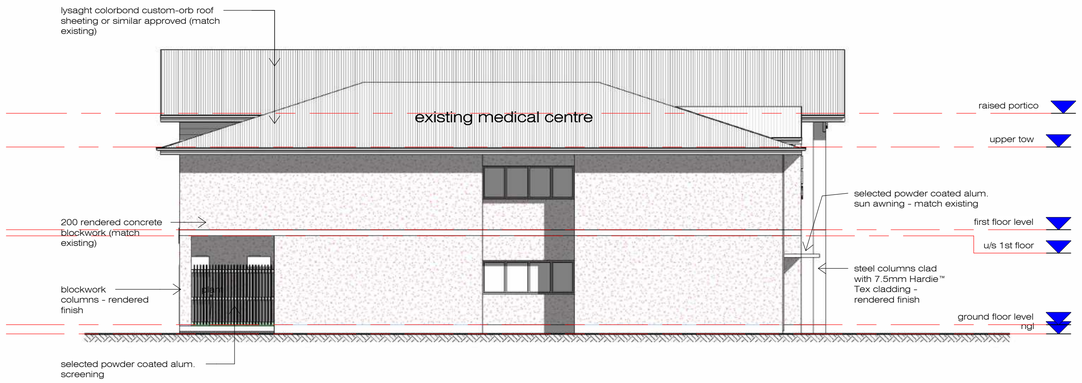

2 / sk_10

prop north-west elevation

1 : 100

issued for planning
issue date: 24.06.11

MILFORD PLANNING

0 5 10 m

1:100 @ a1

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Revision Schedule

No	Description	Date

concepts Building Design
tel: 07 4728 3228

project:
Proposed Dental Practice
for:
Dr Paco Munoz
at:
110-112 Bowen Rd
Rosslea Qld

Issue Date	02/20/23
Drawn	Author
scale	1 : 100
sheet	sk_10

23-019

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MILFORD PLANNING

Attachment 4

LANGTREE
CONSULTING ENGINEERS

PROPOSED MEDICAL CENTER EXTENSION
110-112 BOWEN ROAD, ROSSLEA

TRAFFIC IMPACT ASSESSMENT

MILFORD PLANNING

LANGTREE CONSULTING

Project No.: 1194

Reference No.: R-RM0002

Date: 07/02/2025

Controlled Copy No.: 1

Revisions: C

Revision Record:

Rev	Review Date	Description	Prepared	Checked	Approved
A	22/05/24	Issued for Client Comment	Rea Maglaya	Aidan Reinaudo	Brett Langtree
B	25/06/24	New Development plans, Car Park Count and Other Minor amendments.	Rea Maglaya	Aidan Reinaudo	Brett Langtree
C	07/02/25	Amendments in Response to RFI	Rea Maglaya	Aidan Reinaudo	Brett Langtree

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

Langtree Consulting has been engaged by Milford Planning on behalf of the client to undertake a Traffic Impact Assessment (TIA), to support a Development Application for the proposed extension to the existing Medical Centre located at 112 Bowen Road, Rosslea and extending into 110 Bowen Road, Rosslea also knowns as Lot 57 and Lot 56 on RP703491 respectively.

The proposed development is for a range of uses in the medical and allied health sector.

This TIA report outlines the following:

- Background information for the project and proposed development;
- Existing traffic conditions, proposed development traffic generation and post-development traffic conditions;
- Intersection analysis including turn warrant assessment;
- Assessment of the development impacts on State-controlled and local roads post-development; and
- Any recommendations and mitigation measures, if required.

2.0 BACKGROUND

The proposed development is located approximately 5km from the Townsville CBD. The development site is proposed to be located on the land described as:

- Existing Medical Centre on Lot 57 on RP703491 and;
- Proposed Medical Extension on Lot 56 on RP703491.

Hereon in, the above-described lands shall be referred to as the subject site.

The subject site has a total area of 2,138m^2 and is bound by Bowen Road to the west, Viles Street to the south and neighbouring residential lots to the north and east. Lowth Street to the east criss-cross with Viles Street at the south-eastern side of the subject side.

The subject site consists of a two-storey Medical Centre located at Lot 57 on RP703491. The extension of the existing medical centre is proposed into Lot 56 on RP703491 including the demolition of the existing dwelling at Lot 56.

Refer to **Figure 1** in orange for the development site locality.

Figure 1. *Site Locality (Source: Queensland Globe)*

2.1 LAND USE AND SURROUND AREA

The subject site is currently occupied by the existing Medical Centre at 112 Bowen Road and an existing residential dwelling at 110 Bowen are within the Low-density residential category, as shown in Figure 2 .

Figure 2. *Current Zoning (Source: Townsville City Council Planning Maps)*

2.2 SITE ACCESS

Currently, the subject site has two (2) access, one (1) on Bowen Road to Lot 56 and one (1) on Viles street to Lot 57.

2.3 SURROUNDING ROAD NETWORK

The key surrounding roads in the proximity of the subject site has been identified and summarised in Table 1 below:

Table 1*. Key Roads*

Road Name	Jurisdiction	Hierarchy	Speed Limit, km/hr	AADT (Year)/ AM PH/ PM PH
Bowen Road	TCC	Major Collector	60	Northbound (South of Viles St) = 11,946 Southbound (North of Viles St) = 12,998
Viles Street	TCC	Minor Collector	50	-

2.4 KEY INTERSECTIONS/ ACCESSES

The key intersections and accesses are summarised below in Table 2.

Table 2. *Key Intersections and Accesses*

ID	Roads	Control
Intersection 1	Bowen Road/ Viles Street	Give Way Sign, No Stopping Sign
Existing Access	Viles Street/ Site Access	No Stopping Sign
Site Access 1	Bowen Road/ Site Access	Unsignalised
Site Access 2	Viles Street/ Site Access	Unsignalised

2.5 CRASH HISTORY

Queensland Globe was used to investigate the crash history in the vicinity of the key roads, accesses/intersections. There have been four (4) reported road crash locations within the vicinity of the subject site which has been reviewed and are shown in **Figure 3** and summarised in **Table 3**. Among four (4) crashes, three (3) were related to Bowen Road and another one was near the intersection of Lowth Street and Viles Street. The latest crash occurred in 2020 which indicates the site does not possess any safety deficiencies.

Figure 3*. Crash Report Locality (Source: Queensland Globe)*

Table 3. *Crash History Report Summary*

Crash Location	Year	Severity	Crash Type	Crash Nature	Crash Description
1	2015	Hospitalisation	Multi-Vehicle	Angle	Daylight, clear, sealed-dry, No Traffic control, Vehicle's Manoeuvring: Other
2	2010	Minor Injury	Multi-Vehicle	Rear end	Daylight, clear, sealed-dry, Intersection-T-Junction, No Traffic control, Vehicle's Same Direction: Rear end
3	2015	Hospitalisation	Multi-Vehicle	Angle	Daylight, clear, sealed-dry, No Traffic control, Vehicle's Manoeuvring: Other
4	2020	Medical Treatment	Multi-Vehicle	Angle	Daylight, clear, sealed-dry, Intersection-T Junction, No Traffic control, Vehicle's adjacent approach: Thru-Right

3.0 PROPOSED DEVELOPMENT

The proposed development is to extend the two-storey existing medical centre located at Lot 57 into Lot 56 including the demolition of the existing building at Lot 56. The proposed development is a health care facility which offers various health services such as GP services, Skin checks, Cosmetic Medicine, Veteran Health, and Allied Health.

The proposed development will have two (2) new accesses, one (1) along Bowen Road and one (1) along Viles street. The existing site access is proposed to be removed on the proposed development.

The proposed site and internal layouts are shown in **Figure 4** and included in **Appendix A**.

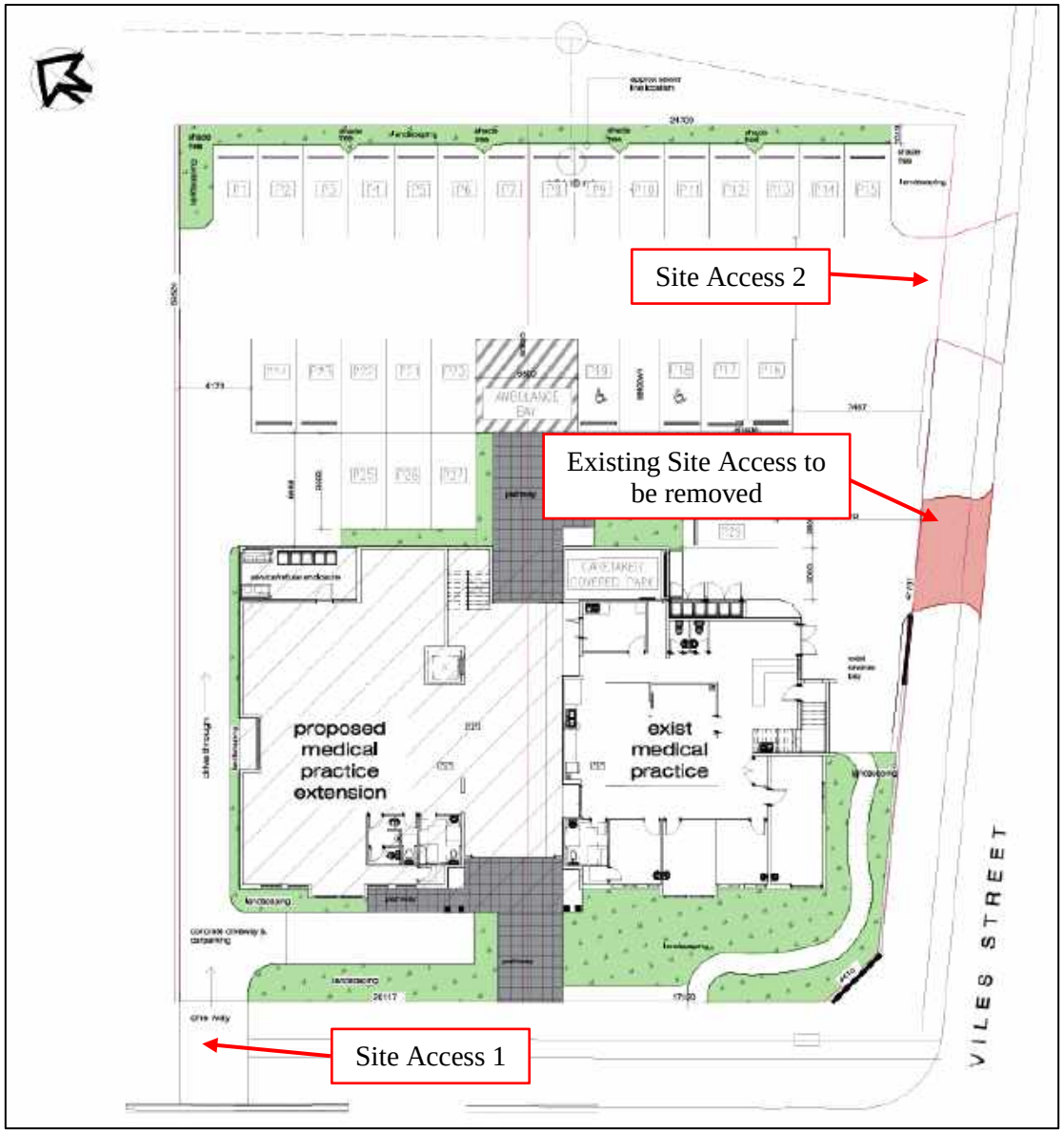


Figure 4. *Proposed Site Plan (Source: Concepts Building Design)*

4.0 BACKGROUND TRAFFIC

4.1 BOWEN ROAD

Background data for Bowen Road has been obtained from the Townsville Traffic Flow 2024 Calibration Model. A summary of the traffic data obtained from Townsville City Council has been summarised in Table 4.

Table 4. *Background traffic data*

Road (ID)	Count year	AADT	AM Peak	PM Peak	HV%
Bowen Road (North of Viles St)	2023	12,998 (Southbound)	912 (S)	1,255 (S)	3.09
Bowen Road (South of Viles St)	2023	11,946 (Northbound)	1275 (N)	941 (N)	5.89

4.1.1 Traffic Growth

According to TCC TIA Guidelines May 2024, the traffic growth on a major arterial road is about 2%. For this assessment, the traffic Growth along Bowen Road is assumed to be **2%**.

4.2 VILES STREET

4.2.1 Existing Medical Centre

For the purpose of this assessment, the traffic data for the existing medical centre at Lot 57 was generated using the Traffic generation data – 2006–2017 (Queensland) Open Data. From Traffic generation data – 2006–2017 (Queensland) Open Data the average weekday peak hour volume rate for medical centres is 5.73 trips/100m^2 GFA and the average daily volume is 52.25 trips/100m^2 GFA. Refer to APPENDIX B for the Traffic generation data- 2006-2017 of Medical Centres.

Assuming that the Existing medical centre peak hour is 8:00-9:00 and 4:00-5:00 the trip generation summarised in Table 5.

Table 5. *Trip generation for the existing medical centre*

Land Use	Trips/PH/100m^2 GFA	Existing Medical Centre GFA, m^2	Trips/hr
Medical Center	5.73	504	29

4.2.2 Surrounding Residential Lots

Townsville Traffic Flow 2023 Calibration Model provided data for Viles Street traffic; however, traffic count appears to be extremely excessive (total AADT = 3,500). As such the background traffic for Viles Street was generated using the RTA Guide to Traffic Generating Developments.

Residential dwellings are located along Viles, Lowth and Quinn Streets. It is assumed that access to half of the dwellings at Lowth Street and Quinn Street is via Viles Street. There are 47 medium-density dwellings (Large), 18 medium-density dwellings (Small) and 24 dwellings that utilise Viles Street. Refer to Figure 5 for the assumed catchment area.

Figure 5. *Assumed dwellings that access via Viles Street.*

The RTA provides peak hour trips for a medium density dwelling of 0.65 and 0.5 for larger and smaller units respectively and 0.85 for dwellings. The generated peak hour trips summary for the residential lots assumed to be accessing Viles Street is shown in Table 5.

Table 6*. Trip generation for Residential Lots accessing Viles Street*

Land Use	No of Dwellings	RTA peak hour vehicle trips rate	Peak Hour Trips
Larger Units and Town Houses	47	0.65/dwelling	31
Smaller Units and Flats	18	0.50/dwelling	9
Dwellings	24	0.85/dwelling	20
		Total	60 veh. trips

4.2.1 Traffic Growth

For the purpose of this assessment, the traffic growth along Viles street is also assumed to be 2%.

4.3 BACKGROUND TRIP DISTRIBUTION

The 2025 and 2035 background traffic distributions are summarised in Figure 6, Figure 7, Figure 8 and Figure 9.

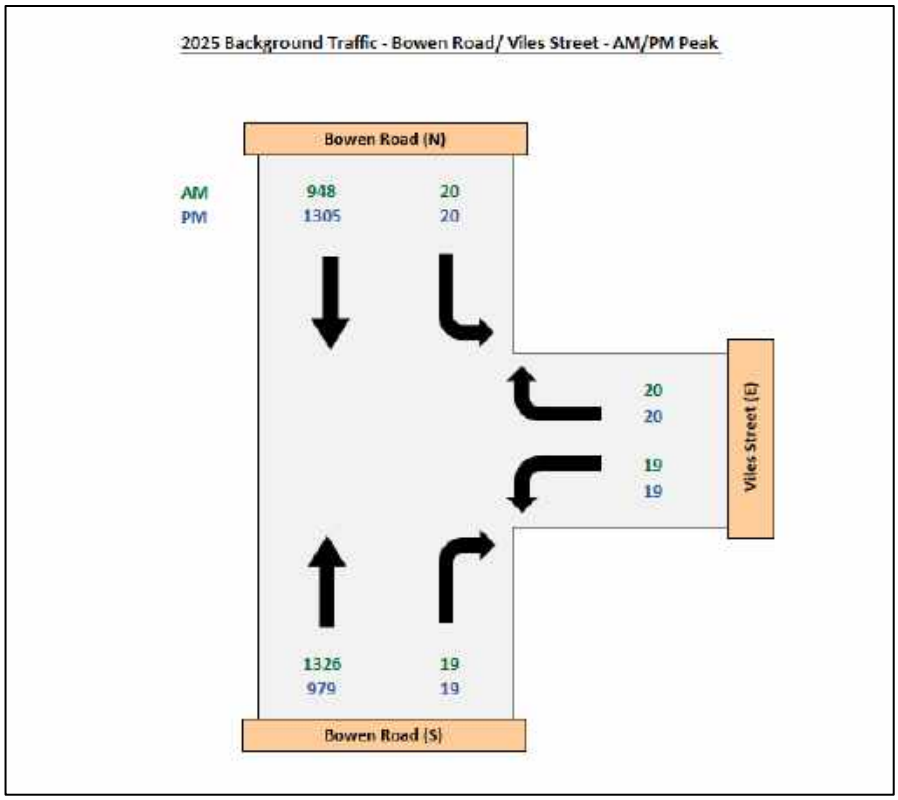


Figure 6. *2025 Background Traffic AM and PM Peak Hour Traffic Distribution- Bowen Road/Viles Street Int.*

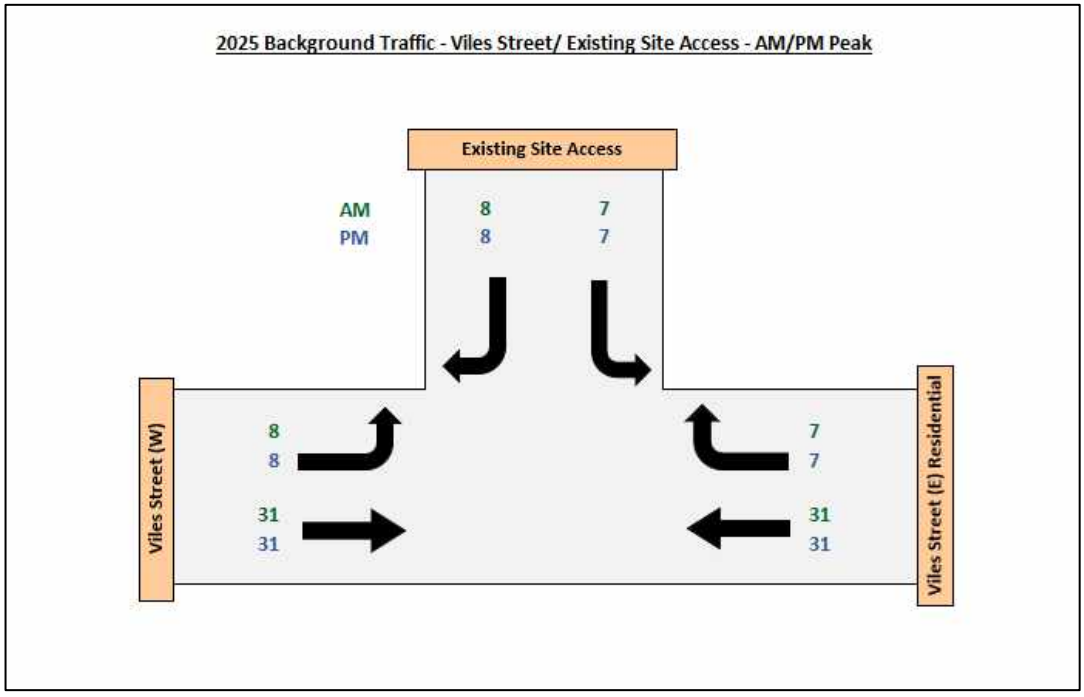


Figure 7. *2025 Background Traffic AM and PM Peak Hour Traffic Distribution- Viles St./Existing Site Access Int.*

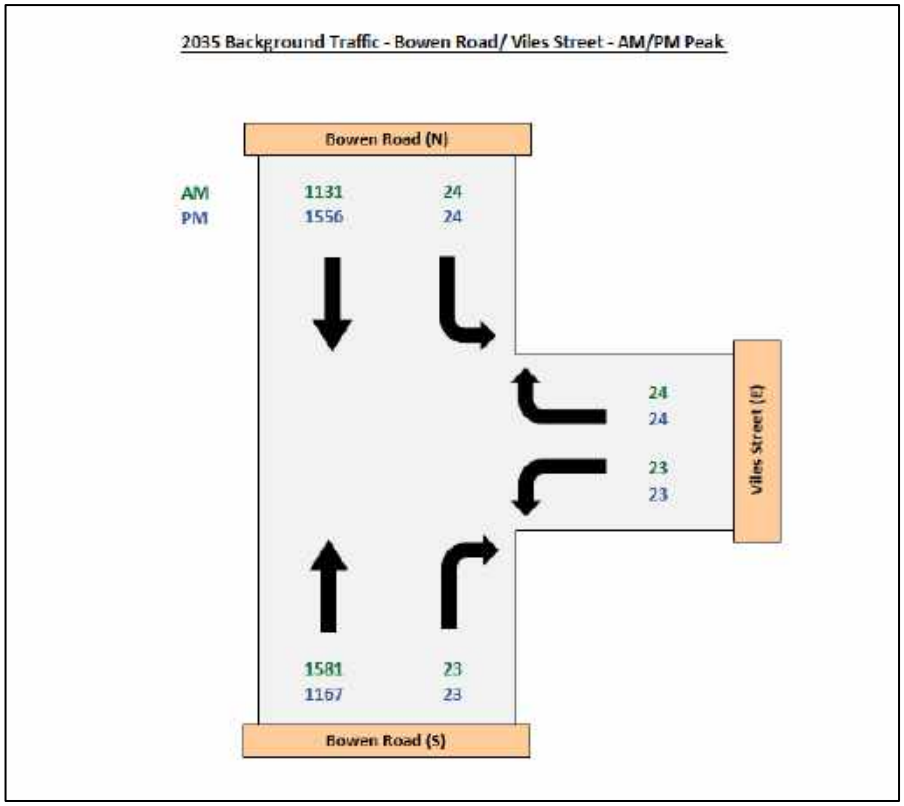


***Figure 8**. 2035 Background Traffic AM and PM Peak Hour Traffic Distribution- Bowen Road/Viles Street Int.*

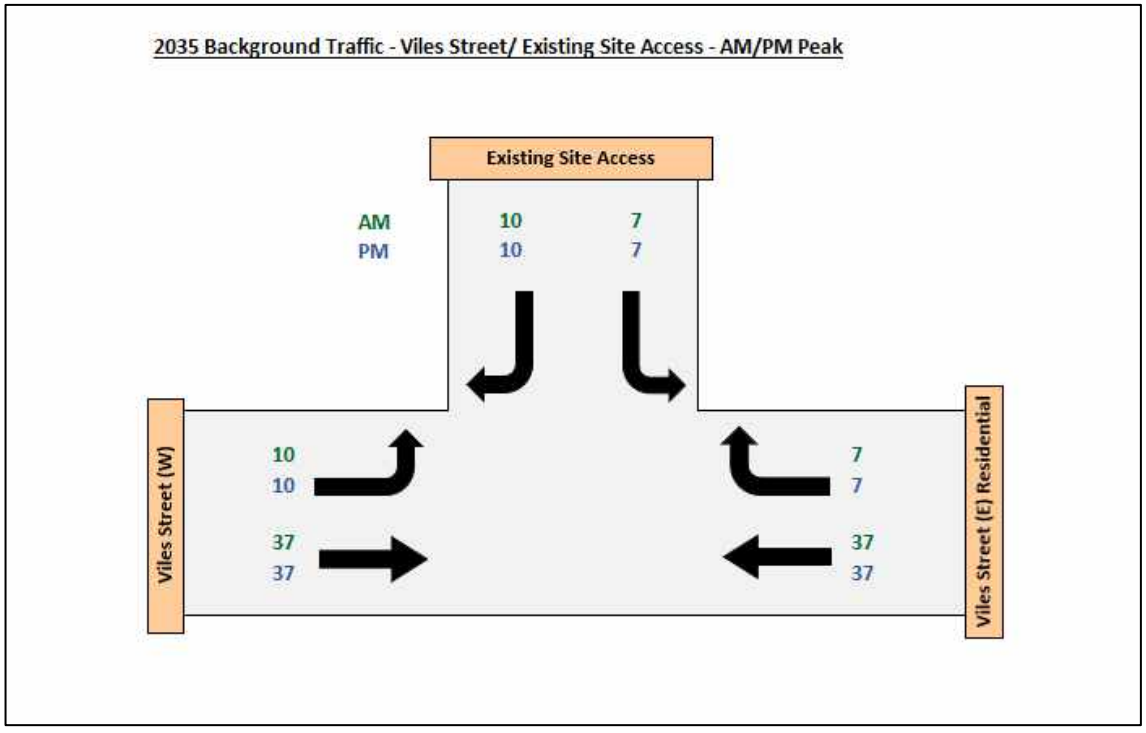


***Figure 9**. 2035 Background Traffic AM and PM Peak Hour Traffic Distribution- Viles St./Existing Site Access Int.*

5.0 DEVELOPMENT TRAFFIC

5.1 PROPOSED DEVELOPMENT

The development consists of an extension of the existing medical centre from Lot 57 to Lot 56. The existing and extension building consists of two levels with each level containing the following features:

- Extension Building
  - Ground Floor
    - Carpark
    - Service Area Plant and Equipment Room
    - Reception Area
    - Admin Office
    - Male Female and PWD Toilets
  - First Floor Plan
    - Bathrooms and Rooms

- Existing Building
  - Ground Floor
    - Carpark
    - Caretakers Store
    - Treatment Area
    - Nurse Rooms
    - Reception Area
    - Consultation Rooms
    - Library
    - Male Female and PWD Toilets
    - Waiting Area
  - First Floor Plan
    - Bedrooms
    - Caretakers Residence
    - Toilets
    - Staff Room and Study Room
    - Patio
    - Waiting Area
    - Paramedical Usage Room
    - Practice Manager Room

The existing building consists of 1 set of fire stairs while the extension building consists of a lift and 1 set of fire stairs. Refer to **Appendix A** for the development plans.

