



ALTITUDE ASPIRE TRANSPORT ASSESSMENT REPORT

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EXECUTIVE SUMMARY

Below details how the proposed development addresses the Director General's Environmental Assessment Requirements (DGEAR) in regards to transport.

DGEAR 2.4 *Proposal provides for the establishment of a suitable neighbourhood character for the area.*

The proposed development minimises the impact of the sites topography constraints and provides connections to all roads surrounding the site including, Fraser Drive, Market Parade, Parkes Lane and the future planned Broadwater Parkway. Where applicable, the internal road network has been designed in accordance with the requirement set out within Section A5 of the Tweed DCP 2008. Specifically, the internal road network has been design to take into consideration the topography constraints to meet the following objectives:

- *provide acceptable levels of safety, convenience and amenity for all street users and adjacent residents in accordance with the roads hierarchical status;*
- *ensure that each road is conducive to the wider road network with a clear distinction between functional classes of streets;*
- *provides amenity for public transport permeability and connectivity to existing and future services; and*
- *provides a safe and convenient network for pedestrians and cyclists.*

The Road Hierarchy Map as shown within Section 3 of this report demonstrates the proposed developments integration with the surrounding road network.

DGEAR 5.1 *Prepare a transport and accessibility impact study in accordance with Table 2.1 of the RTA's Guide to Traffic Generating Developments.*

This Traffic Impact Assessment Report has been developed in accordance with Table 2.1 of the RTA's Guide to Traffic Generating Developments. See Appendix A for Table 2.1 Checklist.

As sections of the subject site require detailed works such as substantial earthworks, environmental consideration and are dependent on the timing for construction of the future planned Broadwater Parkway, the proposed development is to be constructed over two development phases. Phase 1 shall comprise of the development and release of residential Stages 1 to 5 and the construction of a priority controlled (give-way) intersection onto Fraser Drive located approximately 100 metre north of Parkes Lane. Phase 2 will comprise of remaining residential Stages (6 to 11) and is scheduled to coincide with the construction and opening of Broadwater Parkway from Fraser Drive to Mahers Lane.

The traffic assessment has determined that all surrounding intersections perform within capacity with the inclusion of Phase 1 development traffic during AM and PM peak periods. Upon full development and with the inclusion of Broadwater Parkway, all intersections continue to perform within capacity to 2025 design horizon.

As Council's has not yet finalised planning and timing for Broadwater Parkway, assessment of the temporary access to Fraser Drive has been undertaken with full development traffic generation. As such, the temporary site access intersection can cater for full development traffic volumes in the event that construction of Broadwater Parkway is delayed beyond release of the second phase of the development. In addition, surrounding intersections will not be adversely impacted and continue to perform within capacity as a result of the increased traffic volumes at the temporary site access intersection.

DGEAR 5.2 *Address how the Proposal is consistent with the objectives and principles of the NSW Government's Integrating Land Use and Transport Policy package and the NSW Planning Guidelines for Walking and Cycling.*

The proposed development's pedestrian network has been designed to minimise the topography constraints of the site in order to meet the objectives in accordance with NSW Planning Guidelines for Walking and Cycling as detailed below:

- *walking and cycling neighborhood* – Improves walkability and cycleability by providing pathways along site contours and connect to surrounding pathways, public transport routes and nearby local trip attractors such as Tweed Heights Shopping Centre.
- *street pattern* – The proposed developments street pattern minimises the impacts of the sites undulating terrain and provides permeability to existing road network. The street pattern generally provides a grid layout with a circulating collector street that connects to Market Parade and Broadwater Parkway.
- *mixed use neighborhoods* – The inclusion of the community facility in the centre of the proposed development aims to promote healthy living and recreational activities within walking distance to the entire development.
- *connection to local walk and cycle networks* – Footpaths and cycleways within the development integrate to both existing and future planned walk and cycle routes along Fraser Drive and Broadwater Parkway.
- *security and safety* – Footpaths are provided both along residential streets as well as connecting directly through the developments open space providing visually continuous pathways and avoiding areas of concealment.
- *design within road reserve* – Footpaths are provided along all streets within the proposed development. Pedestrian crossings are located are primary desire lines and within clear view of adjacent intersections. Footpaths are provided with disability kerb ramps for all road crossings. Intersections include paved areas to promote slow travel speeds.
- *parks and open space* – Open spaces areas include both circulating pathways as well as direct footpaths that follow desire lines and site contours to promote direct and convenient routes.

Where applicable, the proposal has been developed by following the objectives within the NSW Governments Integrating Land Use:

- *improving access to housing, jobs and services by walking, cycling and public transport;*
- *increasing the choice of available transport and reducing dependence on cars;*
- *reducing travel demand including the number of trips generated by development;*
- *reduce the distances travelled, especially by car;*
- *supporting the efficient and viable operation of public transport services, and*
- *providing for the efficient movement of freight.*

Section 6 within the report provides details on how the proposed development has been developed to promote the use of alternate travel modes.

DGEAR 5.3 *Identify measures to manage travel demand and increase the use of public and non-car transport modes.*

The proposed Altitude development has provided improvements to the existing level of alternate travel modes for this section of Western Banora Point and Terranora. Recent residential, retail and educational development on Fraser Drive has increased the level of accessibility by walk, cycle and public transport. As a result, the proposed development aims to integrate into existing bus services as well as promote the use of future planned road corridors such as Broadwater Parkway.

Further details are provided within Section 6 of the report.

DGEAR 5.4 *Outline any proposed cycleways and ensure connectivity with existing cycleways in the area, especially Fraser Drive.*

The proposed development maximises the available connections to the surrounding cycle routes including direct connections to Fraser Drive, Parkes Lane and the future planned Broadwater Parkway linking to Mahers Lane as detailed within section 6.3 of the report. .

These connections are in line with key desire lines to cycle routes for leisure, employment/education and sport cyclists and aims to minimise the surrounding topography constraints of the area.

Liaison with Tweed Shire Council has been undertaken to determine the connectivity of the site to future proposed cycleways in proximity to the development.

DGRE 5.5 *Identify the likely transport infrastructure and recurrent servicing costs for Government in proceeding with the development.*

The proposed development is located approximately 4kms from the state-controlled road network, namely the Pacific Highway at Sextons Hill. Current construction of the Sextons Hill Bypass as part of the Federal Government's Nation Building Program and takes into account forecast traffic data for future growth in the Tweed Shire and will provide increased capacity to the state-controlled road network. Traffic generated from the proposed development will be distributed throughout the local road network primarily along Fraser Drive, Leisure Drive and Terranora Road. As such, the level of development traffic reaching the state-controlled road network will be negligible and not result in any additional government infrastructure or increase in servicing or maintenance costs to state roads.

In addition, Kirkwood Road / Pacific Highway interchange has recently been announced as a short term future upgrade jointly funded by Tweed Shire Council and the Roads and Traffic Authority (RTA). This upgrade shall include a southbound off-ramp and on-ramp and is expected to reduce the traffic dependence on the southern section of Minjungbal Drive at the Sextons Hill bypass. Subject to planning and approvals, the construction of Kirkwood Road / Pacific Highway interchange is expected to start in 2011.

Future road network upgrades within proximity to the development include the following:

- Kirkwood Road / Pacific Motorway interchange upgrade and extension to Fraser Drive
- Fraser Drive upgrade including 4 laning between Broadwater Parkway and Kirkwood Road; and
- Terranora Road upgrade between Mahers Lane and Fraser Drive.

In accordance with the Section 94 Contributions Plan, the proposed development shall pay contributions to road network upgrades (including the above-mentioned planned upgrades) based on the level trips generated by the development as outlined within Council's Tweed Road Contribution Plan version 5.2.

DGEAR 5.6 *Potential allocation of bus services to the proposal*

The NSW Department of Transport and Infrastructure has indicated that the allocation of future bus services is done so by liaison with the service provider (currently Surfside Buslines) and based primarily on a 'current demand' basis. As a result, it is recommended that the NSW Department of Transport together with Surfside Buslines look to update Bus Route 607 to serve the proposed development following construction of residential lots and production of potential public transport demand over time. The extension of Broadwater Parkway will provide an additional opportunity for bus routes to service future developments and extend to the existing residential areas located at Mahers Lane. Timing of allocation of bus services will be prioritised based on development of residential lots over time.

Refer to Section 6.1 within the report for further details on bus service recommendations for the proposed development.

DGEAR 5.7 *Demonstrate that the proposed road layout can achieve a high degree of pedestrian and cycle access, and can support future bus access in accordance with the NSW TI bus planning guidelines, including during Staging*

The proposed development has been designed to minimise the impacts on walk and cycle travel modes associated with the topography constraints of the site. As such, the proposed development provides a high level of permeability to the existing and future planned surrounding road network. Proposed bus stop locations comply with standard bus stop design practices by providing a maximum walking distance of 400 metres between stops and dwellings within the proposed development.

Staging of the proposed development prior to the construction of Broadwater Parkway will be limited to Stages 1 to 5 and as a result, access to the proposed development is limited to the temporary priority controlled intersection with Fraser Drive. The temporary access to Fraser Drive will provide the primary access point to the development as well as improve the existing walk, cycle and public transport accessibility for existing Parkes Lane residents by creating a more direct link to Fraser Drive and onto the existing bus services at Glen Ayr Drive.

Further details of how the proposed developments have been to maximise walk, cycle and public transport accessibility is detailed within Section 6 of the report.

DGEAR 5.8 *Demonstrate that the proposed internal road layout maximises connectivity within the development, to the broader Terranora Area E urban release area, and to the surrounding environment.*

The proposed development minimises the impact of the sites topography constraints and provides connections to all roads surrounding the site including, Fraser Drive (temporarily), Market Parade, Parkes Lane and the future planned Broadwater Parkway.

The proposed developments primary access is via Broadwater Parkway, which is the future planned collector street for Terranora Urban Release Area E. In addition, the western extent (Stage 10) provides a future road connection opportunity to future development areas of the Terranora Urban Release Area E, specifically on Lot 1DP175234.

DGEAR 5.9 *Analyse the impacts of an expected increase in traffic on the existing road network surrounding the site, and provide measures to ensure that traffic impacts on the existing and future local road network are minimised. Address how the proposed temporary access to Fraser Drive will affect the amenity of local roads*

In accordance with Table 2.1 of the RTA's Guide to Traffic Generating Developments, a traffic impact assessment has been undertaken to determine what impacts the proposed development is expected to have on the surrounding road network.

The proposed development is expected to generate 145 peak hour trips for release stages prior to the construction of Broadwater Parkway and, 264 peak hour trips for full development of all stages. All surrounding intersections for the proposed development perform within capacity within each of the AM and PM peak periods both prior to and after the construction of Broadwater Parkway out to the design horizon of 2025 with full development traffic.

The proposed developments temporary access configuration to Fraser Drive prior to the construction of Broadwater Parkway will perform within capacity with full development of the available stages 1 to 5. In addition, the temporary access intersection can will perform within capacity with full development (all stages) should planning and construction of Broadwater Parkway be delayed by Council.

The proposed location for the temporary site access intersection is the most suitable along the western section of Fraser Drive in regards to meeting Austroads' Standards for Intersections at Grade as well as consideration for adjacent residential driveway crossovers. Assessment of the site access configuration demonstrated that it will comply with Austroads standards in regards to approach gradients, intersection spacing, site distances and vehicle acceptance gaps.

Further details into assessment of traffic impacts are within Sections 4 and 5 of this report.