5.2 OPERATING REGIME

The centre will operate between 8:00 am to 5:00 pm on weekdays and 8:30 am to 12:00 noon every Saturday. It is assumed that staffs will arrive and depart half an hour before and after opening hours.

5.3 ACCESS

The proposed development will have two (2) accesses. The proposed site access 1 is on the northwest corner of Lot 56 along Bowen Road and is a site ingress only, while proposed site access 2 is at the Eastern part of the subject site along Viles Street and is a site ingress and egress. The existing site access is to be removed in the proposed development.

Additionally, for pedestrian access, Council's footpath along Bowen Road is currently connected to the existing medical centre footpath.

Refer to **Figure 4** for the site access locality.

5.4 VEHICLE MOVEMENT

Refer to **Figure 10** for the development traffic movements.

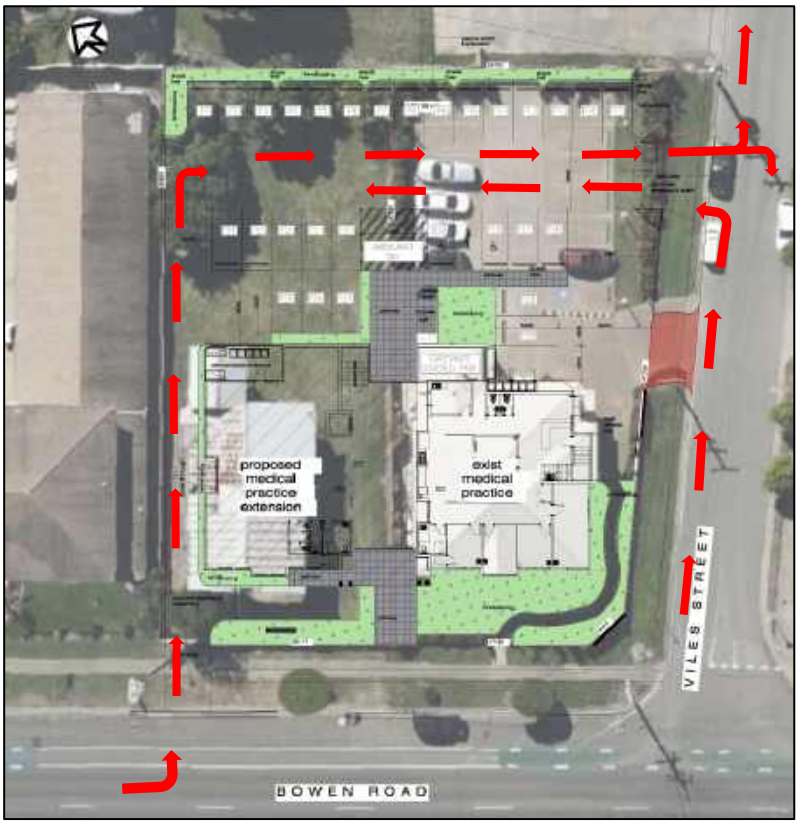


***Figure 10**. Development Traffic Movement*

5.5 DEVELOPMENT TRAFFIC GENERATION

5.5.1 Traffic Generation

In accordance with the TMR Guide to Traffic Impact Assessment (GTIA), the following resources were assessed to determine the development trip generation rate, the following have been reviewed:

- Traffic generation data – 2006–2017 (Queensland) Open Data;
- Guide to Traffic Generation Developments Updated traffic surveys, RMS (2013) (not available); and
- Guide to Traffic Generating Developments, RTA (2002).

In addition to those listed above the following was also reviewed:

- TMR RPDM 1st edition, Chapter 3;
- First principles traffic generation.

From Traffic generation data – 2006–2017 (Queensland) Open Data the average weekday peak hour volume rate for medical centres is 5.73 trips/100m^2 GFA and the average daily volume is 52.25 trips/100m^2 GFA. The proposed extension and existing building's GFA are 1,256m^2. Based on the average medical centre weekday rate the existing and extension development peak hour volume would be 72 trips per hour and the average AADT is 655 trips.

Various assumptions have been made for the development of traffic distribution. The assumptions are as follows:

- 50% entering/exiting in the AM and 50% entering/exiting in the PM.
- Vehicles from Bowen Road entering Site Access 1 are assumed to be 30%, while vehicles from Bowen Road entering Viles Street is 50% and 20% will come from East Viles Street (i.e. Lowth Street).
- Proposed Site Access 1 along Bowen Road is a site ingress only and all vehicles from this access will exist on the proposed Site Access 2 along Viles Street.
- For vehicles from Bowen Rd entering Viles St, 50% will left turn in and 50% will turn right in.
- Vehicles exiting Site Access 2 are assumed to be 60% turning right to Bowen Road and 40% turning left to the residential area.
- Vehicles existing on Viles Street have a 50:50 split or right and left out turns.

5.5.2 Development Traffic Distribution

The development traffic distribution is summarised in Figure 11, Figure 12 and Figure 13.

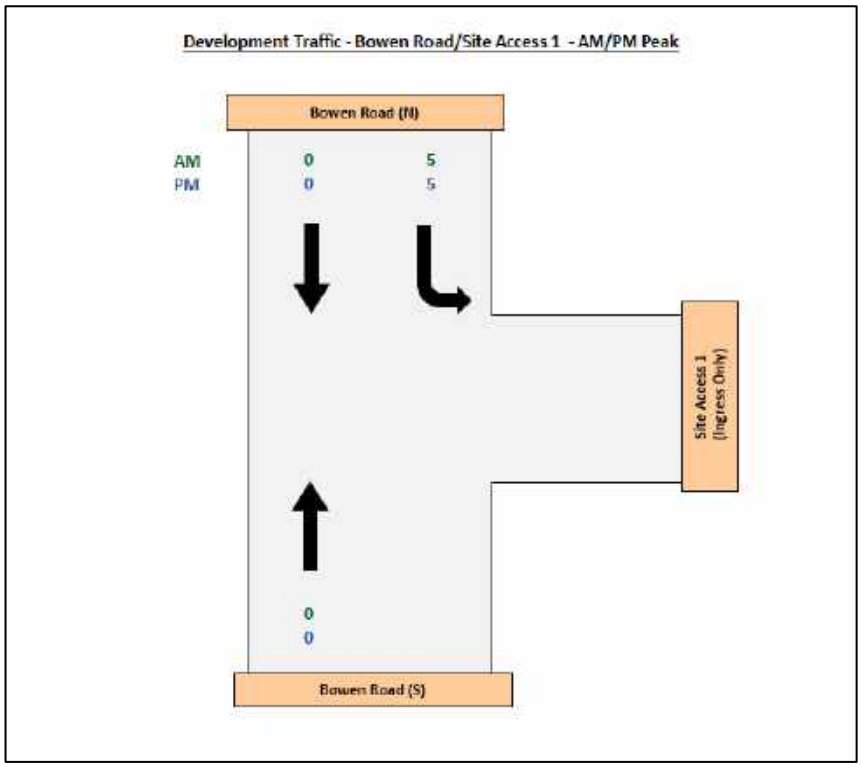


Figure 11. *AM and PM Development Traffic Distribution- Bowen Road/ Proposed Site Access 1 Intersection*

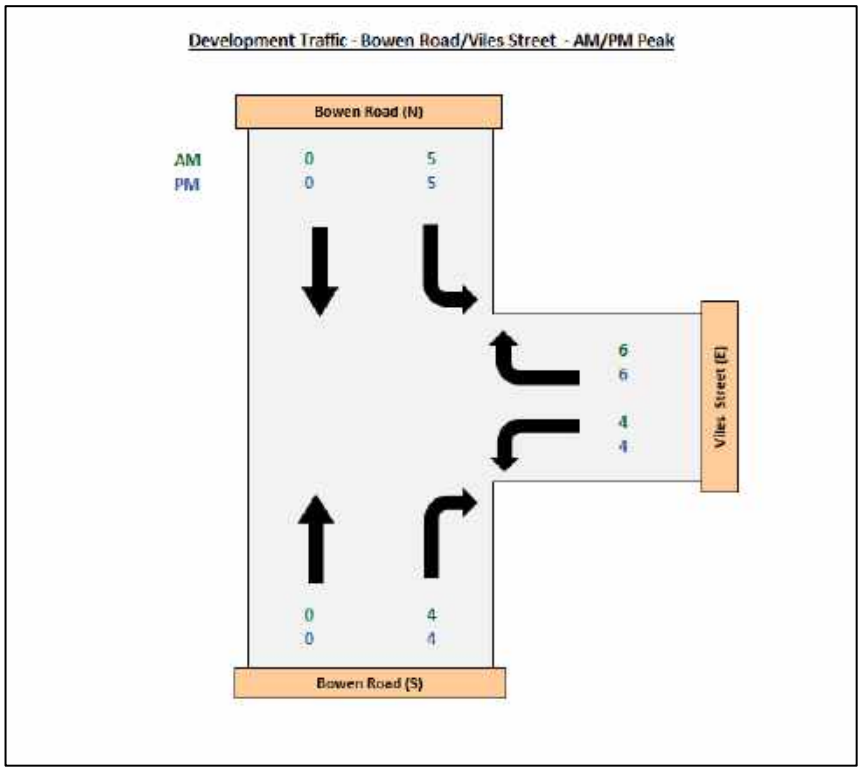


Figure 12*. AM and PM Development Traffic Distribution- Bowen Road/ Viles Street Intersection*

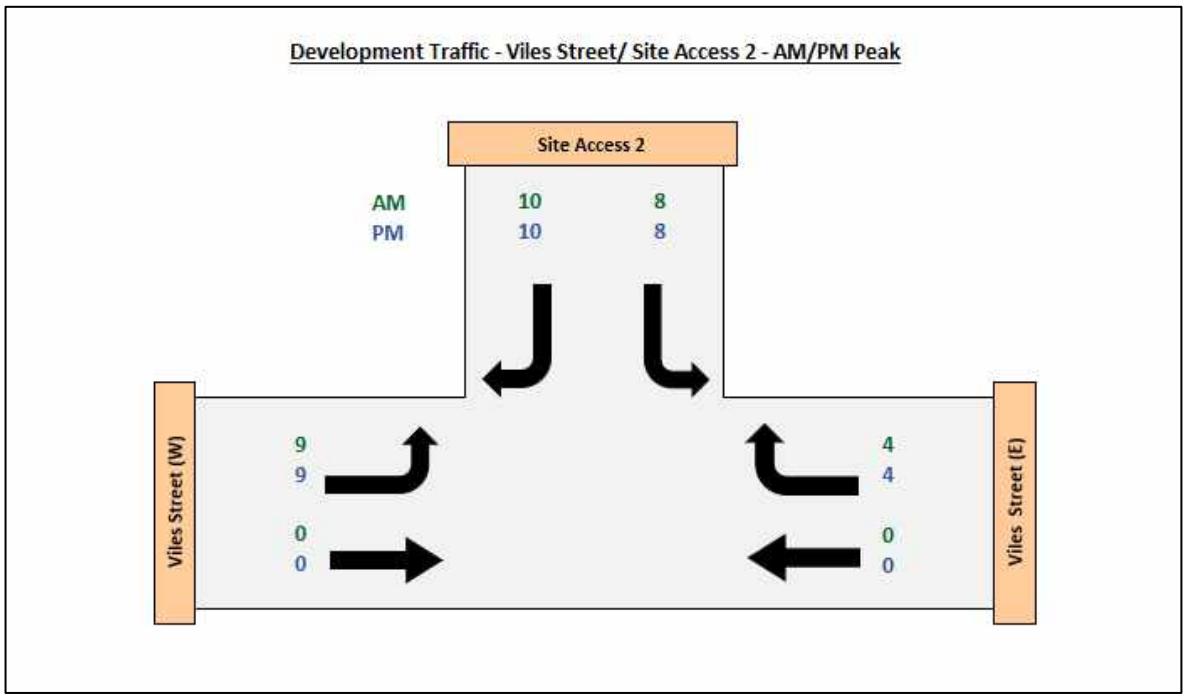


Figure 13. *AM and PM Development Traffic Distribution- Viles Street/ Proposed Site Access 2 Intersection*

5.6 POST DEVELOPMENT TRAFFIC (BACKGROUND+ DEVELOPMENT)

The 2025 AM and PM traffic distribution post-development is summarised in **Figure 14, Figure 15 and Figure 16**. The 2035 AM and PM traffic distribution post development is summarised in **Figure 17**, **Figure 18** and **Figure 19**.

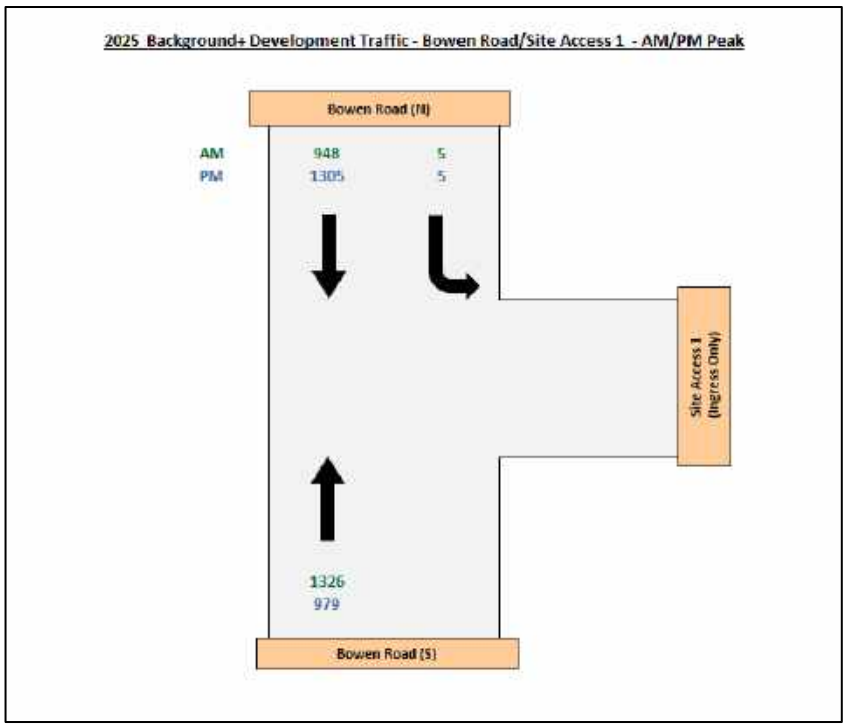


Figure 14. *2025 AM and PM Post Development Traffic - Bowen Road/ Proposed Site Access 1 Intersection*

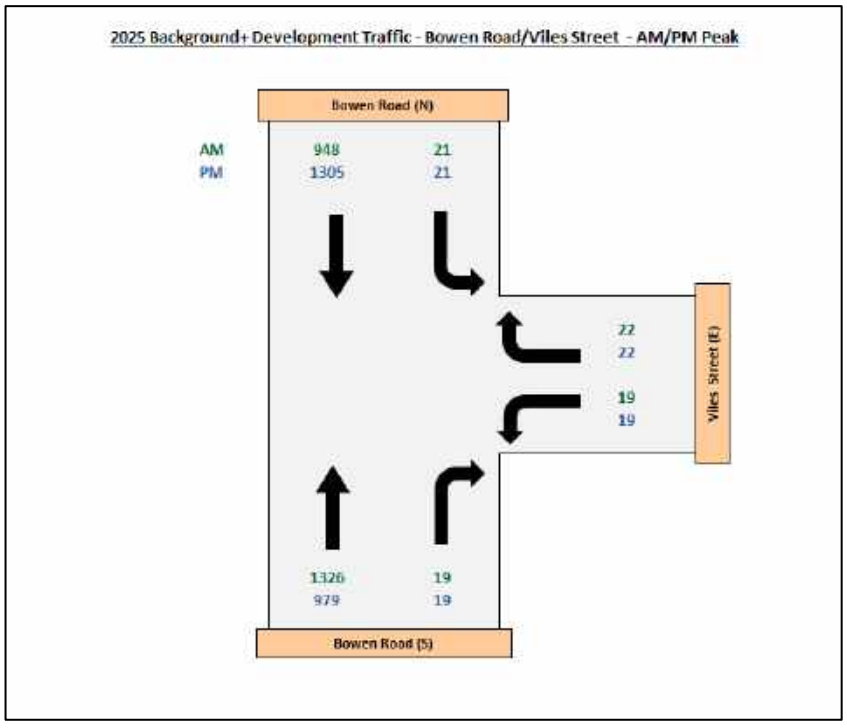


Figure 15. *2025 AM and PM Post Development Traffic - Bowen Road/ Viles Street Intersection*

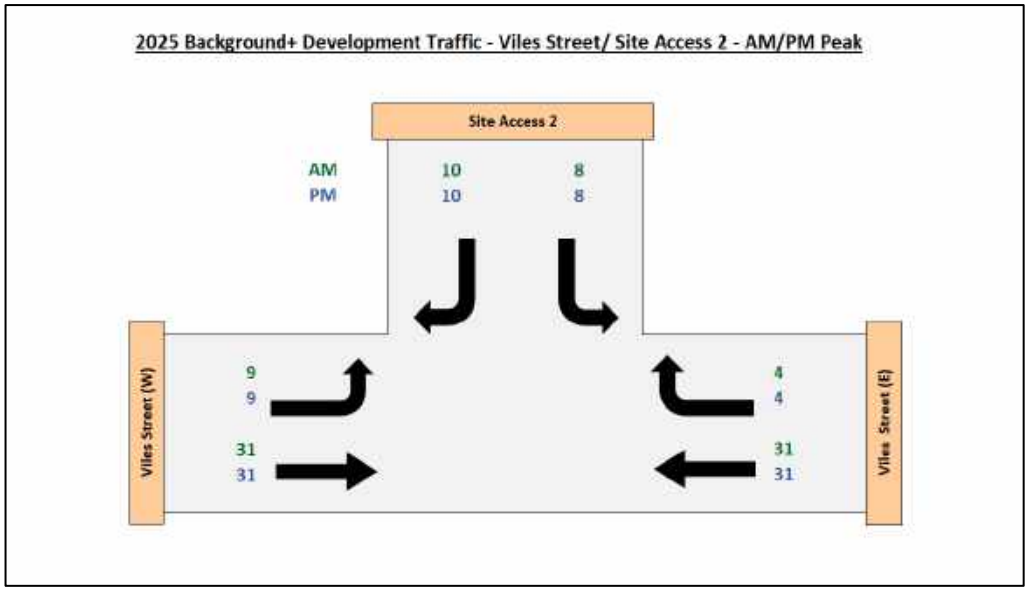


***Figure 16**. 2025 AM and PM Post Development Traffic - Viles Street/ Proposed Site Access 2 Intersection*

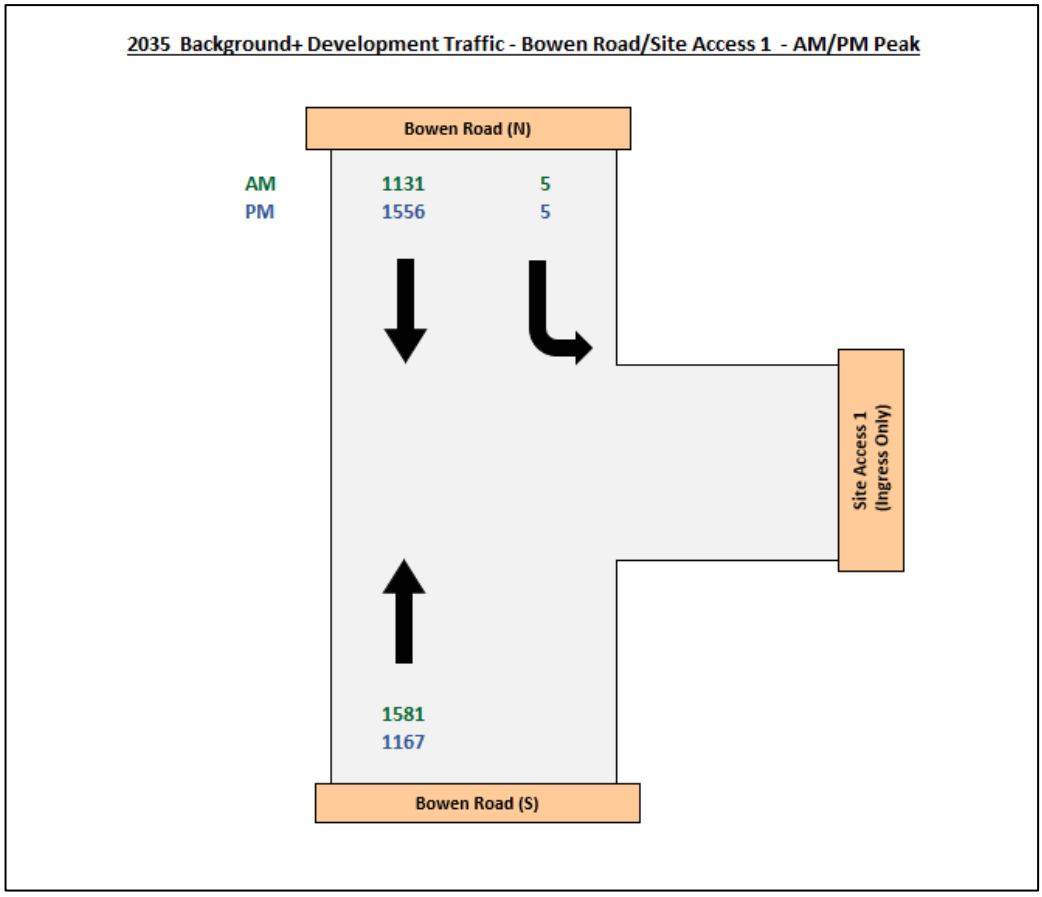


***Figure 17**. 2035 AM and PM Post Development Traffic - Bowen Road/ Proposed Site Access 1 Intersection*

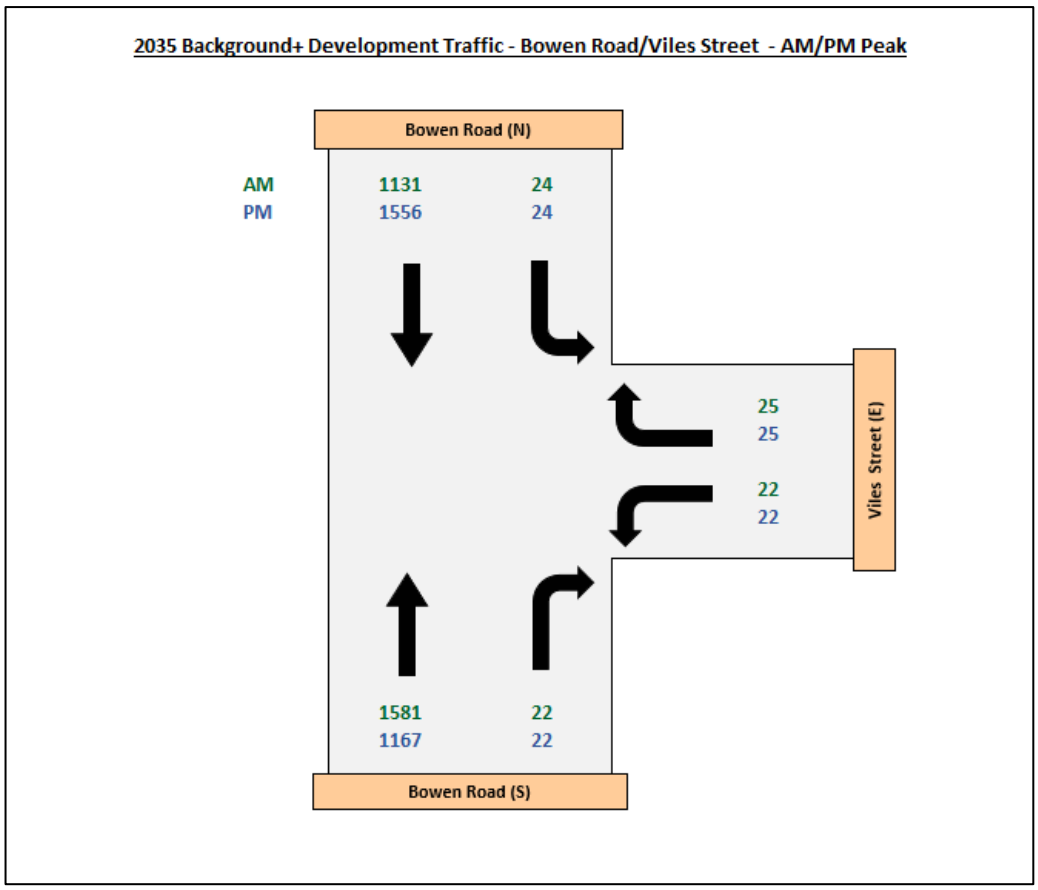


***Figure 18**. 2035 AM and PM Post Development Traffic - Bowen Road/ Viles Street Intersection*

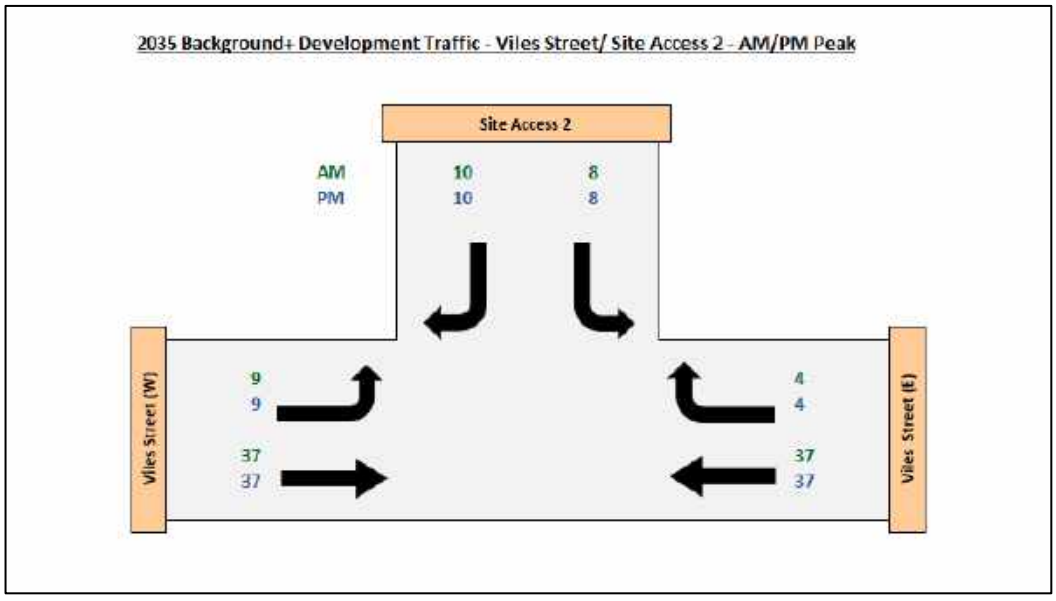


***Figure 19**. 2035 AM and PM Post Development Traffic - Viles Street/ Proposed Site Access 2 Intersection*

6.0 TRAFFIC IMPACT ASSESSMENT

6.1 SIDRA INTERSECTION ANALYSIS

It is proposed to measure the operational performance of the access "intersections" using SIDRA 9.1 software package. SIDRA is a computer package used to describe the capability and operational performance of an intersection in terms of the parameters as defined below:

- Degree of Saturation (DoS) – is the ratio of demand flow (or number of vehicles) to the physical capacity of the intersection or approach and is usually represented by a value that lies between zero and one. A DoS in excess of 1.0 indicates that the intersection will operate above capacity and that long delays and congestion will occur;
- Average Delay – is usually defined as the difference in time between interrupted and uninterrupted travel times through an intersection;
- Queue Length – is the 95th percentile back of queue length. This is the length to the back of the queue for a particular approach which 95% of all observed queue lengths fall below; and
- Level of Service (LOS) – an index of the operational performance of traffic-on-traffic lane, approach, intersection, route or network, based on measures such as delay, degree of saturation, density, speed, congestion coefficient, speed efficiency or travel time index during a given flow period. This provides a quantitative stratification of a performance measure or measures that represent the quality of service, measured on an A to F scale, with LOS A representing the best operating conditions from the traveller's perspective and LOS F the worst.

6.1.1 Intersection Performance Assessment Criteria

The two key performance measurements adopted to assess the intersection operational conditions were Degree of Saturation (DoS) and Level of Service (LOS).

In general, the intersection capacity DoS, where it is considered that the operation of the intersection is constrained, are:

- 0.80 (80%) for un-signalised intersections;
- 0.85 (85%) for roundabouts; and
- 0.90 (90%) for signalised intersections.

The typical LOS, its characteristics and rating are defined in Table 7

Table 7. *Summary of traffic movements*

LOS	Description	Rating
A	Free, unrestrictive flow	Very good
B	Mostly free flow, few disruptions	Very good
C	Stable flow	Good
D	Mostly stable flow, some delays	Acceptable
E	Congested	Bad
F	Forced flow	Bad

6.2 INTERSECTION LAYOUTS

6.2.1 Pre-development Layout

Refer to **Figure 12** for the pre-development intersections layout and **Figure 13** for the post development intersections layout.

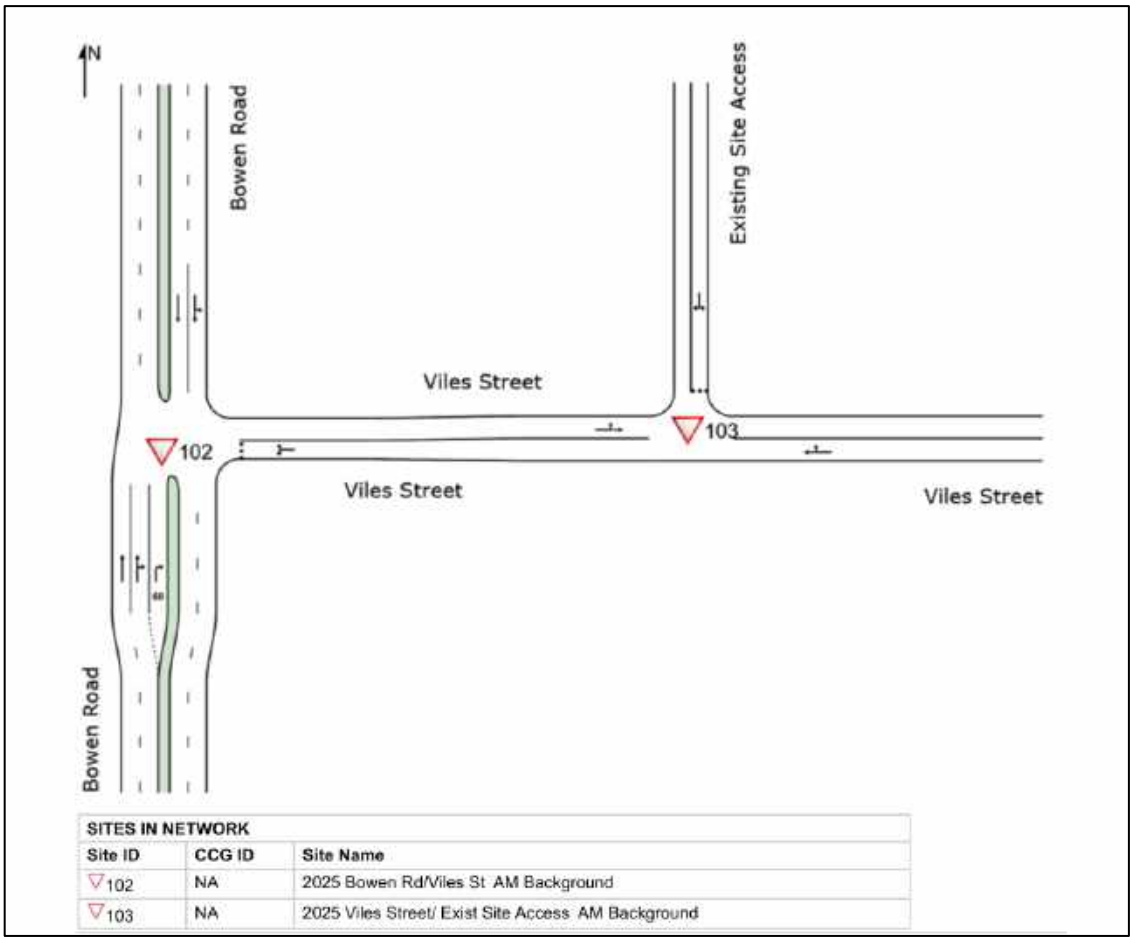


Figure 12*: Pre-development Intersection Layout*

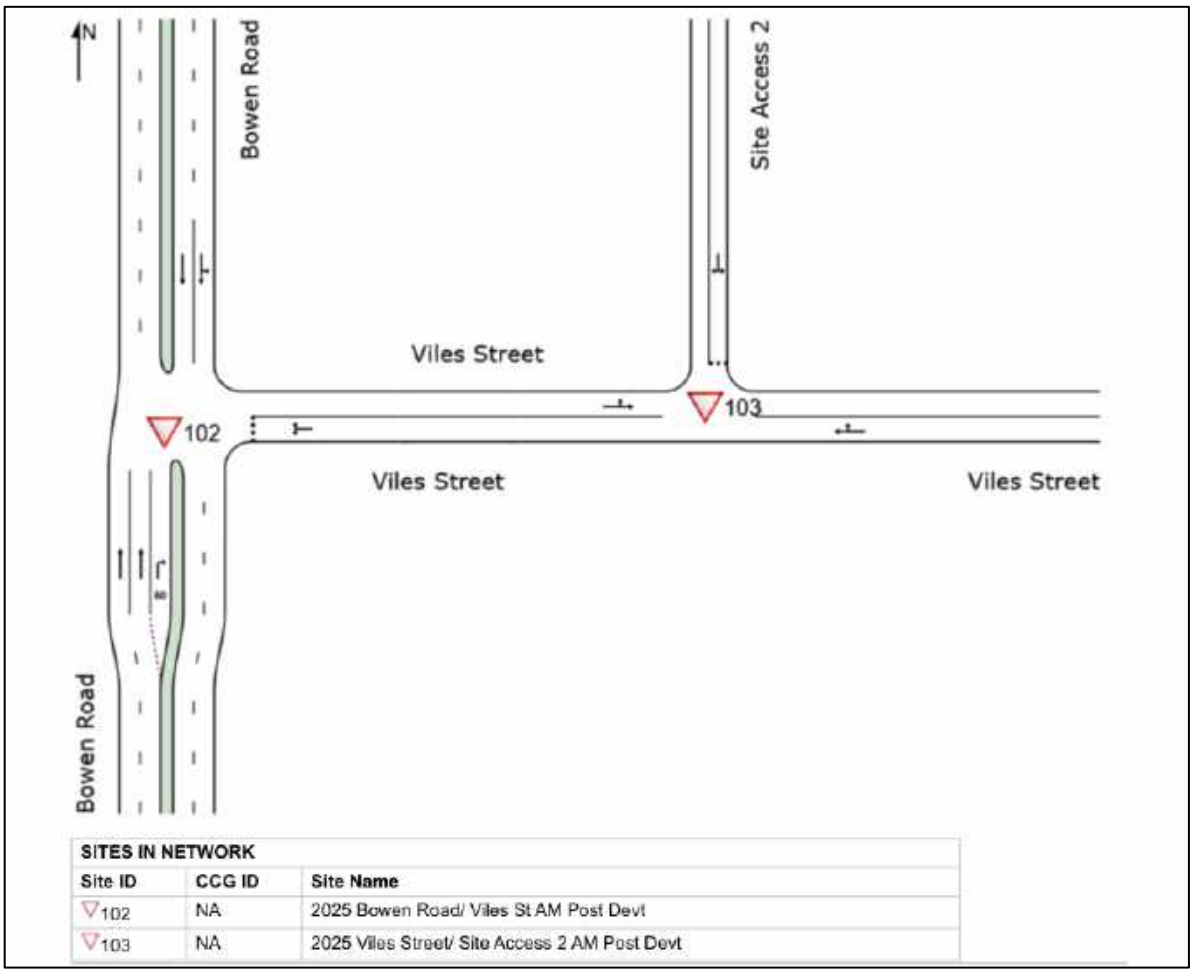


***Figure 13**: Post-development Intersection Layout*

6.3 INTERSECTION PERFORMANCE

6.3.1 Bowen Road/ Viles Street

The SIDRA assessment for the key Intersections is summarised in Table 8 and Table 9 below. Refer to Appendix C for the SIDRA summary.

Table 8. *Pre and Post Development 2025 SIDRA Summary*

PH	Site No	Approach	Movement	2025 Background Traffic			2025 Post Dev't Traffic		
				DoS	Delay (s)	LOS	DoS	Delay (s)	LOS
AM	102	Bowen Rd (S)	Through	0.588	0.1	A	0.353	0.0	A
			Right Turn	0.046	13.2	B	0.043	12.4	B
		Vile Street St (E)	Left Turn	3.535	2294.5	F	3.148	1954.3	F
			Right Turn	3.535	2508.8	F	3.148	2196.2	F
		Bowen Rd (N)	Left Turn	0.268	5.6	A	0.254	2.8	A
			Through	0.268	0.0	A	0.254	0.0	A
		Overall		**3.535**	**41.2**	**NA**	**3.148**	**38.3**	**NA**
	103	Viles Street (E)	Through	0.020	0.0	A	0.018	0.0	A
			Right Turn	0.020	3.6	A	0.018	3.1	A
		Existing Site Access (N)	Left Turn	0.018	2.4	A	-	-	-
			Right Turn	0.018	2.3	A	-	-	-
		Proposed Site Access 2 (N)	Left Turn	-	-	-	0.022	2.9	A
			Right Turn	-	-	-	0.022	2.9	A
		Viles Street (W)	Left Turn	0.021	2.7	A	0.021	3.1	A
			Through	0.021	0.0	A	0.021	0.0	A
		Overall		**0.021**	**0.9**	**NA**	**0.022**	**1.0**	**NA**
PM	102	Bowen Rd (S)	Through	0.434	0.0	A	0.261	0.0	A
			Right Turn	0.091	22.4	C	0.079	19.9	C
		Vile Street St (E)	Left Turn	3.466	2238.9	F	3.156	1964.4	F
			Right Turn	3.466	2461.7	F	3.156	2202.1	F
		Bowen Rd (N)	Left Turn	0.367	5.6	A	0.347	2.8	A
			Through	0.367	0.0	A	0.347	0.0	A
		Overall		**3.466**	**39.9**	**NA**	**3.156**	**38.3**	**NA**
	103	Viles Street (E)	Through	0.020	0.0	A	0.018	0.0	A
			Right Turn	0.020	3.6	A	0.018	3.1	A
		Existing Site Access (N)	Left Turn	0.018	2.4	A	-	-	-
			Right Turn	0.018	2.3	A	-	-	-
		Proposed Site Access 2 (N)	Left Turn	-	-	-	0.022	2.9	A
			Right Turn	-	-	-	0.022	2.9	A
		Viles Street (W)	Left Turn	0.021	2.7	A	0.021	3.1	A
			Through	0.021	0.0	A	0.021	0.0	A
		Overall		**0.021**	**0.9**	**NA**	**0.022**	**1.0**	**NA**

As seen in Table 8, all the leg remain as a LOS as is for background and post development traffic. Currently, the left turn and right turn out to Bowen Road from the Viles Street have a LOS F. It is important to take note that an auxiliary lane of approximately 5.2m is present in the intersection for the right turn out to Bowen Road sufficient to store a passenger car. Additionally, it is assumed that the intersection is free flowing. The current width of the left turn and right turn lane on Viles Street is not sufficient for a left turn. Moreover, traffic lights are present on Love Lane/Bowen Road Intersection which is approximately 500m in Bowen Road/Viles Street intersection which can create a gap between the traffic allowing movements out of Viles Street. Bowen Road right turn movement in 2025 AM Peak Background and Post Development Scenario has increased from LOS B to LOS C in the 2025 PM Peak Background and Post Development Scenario. As such, as the current situation on turn left and right-out movement to Bowen Road as well as the right turn from Bowen Road (S) remains the same after the post development, the post development does not impact the intersection.

As seen in Table 9, for the year 2035 all the leg remain as a LOS as is for background and post development traffic. The left turn and right turn out to Bowen Road from the Viles Street have a LOS F. Bowen Road right turn movement in 2025 AM Peak Background and Post Development Scenario has increased from LOS B to LOS C in the 2025 PM Peak Background and Post Development Scenario. As such, as the current situation on turn left and turn right-out movement to Bowen Road from Viles Street as well as the right turn from Bowen Road (S) remains the same after the post development, the post development does not impact the intersection.

Table 9. *Bowen Road/Viles Street year 2035 SIDRA Summary*

PH	Site No	Approach	Movement	2025 Background Traffic			2025 Post Dev't Traffic		
				DoS	Delay (s)	LOS	DoS	Delay (s)	LOS
AM	102	Bowen Rd (S)	Through	0.588	0.1	A	0.353	0.0	A
			Right Turn	0.046	13.2	B	0.043	12.4	B
		Vile Street St (E)	Left Turn	3.535	2294.5	F	3.148	1954.3	F
			Right Turn	3.535	2508.8	F	3.148	2196.2	F
		Bowen Rd (N)	Left Turn	0.268	5.6	A	0.254	2.8	A
			Through	0.268	0.0	A	0.254	0.0	A
		Overall		**3.535**	**41.2**	**NA**	**3.148**	**38.3**	**NA**
	103	Viles Street (E)	Through	0.020	0.0	A	0.018	0.0	A
			Right Turn	0.020	3.6	A	0.018	3.1	A
		Existing Site Access (N)	Left Turn	0.018	2.4	A	-	-	-
			Right Turn	0.018	2.3	A	-	-	-
		Proposed Site Access 2 (N)	Left Turn	-	-	-	0.022	2.9	A
			Right Turn	-	-	-	0.022	2.9	A
		Viles Street (W)	Left Turn	0.021	2.7	A	0.021	3.1	A
			Through	0.021	0.0	A	0.021	0.0	A
		Overall		**0.021**	**0.9**	**NA**	**0.022**	**1.0**	**NA**
PM	102	Bowen Rd (S)	Through	0.434	0.0	A	0.261	0.0	A
			Right Turn	0.091	22.4	C	0.079	19.9	C
		Vile Street St (E)	Left Turn	3.466	2238.9	F	3.156	1964.4	F
			Right Turn	3.466	2461.7	F	3.156	2202.1	F
		Bowen Rd (N)	Left Turn	0.367	5.6	A	0.347	2.8	A
			Through	0.367	0.0	A	0.347	0.0	A
		Overall		**3.466**	**39.9**	**NA**	**3.156**	**38.3**	**NA**
	103	Viles Street (E)	Through	0.020	0.0	A	0.018	0	A
			Right Turn	0.020	3.6	A	0.018	3.1	A
		Existing Site Access (N)	Left Turn	0.018	2.4	A	-	-	-
			Right Turn	0.018	2.3	A	-	-	-
		Proposed Site Access 2 (N)	Left Turn	-	-	-	0.022	2.9	A
			Right Turn	-	-	-	0.022	2.9	A
		Viles Street (W)	Left Turn	0.021	2.7	A	0.021	3.1	A
			Through	0.021	0.0	A	0.021	0.0	A
		Overall		**0.021**	**0.9**	**NA**	**0.022**	**1.0**	**NA**

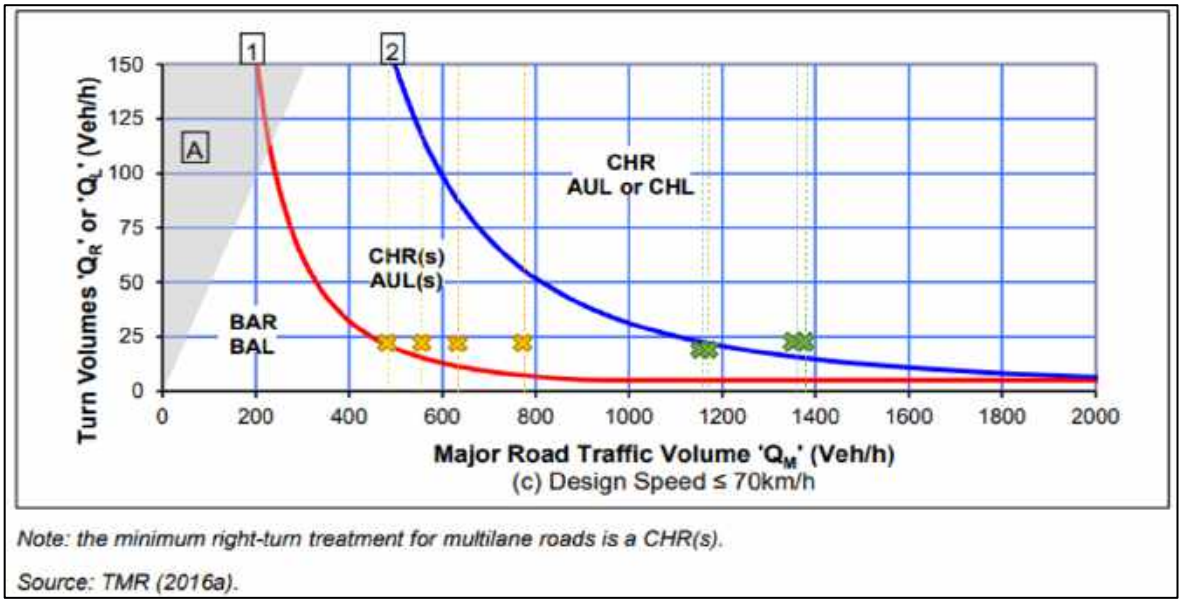
6.4 TURN WARRANT ASSESSMENT

6.4.1 Bowen Road/ Viles Street

A turn warrant check was conducted on the intersection to determine if any specific turn treatment might be recommended. The turn warrant check has been completed in accordance with Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings. Table 10 shows the Bowen Road/Viles Street warrant check.

***Table 10**. Bowen Road/Viles Street warrant Check*

Scenario	Right Turn In		Left Turn In		Warrants
	QR	QM	QL	QM	
2025 AM	19	1137	21	474	CHR(s)/AUL(s)
2025 PM	19	1142	21	653	CHR(s)/AUL(s)
2035 AM	22	1356	24	565	CHR(s)/AUL(s)
2035 PM	22	1362	24	778	CHR(s)/AUL(s)



Note: the minimum right-turn treatment for multilane roads is a CHR(s).

Source: TMR (2016a).

***Figure 20.** Warrant Check Turn Treatment*

As seen in Figure 20. A CHR(s) turn treatment is warranted for a right turn, and this treatment is already existing in the intersection and as such there is no recommendation for turn warrant for a right turn and remain the existing. Refer to Figure 21 for the existing CHR(s) turn treatment.

Figure 21. *Existing intersection at Bowen Road/Viles Street. Source (Queensland Globe)*

As shown in Figure 20, an AUL(s) is required for the left turn. Therefore, the recommended treatment for the left turn is the AUL(s). Considering a design speed of 70 km/h, the taper length and diverge length were determined using the Austroads Guide to Road Design, Part 4A. Specifically, the values were extracted from Table 5.2 (Table 11) for diverge length and Table 8.4 (Table 12) for taper length.

Table 11. *Austroads Guide to Road Design Part 4A, Table 5.2*

Table 5.2: Deceleration distances required for cars on a level grade

Design speed of approach road (km/h)	Length of deceleration D – including diverge taper *T* (m)										Diverge length L_e[3] for lane widths (m)	
	Stop condition[1] (m)		Design speed of exit curve (km/h)[2]									
	0	0	20	30	40	50	60	70	80	90	3.5 m[4]	3.0 m[4]
	Comfortable 2.5 m/s²	Maximum 3.5 m/s²	Comfortable average rate of deceleration 2.5 m/s²									
50	40	30	30	25	15						33	27
60	55	40	50	40	30	15					40	33
70	75	55	70	60	50	40	20				47	40
80	100	70	95	85	75	60	45	25			54	44
90	125	90	120	110	100	85	70	50	25		60	50
100	155	110	150	140	130	115	100	80	55	30	67	57
110	185	135	180	175	160	150	130	110	90	60	74	62

***Table 12**.Austroads Guide to Road Design Part 4A, Table 8.4*

Table 8.4: Dimensions for D and T in AUL(S) treatment

Design speed of major road approach (km/h)	Diverge/deceleration length *D* (m)[1]	Taper length *T* (m)[2]
50	20	20
60	25	20
70	35	30
80	45	30
90	55	40

In accordance with Austroads Guide to Road Design Part 4A, a proposed AUL(s) has been designed. Refer to Figure 22 for the proposed AUL(s) and is attached to Appendix E.

***Figure 22.** Proposed AUL(s) Turn Treatments*

7.0 SIGHT DISTANCES

7.1 SAFE INTERSECTION SIGHT DISTANCE (SISD)

A SISD check was conducted for the Bowen Road/ Viles Street intersection and Viles Street/ Site Access 2 in accordance with Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections. The Bowen Road/ Site Access 1 hasn't been checked as this is assumed to be one way site access.

The equation below was used to calculate the SISD:

$$SISD = \frac{D_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

Where:

SISD = safe intersection sight distance (m)

D_T = decision time (sec) = observation time (sec) + reaction time (sec)

V = operating (85th percentile) speed (km/h)

d = coefficient of deceleration

a = longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

The base cases of car-day and truck-day were checked along with the other relevant check cases below. The minimum required SISD is the same for north and south of the Bowen Road/ Viles Street as the road grade is the same. For, Bowen Road/ Site Access 1 Intersection, only from the north direction will be assessed as this is assumed to be one way. The minimum required SISD will be checked against the available SISD for both intersections. As seen in **Table 11** and **Table 12** the intersections meet the SISD requirements. Refer to **Figure 20** and **Figure 21** for the North and South of Bowen Road available sight distance and **Figure 22** for Site Access 1 available sight distance.