DGEAR 5.10 *Provide an assessment of the feasibility and environmental impacts of the proposed temporary access to Fraser Drive*

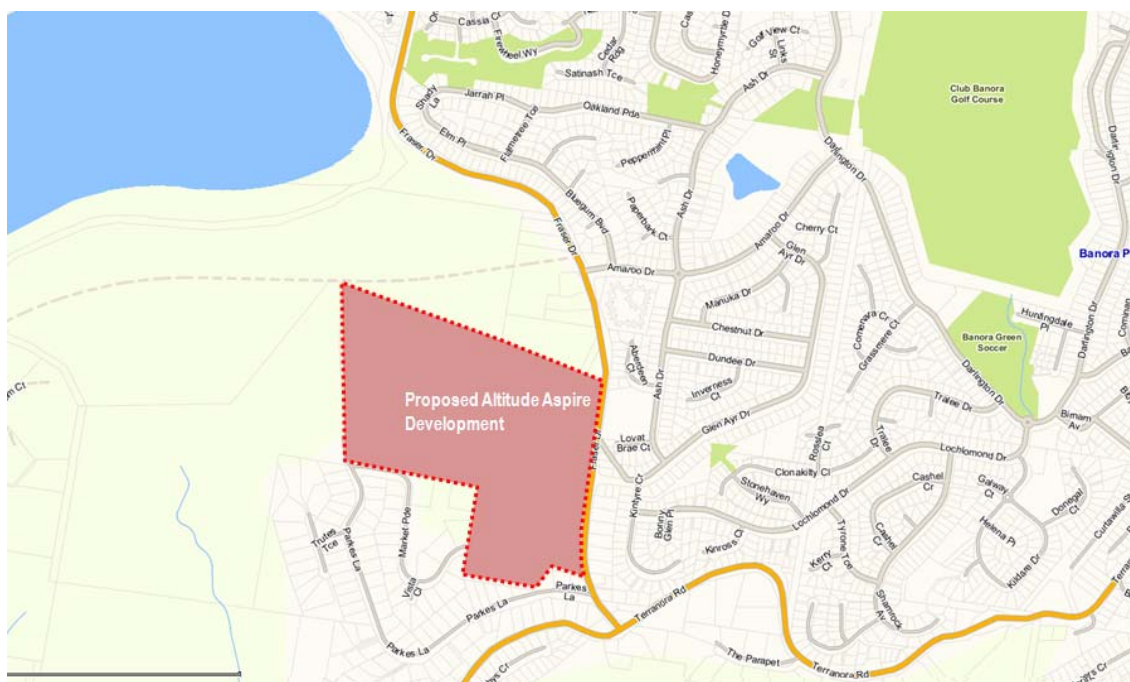
As mentioned above, the proposed location for the temporary site access intersection is the most suitable along the western section of Fraser Drive in regards to meeting Austroads' Standards for Intersections at Grade as well as consideration for adjacent residential driveway crossovers. Assessment of the site access configuration demonstrated that it will comply with Austroads standards in regards to approach gradients, intersection spacing, site distances and vehicle acceptance gaps.

Refer to Section 5 of this report for further information.

1. INTRODUCTION

The proposed Altitude Aspire development is to be located on the western side of Fraser Drive north of Parkes Lane as shown in Figure 1.1. The current land use zoning is 2(c) – Urban Expansion, which is primarily residential development focused on multi-use neighbourhood centres. Currently the site consists of primarily rural farmland with limited existing traffic generation.

Bitzios Consulting has been engaged by Metricon to provide a transport assessment report to address the transport aspects of the Director General's Environmental Assessment Requirements (DGEARs) for Major Project Application No. MP09-0166 known as Altitude Aspire.



Source: <http://www.whereis.com>

Figure 1.1: Site Location

1.1 SCOPE

In line with the Director General's Environmental Assessment Requirements, this report has been developed in accordance with the RTA's Guidelines to Traffic Generating Developments and includes the following:

- assess the impacts additional traffic generated by the proposed development has on the surrounding road network and provide measures to ensure that any impacts are minimised;
- assess and demonstrate that the internal road network maximises connectivity within the development and to adjacent proposed urban release areas;
- assess the staging requirements including temporary access configurations and impacts on surrounding road network;
- identify the measures to manage travel demand and increase public transport and non-motorised travel modes;
- investigate the options of providing bus services which may cater to the proposed development;
- assess the proposed development against NSW Government Integrating Land Use and Transport Policy and BNSW Planning Guidelines for Walking and Cycling;
- outline the proposed cycle facilities and connectivity to surrounding facilities; and
- demonstrate the internal road layout provides for pedestrians and cyclists including during staging of the development.

Please refer to Appendix A for the Checklist Table 2.1 with the RTA's Guidelines for Traffic Generating Developments.

2. EXISTING CONDITIONS

2.1 ROAD NETWORK

Figure 2.1 demonstrates the existing road hierarchy of the road network surrounding the proposed site as per Council's road designation and below details the condition, land uses and road environment of key roads.



Figure 2.1 Surrounding Road Hierarchy

2.1.1 Fraser Drive

Fraser Drive is a two lane urban distributor road which connects to Terranora Road to the south and continues to Dry Dock Road 4.8 km's to the north. Fraser Drive is the primary road that serves western Banora Point and acts as a local bypass of South Tweed Heads for residents of Banora Point, Terranora and Vintage Lake. Recent residential developments along the centre of Fraser Drive such as Flame Tree Park and Vintage Lakes has seen traffic growth along the central section of Fraser Drive.

As a result of this development, Fraser Drive has been recently upgraded to four lanes between Vintage Lakes Drive and Leisure Drive to cater for the increase in turn movements and surrounding land uses such as the recently constructed Banora Central Shopping Centre.

Whilst the above mentioned development has increased traffic volumes along the central section of Fraser Drive, much of the traffic is to/from South Tweed Heads and traffic volumes along the southern section of Fraser Drive near Terranora Road have not increased as substantially as a result of these developments.

2.1.2 Terranora Road

Terranora Road is a two lane distributor road that connects the Pacific Highway at Sextons Hill through Banora Point, Terranora and onto the township of Tumbulgum. Recent development at Terranora has resulted in traffic increasing along Terranora Road particularly west of Fraser Drive. East of Fraser Drive includes a meandering section of road adjacent to a vertical drop, which causes safety concerns and has been the location for a number of vehicle crashes. As a result, safety barriers have been erected along this section of Terranora Road.

2.1.3 Parkes Lane

Parkes Lane is a two lane local access street that serves approximately 150 residential lots and exhibits approximately 500 vehicles per day. Parkes Lane connects to Fraser Drive immediately south of the proposed development by way of a priority controlled (give way) intersection with no channelisation for right turn movements off Fraser Drive.

2.1.4 Glen Ayr Drive and Amaroo Drive

Both Glen Ayr Drive and Amaroo Drive are two lane collector streets that connect the residential suburb commonly known as Tweed Heights to Fraser Drive. Each of the intersections is a 'Seagull' give-way intersection configuration. Amaroo Drive also connects Fraser Drive to Darlington Drive which circulates Club Banora Golf Course and is the primary collector road for Banora Point.

2.1.5 Impact on State-controlled Road Network

The proposed development is located approximately 4kms from the state-controlled road network namely the Pacific Highway at Sextons Hill. Current construction of the Sextons Hill bypass takes into account traffic forecast data for future development growth in the Tweed Shire and will provide increased capacity to the state-controlled road network.

Traffic generated from the proposed development will be distributed throughout the local road network primarily along Fraser Drive, Leisure Drive and Terranora Road. As such, the level of development traffic reaching the existing state-controlled road network will be negligible and not result in any additional government infrastructure or increase in servicing / maintenance costs to state roads.

Kirkwood Road / Pacific Highway interchange has recently been announced as an immediate upgrade jointly funded by Tweed Shire Council and the Roads and Traffic Authority (RTA). This upgrade shall include a southbound off-ramp and southbound on-ramp and is expected to reduce the traffic dependence on the southern section of Minjungbal Drive at the Sextons Hill bypass. Subject to planning and approvals, the construction of Kirkwood Road / Pacific Highway interchange is expected to start in 2011.

Future road network upgrades within proximity to the development include the following:

- Kirkwood Road / Pacific Motorway interchange upgrade and extension to Fraser Drive;
- Fraser Drive upgrade including 4 laning between Broadwater Parkway and Kirkwood Road; and
- Terranora Road upgrade between Mahers Lane and Fraser Drive.

In accordance with the Section 94 Contributions Plan, the proposed development shall pay contributions to road network upgrades (including the above-mentioned planned upgrades) based on the level trips generated by the development as outlined within Council's Tweed Road Contribution Plan version 5.2.

2.2 TRAFFIC VOLUMES

Figure 2.2 demonstrates the historical daily traffic volumes along the surrounding road network collected by Tweed Shire Council. These historical traffic volumes have fluctuated from both positive and negative growths in previous years. This may be attributed to recent land releases and residential developments as well as changes in traffic patterns to/from Tweed Heads. The recent residential growth in Terranora and Banora Point however has generally seen an overall increase in traffic volumes when compared to historical values.

Based on a review of the historical traffic counts from Tweed Shire Council a conservative linear growth rate of 3% pa has been applied to the most recent traffic volume to determine the existing 2010 traffic volumes on the surrounding road network as shown in Figure 2.2.

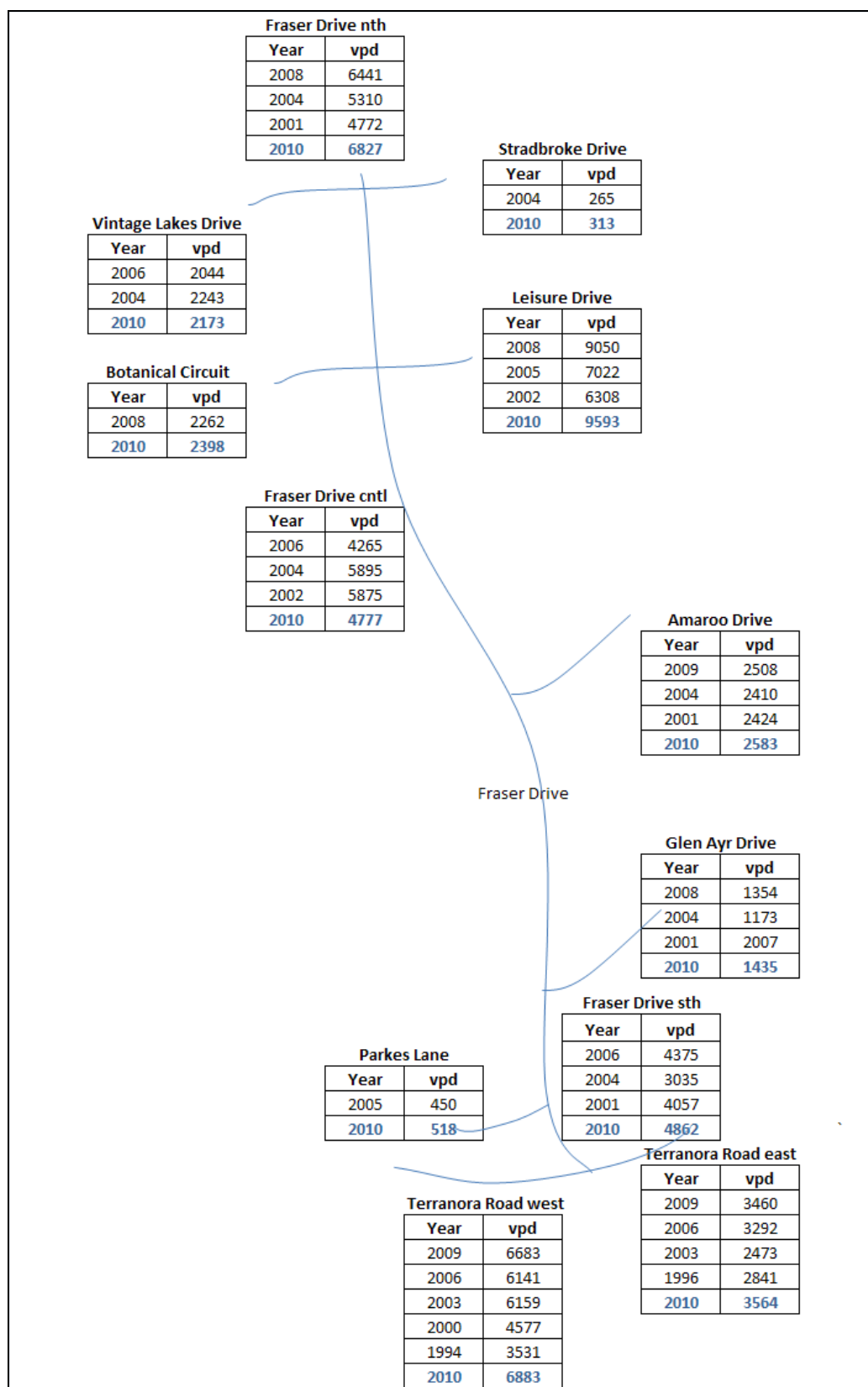


Figure 2.2: Historical Two-way Daily Traffic Volumes

Typically, the AM and PM peak hour traffic volumes are equal to approximately 10% of the overall daily traffic. Therefore, the daily traffic volumes demonstrated in Figure 2.1 have been used to derive peak hour traffic volumes. Figure 2.3 demonstrates the distribution assumption and subsequent peak hour traffic volumes along streets in proximity to the proposed development.