Table 13. *SISD Assessment Summary for Bowen Road/ Viles Street*

Case	Vehicle Type	Time of day	Design Speed (km/h)	R_t (sec)	O_t (sec)	D_t (sec)	a (%)	d	Min Required SISD (m)	North of Access Available SISD (m)	South of Access Available SISD (m)
Base	Car	Day	60	2.0	3.0	5.0	0	0.36	123	153	146
Base	Truck	Day	60	2.0	3.0	5.0	0	0.46	142		
Check	Car	Night	60	2.0	2.5	4.5	0	0.24	106		
Check	Truck	Night	60	2.0	3.0	5.0	0	0.29	132		

***Figure 23**. North of Bowen Road/Viles Street available sight distance*

***Figure 24**. South of Bowen Road/Viles Street available sight distance*

Table 14. *SISD Assessment Summary for Bowen Road/ Site Access 1*

Case	Vehicle Type	Time of day	Design Speed (km/h)	R_t (sec)	O_t (sec)	D_t (sec)	a (%)	d	Min Required SISD (m)	North of Access Available SISD (m)
Base	Car	Day	60	2.0	3.0	5.0	0	0.36	123	151
Base	Truck	Day	60	2.0	3.0	5.0	0	0.46	142	
Check	Car	Night	60	2.0	2.5	4.5	0	0.24	106	
Check	Truck	Night	60	2.0	3.0	5.0	0	0.29	132	

Figure 25. *North of Bowen Rd/Site Access 1 available sight distance*

7.2 APPROACH SIGHT DISTANCE (ASD)

An ASD check was conducted for the Bowen Road/Site Access 1 intersection in accordance with Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections.

The equation below was used to calculate the ASD:

$$ASD\ (Approach\ Sight\ Distance) = \frac{R_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

Where:

R_T = reaction time (sec), refer to AGRD Part 3 (Austroads 2016a) for guidance on values

V = operating (85th percentile) speed (km/h)

d = coefficient of deceleration

a = longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

As seen in **Table 12** and **Figure 23** the Bowen Road /Site Access 1 has suitable ASD.

***Table 15**. ASD Assessment Summary for Bowen Road/ Site Access 1*

Case	Vehicle Type	Time of day	Design Speed (km/h)	R_t (sec)	a (%)	d	Min Required SISD (m)	North of Access Available SISD (m)
Base	Car	Day	60	2.0	0	0.36	73	122
Base	Truck	Day	60	2.0	0	0.46	92	
Check	Car	Night	60	2.0	0	0.24	64	
Check	Truck	Night	60	2.0	0	0.29	82	

***Figure 26**. North of intersection available sight distance*

7.3 PEDESTRIAN SAFE SIGHT DISTANCE

7.3.1 AS2890.1

The pedestrian safe sight distance was checked in accordance with AS2890.1, the minimum sight lines at the property boundary for exiting vehicles and pedestrian safety shown in **Figure 24**.

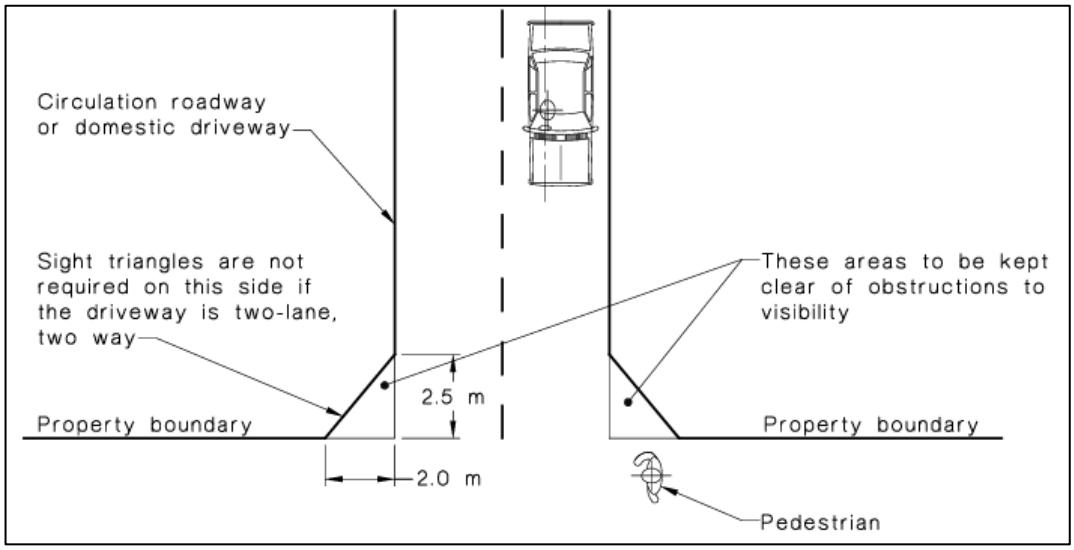


***Figure 27**. Minimum Sight Lines for Pedestrian Safety (Source: AS2890.1: 2004, Figure 3.3)*

As shown in **Figure 25**, Proposed Site Access 2 has adequate pedestrian safe sight distance provided that the landscaping on both side of the access is of a low-level planting, with maximum of 500mm height above driveway level.

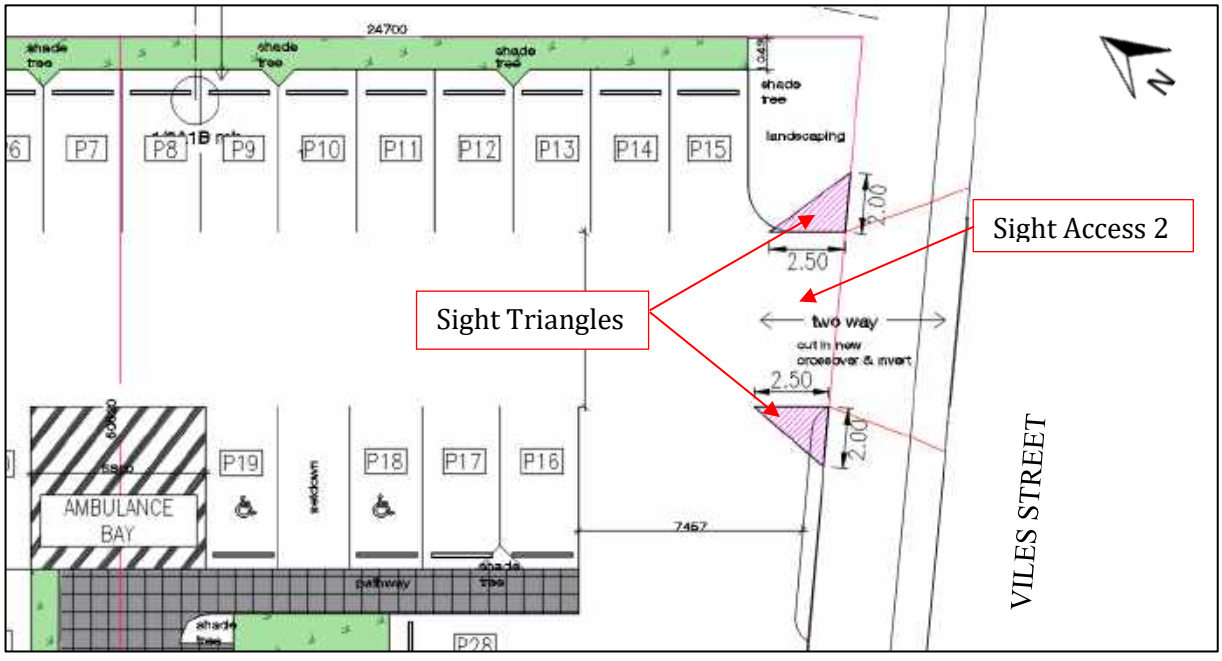


***Figure 28**. Site Access 2 Available Pedestrian Sight Distance.*

7.3.2 DTMR- Treatment options to improve safety of pedestrians. Bicycle riders and other path users at driveways

The proposed site access 2 was also assessed against DTMR- Treatment options to improve the safety of pedestrians, bicycle riders and other path users at driveways. The risk assessment process is detailed in Figure 26 and risk level in Figure 27.

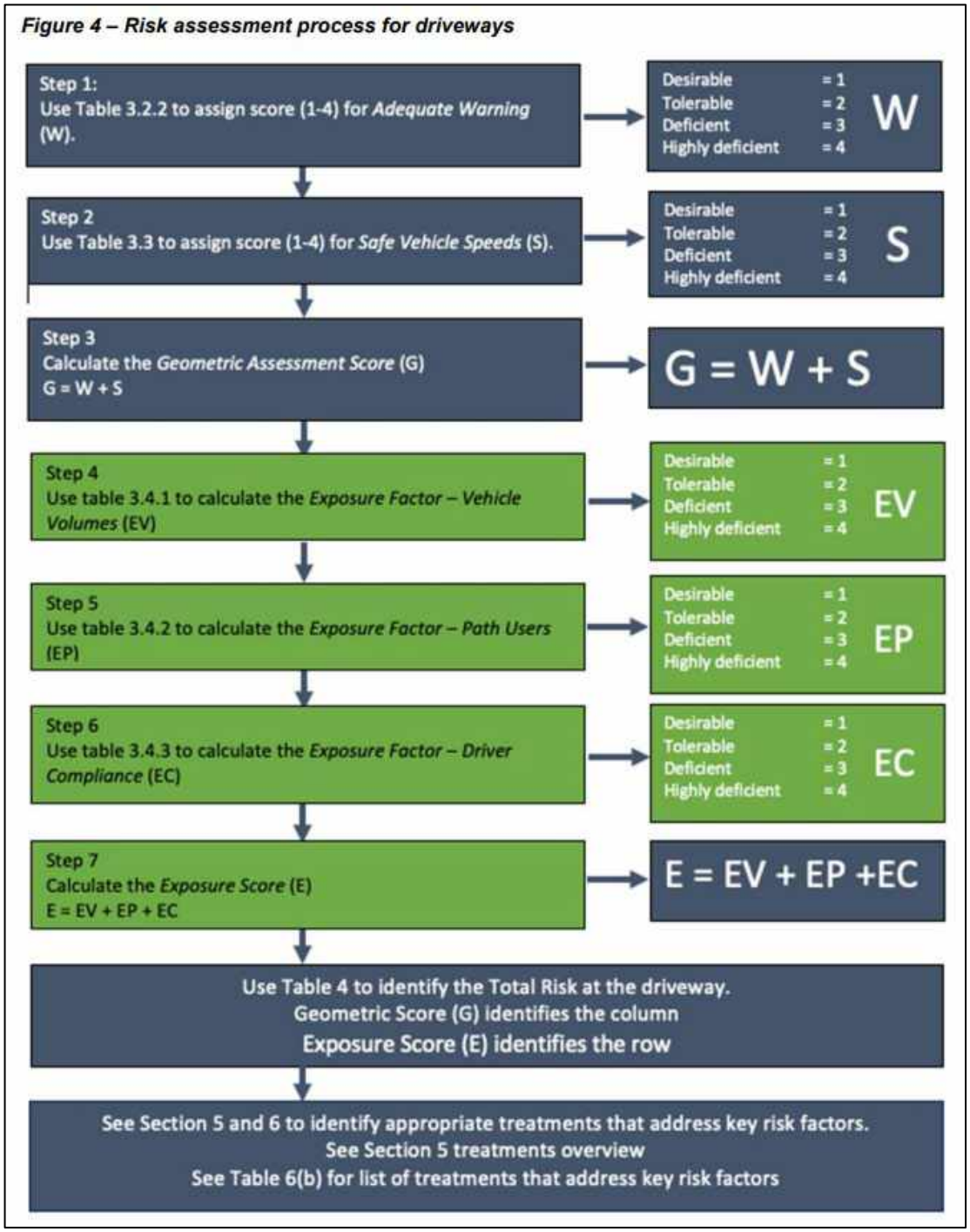


Figure 29. *Risk Assessment Process for Driveways (Source: TMR Guideline – Treatment options to improve safety of pedestrians, bicycle riders and other path users at driveways, Figure 4).*

Table 4 – Risk levels level for assessment process in Figure 4

		Geometric assessment score (G = W + S)			
Exposure score (E = EV + EP + EC)	Exposure scores	Desirable Range 2–3	Tolerable Range 4–5	Deficient Range 5–7	Highly deficient Range 7–8
	Low exposure 3–4	Existing treatments appropriate		Consider low-cost treatment options	
	Moderate exposure 5–7	Low risk Existing treatments appropriate	Consider low-cost treatment options	Recommend supplementary treatments or redesign to address issue	Require supplementary treatments or redesign to address issue
	High exposure 8–10		Recommend supplementary treatments or redesign to address issue		
	Very high exposure 11–12		Recommend supplementary treatments or redesign to address issue	Require supplementary treatments or redesign to address issue	

***Figure 30**. Table-4- Risk levels level for assessment process.*

Site Access 2 along Viles street is a proposed new access. While it is not yet constructed, a risk assessment has been made for recommendations. Currently, there is no footpath along the Viles street. For the purpose of this assessment, a 1.5m footpath is assumed along Viles street. Additionally, the report recommends that risk between path users and vehicles at the driveway will be managed in general accordance with TMR's Driveway Guideline, Figure 5 (b) shown as Figure 28.

Figure 5(b) – Recommended treatments to manage risks between path users and vehicles at commercial driveway on other pathways

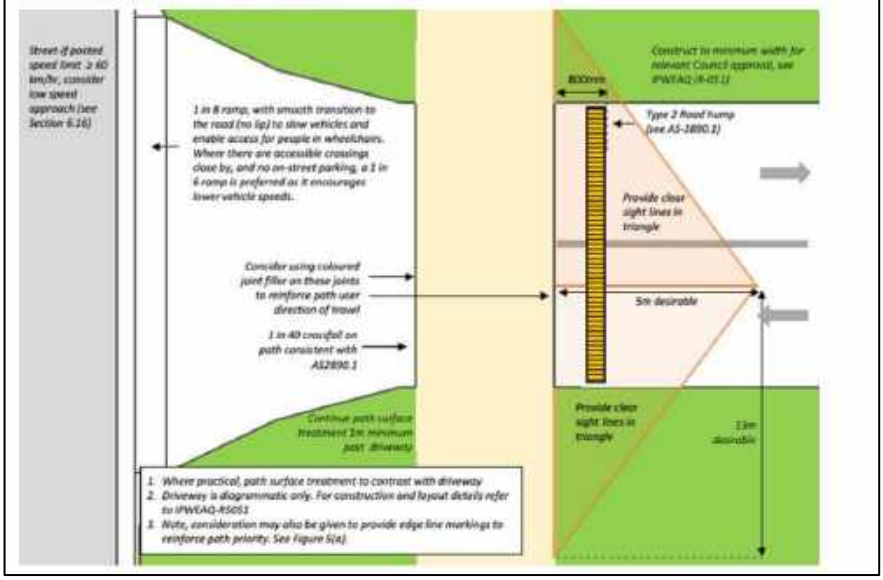


***Figure 31.** Risk Assessment Process (Source: TMR Guideline- Treatment options to improve safety of pedestrians, bicycle and other path users ay driveways, Figure 5 (b)).*

***Table 16**. Site Access 2 (Ingress and Egress) Risk Assessment)*

Step	Description	Reference	Score	Comments
Step 1	Adequate Warning (W)	Table 3.2.2	2	Adequate SSD with condition. Proposed landscape along both sides of driveway should have low level planting. Max 500mm Height above driveway level. No stopping sign along the driveway. Refer below for details.
Step 2	Safe Vehicle Speeds (S)	Table 3.3	2	Ramp will be provided on driveway
Step 3	Geometric Assessment Score (G), G=W+S		4	*Tolerable Range*
Step 4	Exposure Factor- Vehicle Volumes (EV)	Table 3.4.1	3	21-100 Peak hour trips
Step 5	Exposure Factor- Path Users (EP)	Table 3.4.2	3	Paths servicing medical centres
Step 6	Exposure Factor- Driver Compliance (EC)	Table 3.4.3	1	Assumed that drivers consistently giving way to path users
Step 7	Exposure Score (E), E= EV+ EP + EC		7	*Moderate Exposure*
Level of Assessment		***Table 4 (*Figure 27*)***	***Consider-low-cost treatment options***	

The proposed site access has adequate SSD provided that the shaded part shown in Figure 29 is not obstructed or plants along this landscape should be a low-level plant. For vehicles entering Site access 2, SSD was assessed in accordance with SSDs in Table 3.2.4 of DTMR, considering a 20km/hr as a worst-case scenario, a forward moving vehicle requires 12m SSD. As such, on street parking is recommended to be prohibited along both sides of the driveway. Refer to Figure 29 for the required SSD and recommended location of No stopping sign.

The proposed driveway crossover will be in accordance with the TCC driveway access specifications, and as such driveway crossovers is believed to have adequate gradient to slow down entering vehicles. Footpath to be constructed along Viles street should be a coloured path extending across Proposed Site Access 2 and beyond. To reduce speed of exiting vehicles, a road hump is recommended in the driveway.

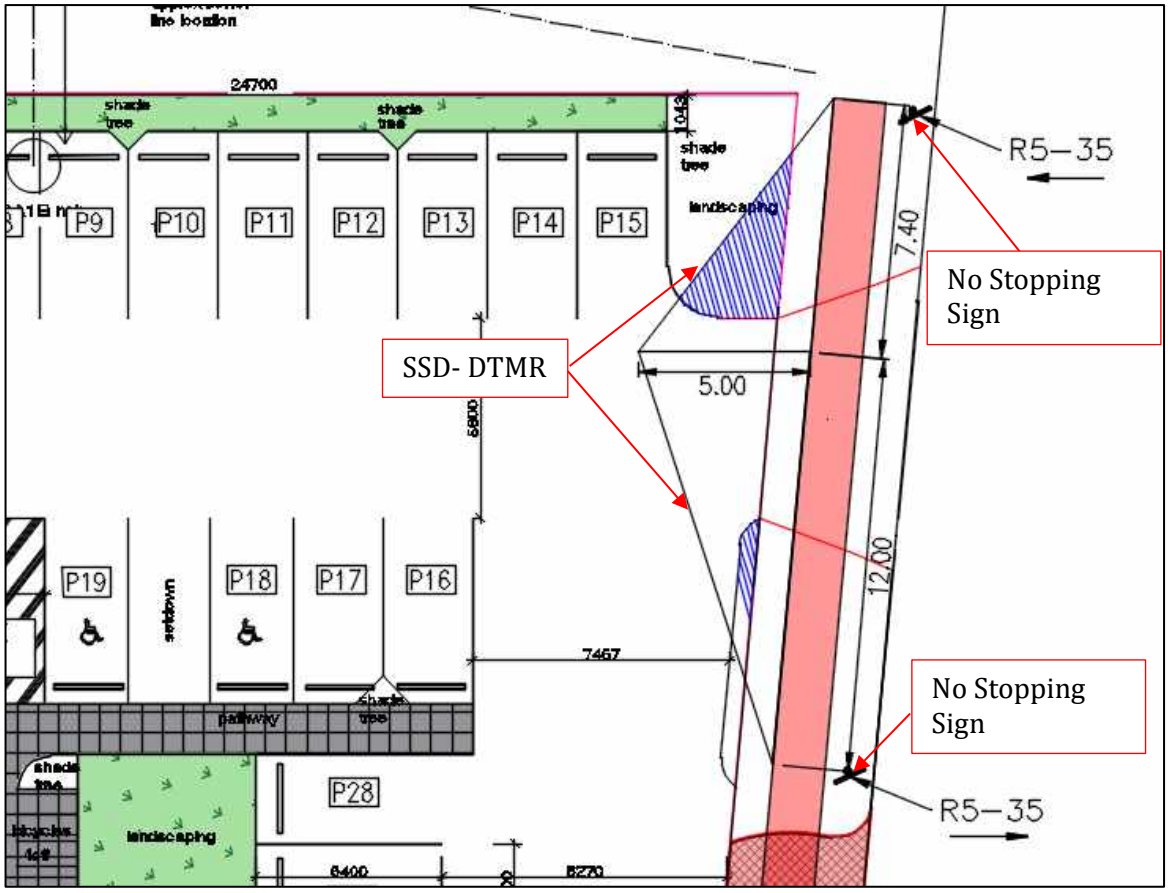


***Figure 32**. Required SSD based on DTMR and Approximate location of No Stopping Sign.*

8.0 SWEPTH PATHS

Swept paths for a Small Rigid Vehicle (SRV) design vehicle (i.e Ambulance) and a B99 vehicle have been assess and is shown in Figure 30, Figure 31, Figure 32, Figure 33, Figure 34, Figure 35 and Figure 36 and is attached to Appendix D.

As shown in the Figures, an SRV and B99 vehicle have sufficient turning movements and clearances on the proposed development layout.

Proposed developments driveway to conform with TCC SD-030. As the rubbish pickup points are not known, these points are to be confirmed.

Figure 33. *SRV entering via Site Access 1*

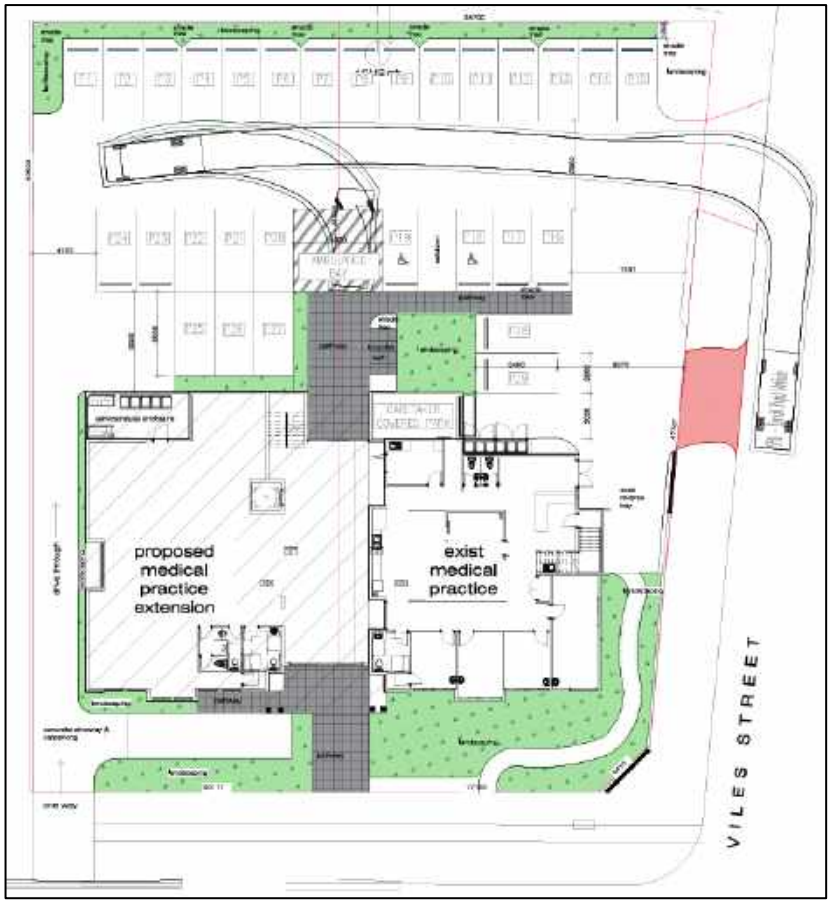


Figure 34. *SRV entering via Site Access 2*

Figure 35. *SRV Exiting*

Figure 36. *B99 Vehicle Entering Via Site Access 1 and Parking at Tandem Car Park.*