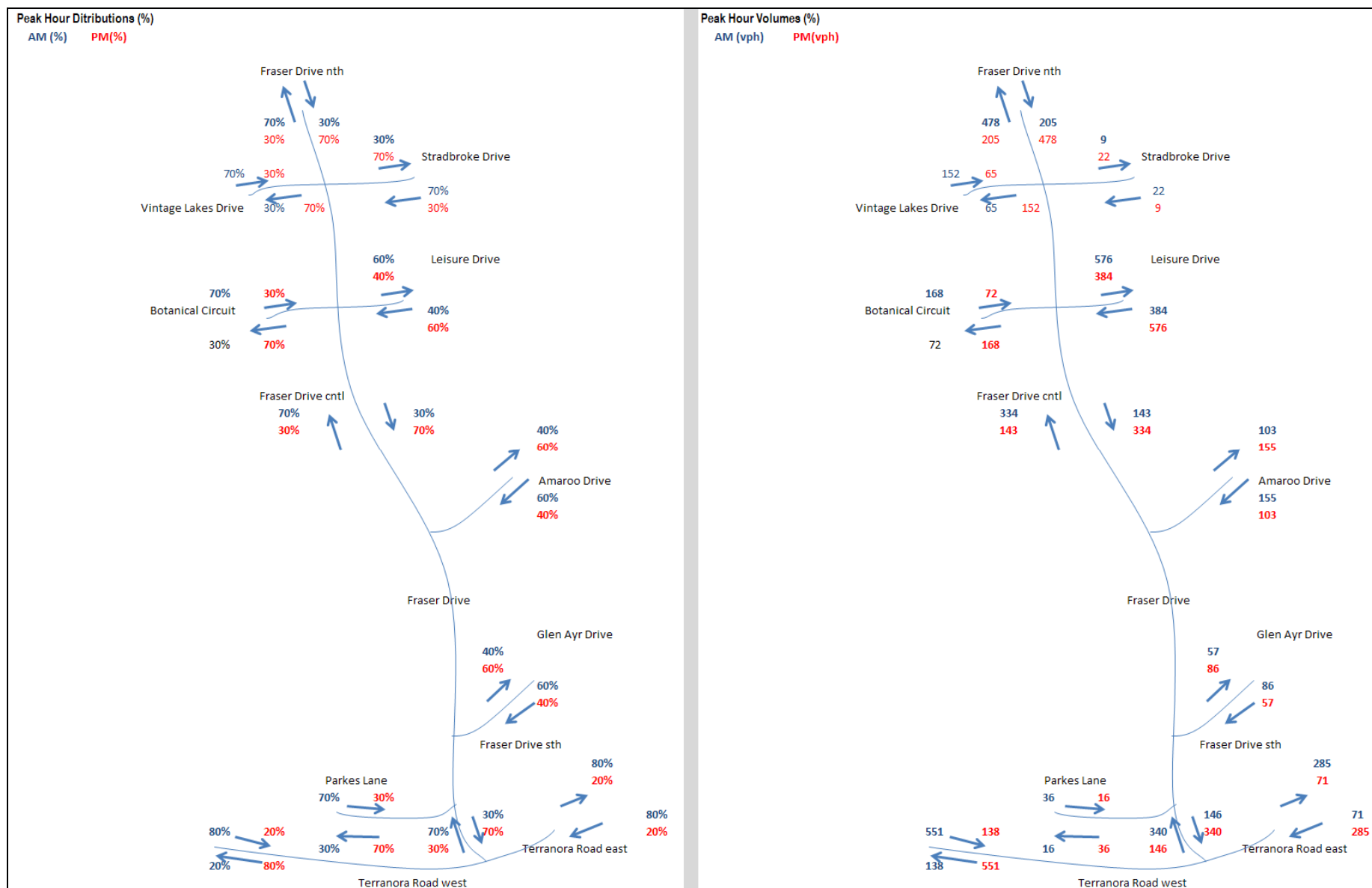


Figure 2.3: Peak Hour Distributions Assumption and 2010 Traffic Volumes

2.3 INTERSECTION TURN VOLUMES

In order to determine the exiting intersection performance, traffic observations were undertaken to determine the peak hour turning volume percentages to be applied to each derived link volume previously shown in Figure 2.3. Figure 2.4 shows the 2010 AM and PM turn volumes at intersections in proximity to the proposed development.

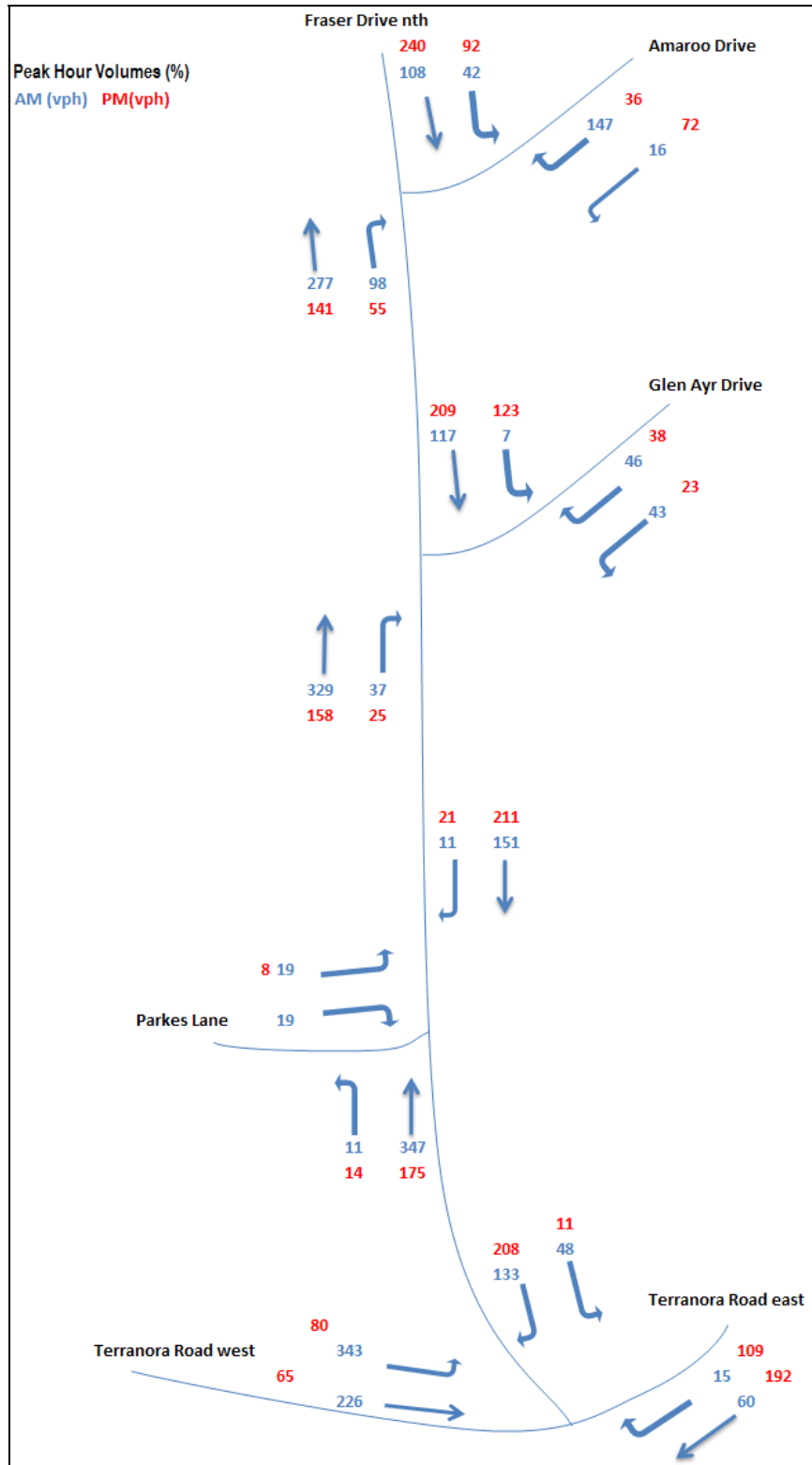


Figure 2.4: 2010 AM and PM Peak Traffic Volumes

3. PROPOSED DEVELOPMENT

The proposed development comprises of a total of 321 lots including 317 residential lots, 2 public reserves, 1 drainage reserve and 1 community lot over eleven stages of development as shown in Figure 3.1.



Figure 3.1: Proposed Altitude Aspire Development

Overall, The proposed development minimises the impact of the sites topography constraints and provides connections to all roads surrounding the site including, Fraser Drive (temporarily), Market Parade, Parkes Lane and the future planned Broadwater Parkway. The internal road network has been designed in accordance with the requirement set out within Section A5 of the Tweed DCP 2008. Specifically, the internal road network has been design in accordance with Council's Development Design Specification D1 'Road Design' and takes into consideration the topography constraints to meet the following objectives:

- provide acceptable levels of safety, convenience and amenity for all street users and adjacent residents in accordance with the roads hierarchical status;
- ensure that each road is conducive to the wider road network with a clear distinction between functional classes of streets;
- provides amenity for public transport permeability and connectivity to existing and future services; and
- provides a safe and convenient network for pedestrians and cyclists.

Figure 3.2 demonstrates how the proposed development integrates with the existing and future planned road hierarchy. The existing cul-de-sac configuration of Market Parade will to connect to the primary neighbourhood connector though the proposed development. In addition, the connection to Parkes Lane on the western extent will significantly improve traffic, walk and cycle permeability and connectivity for residents along Parkes Lane.