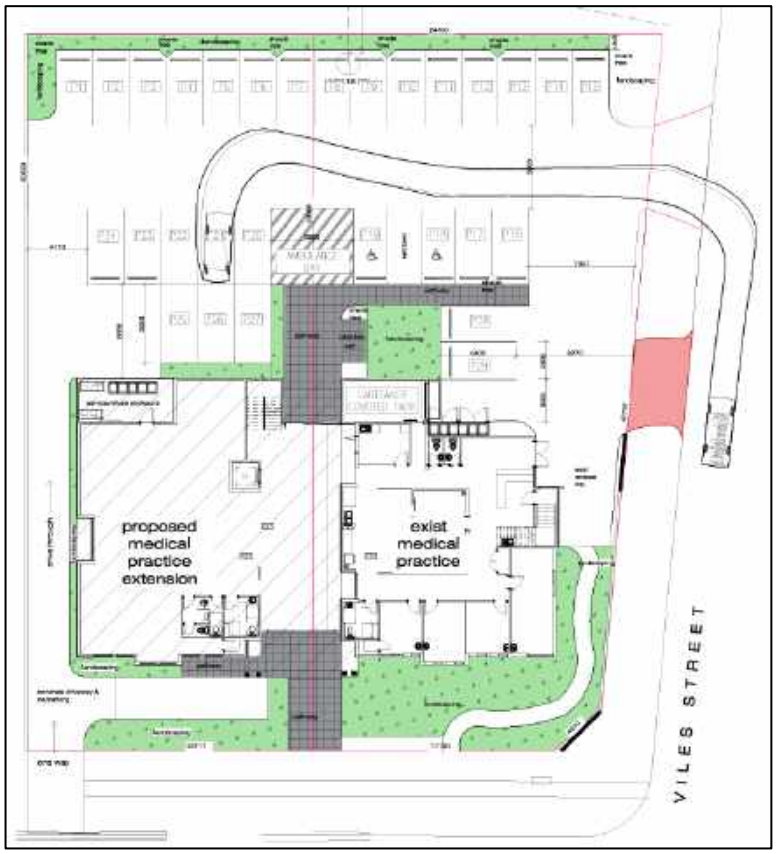


Figure 37. *B99 Vehicle Entering and Parking in the Northwest Tandem Car park*

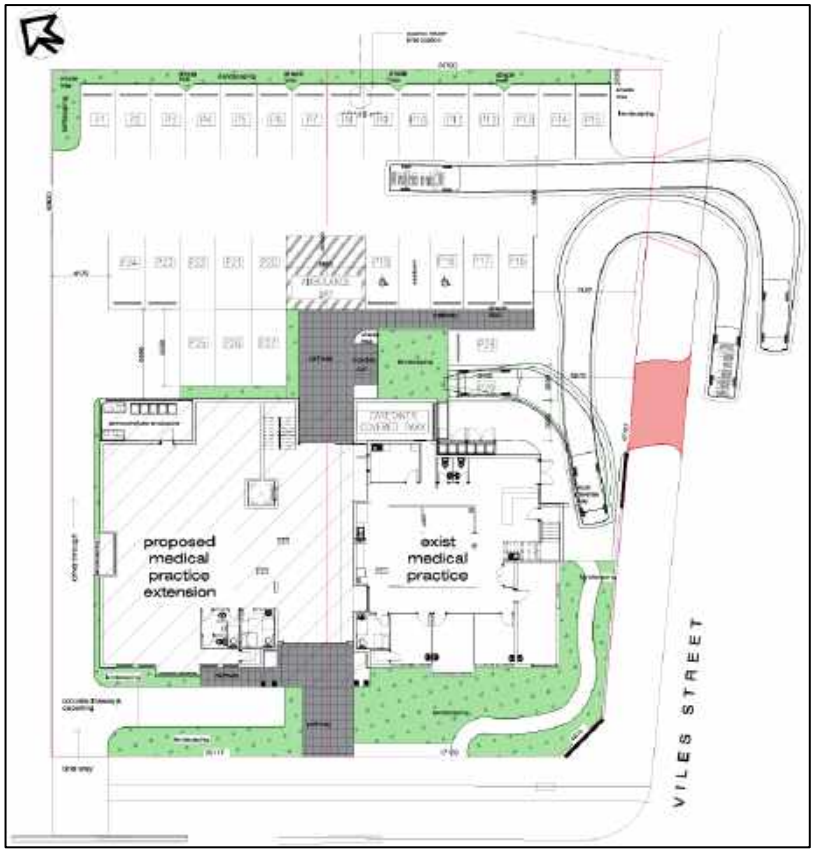


Figure 38. *B99 Vehicle Exiting*

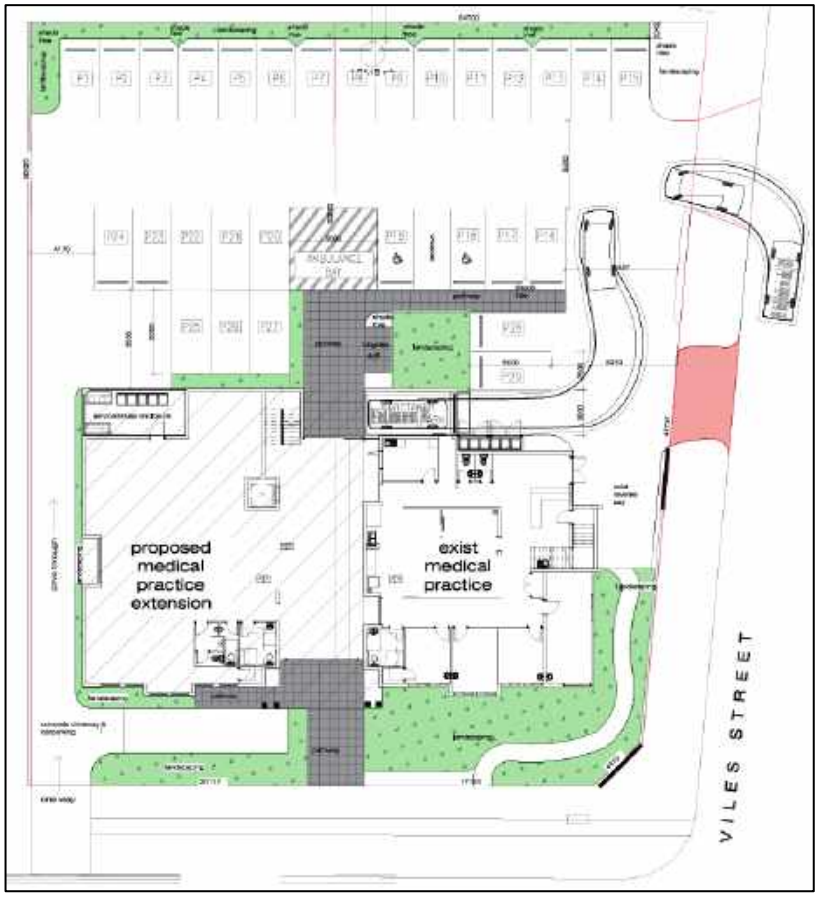


Figure 39. *B99 Vehicle Entering and Exiting*

9.0 CAR PARKING

The proposed medical centre extension and existing medical centre has a resulting GFA of 462 m2. In accordance with TCC City Plan SC6.10, health care services one (1) space per 20m² of GFA, or four (4) spaces per medical practitioner, whichever is the greater; AND one (1) space for ambulance vehicle pick-up and set down. As seen in the proposed plans, the development provides 29 parking spaces. Considering the available car park spaces, a maximum of eight medical practitioner can be on site at any one time.

Additionally, ambulance bay and caretakers covered car park is provided in the proposed development. Tandem car parking is proposed on the northeast of the proposed development.

Refer to **Figure 30** for the car park layout.

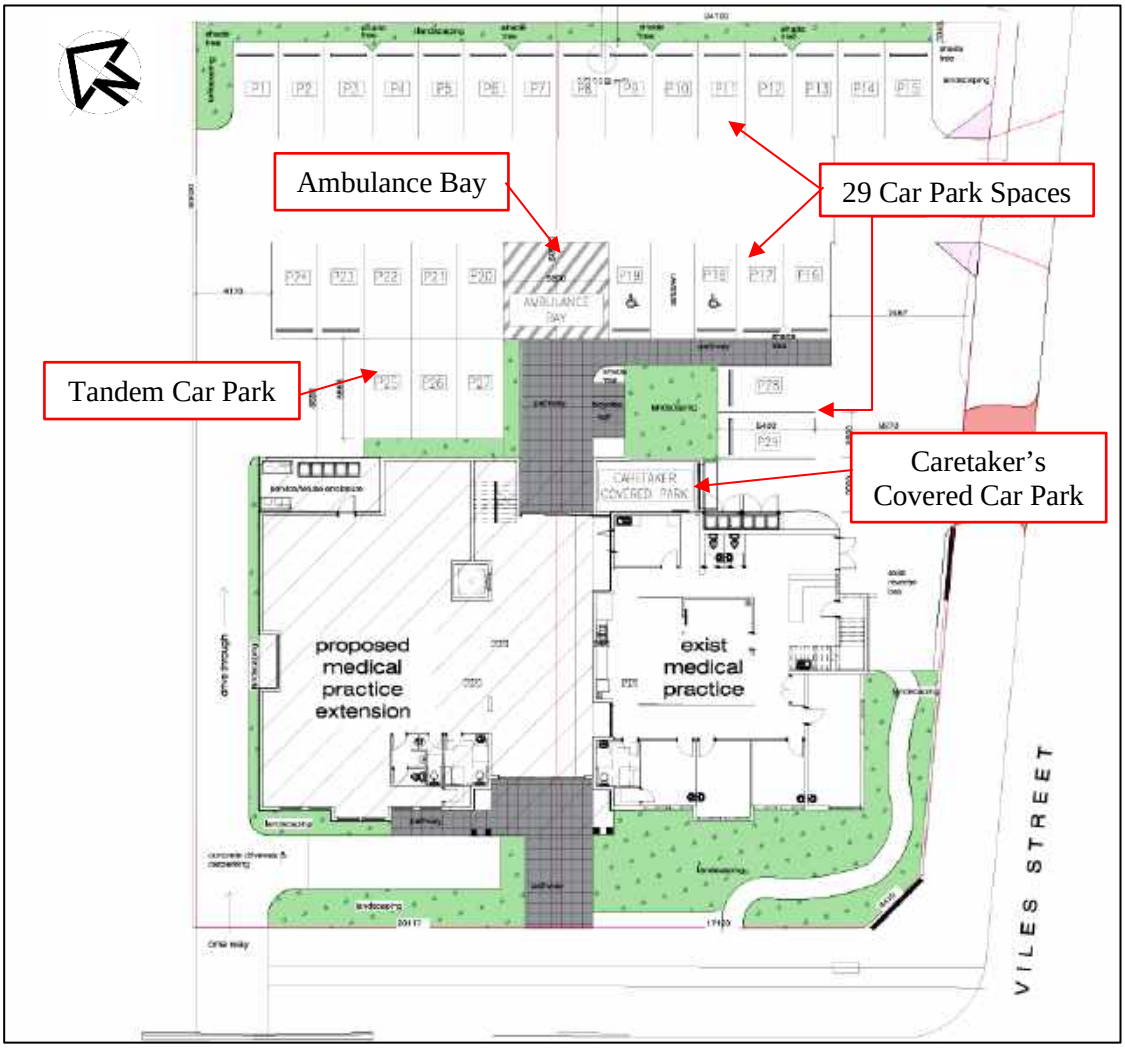


Figure 40. *Available Car Park Spaces*

10.0 SAFETY ASSESSMENT

In accordance with the TMR Guide to Impact Assessment (GTIA), Table 9.3.3(a) and Table 9.3.3(b), (shown as Table 15 and Table 16 below) the Road environment safety rating matrix (level of risk) for Key Intersection 1 (Bowen Road/ Viles Street) is Medium and the type of assessment required is a road safety assessment.

Table 17. *Road environment safety rating matrix (level of risk). (Source: TMR GTIA, 2048, Table 9.3.3(a))*

Traffic volume (AADT)	Speed (km/h)		
	Up to 50 km/h	60 km/h to 70 km/h	80 km/h+
≤ 8000	Low	Medium	Medium
> 8000	Medium	Medium	High

Table 18. *Type of road safety assessment based on road environment safety rating (Source: TMR GTIA, 2018, Table 9.3.3(b))*

Development type	Road environment safety rating		
	Low	Medium	High
Major Development	road safety assessment	road safety audit	road safety audit
Planning Act Development	road safety assessment	road safety assessment	road safety audit

10.1 ROAD SAFETY ASSESSMENT

A road safety risk assessment has been performed in accordance with the Safety Risk Score Matrix in accordance with Table 17 below.

Table 19. *Safety risk score matrix (Source: TMR GTIA, 2018, Table 9.3.2(a))*

		Potential consequence				
		Property only (1)	Minor injury (2)	Medical treatment (3)	Hospitalisation (4)	Fatality (5)
Potential likelihood	Almost certain (5)	M	M	H	H	H
	Likely (4)	M	M	M	H	H
	Moderate (3)	L	M	M	M	H
	Unlikely (2)	L	L	M	M	M
	Rare (1)	L	L	L	M	M

L: Low risk
M: Medium risk
H: High risk

Safety risks identified for the development have been summarised in Table 18.

***Table 20**. Safety risk assessment*

	Without Development			With Development				With Development and mitigation		
Risk Item	**Likelihood**	**Consequence**	**Risk Score**	**Likelihood**	**Consequence**	**Risk Score**	**Mitigation Measure**	**Likelihood**	**Consequence**	**Risk Score**
Traffic turning right from Viles Street to Bowen Road	1	3	L	2	3	M	No Action. Ample sight distance and space for passing.	2	3	M
Traffic turning into Site Access 2 colliding with pedestrian	1	3	L	2	3	L	Ample pedestrian sight distance and other treatment measures (Refer to Section 7.3.2)	2	3	M
Traffic turning in left into Site Access 2 queuing into Viles Street; Rear end of queuing traffic	1	3	L	1	3	L	No Action			

11.0 CONCLUSION

This report has assessed the impact of the traffic generated by the proposed development on the existing road network including at key intersections and accesses. Consideration has been given to operational performance and road safety.

The impact of the proposed development on the road network has been analysed using procedures set out in Austroads, Australian Standard AS2890, Parking facilities and in TMR's Guide to Traffic Impact Assessment. Whilst the level of performance of the left and right turn out from the Viles Street currently shown as operating at a LOS F, assessment has found that there is no significant worsening of the operational performance of the surrounding road network as a result of the proposed development. The turn warrant checked shows that the road networks has already implementing the recommended turn warrants for right turn in which is an CHR(s). However, the AUL(s) warranted turn treatment for left turn in is not existing and as such AUL(s) is to be implemented. A proposed AUL(s) have been provided. The proposed sight access has adequate SSID and ASD. Pedestrian sight distance was assessed and found to have suitable safe pedestrian sight line provided that landscape along the sight line are low level planting.

In conclusion, the proposed development accesses have been found to be adequate and no significant adverse impact on the operational performance or safety of the surrounding road network has been identified thus, no other mitigation measures have been deemed necessary.

12.0 TRAFFIC IMPACT ASSESSMENT CERTIFICATION

This report has been prepared under the direction of Brett Langtree (RPEQ No 11932), a civil engineer with over 27 years' experience in the planning, design and implementation of urban residential, industrial and commercial land development and the provision of infrastructure services to urban communities and the preparation of traffic impact assessments for developments.

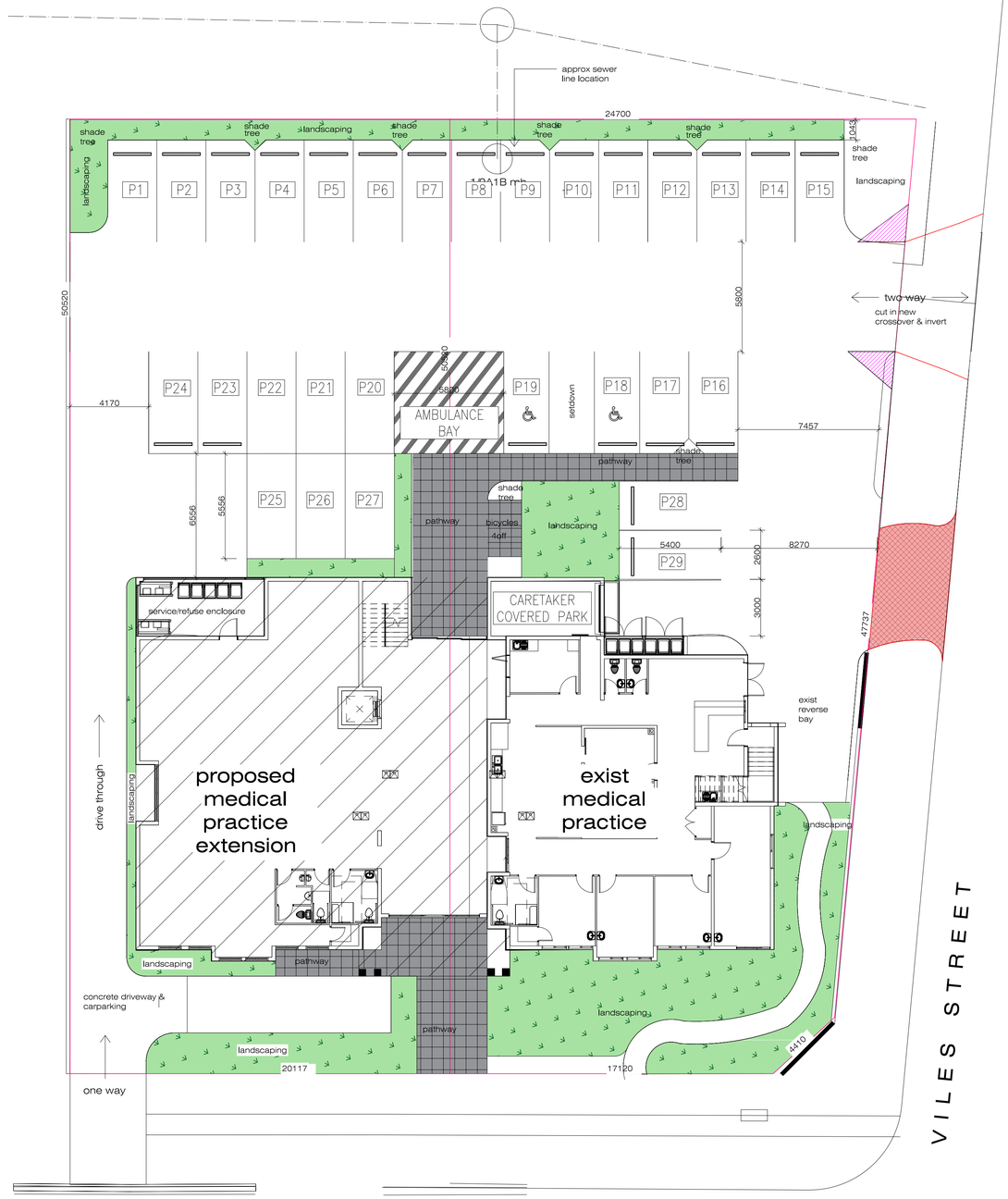
……

Brett Langtree – Principal Civil Engineer (RPEQ No 11932), Langtree Consulting

Date: 07 February 2025

APPENDIX A

DEVELOPMENT PLANS



LAYOUT PLAN
SCALE 1:150

REVISIONS				
No.	BY	DATE	DESCRIPTION	
A	B.L	21.01.24	FOR INFORMATION	

HORIZ. DATUM	MGA		
VERT. DATUM	AHD		
DRG. FILE		DATE	
DESIGN			
DRAWN	R.M	17.01.24	

CERTIFICATION
B. LANGTREE RPEQ 11932

LANGTREE Consulting Engineers
m 0400 699 979
e brett@langtreeconsulting.com.au

MILFORD PLANNING

110–112 BOWEN ROAD, ROSSLEA
ROSSLEA MEDICAL CENTRE EXTENSION
PROPOSED NEW CAR PARKING LAYOUT

SCALE	NTS
SHEET	1 OF 1
REVISION	A
DRG No.	1194–SK01

APPENDIX B

TRAFFIC GENERATION DATA 2006-2017 OPEN DATA (MEDICAL CENTRES)

LANGTREE
Consulting Engineers

PROJECT No.: 1194
CALCULATED BY: RM DATE: 4/02/2025
CHECKED BY: AR DATE: 4/02/2025
SHEET: 1 of 1

Source: Traffic generation data – 2006–2017 (Queensland) Open Data (Not Adopted)

Year	Land use	SITE	Suburb	Local Government Area	Variable Units	Variable Value	Start Date	End Date	Average Weekday Volume	Average Weekend Volume	Weekday Peak Hour Start	Weekday Peak Hour End	Weekday Peak Volume	Weekend Peak Hour Start	Weekend Peak Hour End	Weekend Peak Volume	Vol / 100m2 GLFA	PH/ 100m2 GLFA
2006	Medical Centre	2006MD1	TARINGA	Brisbane City	GLFA	2188	19/05/2006	16/06/2006			15:00:00	16:00:00	63				0	2.88
2006	Medical Centre	2006MD2	INDOOROOPIL	Brisbane City	GLFA	1695	19/05/2006	16/06/2006			15:30:00	16:30:00	86				0	5.07
2006	Medical Centre	2006MD3	CAMP HILL	Brisbane City	GLFA	469	19/05/2006	16/06/2006			15:00:00	16:00:00	21				0	4.48
2006	Medical Centre	2006MD4	NEWMARKET	Brisbane City	GLFA	1147	19/05/2006	16/06/2006			16:15:00	17:15:00	52				0	4.53
2006	Medical Centre	2006MD5	ASPLEY	Brisbane City	GLFA	910	19/05/2006	16/06/2006			17:30:00	18:30:00	57				0	6.26
2006	Medical Centre	2006MD6	KEDRON	Brisbane City	GLFA	936	19/05/2006	16/06/2006			16:00:00	17:00:00	50				0	5.34
2007	Medical Centre	2007MD7	ROBINA	Gold Coast City	GLFA	640	23/05/2007	13/06/2007			15:15:00	16:15:00	53				0	8.28
2007	Medical Centre	2007MD8	BEENLEIGH	Logan City	GLFA	840	23/05/2007	13/06/2007			16:15:00	17:15:00	41				0	4.88
2009	Medical Centre	2009MD1	TARINGA	Brisbane City	GLFA	2188	12/05/2009	18/05/2009	1013	790	15:00:00	16:00:00	88	18:15:00	19:15:00	73	46.297989	4.02
2009	Medical Centre	2009MD2	INDOOROOPIL	Brisbane City	GLFA	1695	5/05/2009	11/05/2009	814	188	8:45:00	9:45:00	88	9:00:00	10:00:00	30	48.023599	5.19
2009	Medical Centre	2009MD4	NEWMARKET	Brisbane City	GLFA	1147	5/05/2009	11/05/2009	552	92	14:00:00	15:00:00	61	11:00:00	12:00:00	14	48.125545	5.32
2009	Medical Centre	2009MD6	KEDRON	Brisbane City	GLFA	937	5/05/2009	11/05/2009	1005	543	11:15:00	12:15:00	100	9:30:00	10:30:00	70	107.2572	10.67
2011	Medical Centre	2011MD1	MUNDINGBUF	Townsville City	GLFA	351	24/05/2011	30/05/2011	155	30	9:30:00	10:30:00	24	11:00:00	12:00:00	8	44.159544	6.84
2011	Medical Centre	2011MD2	CAIRNS NORTI	Cairns Regional	GLFA	300	5/05/2011	11/05/2011	86	5	10:30:00	11:30:00	13	14:00:00	15:00:00	2	28.666667	4.33
2011	Medical Centre	2011MD3	PARRAMATTA	Cairns Regional	GLFA	638	5/05/2011	11/05/2011	200	50	14:30:00	15:30:00	24	10:00:00	11:00:00	14	31.347962	3.76
2011	Medical Centre	2011MD4	WOREE	Cairns Regional	GLFA	294	14/05/2011	20/05/2011	203	23	9:15:00	10:15:00	28	9:15:00	10:15:00	8	69.047619	9.52
2011	Medical Centre	2011MD5	BURLEIGH HE/	Gold Coast City	GLFA	298	14/06/2011	20/06/2011	141	56	7:45:00	8:45:00	18	9:30:00	10:30:00	11	47.315436	6.04
																Average	52.249063	5.73

Existing
GLFA = 504 m2
Trips/hr = 28.89

Development (Existing and Extension)
GLFA = 1256 m2
Trips/hr = 71.99

APPENDIX C

SIDRA RESULTS

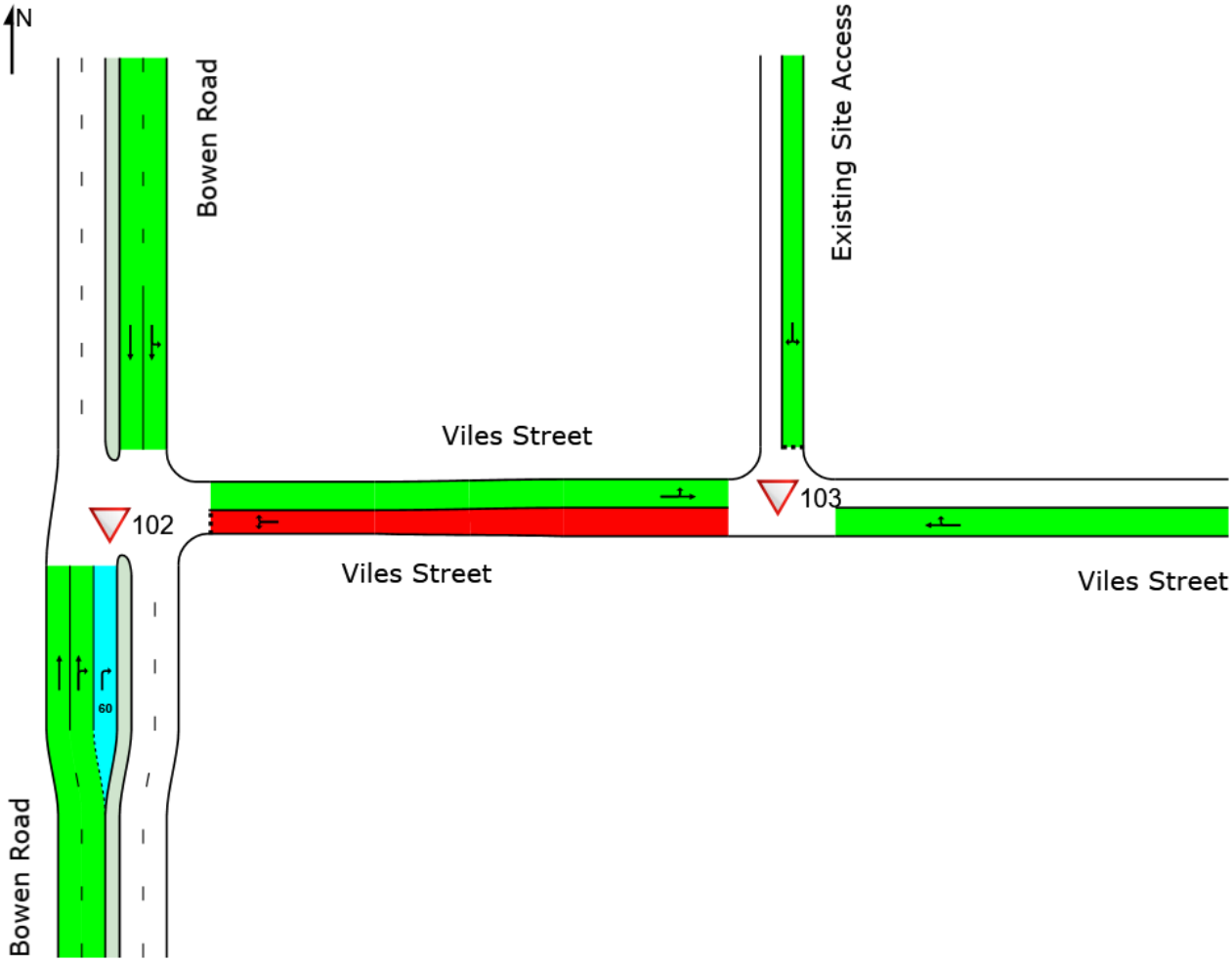
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [2025 AM Background (Network Folder: Background)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Organisation: LANGTREE CONSULTING | Licence: NETWORK / 1PC | Processed: Monday, 3 February 2025 3:23:42 PM
Project: C:\Users\Langtree Consulting\Documents\SIDRA Analysis Projects\112 Bowen Road_VS2\Bowen Rd Viles St_2.sip9