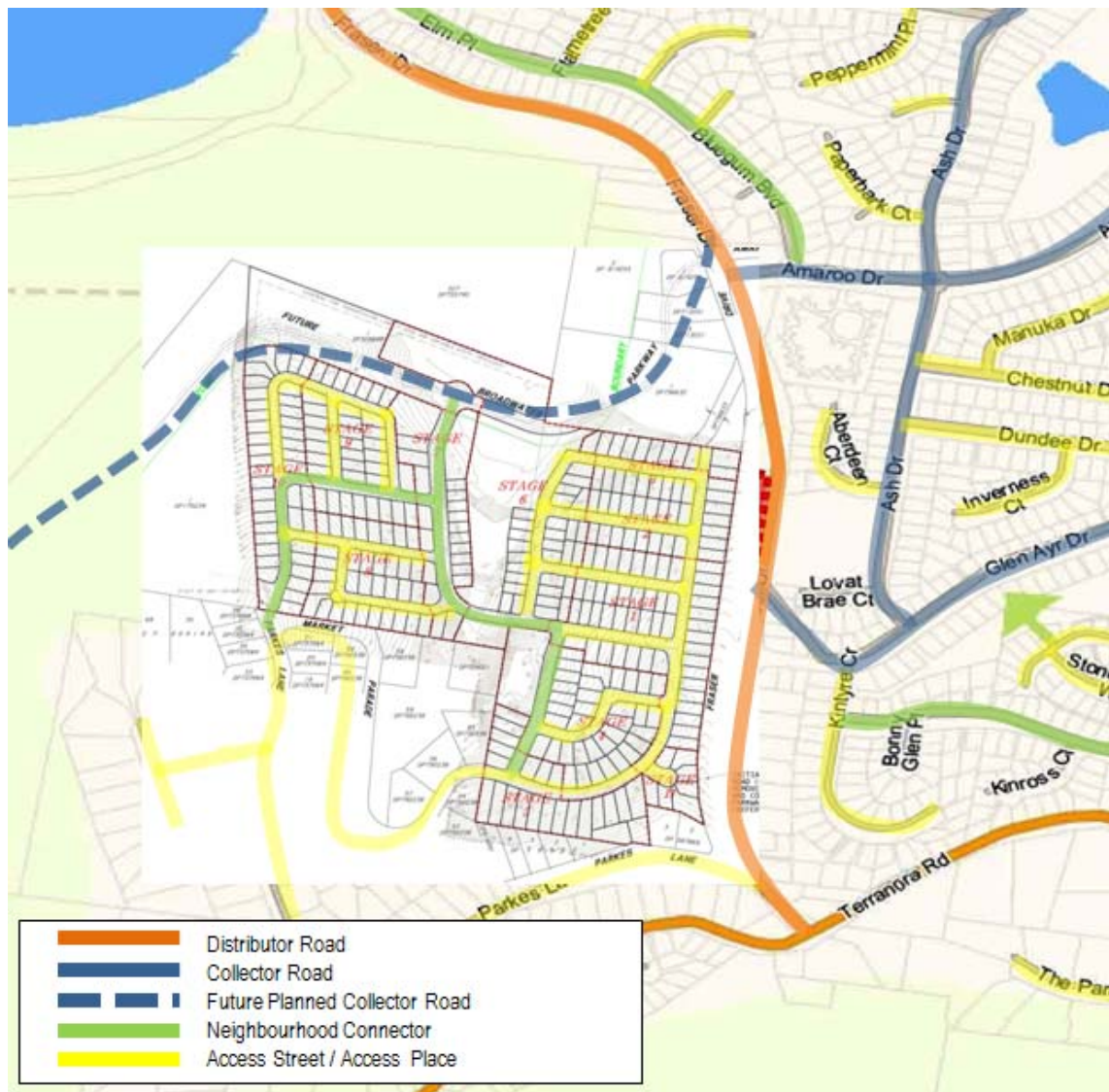


Figure 3.2: Proposed Altitude Aspire Road Hierarchy

The proposed developments primary access is via Broadwater Parkway, which is the future planned collector road for Terranora Urban Release Area E. In addition, the western extent (Stage 10) provides a future road connection opportunity to future development areas of the Terranora Urban Release Area E, specifically on Lot 1DP175234.

As sections of the site require detailed works such as substantial earthworks, environmental consideration and are dependent on the timing for construction of the future planned Broadwater Parkway, the proposed development is to be constructed over two development phases as detailed below.

3.1 PHASE 1 OF DEVELOPMENT

Phase 1 shall comprise of the development and release of residential Stages 1 to 5 and the construction of a priority controlled (give-way) intersection onto Fraser Drive located approximately 100 metre north of Parkes Lane. In addition, traffic from the development will be able to access Market Parade and onto Parks Lane. Figure 3.3 shows the intersection configuration proposed for the site access onto Fraser Drive. Further assessment of the priority controlled intersection design is shown in Section 4 within this report.

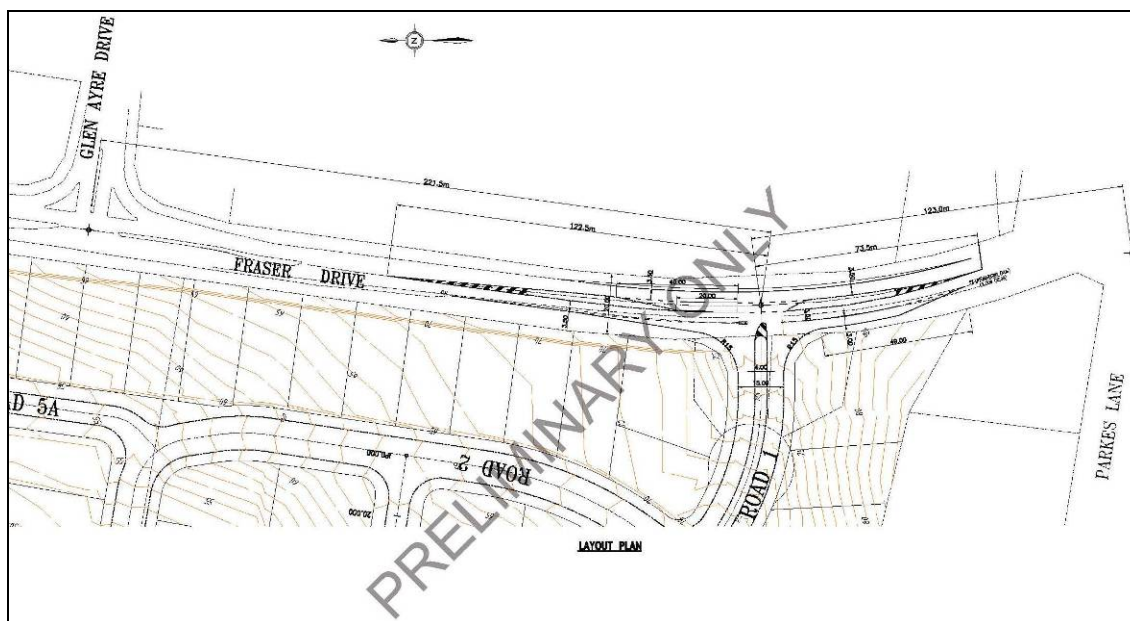


Figure 3.3: Site Access/Fraser Drive Intersection

3.2 PHASE 2 OF DEVELOPMENT

Phase 2 will comprise of remaining residential Stages (6 to 11) and is scheduled to coincide with the construction and opening of Broadwater Parkway from Fraser Drive to Mahers Lane. Upon opening of Broadwater Parkway, the temporary intersection will be closed from accessing Fraser Drive. It is expected that Phase 2 of the proposed development will be constructed by 2015 and ready for release.

The Broadwater Parkway corridor linking Fraser Drive to Mahers Lane is an integral part of the proposed development. However, in the event that Broadwater Parkway is not constructed by the time of release of Phase 2, the potential impacts and requirements to cater for development traffic without the inclusion of via the retention of the Phase 1 give-way intersection onto Fraser Drive has been undertaken as detailed in Section 4.

3.2.1 Future Planned Broadwater Parkway

The future planned Broadwater Parkway is a new road to be constructed between Fraser Drive and Mahers Lane and will form the primary collector road function for the Terranora Urban Release Area E. As a result, Broadwater Parkway is integral to providing access to the proposed Altitude Aspire development.

Tweed Shire Council officers have provided planning details for the proposed alignment as shown in Figure 3.4. Consistent with future planning for Fraser Drive, Broadwater Parkway will be aligned with Fraser Drive north of Amaroo Drive to provide a direct connection and reduce the attraction for vehicles to continue further south to Terranora Road.

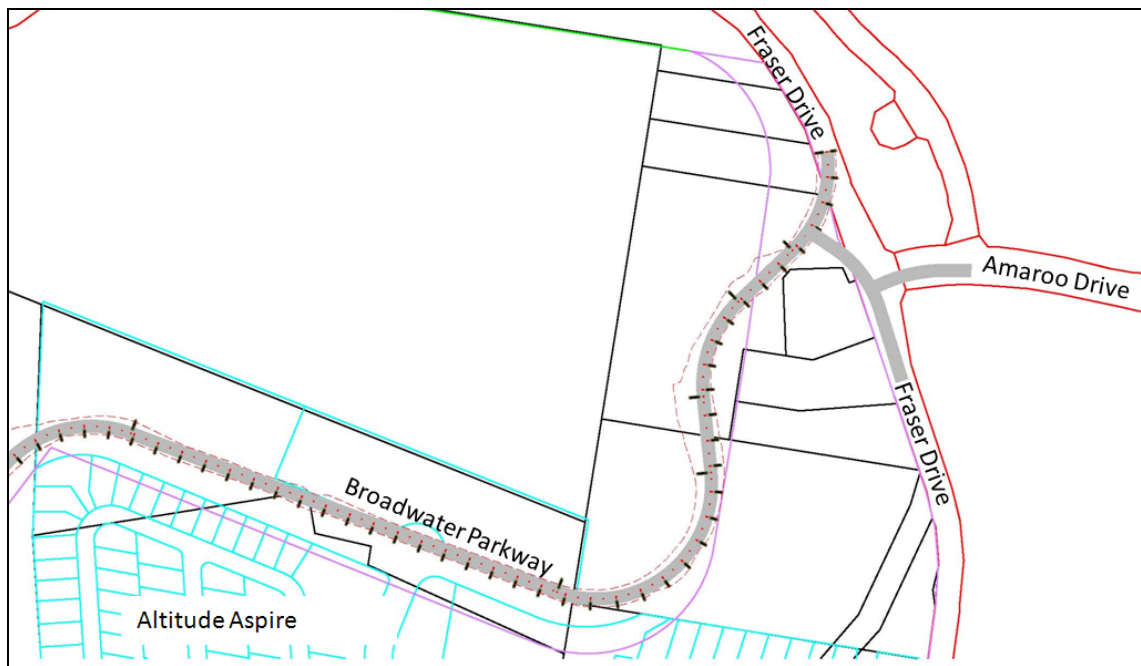
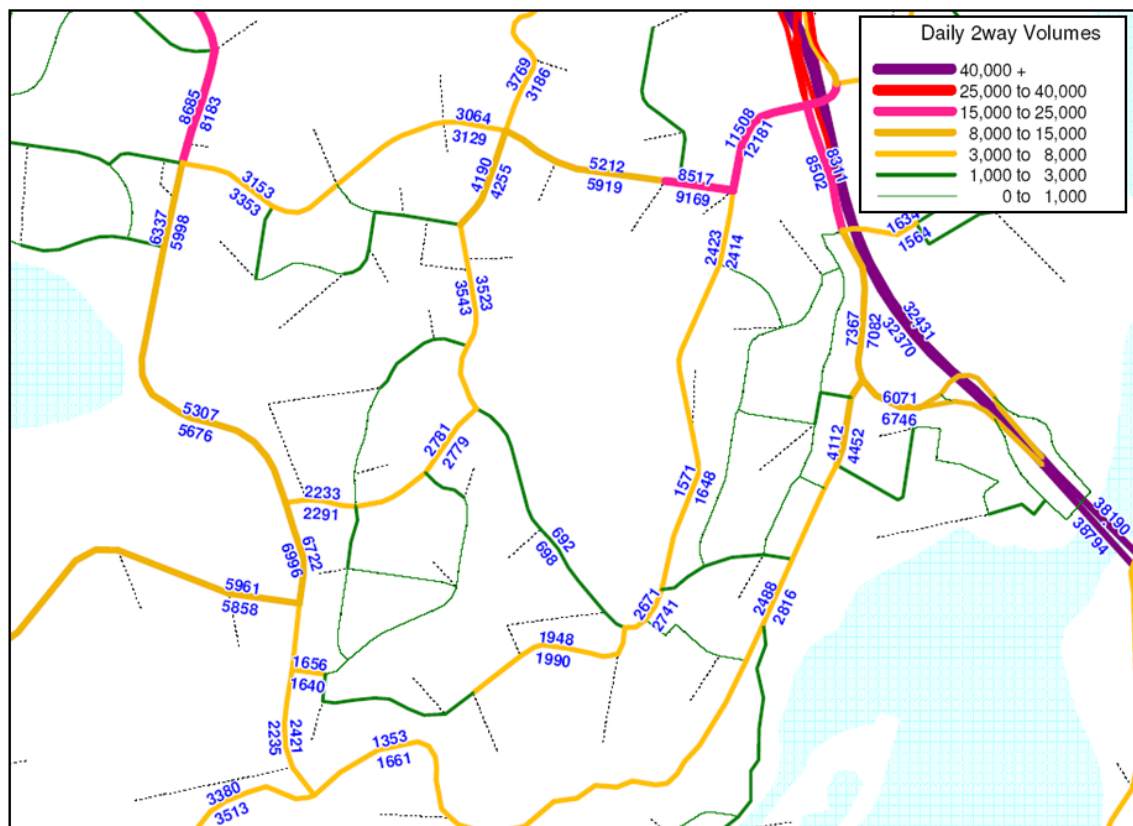


Figure 3.4: Proposed Broadwater Parkway Alignment

Figure 3.5 demonstrates Tweed Shire Council's projected 2030 AADT's with the inclusion of Broadwater Parkway. The future inclusion of Broadwater Parkway will see a redistribution of traffic onto Broadwater Parkway, which would historically continue along Fraser Drive south of Amaro Drive and onto Terranora Road. As such, traffic volumes along Terranora Road and particularly at Fraser Drive intersection will reduce and Broadwater Parkway will become the primary connection for residential areas in proximity to Mahers Lane.



Tweed Shire Council's Traffic Forecast Data

Figure 3.5: 2030 AADT Traffic Volumes

Council is yet to undertake detailed investigations into the specific intersection design requirements for Broadwater Parkway / Fraser Drive intersection, based on the latest proposed alignment. However, for the purposes of assessing the proposed developments potential impacts on the surrounding road network, the future proposed intersection has been assessed based on a signalised intersection, as shown in Figure 3.6. Further detailed assessment into the performance of this intersection and impact from the proposed development is detailed within section 4.0.

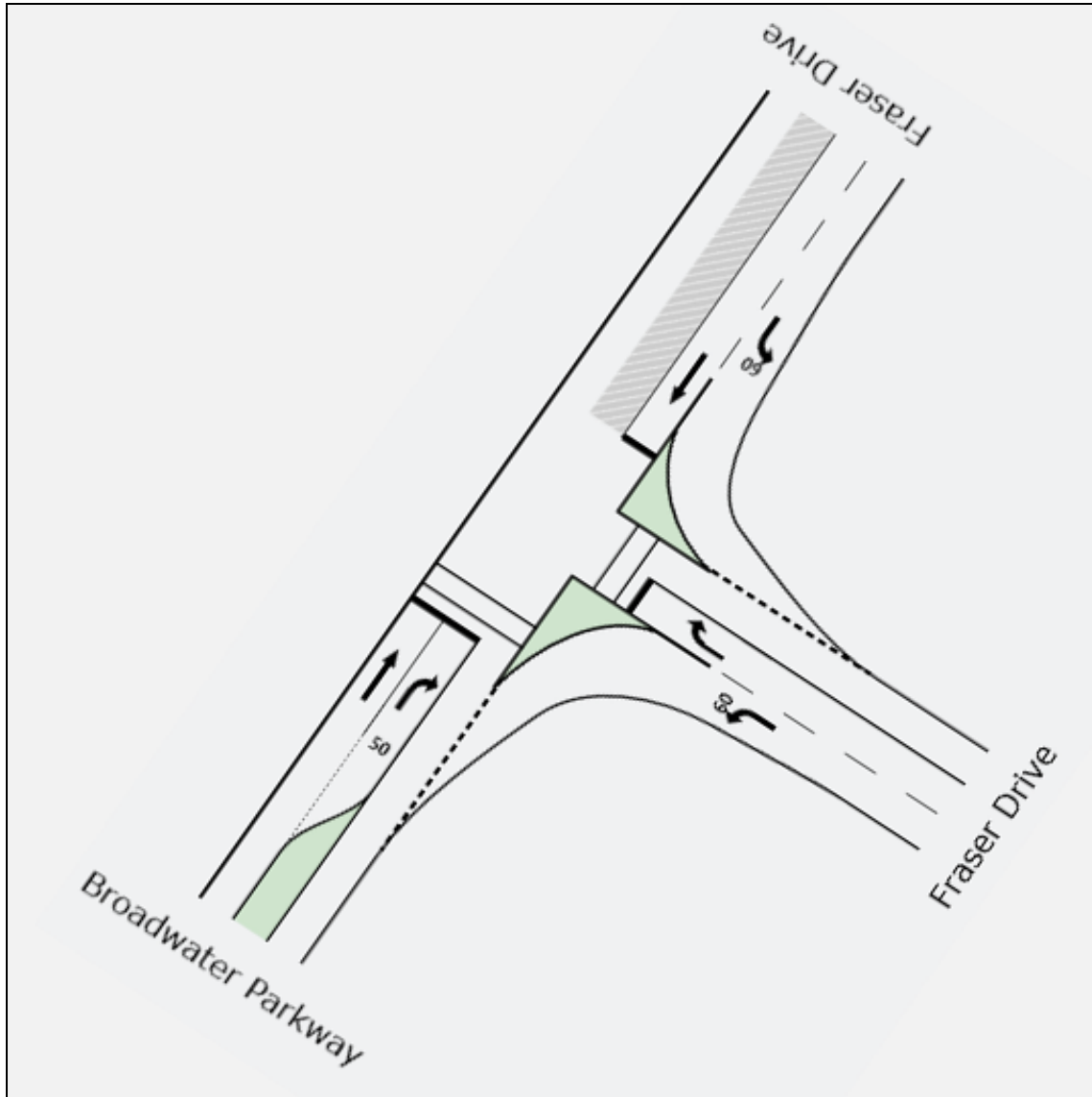


Figure 3.6: Future Proposed Broadwater Parkway / Fraser Drive Intersection

3.3 ALTITUDE COMMUNITY FACILITY

As part of the Altitude development, a community facility is proposed to be located adjacent to the proposed site access intersection with Broadwater Parkway as shown in Figure 3.7.

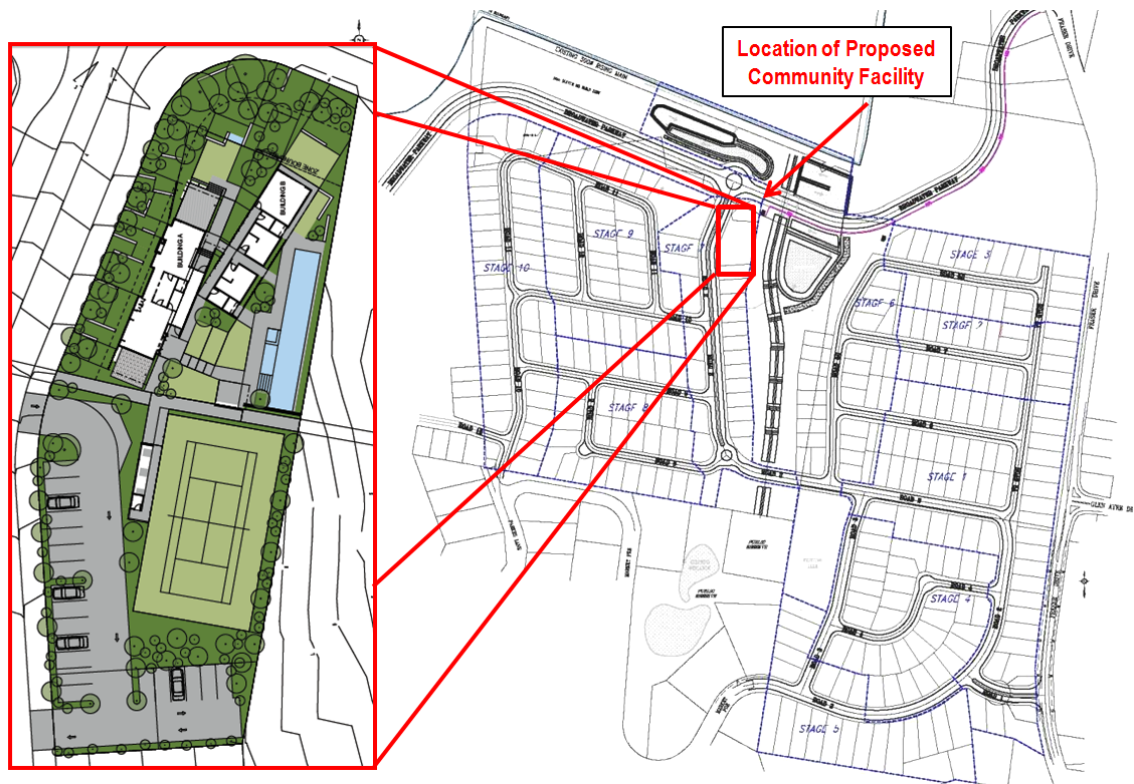


Figure 3.7 Proposed Altitude Community Facility

The intent of the community facility is to create a local recreational service for the residents of Altitude Aspire development. The community facility area comprises of two separate buildings and additional fitness recreational space. Building A will be used as a multipurpose recreational facility for the local residents, whereas Building B includes the gym and fitness amenities. The outdoor recreational area will consist of a 4 lane, 25 m swimming pool and a tennis court.

A parking assessment of the proposed community facility is detailed within Appendix B and demonstrates that the proposed facility shall provide sufficient vehicle and cycle parking amenity to cater for the demand based on the following reasons:

- activities within the facility will attract a parking at varying times of the day and not result in adverse parking demand at peak operating times;
- the facility provides in excess of the required cycle racks and end of journey facilities, which is a primary travel mode and conducive to the recreational land uses;
- the proposed facility is designed to cater for local residents only, with similar large scale facilities such as Club Banora located within close proximity; and
- the proposed facility is located in the centre of the altitude development to promote walking from the surrounding residential areas.

4. TRAFFIC ASSESSMENT

4.1 TRAFFIC GENERATION

Table 4.1 shows overall development traffic generation for each phase based on the traffic generation rate of 0.85 peak hour trips per dwelling in accordance with RTA's Guide to Traffic Generating Developments.

Table 4.1: Peak Hour Development Traffic Generation and Distribution

Component	Number of Dwellings	Peak Hour Trips	Directionality In/Out (%)	
			AM Peak	PM Peak
Phase1 (Residential Stages 1 to 5)	170	145	30/70	70/30
Phase 2 (Full Development)	310	264	30/70	70/30

Table 4.2: Development Traffic Volumes

Component	AM Peak		PM Peak	
	In	Out	In	Out
Phase1 (Residential Stages 1 to 5)	44	102	102	44
Phase 2 (Full Development)	80	185	185	80

4.2 TRAFFIC DISTRIBUTION FOR THE PROPOSED DEVELOPMENT

Due to the construction staging of the proposed development, impacts of the development on the surrounding road network have been assessed based on the peak traffic distribution at key milestones along the development timeline and design horizon.

4.2.1 Phase 1

Figure 4.1 shows the development traffic distributions for Phase 1 traffic generation and is based on the following assumptions:

- all traffic from the development will use the temporary intersection at Fraser Drive;
- traffic distribution along Fraser Drive is based on 70% northbound and 30% southbound;
- 5% of traffic originally using Parkes Lane will now use the temporary intersection due to the new connection between the proposed development and Market Parade. However, this equates to only three vehicles per hour during peak periods; and
- turning volumes at nearby intersections is based on observed percentage splits.