MOVEMENT SUMMARY

Site: 102 [2025 Bowen Rd/Viles St AM Background (Site Folder: Background TRaffic)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [2025 AM Background (Network Folder: Background)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Bowen Road															
2	T1	All MCs	1326	5.9	1326	5.9	0.588	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
3	R2	All MCs	19	1.0	19	1.0	0.046	13.2	LOS B	0.1	0.4	0.72	0.88	0.72	20.6
Approach			1345	5.8	1345	5.8	0.588	0.2	NA	0.1	0.4	0.01	0.01	0.01	58.8
East: Viles Street															
4	L2	All MCs	20	1.0	20	1.0	3.535	2294.5	LOS F	2.8	20.0	1.00	1.71	3.77	0.2
6	R2	All MCs	21	1.0	21	1.0	3.535	2508.8	LOS F	2.8	20.0	1.00	1.71	3.77	0.3
Approach			41	1.0	41	1.0	3.535	2404.4	LOS F	2.8	20.0	1.00	1.71	3.77	0.2
North: Bowen Road															
7	L2	All MCs	21	1.0	21	1.0	0.268	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	58.4
8	T1	All MCs	998	3.9	998	3.9	0.268	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.4
Approach			1019	3.8	1019	3.8	0.268	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.4
All Vehicles			2405	4.9	2405	4.9	3.535	41.2	NA	2.8	20.0	0.02	0.04	0.07	16.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 103 [2025 Viles Street/ Exist Site Access AM Background (Site Folder: Background TRaffic)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [2025 AM Background (Network Folder: Background)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Viles Street															
5	T1	All MCs	31	1.0	31	1.0	0.020	0.0	LOS A	4.3	30.1	0.05	0.11	0.05	48.4
6	R2	All MCs	7	0.0	7	0.0	0.020	3.6	LOS A	4.3	30.1	0.05	0.11	0.05	40.6
Approach			38	0.8	38	0.8	0.020	0.7	NA	4.3	30.1	0.05	0.11	0.05	46.5
North: Existing Site Access															
7	L2	All MCs	7	0.0	7	0.0	0.018	2.4	LOS A	1.2	8.1	0.11	0.47	0.11	27.7
9	R2	All MCs	8	0.0	8	0.0	0.018	2.3	LOS A	1.2	8.1	0.11	0.47	0.11	22.1
Approach			16	0.0	16	0.0	0.018	2.3	LOS A	1.2	8.1	0.11	0.47	0.11	25.8
West: Viles Street															
10	L2	All MCs	8	0.0	8	0.0	0.021	2.7	LOS A	0.0	0.0	0.00	0.11	0.00	22.8
11	T1	All MCs	33	1.0	33	1.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	53.3
Approach			41	0.8	41	0.8	0.021	0.6	NA	0.0	0.0	0.00	0.11	0.00	45.7
All Vehicles			95	0.7	95	0.7	0.021	0.9	NA	4.3	30.1	0.04	0.17	0.04	42.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

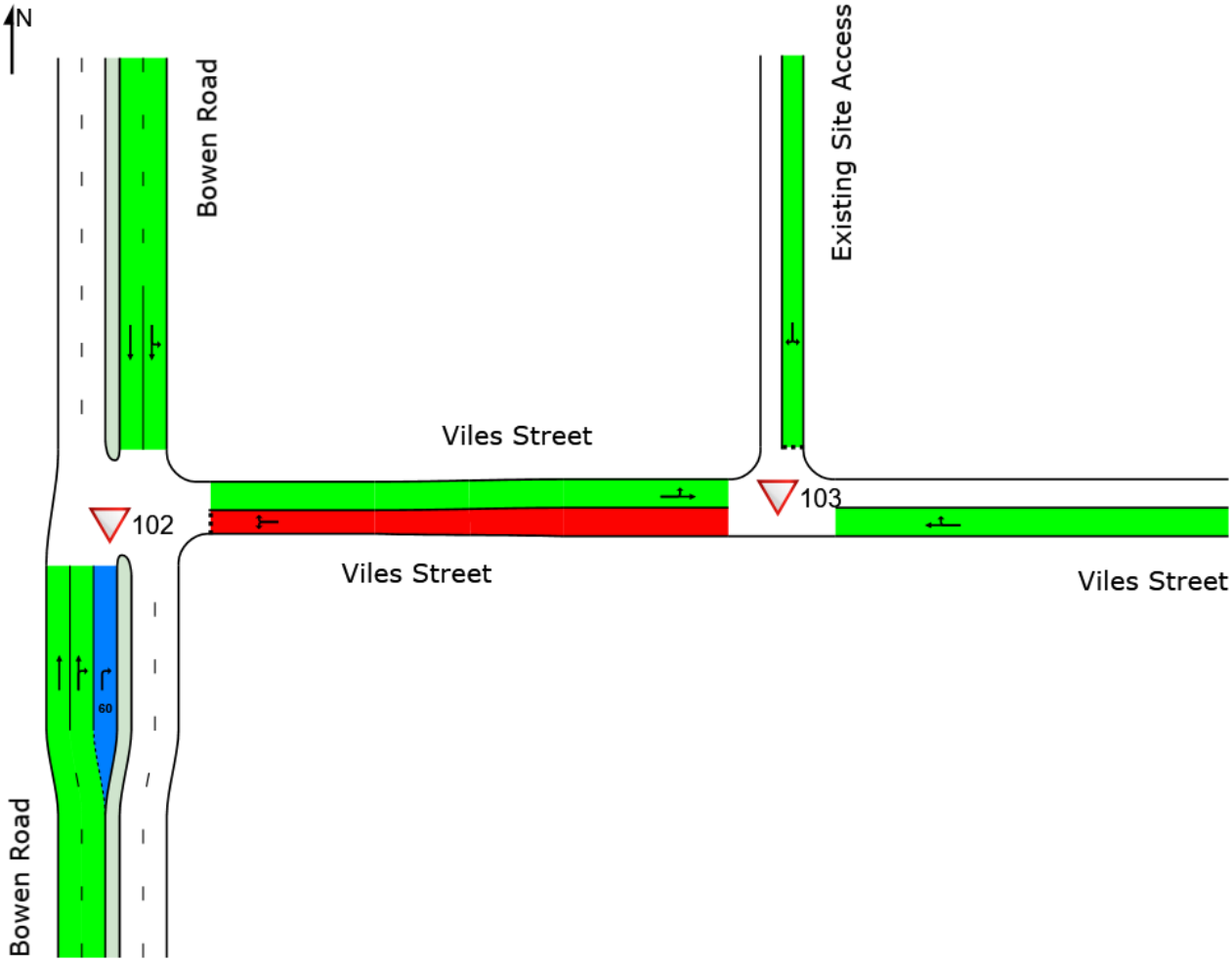
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [2025 PM Background (Network Folder: Background)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Organisation: LANGTREE CONSULTING | Licence: NETWORK / 1PC | Processed: Monday, 3 February 2025 3:23:45 PM
Project: C:\Users\Langtree Consulting\Documents\SIDRA Analysis Projects\112 Bowen Road_VS2\Bowen Rd Viles St_2.sip9

MOVEMENT SUMMARY

Site: 102 [2025 Bowen Rd/Viles St PM Background (Site Folder: Background TRaffic)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [2025 PM Background (Network Folder: Background)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Bowen Road															
2	T1	All MCs	979	5.9	979	5.9	0.434	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
3	R2	All MCs	19	1.0	19	1.0	0.091	22.4	LOS C	0.1	0.8	0.86	0.94	0.86	14.2
Approach			998	5.8	998	5.8	0.434	0.5	NA	0.1	0.8	0.02	0.02	0.02	58.1
East: Viles Street															
4	L2	All MCs	20	1.0	20	1.0	3.466	2238.9	LOS F	2.8	20.0	1.00	1.67	3.65	0.2
6	R2	All MCs	21	1.0	21	1.0	3.466	2461.7	LOS F	2.8	20.0	1.00	1.67	3.65	0.3
Approach			41	1.0	41	1.0	3.466	2353.1	LOS F	2.8	20.0	1.00	1.67	3.65	0.2
North: Bowen Road															
7	L2	All MCs	21	1.0	21	1.0	0.367	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	58.7
8	T1	All MCs	1374	3.9	1374	3.9	0.367	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.4
Approach			1395	3.8	1395	3.8	0.367	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.4
All Vehicles			2434	4.6	2434	4.6	3.466	39.9	NA	2.8	20.0	0.02	0.04	0.07	16.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 103 [2025 Viles Street/ Exist Site Access PM Background (Site Folder: Background TRaffic)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [2025 PM Background (Network Folder: Background)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Viles Street															
5	T1	All MCs	31	1.0	31	1.0	0.020	0.0	LOS A	4.3	30.1	0.05	0.11	0.05	48.4
6	R2	All MCs	7	0.0	7	0.0	0.020	3.6	LOS A	4.3	30.1	0.05	0.11	0.05	40.6
Approach			38	0.8	38	0.8	0.020	0.7	NA	4.3	30.1	0.05	0.11	0.05	46.5
North: Existing Site Access															
7	L2	All MCs	7	0.0	7	0.0	0.018	2.4	LOS A	1.2	8.1	0.11	0.47	0.11	27.7
9	R2	All MCs	8	0.0	8	0.0	0.018	2.3	LOS A	1.2	8.1	0.11	0.47	0.11	22.1
Approach			16	0.0	16	0.0	0.018	2.3	LOS A	1.2	8.1	0.11	0.47	0.11	25.8
West: Viles Street															
10	L2	All MCs	8	0.0	8	0.0	0.021	2.7	LOS A	0.0	0.0	0.00	0.11	0.00	22.8
11	T1	All MCs	33	1.0	33	1.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	53.3
Approach			41	0.8	41	0.8	0.021	0.6	NA	0.0	0.0	0.00	0.11	0.00	45.7
All Vehicles			95	0.7	95	0.7	0.021	0.9	NA	4.3	30.1	0.04	0.17	0.04	42.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

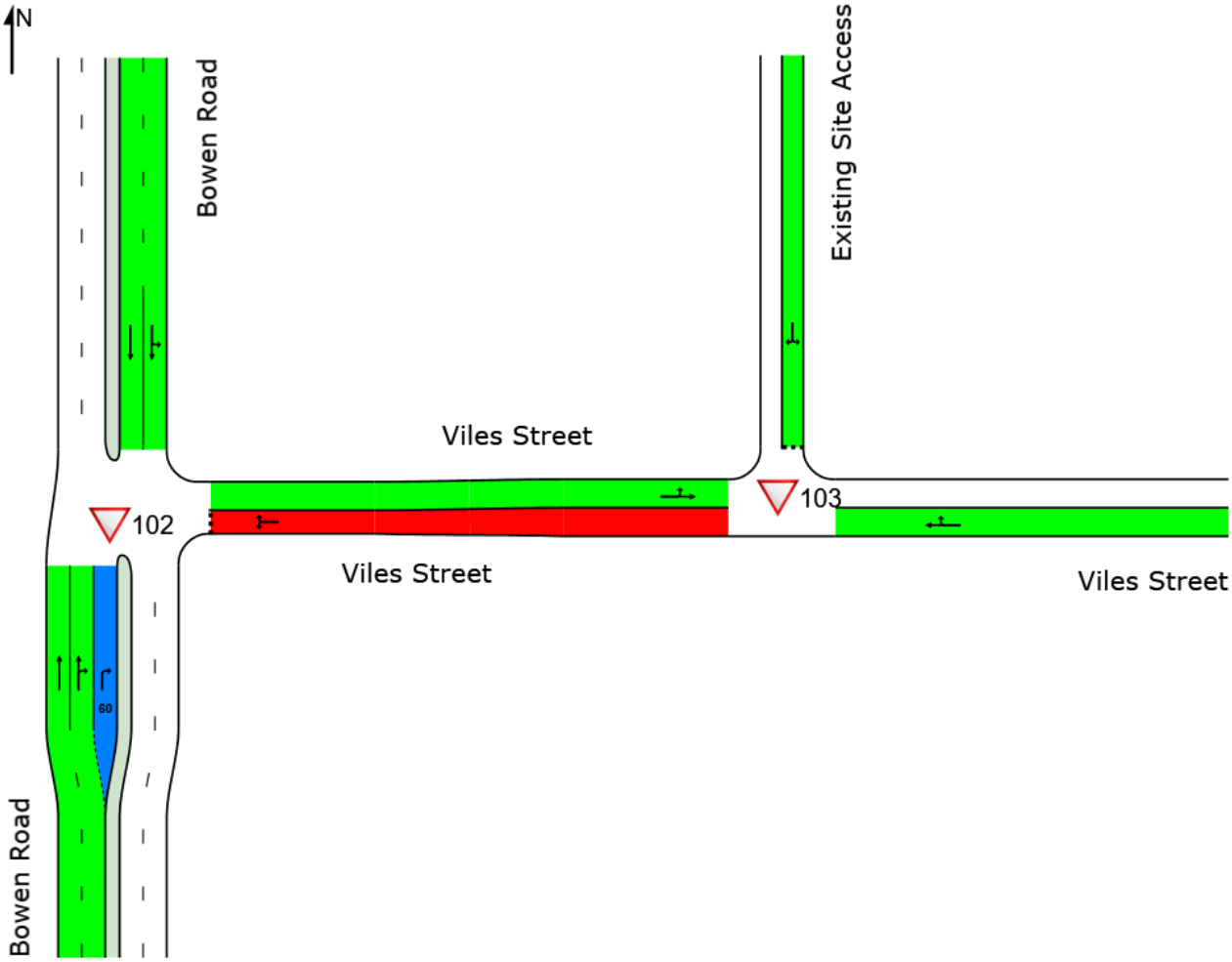
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [2035 AM Background (Network Folder: Background)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Organisation: LANGTREE CONSULTING | Licence: NETWORK / 1PC | Processed: Monday, 3 February 2025 3:23:47 PM
Project: C:\Users\Langtree Consulting\Documents\SIDRA Analysis Projects\112 Bowen Road_VS2\Bowen Rd Viles St_2.sip9

MOVEMENT SUMMARY

Site: 102 [2035 Bowen Rd/Viles St AM Background (Site Folder: Background TRaffic)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [2035 AM Background (Network Folder: Background)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Bowen Road															
2	T1	All MCs	1581	5.9	1581	5.9	0.702	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.2
3	R2	All MCs	23	1.0	23	1.0	0.078	17.2	LOS C	0.1	0.7	0.81	0.92	0.81	17.3
Approach			1604	5.8	1604	5.8	0.702	0.3	NA	0.1	0.7	0.01	0.01	0.01	58.3
East: Viles Street															
4	L2	All MCs	24	1.0	24	1.0	4.246	2973.8	LOS F	2.8	20.0	1.00	1.83	4.24	0.2
6	R2	All MCs	25	1.0	25	1.0	4.246	3081.8	LOS F	2.8	20.0	1.00	1.83	4.24	0.2
Approach			49	1.0	49	1.0	4.246	3029.0	LOS F	2.8	20.0	1.00	1.83	4.24	0.2
North: Bowen Road															
7	L2	All MCs	25	1.0	25	1.0	0.320	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	58.4
8	T1	All MCs	1191	3.9	1191	3.9	0.320	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.4
Approach			1216	3.8	1216	3.8	0.320	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.4
All Vehicles			2869	4.9	2869	4.9	4.246	52.5	NA	2.8	20.0	0.02	0.04	0.08	13.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 103 [2035 Viles Street/ Exist Site Access AM Background (Site Folder: Background TRaffic)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [2035 AM Background (Network Folder: Background)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Viles Street															
5	T1	All MCs	37	1.0	37	1.0	0.023	0.0	LOS A	5.8	40.9	0.05	0.10	0.05	49.5
6	R2	All MCs	7	0.0	7	0.0	0.023	3.6	LOS A	5.8	40.9	0.05	0.10	0.05	41.2
Approach			44	0.8	44	0.8	0.023	0.6	NA	5.8	40.9	0.05	0.10	0.05	47.8
North: Existing Site Access															
7	L2	All MCs	7	0.0	7	0.0	0.021	2.4	LOS A	1.6	11.5	0.13	0.47	0.13	27.6
9	R2	All MCs	11	0.0	11	0.0	0.021	2.3	LOS A	1.6	11.5	0.13	0.47	0.13	21.8
Approach			18	0.0	18	0.0	0.021	2.3	LOS A	1.6	11.5	0.13	0.47	0.13	25.4
West: Viles Street															
10	L2	All MCs	11	0.0	11	0.0	0.025	2.7	LOS A	0.0	0.0	0.00	0.12	0.00	22.7
11	T1	All MCs	39	1.0	39	1.0	0.025	0.0	LOS A	0.0	0.0	0.00	0.12	0.00	53.1
Approach			49	0.8	49	0.8	0.025	0.6	NA	0.0	0.0	0.00	0.12	0.00	45.2
All Vehicles			111	0.7	111	0.7	0.025	0.9	NA	5.8	40.9	0.04	0.17	0.04	42.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

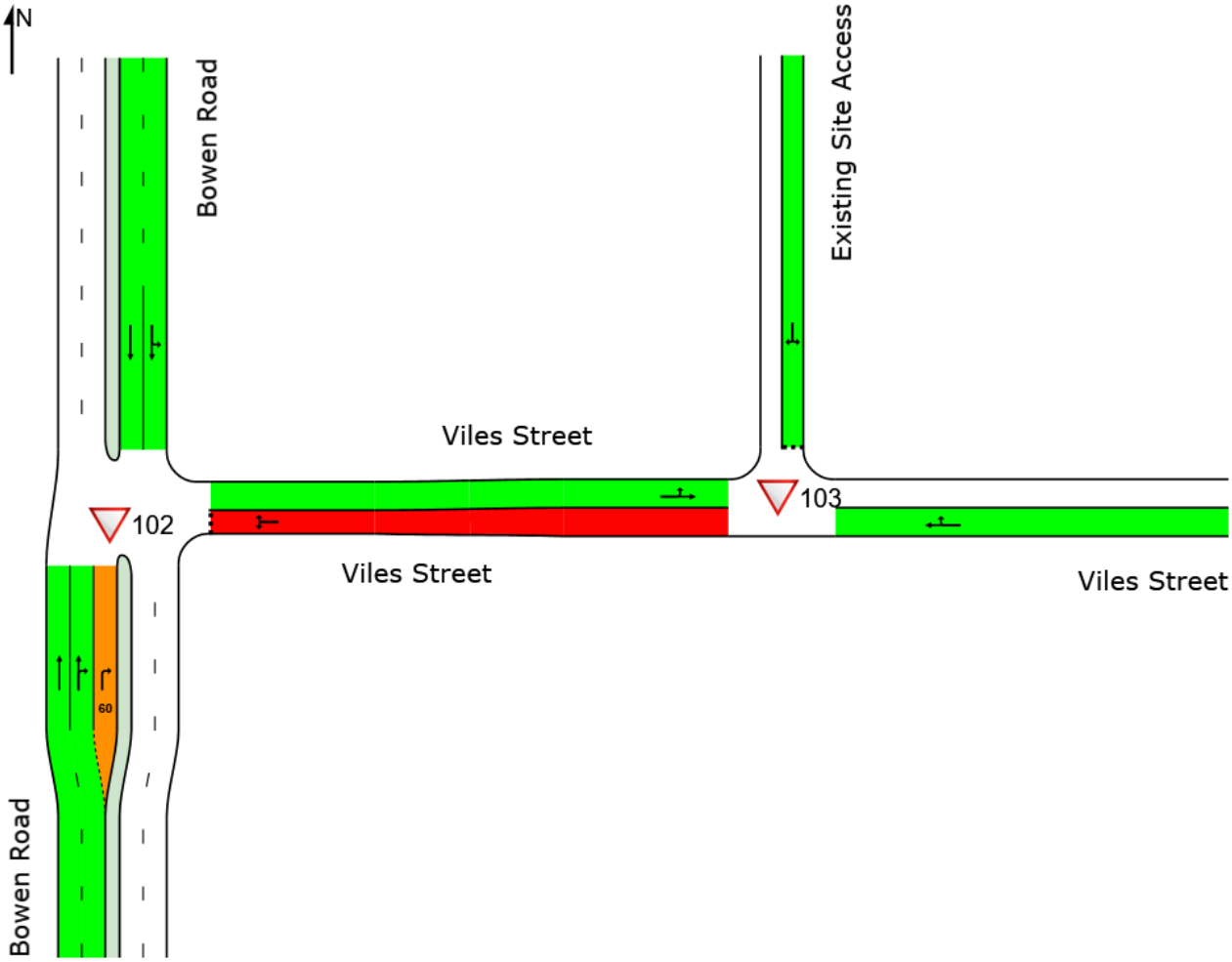
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [2035 PM Background (Network Folder: Background)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Organisation: LANGTREE CONSULTING | Licence: NETWORK / 1PC | Processed: Monday, 3 February 2025 3:23:49 PM
Project: C:\Users\Langtree Consulting\Documents\SIDRA Analysis Projects\112 Bowen Road_VS2\Bowen Rd Viles St_2.sip9

MOVEMENT SUMMARY

Site: 102 [2035 Bowen Rd/Viles St PM Background (Site Folder: Background TRaffic)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [2035 PM Background (Network Folder: Background)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Bowen Road															
2	T1	All MCs	1167	5.9	1167	5.9	0.518	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
3	R2	All MCs	23	1.0	23	1.0	0.200	38.5	LOS E	0.2	1.7	0.93	0.98	0.98	9.2
Approach			1190	5.8	1190	5.8	0.518	0.8	NA	0.2	1.7	0.02	0.02	0.02	56.9
East: Viles Street															
4	L2	All MCs	24	1.0	24	1.0	4.262	2973.2	LOS F	2.8	20.0	1.00	1.74	4.09	0.2
6	R2	All MCs	25	1.0	25	1.0	4.262	3123.5	LOS F	2.8	20.0	1.00	1.74	4.09	0.2
Approach			49	1.0	49	1.0	4.262	3049.9	LOS F	2.8	20.0	1.00	1.74	4.09	0.2
North: Bowen Road															
7	L2	All MCs	25	1.0	25	1.0	0.437	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	58.6
8	T1	All MCs	1638	3.9	1638	3.9	0.437	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.4
Approach			1663	3.8	1663	3.8	0.437	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.4
All Vehicles			2903	4.6	2903	4.6	4.262	52.4	NA	2.8	20.0	0.02	0.04	0.08	13.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 103 [2035 Viles Street/ Exist Site Access PM Background (Site Folder: Background TRaffic)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [2035 PM Background (Network Folder: Background)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Viles Street															
5	T1	All MCs	37	1.0	37	1.0	0.023	0.0	LOS A	5.8	41.1	0.05	0.10	0.05	49.5
6	R2	All MCs	7	0.0	7	0.0	0.023	3.6	LOS A	5.8	41.1	0.05	0.10	0.05	41.2
Approach			44	0.8	44	0.8	0.023	0.6	NA	5.8	41.1	0.05	0.10	0.05	47.8
North: Existing Site Access															
7	L2	All MCs	7	0.0	7	0.0	0.021	2.4	LOS A	1.7	11.6	0.13	0.47	0.13	27.6
9	R2	All MCs	11	0.0	11	0.0	0.021	2.3	LOS A	1.7	11.6	0.13	0.47	0.13	21.8
Approach			18	0.0	18	0.0	0.021	2.3	LOS A	1.7	11.6	0.13	0.47	0.13	25.4
West: Viles Street															
10	L2	All MCs	11	0.0	11	0.0	0.025	2.7	LOS A	0.0	0.0	0.00	0.12	0.00	22.7
11	T1	All MCs	39	1.0	39	1.0	0.025	0.0	LOS A	0.0	0.0	0.00	0.12	0.00	53.1
Approach			49	0.8	49	0.8	0.025	0.6	NA	0.0	0.0	0.00	0.12	0.00	45.2
All Vehicles			111	0.7	111	0.7	0.025	0.9	NA	5.8	41.1	0.04	0.17	0.04	42.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