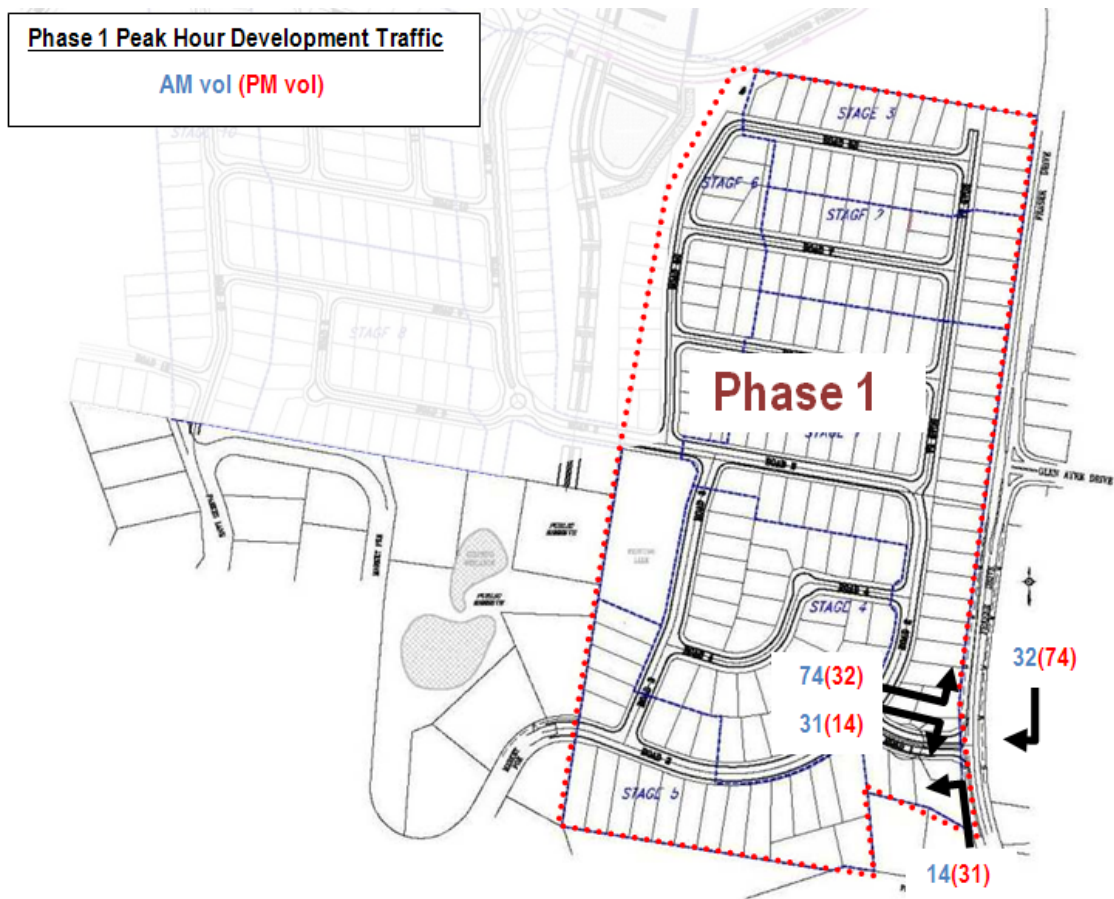


Figure 4.1: Phase 1 Development Traffic Volumes

4.2.2 Phase 2

Upon completion of the remaining lots, closure of the temporary intersection and construction of Broadwater Parkway results in traffic generated by the development will be distributed as follows:

- 85% of development traffic will use the Broadwater Parkway to/from the development, 10% will use the connection onto Parkes Lane and 5% using the connection onto Market Parade;
- 80% of the total development traffic using Broadwater Parkway will travel to/from the east to access Fraser Drive and 5% will travel to/from the west to access Mahers Lane; and
- development traffic east along Broadwater Parkway will be distributed at Amaroo Drive as follows:
 - 50% through along Fraser Drive;
 - 30% right to Amaroo Drive; and
 - 20% right towards Terranora Road.

Figure 4.2 shows the full development's traffic distributions for the AM and PM peak periods.

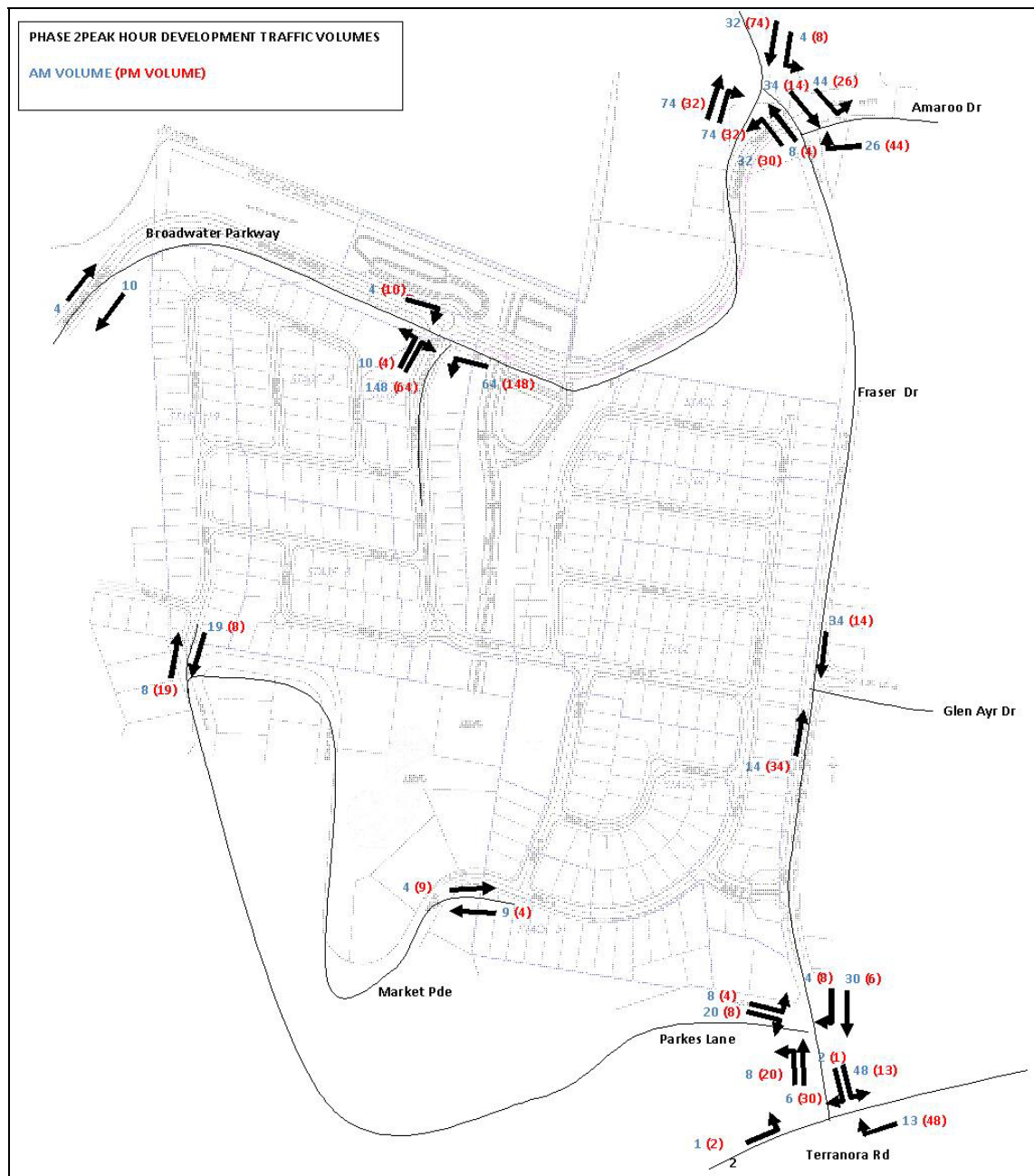


Figure 4.2: Full Development Peak Hour Traffic Volumes

These traffic volumes from the proposed development were applied to background traffic volumes at key intersections surrounding the site to determine any impacts on the surrounding road network.

4.3 INTERSECTION ASSESSMENT

4.3.1 Intersection Performance

The operating performance of the surrounding intersections has been assessed using aaSidra Modelling package and focusing on the degree of saturation (DoS), average delay (seconds) and 95th percentile queue length (metres). Future year assessment was based on the abovementioned development phases. Detailed outputs from aaSidra for each modelled intersection are shown in Appendix C.

Based on the historical traffic counts from Tweed Shire Council, background traffic growth increased by 3% per annum for traffic volumes on Fraser Drive and Terranora Road and 2% per annum for intersecting streets serving nearby residential areas such as Parkes Lane, Amaroo Drive and Glen Ayr Drive.

Phase 1 Development (Stages 1 to 5)

Table 4.3 shows the performance surrounding intersections under Phase 1 of the proposed development.

Table 4.3: Phase 1 Development Intersection Performance

Scenario	Degree of Saturation (DoS)		Average Delay (s)		95% Back of Queue (Cars)	
	AM	PM	AM	PM	AM	PM
Terranora Road / Fraser Drive						
2010 Base Case	0.195	0.250	6.3	6.4	1.0	2.6
2010 Phase 1 Development	0.202	0.278	6.5	6.7	1.0	2.9
2015 Phase 1 Development	0.228	0.322	6.7	7.0	1.4	3.6
Parkes Lane / Fraser Drive						
2010 Base Case	0.188	0.128	1.7	1.5	0.8	1.0
2010 Phase 1 Development	0.196	0.156	1.7	1.7	1.0	1.4
2015 Phase 1 Development	0.226	0.197	2.0	2.0	1.2	1.9
Temporary Site Access / Fraser Drive						
2010 Base Case	n/a	n/a	n/a	n/a	n/a	n/a
2010 Phase 1 Development	0.191	0.121	2.7	2.7	0.9	0.3
2015 Phase 1 Development	0.221	0.139	2.5	2.5	1.0	0.3
Glen Ayr Drive / Fraser Drive						
2010 Base Case	0.172	0.110	2.4	3.3	0.5	0.5
2010 Phase 1 Development	0.209	0.163	2.4	3.2	0.6	0.6
2015 Phase 1 Development	0.233	0.196	2.5	3.5	0.7	0.9
Amaroo Drive / Fraser Drive						
2010 Base Case	0.303	0.136	5.1	3.7	1.8	0.4
2010 Phase 1 Development	0.343	0.165	5.1	3.6	2.1	0.5
2015 Phase 1 Development	0.419	0.185	5.5	3.8	2.7	0.6

All surrounding intersections perform within capacity with the inclusion of Phase 1 development traffic during AM and PM peak periods.

The Phase 1 site access intersection with Fraser Drive exhibits a maximum DoS of 0.221 during the AM peak in 2015 and does not exhibit more than one vehicle queuing during either peak period.

The intersection which exhibits the highest DoS is Amaroo Drive (0.419) due to right turning vehicles from Amaroo Drive heading northbound. However, the resulting maximum queue is only three vehicles and delay is 5.5 seconds.

Phase 2 Development (Full Development)

Beyond 2015, the completion of the remaining proposed development (Stage 6 to 11) as well as the inclusion of Broadwater Parkway will see an increase in development traffic and redistribution into the surrounding road network.

Typically, the design horizon for these types of developments is 10 years, but as the construction is staged and subsequently not to be fully completed until after 2015, assessment of the future impacts of the full

development's traffic generation has been assessed out to the design year of 2025. Table 4.4 shows the impact of the proposed development traffic on surrounding intersections for 2015 and out to the design horizon of 2025.

Based on discussions with Council, it is not envisaged that Broadwater Parkway will be fully completed to Mahers Lane by 2015 and as a result, shall be utilised by proposed development traffic only. However, by 2025 it is envisaged that Broadwater Parkway is expected to be completed and subsequently redistribute traffic from Fraser Drive. Therefore assessment has been undertaken based on proposed development traffic only using Broadwater Parkway in 2015, and full network redistribution to Broadwater Parkway by 2025. The assumed 2025 traffic volumes at Broadwater Parkway / Fraser Drive intersection are based on Council's ultimate expected traffic volumes as previously shown in Figure 3.5.

Figure 4.3 shows 2015 and 2025 traffic volumes at Broadwater Parkway / Fraser Drive intersection respectively.

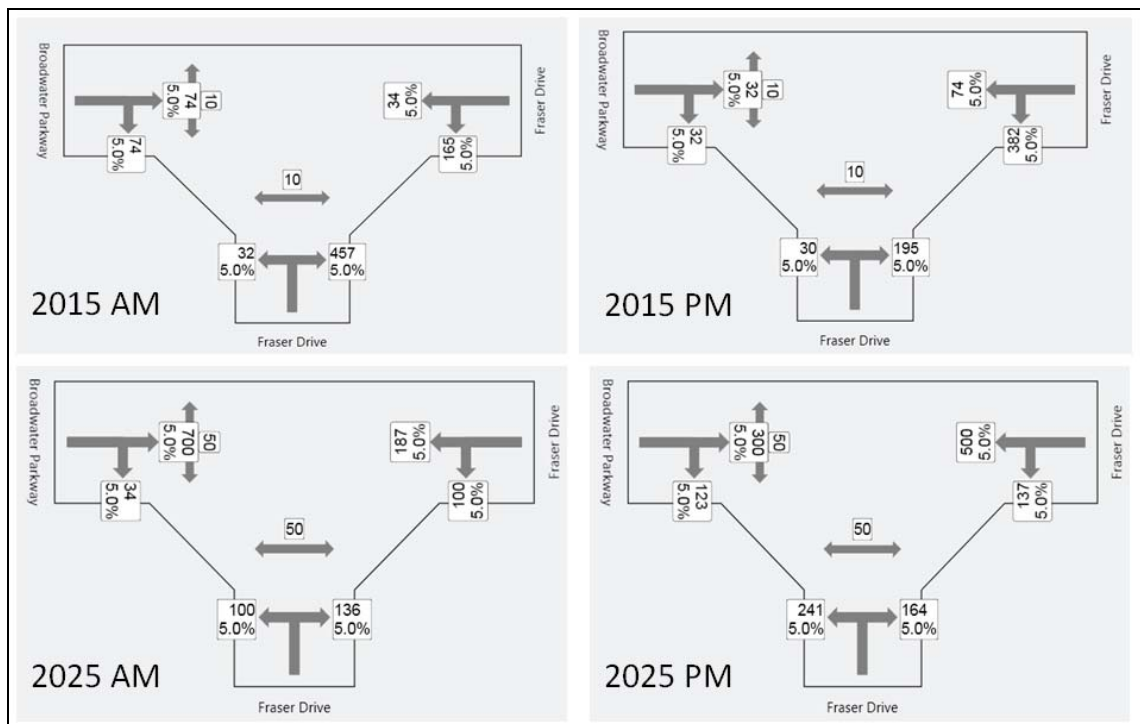


Table 4.3: Broadwater Parkway / Fraser Drive Intersection 2015 and 2025 Peak Hour Volumes

Table 4.4: Full Development Intersection Performance

Scenario	Degree of Saturation (DoS)		Average Delay (s)		95% Back of Queue (Cars)	
	AM	PM	AM	PM	AM	PM
Terranora Road / Fraser Drive						
2015 Full Development	0.224	0.368	7.1	7.2	1.7	4.1
2025 Full Development	0.283	0.467	8.0	8.5	3.2	8.1
Parkes Lane / Fraser Drive						
2015 Full Development	0.224	0.160	2.7	2.4	1.3	1.4
2025 Full Development	0.282	0.201	3.2	2.5	1.8	1.9
Glen Ayr Drive / Fraser Drive						
2015 Full Development	0.206	0.134	2.4	3.2	0.7	0.5
2025 Full Development	0.255	0.173	2.7	3.4	1.0	0.8
Amaroo Drive / Fraser Drive						
2015 Full Development	0.372	0.267	24.5	14.1	12.0	10.0
2025 Full Development	0.453	0.320	24.0	14.2	14.3	10.3
Broadwater Parkway / Fraser Drive						
2015 Full Development	0.549	0.333	15.5	12.0	67.8	28.3
2025 Full Development	0.780	0.727	15.0	15.8	131.1	112.6

The proposed signalised intersection at Broadwater Parkway / Fraser Drive is expected to perform within acceptable limits in 2015 with proposed development traffic only using Broadwater Parkway, as well as in 2025 with full redistribution of traffic from Fraser Drive south to Broadwater Parkway.

Terranora Road/Fraser Drive intersection exhibits a maximum DoS of 0.467 during the PM peak. The critical movement is the westbound right turn from Terranora Road to Fraser Drive northbound, which is a shared single lane for both through and right turn movements. This movement exhibits a maximum queue of just over eight vehicles, however the delay is only 8.5 seconds.

Both Parkes Lane and Glen Ayr Drive continue to perform well within capacity in 2025 with full development traffic.

4.4 INTERSECTION ASSESSMENT WITHOUT BROADWATER PARKWAY

During preliminary discussions, Council indicated that detailed planning for Broadwater Parkway is not yet underway and as a result, the development should not fully expect Broadwater Parkway to be in place by the time Phase 2 is constructed. Therefore, in the event that Broadwater Parkway is not in constructed by the time Phase 2 is ready for release, it is proposed to retain the Phase 1 site access intersection with Fraser Drive.

Assessment of the Phase 1 intersection was undertaken to determine what impact retaining the intersection may have on Fraser Drive and the surrounding intersection at Glen Ayr Drive and Fraser Drive.

Table 4.5 details how the temporary intersection performs with full development traffic using Phase 1 site access intersection and distributed accordingly.

Table 4.5: Future Intersection Performance without Broadwater Parkway

Scenario	Degree of Saturation (DoS)		Average Delay (s)		95% Back of Queue (Cars)	
	AM	PM	AM	PM	AM	PM
Terranora Road / Fraser Drive						
2015 Full Development	0.238	0.349	6.9	7.4	1.5	3.9
2025 Full Development	0.296	0.448	7.7	8.7	2.6	7.6
Parkes Lane / Fraser Drive						
2015 Full Development	0.234	0.186	2.7	2.3	1.4	1.7
2025 Full Development	0.287	0.205	3.2	2.5	2.0	1.9
Temporary Site Access / Fraser Drive						
2015 Full Development	0.323	0.161	3.7	3.8	1.8	0.7
2025 Full Development	0.401	0.193	3.7	3.5	2.4	0.9
Glen Ayr Drive / Fraser Drive						
2015 Full Development	0.259	0.190	2.5	3.2	0.8	0.6
2025 Full Development	0.311	0.223	2.9	3.5	1.3	0.9
Amaroo Drive / Fraser Drive						
2015 Full Development	0.455	0.206	5.6	3.8	3.0	0.7
2025 Full Development	0.670	0.247	7.4	4.1	5.2	0.9

The give-way intersection experiences the maximum peak traffic during the PM peak, however this results in a maximum DoS of 0.193 for the site access approach. Maximum queues for the site access approach is one vehicle, which can safely be accommodated on the level section of the approach.

The maximum right turn queue into the site access from the north in 2025 is one vehicle, which can also safely be accommodated within the provided 40 metre long turning lane.

Right turning queues along Fraser Drive at Parkes Lane and Glen Ayr Drive intersection will not extend to influence the site access intersection as a result of the proposed development traffic.

The site access intersection can therefore cater for the majority of development in the event that construction of Broadwater Parkway is delayed beyond release of the second phase of the development. In addition, surrounding intersection will be adversely impacted and continue to perform within capacity as a result of the increased traffic volumes at the site access intersection.

5. SITE ACCESS CONSIDERATION

5.1 PHASE 1 SITE ACCESS INTERSECTION

Whilst the site access is expected to perform within capacity beyond 2025 with the inclusion of full development traffic, it is important to also consider a variety of factors in order to maintain safety, compliance with applicable standards and reduce any impacts on existing land uses surrounding the intersection. As such, below details the additional considerations taken into account when designing the proposed site access intersection with Fraser Drive.

5.1.1 Approach Gradients

The chosen location for the intersection is the most suitable along the western section of Fraser Drive as it follows the minimum main grade into the site and includes an appropriate level platform adjacent to Fraser Drive. This level platform has been used within the design to provide a 20 metre level approach, which will allow vehicles to yield at the intersection with clear approach site distances in each direction in accordance with Austroads Part 5, Intersections at Grade. Beyond the approach platform the site access road slopes to the west for a distance of 90 metres at a maximum grade of 12%.

Previous intersection assessment demonstrated that the maximum queue for the approach in 2025 is under three vehicles. Therefore, the expected volumes will not result in extensive queues to the west along the sloped section of the road.

5.1.2 Intersection Spacing

The proposed location for the intersection with Fraser Drive provides the following clearances between the midpoints of the surrounding intersections:

- south to Parkes Lane intersection - 123m; and
- north to Glen Ayr Dr intersection - 221.5m.

The current speed along this section of Fraser Drive is 60 km/hr. The proposed intersection provides clear sight lines of 170 metre south (towards and past Parkes Lane) and 350 metre north (towards and past Glen Ayr Drive) on Fraser Drive. This complies with the Safe Sight Distance requirements of Austroads Part 5, Intersections at Grade for 60km/hr speed limits.

The influence of spacing between closely located intersections is generally considered for where sight lines are poor, traffic speeds are high or signalised intersection queues may influence previous intersections.

The 60km/hr speed limit along this section of Fraser Drive together with the abovementioned sight lines provides drivers entering or exiting the proposed site access with sufficient decision time to identify oncoming vehicles and decide on acceptable gaps in each direction to safely enter/exit Fraser Drive.

Table 5.1 demonstrates Austroads minimum recommended acceptance gaps compared to the provided acceptance gaps from the proposed intersection to the nearby intersections at Parkes Lane and Glen Ayr Drive.

Table 5.1: Acceptance Gap Comparisons

Site Access Movement	Austroads Min Required Acceptance Gap (seconds)	Provided Acceptance Gap (seconds)
Right turn into Site Access	4 sec	7 sec
Left turn out of Site Access	5 sec	7 sec
Right turn out of Site Access	5 sec in each direction	7 sec south and 13sec north

Table 5.1 shows that the acceptance gaps between the surrounding intersections exceed the minimum requirements. In addition, the practical acceptance gaps will be greater than stated in Table 5.1 as sight lines from the new intersection extend beyond the surrounding intersections and vehicles entering Fraser Drive at the surrounding intersections will be travelling at less than 60km/hr.

Parkes Lane currently serves approximately 150 dwellings and the already developed nature of the residential catchment has seen limited traffic growth in recent years. Therefore, the 2005 daily traffic volumes for Parkes Lane of 450 vehicles per day is expected to be consistent with daily current traffic volumes in 2010.

The right turn volumes into Parkes Lane from Fraser Drive in the PM peak do not currently produce extensive queues or impacts on the southbound traffic flow along Fraser Drive. Pursuant to this, it is not expected that the right turn queues into Parkes Lane would extend back to influence the proposed new intersection to the north.

Similar to the current traffic patterns for Parkes Lane intersection, the proposed intersection will exhibit maximum right turns into the proposed access road in the PM peak. Peak development traffic turning right into the proposed access is expected to generate a maximum queue of three vehicles. The proposed channelised right turn configuration will provide sufficient storage for right turning vehicles without influencing southbound through traffic along Fraser Drive.