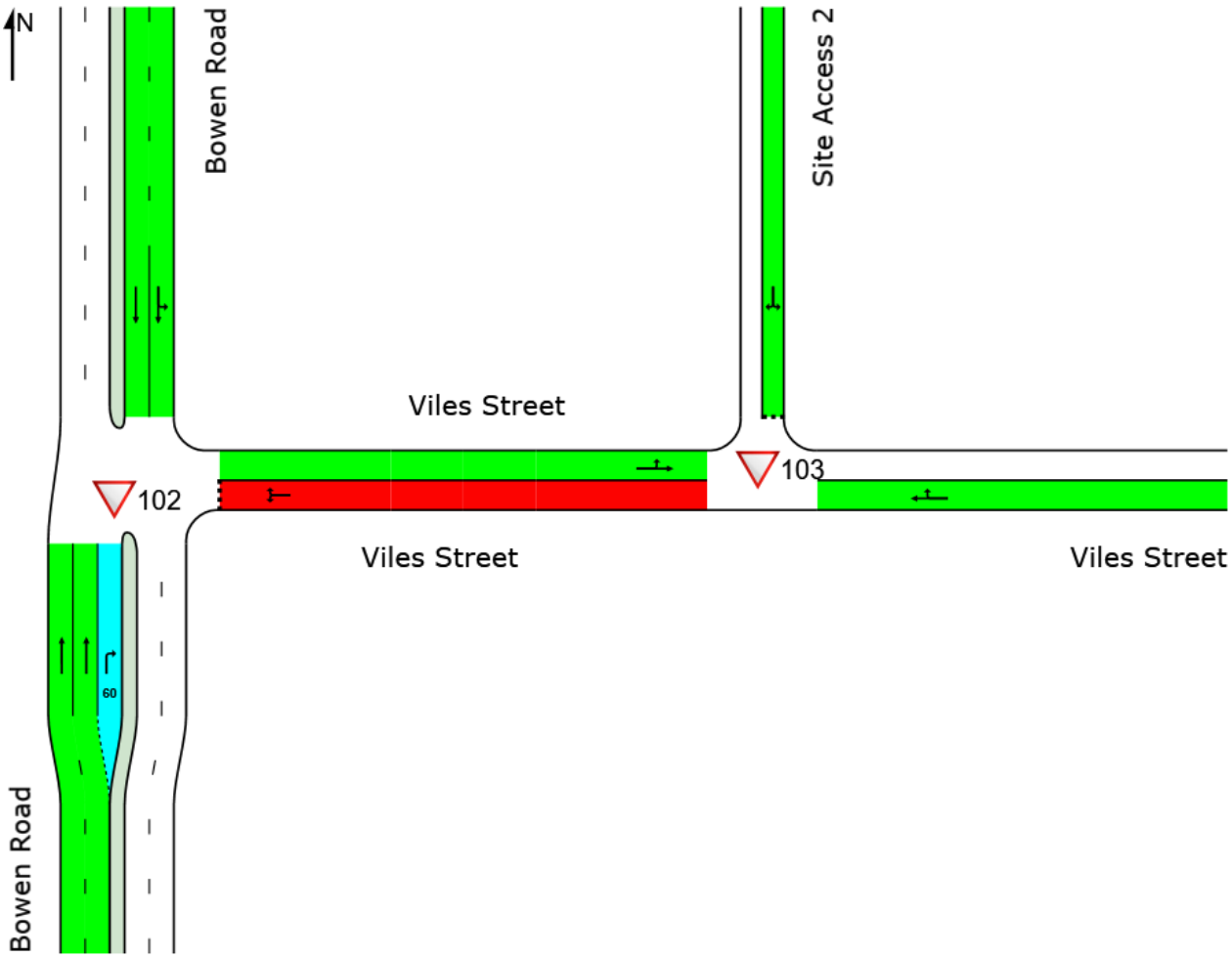
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [2025 AM Post Devt (Network Folder: Post Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Organisation: LANGTREE CONSULTING | Licence: NETWORK / 1PC | Processed: Monday, 3 February 2025 3:27:39 PM
Project: C:\Users\Langtree Consulting\Documents\SIDRA Analysis Projects\112 Bowen Road_VS2\Bowen Rd Viles St_2.sip9

MOVEMENT SUMMARY

Site: 102 [2025 Bowen Road/ Viles St AM Post Devt (Site Folder: Post Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [2025 AM Post Devt (Network Folder: Post Development)]

New Site
Site Category: Future Conditions 1
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Bowen Road															
2	T1	All MCs	1326	5.9	1326	5.9	0.353	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	All MCs	19	1.0	19	1.0	0.043	12.4	LOS B	0.1	0.4	0.70	0.86	0.70	21.5
Approach			1345	5.8	1345	5.8	0.353	0.2	NA	0.1	0.4	0.01	0.01	0.01	58.5
East: Viles Street															
4	L2	All MCs	20	1.0	20	1.0	3.148	1954.3	LOS F	4.2	30.0	1.00	1.75	3.89	0.3
6	R2	All MCs	23	1.0	23	1.0	3.148	2196.2	LOS F	4.2	30.0	1.00	1.75	3.89	0.1
Approach			43	1.0	43	1.0	3.148	2084.1	LOS F	4.2	30.0	1.00	1.75	3.89	0.2
North: Bowen Road															
7	L2	All MCs	21	1.0	21	1.0	0.254	2.8	LOS A	0.0	0.0	0.00	0.02	0.00	56.5
8	T1	All MCs	948	3.1	948	3.1	0.254	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.4
Approach			969	3.0	969	3.0	0.254	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.4
All Vehicles			2357	4.6	2357	4.6	3.148	38.3	NA	4.2	30.0	0.02	0.04	0.08	10.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 103 [2025 Viles Street/ Site Access 2 AM Post Devt (Site Folder: Post Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [2025 AM Post Devt (Network Folder: Post Development)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Viles Street															
5	T1	All MCs	31	1.0	31	1.0	0.018	0.0	LOS A	3.1	21.6	0.03	0.07	0.03	51.7
6	R2	All MCs	4	0.0	4	0.0	0.018	3.1	LOS A	3.1	21.6	0.03	0.07	0.03	38.2
Approach			35	0.9	35	0.9	0.018	0.4	NA	3.1	21.6	0.03	0.07	0.03	48.8
North: Site Access 2															
7	L2	All MCs	8	0.0	8	0.0	0.022	2.9	LOS A	1.0	7.3	0.11	0.50	0.11	27.4
9	R2	All MCs	11	0.0	11	0.0	0.022	2.9	LOS A	1.0	7.3	0.11	0.50	0.11	25.5
Approach			19	0.0	19	0.0	0.022	2.9	LOS A	1.0	7.3	0.11	0.50	0.11	26.6
West: Viles Street															
10	L2	All MCs	9	0.0	9	0.0	0.021	3.1	LOS A	0.0	0.0	0.00	0.13	0.00	28.5
11	T1	All MCs	33	1.0	33	1.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	51.8
Approach			42	0.8	42	0.8	0.021	0.7	NA	0.0	0.0	0.00	0.13	0.00	44.4
All Vehicles			96	0.7	96	0.7	0.022	1.0	NA	3.1	21.6	0.03	0.18	0.03	40.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

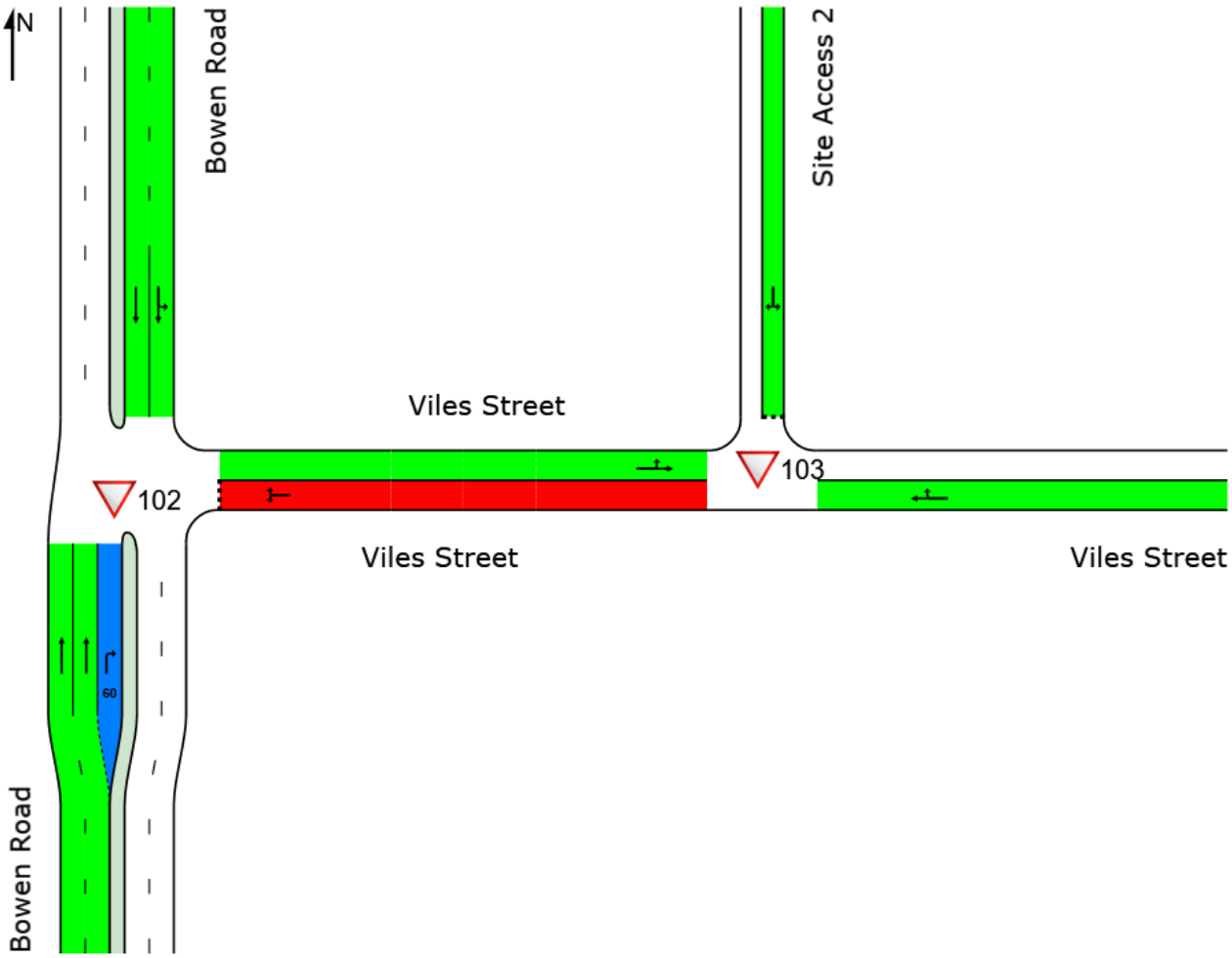
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [2025 PM Post Devt (Network Folder: Post Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Organisation: LANGTREE CONSULTING | Licence: NETWORK / 1PC | Processed: Monday, 3 February 2025 3:27:41 PM
Project: C:\Users\Langtree Consulting\Documents\SIDRA Analysis Projects\112 Bowen Road_VS2\Bowen Rd Viles St_2.sip9

MOVEMENT SUMMARY

Site: 102 [2025 Bowen Road/ Viles St PM Post Devt (Site Folder: Post Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [2025 PM Post Devt (Network Folder: Post Development)]

New Site
Site Category: Future Conditions 1
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Bowen Road															
2	T1	All MCs	979	5.9	979	5.9	0.261	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	19	1.0	19	1.0	0.079	19.9	LOS C	0.1	0.7	0.84	0.93	0.84	15.5
Approach			998	5.8	998	5.8	0.261	0.4	NA	0.1	0.7	0.02	0.02	0.02	57.2
East: Viles Street															
4	L2	All MCs	20	1.0	20	1.0	3.156	1964.4	LOS F	4.2	30.0	1.00	1.74	3.90	0.2
6	R2	All MCs	23	1.0	23	1.0	3.156	2202.1	LOS F	4.2	30.0	1.00	1.74	3.90	0.1
Approach			43	1.0	43	1.0	3.156	2092.0	LOS F	4.2	30.0	1.00	1.74	3.90	0.2
North: Bowen Road															
7	L2	All MCs	21	1.0	21	1.0	0.347	2.8	LOS A	0.0	0.0	0.00	0.02	0.00	57.3
8	T1	All MCs	1305	3.1	1305	3.1	0.347	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.5
Approach			1326	3.1	1326	3.1	0.347	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.4
All Vehicles			2367	4.2	2367	4.2	3.156	38.3	NA	4.2	30.0	0.02	0.04	0.08	10.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 103 [2025 Viles Street/ Site Access 2 PM Post Devt (Site Folder: Post Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [2025 PM Post Devt (Network Folder: Post Development)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Viles Strees															
5	T1	All MCs	31	1.0	31	1.0	0.018	0.0	LOS A	3.1	21.6	0.03	0.07	0.03	51.7
6	R2	All MCs	4	0.0	4	0.0	0.018	3.1	LOS A	3.1	21.6	0.03	0.07	0.03	38.2
Approach			35	0.9	35	0.9	0.018	0.4	NA	3.1	21.6	0.03	0.07	0.03	48.8
North: Site Access 2															
7	L2	All MCs	8	0.0	8	0.0	0.022	2.9	LOS A	1.0	7.3	0.11	0.50	0.11	27.4
9	R2	All MCs	11	0.0	11	0.0	0.022	2.9	LOS A	1.0	7.3	0.11	0.50	0.11	25.5
Approach			19	0.0	19	0.0	0.022	2.9	LOS A	1.0	7.3	0.11	0.50	0.11	26.6
West: Viles Street															
10	L2	All MCs	9	0.0	9	0.0	0.021	3.1	LOS A	0.0	0.0	0.00	0.13	0.00	28.5
11	T1	All MCs	33	1.0	33	1.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	51.8
Approach			42	0.8	42	0.8	0.021	0.7	NA	0.0	0.0	0.00	0.13	0.00	44.4
All Vehicles			96	0.7	96	0.7	0.022	1.0	NA	3.1	21.6	0.03	0.18	0.03	40.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

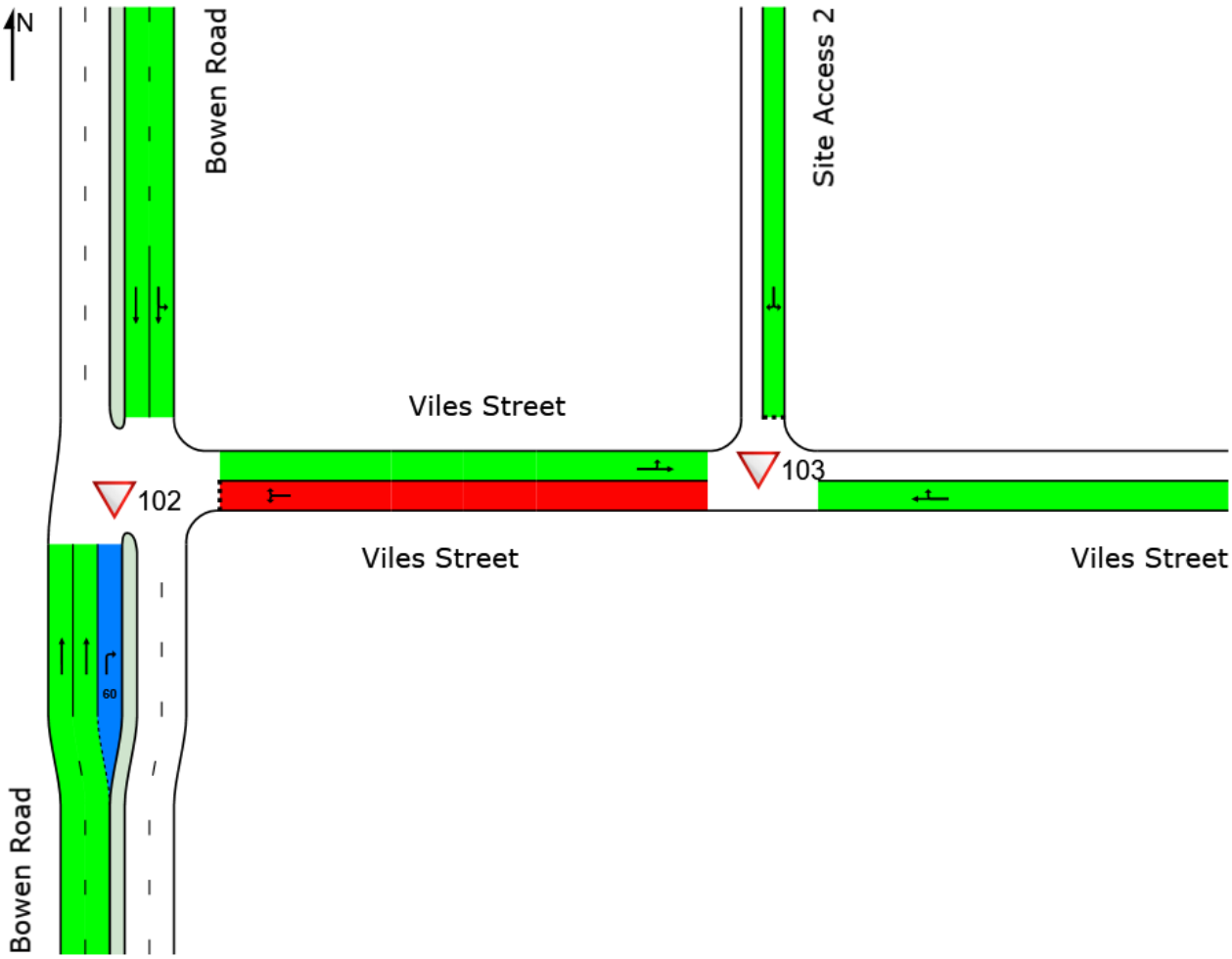
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [2035 AM Post Devt (Network Folder: Post Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Organisation: LANGTREE CONSULTING | Licence: NETWORK / 1PC | Processed: Monday, 3 February 2025 3:27:45 PM
Project: C:\Users\Langtree Consulting\Documents\SIDRA Analysis Projects\112 Bowen Road_VS2\Bowen Rd Viles St_2.sip9

MOVEMENT SUMMARY

Site: 102 [2035 Bowen Road/ Viles St AM Post Devt (Site Folder: Post Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [2035 AM Post Devt (Network Folder: Post Development)]

New Site
Site Category: Future Conditions 1
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Bowen Road															
2	T1	All MCs	1581	5.9	1581	5.9	0.421	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
3	R2	All MCs	22	1.0	22	1.0	0.067	15.7	LOS C	0.1	0.6	0.78	0.91	0.78	18.4
Approach			1603	5.8	1603	5.8	0.421	0.2	NA	0.1	0.6	0.01	0.01	0.01	58.2
East: Viles Street															
4	L2	All MCs	23	1.0	23	1.0	4.419	3094.5	LOS F	4.2	30.0	1.00	1.76	3.98	0.2
6	R2	All MCs	26	1.0	26	1.0	4.419	3285.6	LOS F	4.2	30.0	1.00	1.76	3.98	0.1
Approach			49	1.0	49	1.0	4.419	3196.2	LOS F	4.2	30.0	1.00	1.76	3.98	0.1
North: Bowen Road															
7	L2	All MCs	24	1.0	24	1.0	0.302	2.8	LOS A	0.0	0.0	0.00	0.02	0.00	56.6
8	T1	All MCs	1131	3.1	1131	3.1	0.302	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.4
Approach			1155	3.0	1155	3.0	0.302	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.4
All Vehicles			2807	4.6	2807	4.6	4.419	56.5	NA	4.2	30.0	0.02	0.04	0.08	7.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 103 [2035 Viles Street/ Site Access 2 AM Post Devt (Site Folder: Post Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [2035 AM Post Devt (Network Folder: Post Development)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Viles Street															
5	T1	All MCs	37	1.0	37	1.0	0.021	0.0	LOS A	4.8	34.0	0.03	0.06	0.03	52.7
6	R2	All MCs	4	0.0	4	0.0	0.021	3.1	LOS A	4.8	34.0	0.03	0.06	0.03	38.6
Approach			41	0.9	41	0.9	0.021	0.3	NA	4.8	34.0	0.03	0.06	0.03	50.0
North: Site Access 2															
7	L2	All MCs	8	0.0	8	0.0	0.022	3.0	LOS A	1.4	9.6	0.13	0.50	0.13	27.3
9	R2	All MCs	11	0.0	11	0.0	0.022	2.9	LOS A	1.4	9.6	0.13	0.50	0.13	25.3
Approach			19	0.0	19	0.0	0.022	2.9	LOS A	1.4	9.6	0.13	0.50	0.13	26.5
West: Viles Street															
10	L2	All MCs	9	0.0	9	0.0	0.024	3.1	LOS A	0.0	0.0	0.00	0.11	0.00	28.8
11	T1	All MCs	39	1.0	39	1.0	0.024	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	52.8
Approach			48	0.8	48	0.8	0.024	0.6	NA	0.0	0.0	0.00	0.11	0.00	46.0
All Vehicles			108	0.7	108	0.7	0.024	0.9	NA	4.8	34.0	0.03	0.16	0.03	42.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

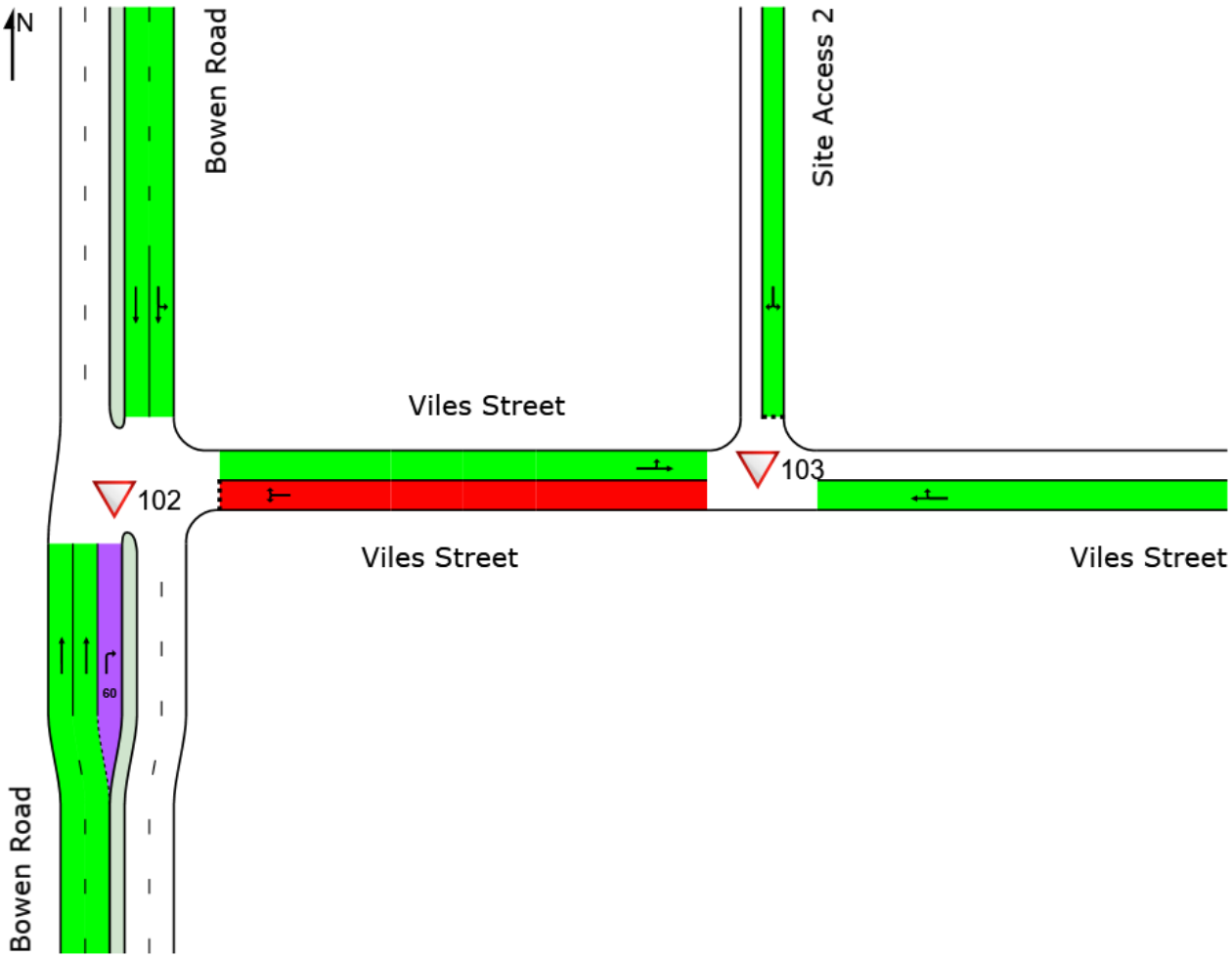
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [2035 PM Post Devt (Network Folder: Post Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Organisation: LANGTREE CONSULTING | Licence: NETWORK / 1PC | Processed: Monday, 3 February 2025 3:27:43 PM
Project: C:\Users\Langtree Consulting\Documents\SIDRA Analysis Projects\112 Bowen Road_VS2\Bowen Rd Viles St_2.sip9

MOVEMENT SUMMARY

Site: 103 [2035 Viles Street/ Site Access 2 PM Post Devt (Site Folder: Post Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [2035 PM Post Devt (Network Folder: Post Development)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Viles Street															
5	T1	All MCs	37	1.0	37	1.0	0.021	0.0	LOS A	4.8	34.0	0.03	0.06	0.03	52.7
6	R2	All MCs	4	0.0	4	0.0	0.021	3.1	LOS A	4.8	34.0	0.03	0.06	0.03	38.6
Approach			41	0.9	41	0.9	0.021	0.3	NA	4.8	34.0	0.03	0.06	0.03	50.0
North: Site Access 2															
7	L2	All MCs	8	0.0	8	0.0	0.022	3.0	LOS A	1.4	9.6	0.13	0.50	0.13	27.3
9	R2	All MCs	11	0.0	11	0.0	0.022	2.9	LOS A	1.4	9.6	0.13	0.50	0.13	25.3
Approach			19	0.0	19	0.0	0.022	2.9	LOS A	1.4	9.6	0.13	0.50	0.13	26.5
West: Viles Street															
10	L2	All MCs	9	0.0	9	0.0	0.024	3.1	LOS A	0.0	0.0	0.00	0.11	0.00	28.8
11	T1	All MCs	39	1.0	39	1.0	0.024	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	52.8
Approach			48	0.8	48	0.8	0.024	0.6	NA	0.0	0.0	0.00	0.11	0.00	46.0
All Vehicles			108	0.7	108	0.7	0.024	0.9	NA	4.8	34.0	0.03	0.16	0.03	42.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

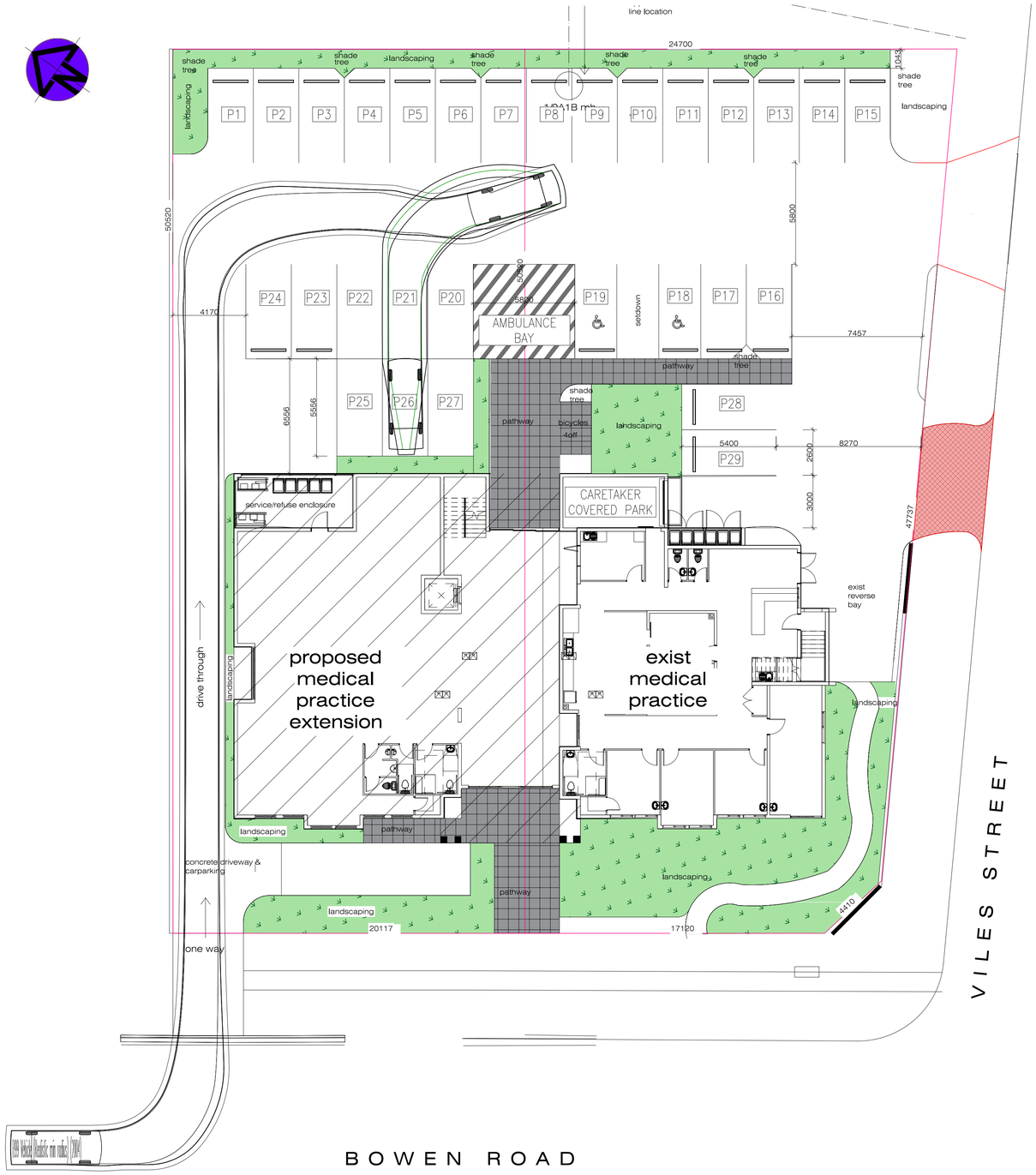
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

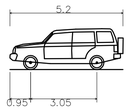
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

APPENDIX D

SWEPTH PATHS





B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m

LAYOUT PLAN
SCALE 1:150

REVISIONS				
No.	BY	DATE	DESCRIPTION	
A	B.L	21.01.24	FOR INFORMATION	

HORIZ. DATUM	MGA		
VERT. DATUM	AHD		
DRG. FILE		DATE	
DESIGN			
DRAWN	R.M	17.01.24	

CERTIFICATION

B. LANGTREE RPEQ 11932

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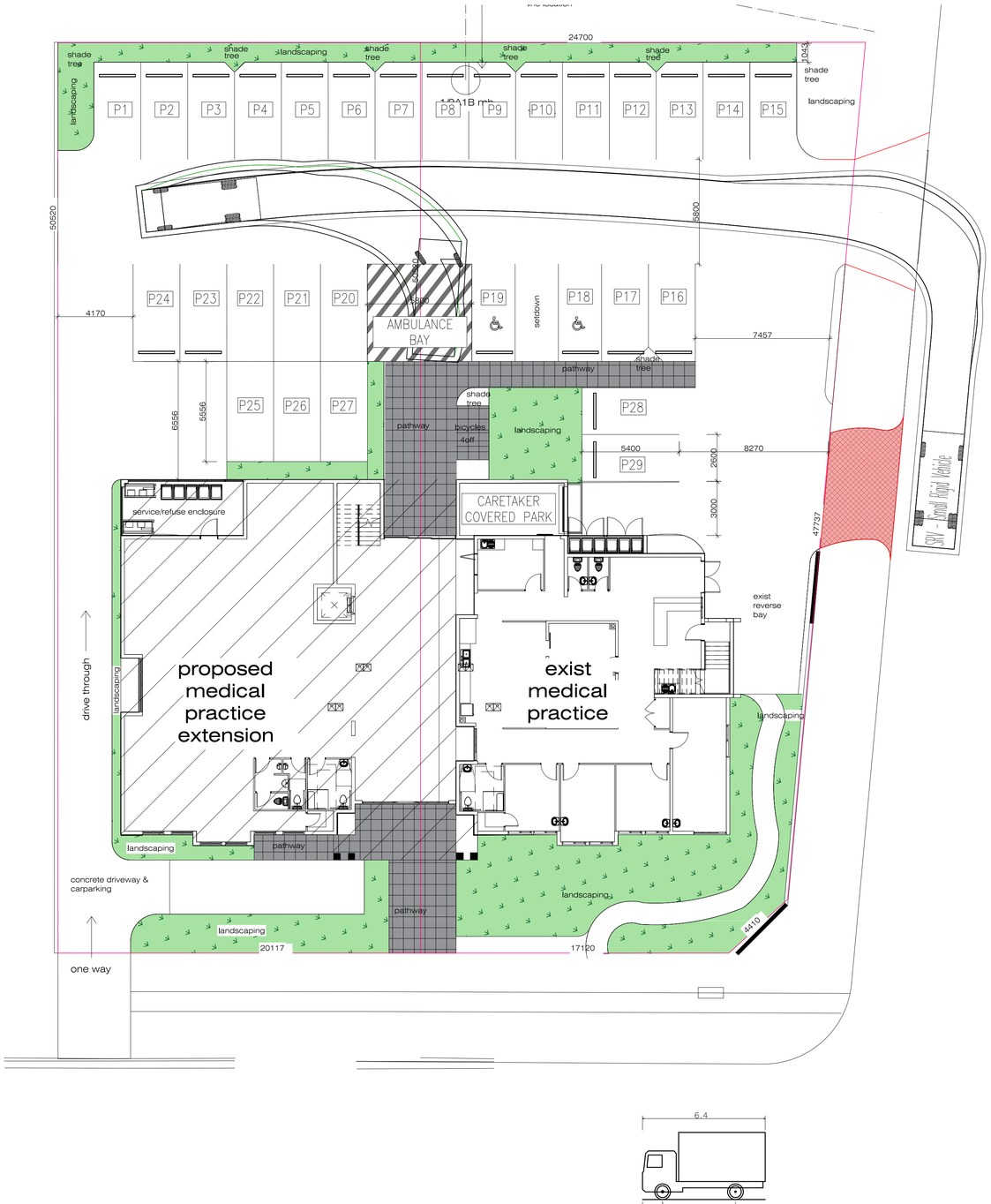
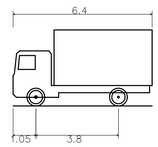
MILFORD PLANNING

110-112 BOWEN ROAD, ROSSLEA
ROSSLEA MEDICAL CENTRE EXTENSION
B99 VEHICLE ENTERING

SCALE	NTS
SHEET	1 OF 4
REVISION	A
DRG No.	1194-SK01





SRV – Small Rigid Vehicle

Overall Length	6.400m
Overall Width	2.330m
Overall Body Height	3.500m
Min Body Ground Clearance	0.398m
Track Width	2.330m
Lock–to–lock time	4.00s
Curb to Curb Turning Radius	7.100m

LAYOUT PLAN
SCALE 1:150

REVISIONS

No.	BY	DATE	DESCRIPTION
A	B.L	21.01.25	FOR INFORMATION

HORIZ. DATUM: MGA
VERT. DATUM: AHD
DRG. FILE | DATE
DESIGN
DRAWN: R.M | 21.01.24

CERTIFICATION
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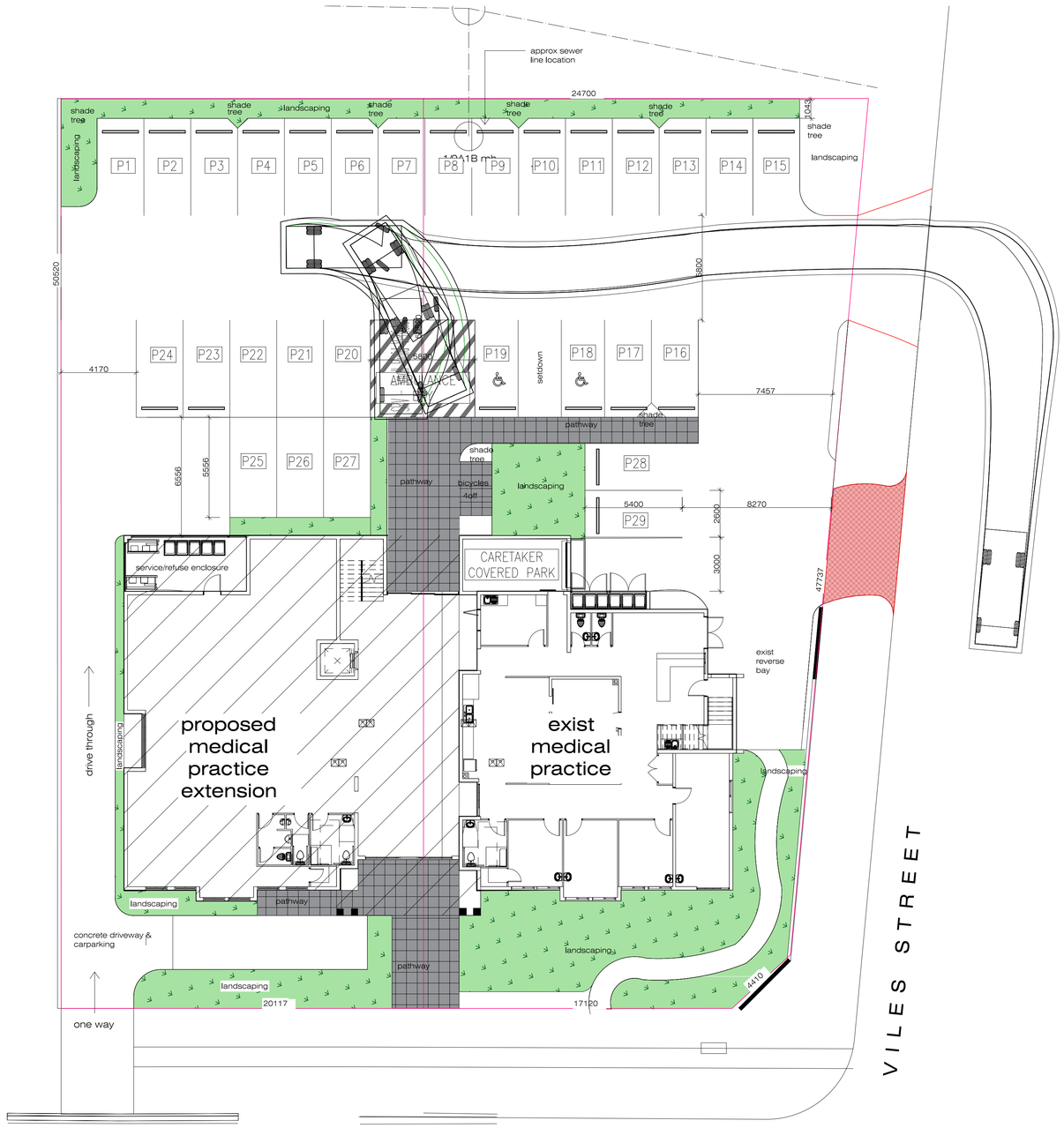
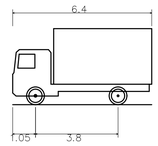
MILFORD PLANNING

110–112 BOWEN ROAD, ROSSLEA
ROSSLEA MEDICAL CENTRE EXTENSION
SMALL RIGID VEHICLE ENTERING

SCALE	NTS
SHEET	2 OF 4
REVISION	A
DRG No.	1194–SK04





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Track Width	2.330m
Lock–to–lock time	4.00s
Curb to Curb Turning Radius	7.100m

LAYOUT PLAN
SCALE 1:150

REVISIONS				
No.	BY	DATE	DESCRIPTION	
A	B.L	21.01.25	FOR INFORMATION	

HORIZ. DATUM	MGA	
VERT. DATUM	AHD	
DRG. FILE		DATE
DESIGN		
DRAWN	R.M	21.01.24

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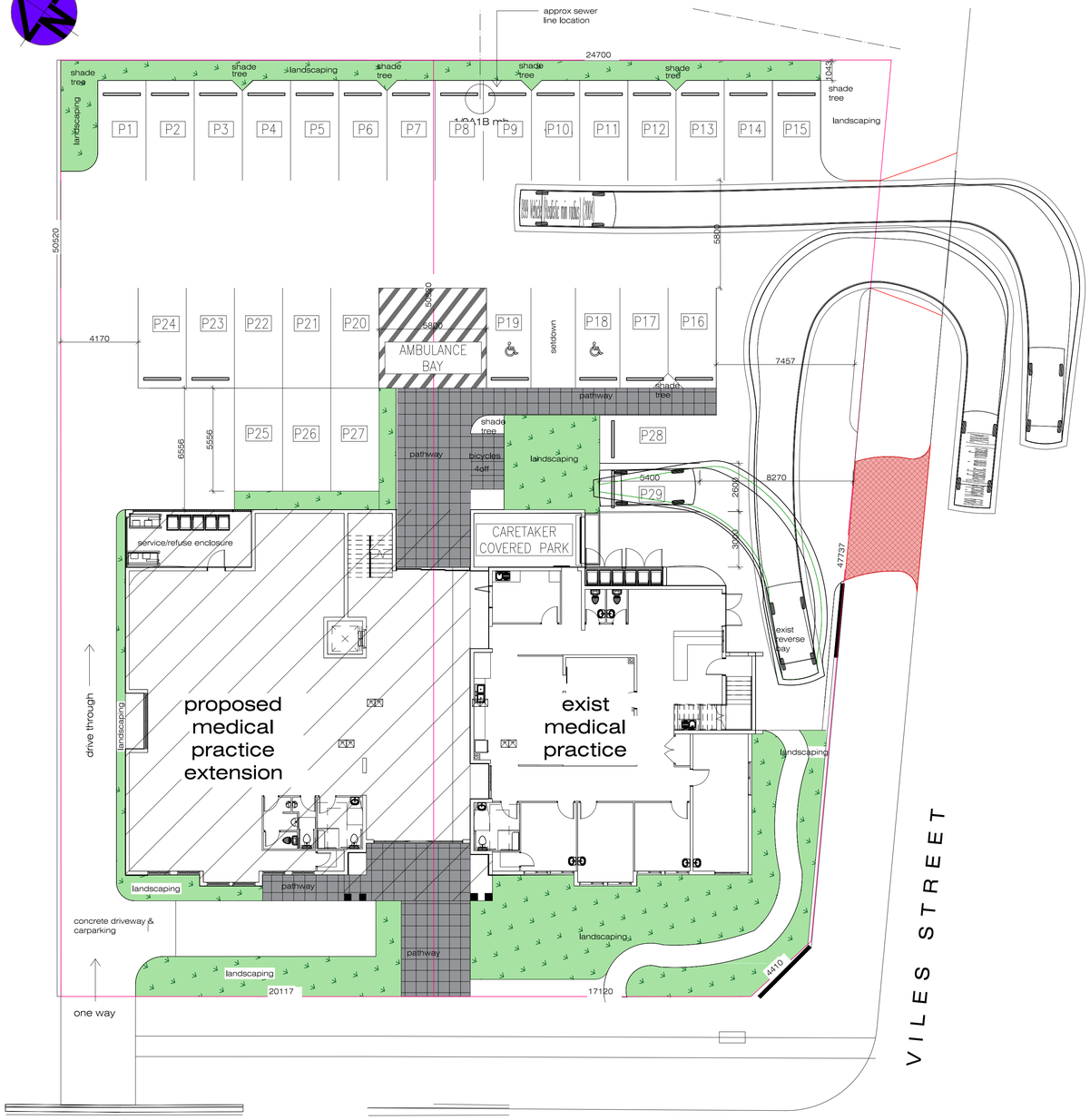
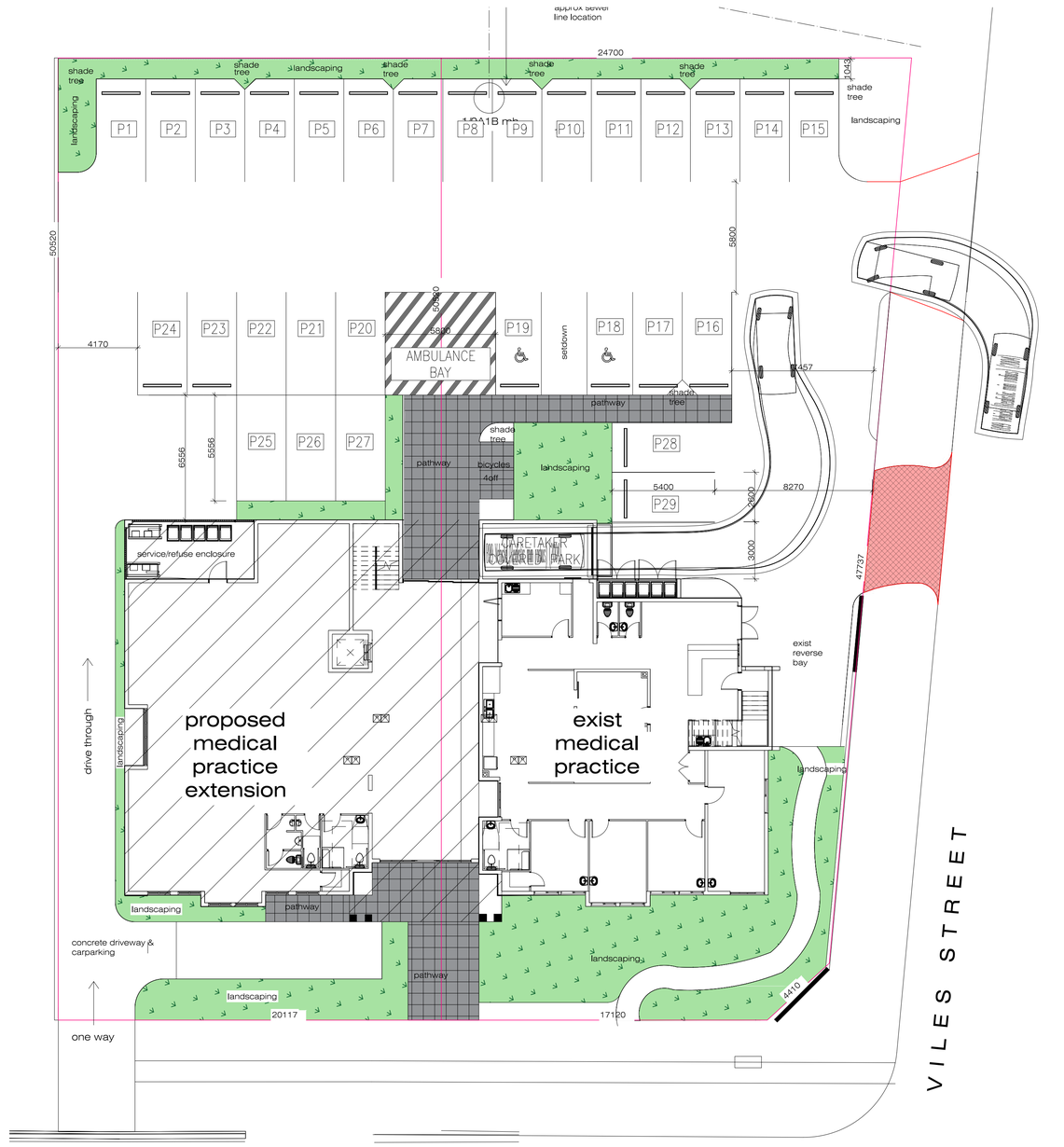
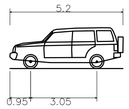
MILFORD PLANNING

110–112 BOWEN ROAD, ROSSLEA
ROSSLEA MEDICAL CENTRE EXTENSION
SMALL RIGID VEHICLE EXITING

SCALE	NTS
SHEET	3 OF 4
REVISION	A
DRG No.	1194–SK03







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Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m

LAYOUT PLAN
SCALE 1:150

REVISIONS				
No.	BY	DATE	DESCRIPTION	
A	B.L	22.01.24	FOR INFORMATION	

HORIZ. DATUM	MGA	
VERT. DATUM	AHD	
DRG. FILE		DATE
DESIGN		
DRAWN	R.M	21.01.24

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MILFORD PLANNING

110-112 BOWEN ROAD, ROSSLEA
ROSSLEA MEDICAL CENTRE EXTENSION
B99 VEHICLE ENTERING/EXITING SOUTH PARKING SPACES

SCALE	NTS
SHEET	4 OF 4
REVISION	A
DRG No.	1194-SK04

APPENDIX E

PROPOSED AUL(S) TREATMENT

REVISIONS				
A	B.L	04.02.25	FOR INFORMATION	
No.	BY	DATE	DESCRIPTION	

HORIZ. DATUM	MGA	
VERT. DATUM	AHD	
DRG. FILE		DATE
DESIGN		
DRAWN	R.M	04.02.25

CERTIFICATION

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MILFORD PLANNING

110–112 BOWEN ROAD, ROSSLEA
ROSSLEA MEDICAL CENTRE EXTENSION
PROPOSED AUL(s) AND SIGNAGES

SCALE	1:150 @ A1
SHEET	1 OF 1
REVISION	A
DRG No.	1194–SK05