Austrroads design guidelines recommends a minimum right turn lane of 40 metres, which includes a 20 metre storage area and a 20 metre taper. The total length from the intersection yield point to the beginning of the delineation line marking is 125 metres. This allows a clearance of 105 metres between Glen Ayr Drive intersection and the beginning of the delineation linemarking of the proposed new right turn pocket and an overall clearance of 190 metres to the beginning of the right turn lane. This shall provide sufficient clearance for between Glen Ayr Drive and the new intersection for a single lane of traffic travelling at a maximum speed of 60km/hr.

5.1.3 Impact on Property Access

There are currently six property access driveways along the eastern side of Fraser Drive opposite the site access intersection. As such, the intersection has been designed to incorporate provisions to allow vehicles to access/egress each of the driveways.

Driveways for properties 14 and 16 Fraser Drive are located south of the intersection area of influence and therefore will continue to be able to access/egress in both directions along Fraser Drive.

Property No. 22 Fraser Drive is located directly opposite the proposed site access approach to the intersection. The medians have been set back to allow the driveway full access to both directions along Fraser Drive.

The right turn pocket and central median limits access Property No. 26 Fraser Drive from the northbound traffic lane. As such, the site access central median has been set back so as to allow vehicles exiting Property No. 26 to use the right turn pocket and perform a u-turn to travel northbound. In order to allow vehicles to access the property from the northbound traffic lane, an access clearway is proposed in the centre of the Glen Ayr Drive approach at Fraser Drive intersection. This will allow vehicles to perform a u-turn using a turning lane to travel south on Fraser Drive.

To maintain vehicle access/egress for both directions to Property No. 30, a separation area is provided within the chevron markings.

6. ALTERNATE TRAVEL MODES

This section investigates the proposed developments provisions for alternate transport modes other than car such as public transport, walk and cycle. Numerous measures to manage travel demand and increase the use of public and non-car transport modes have been identified for the development and its surrounding areas. The local areas of western Banora Point and eastern Terranora have historically comprised of semi rural and rural lots which have had limited transport infrastructure such as bus routes or pedestrian/cycle pathways.

Where applicable, the proposal has been developed by following the objectives within the NSW Governments Integrating Land Use and Transport Policy and Planning Guidelines for Walking and Cycling, which include;

- improving access to housing, jobs and services by walking, cycling and public transport;
- increasing the choice of available transport and reducing dependence on cars;
- reducing travel demand including the number of trips generated by development;
- reduce the distances travelled, especially by car;
- supporting the efficient and viable operation of public transport services, and
- providing for the efficient movement of freight.

6.1 PUBLIC TRANSPORT

The development is located in relative proximity to several bus services run by Surfside Buslines as shown in Figure 6.1. Whilst the bus routes pass within relatively close proximity to the proposed development (300 metres from the site access intersection and 500 metres from the roundabout intersection with Broadwater Parkway), the topography of the local road network discourages pedestrian access to existing bus stops. This reduces the attractiveness of using the existing buses as a viable public transport mode.

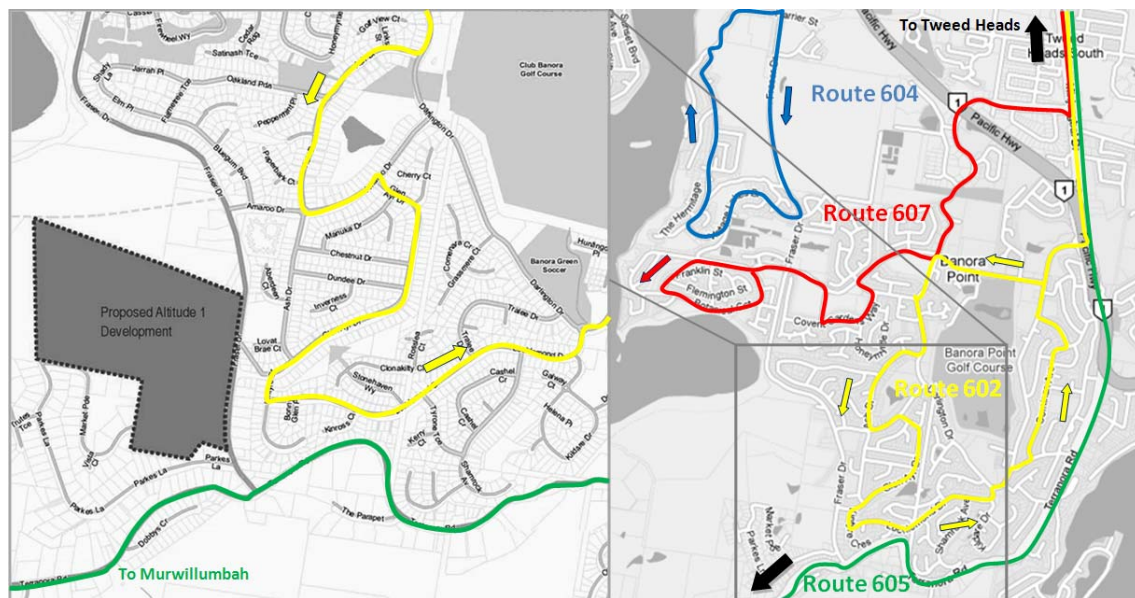


Figure 6.1: Existing Bus Routes

The average weekday frequency for the bus routes shown in Figure 6.1 is one hour for each particular route. Bus route 607, which travels from Tweed Heads to Flame Tree Park, is a relatively new service which was developed to serve to the retail showroom precinct along Greenway Drive and the recently developed residential area of Flame Tree Park.

The NSW Department of Transport and Infrastructure has indicated that the allocation of future bus services is done so by liaison with the service provider (currently Surfside Buslines) and based primarily on a current or expected demand basis.

It is recommended that Surfside Buslines update Bus Route 607 to continue further south along Fraser Drive and access the proposed development via Broadwater Parkway as shown in Figure 6.2. Figure 6.2 also demonstrates the proposed bus stop locations along Broadwater Parkway and within the internal road network.

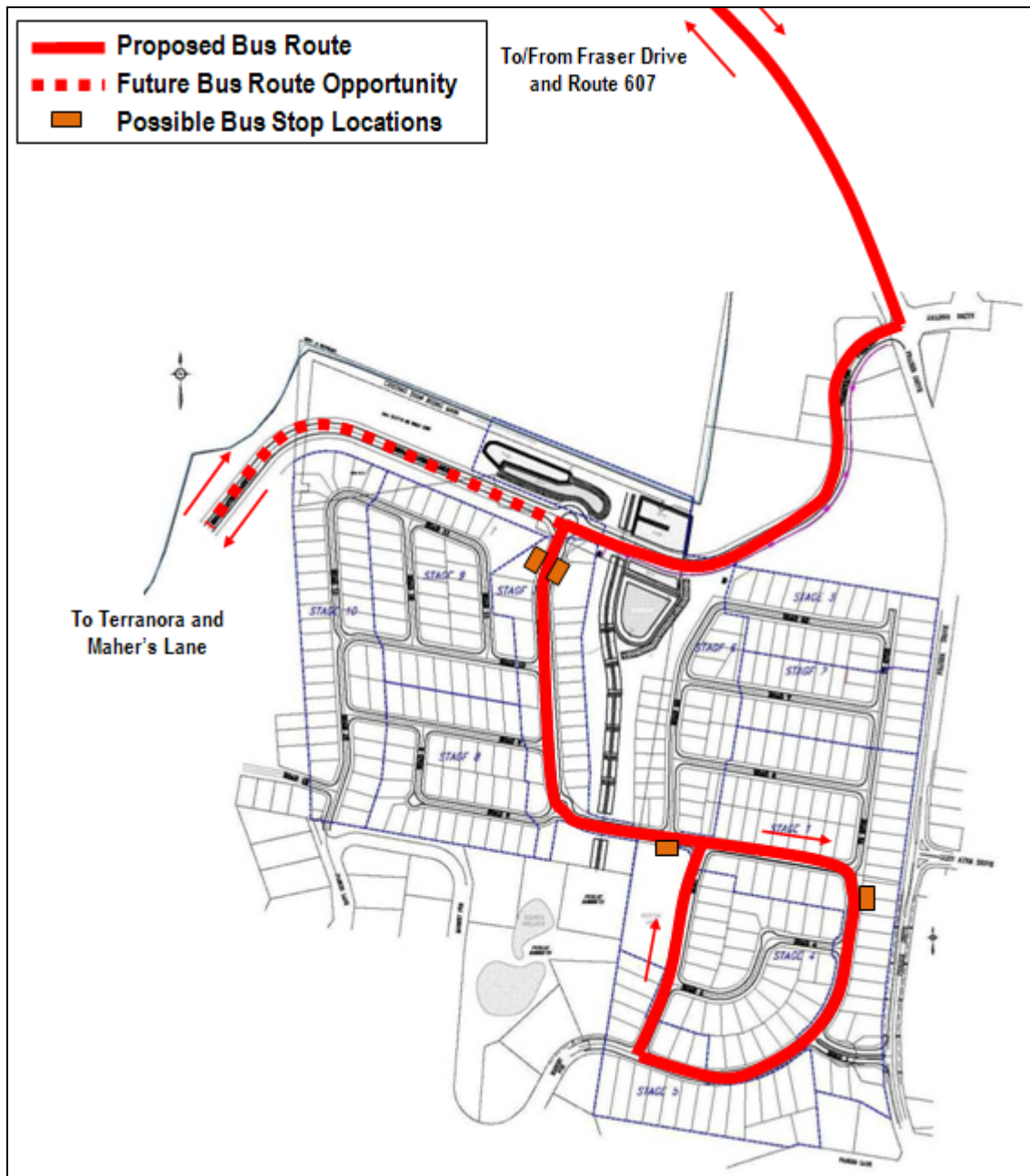


Figure 6.2: Proposed Bus Route 607 Extension

By extending Route 607, residents of the proposed development will be provided with a regular bus connection to the nearby Banora Central Shopping Centre located at Flame Tree Park, as well as connection to regional centres of South Tweed Heads, Tweed Heads and Coolangatta. Four potential bus stop locations have been strategically placed (refer to Figure 6.2). These bus stop locations comply with standard bus stop design practices by providing a maximum walking distance of 400 metres between stops and dwellings within new residential developments.

The future inclusion of Broadwater Parkway will also see a viable alternative route to Terranora Road, which currently includes Route 605 that runs along a ridge and does not provide a high patronage catchment. Broadwater Parkway will connect to Mahers Lane which is a primary collector street for residential areas, retail outlets and schools in Terranora. It is therefore recommended to update Route 605 to use Broadwater Parkway between Mahers Lane and Fraser Drive. Both of the proposed bus route updates are in accordance with NSWTI Bus Planning Guidelines and would greatly improve public transport amenity to western Banora Point and Terranora.

There are a number of primary schools and high schools located nearby to the proposed development including Terranora Primary, Centaur Primary, Banora Point High School and Lindisfarne Anglican College.

Services to the public schools are funded by NSW Department of Transport and Infrastructure and operated by Surfside Buslines. However, Lindisfarne Anglican College provides its own school bus services.

School bus services to emerging areas are implemented based on the demand of enrolments living in a particular area, which warrants the need for a dedicated bus service. Therefore, as residential lots within the site are developed and residents are attracted to the area, school bus services will gradually be implemented over time by Surfside Buslines.

Detailed liaison with the Surfside Buslines has not yet been undertaken. School services are generally reviewed and updated annually based on school specific enrolment locations. As such, the need to provide additional services or re-route existing services is identified by residential lot development and school enrolments over time.

It is envisaged that both public bus services and school bus routes will need to consider routes to serve the proposed development within the next three to five years. This is however dependent on sale of the lots as well and Tweed Shire Council's planned construction timing of Broadwater Parkway.

6.2 PEDESTRIANS

The proposed development's pedestrian network has been designed to minimise the topography constraints of the site in order to meet the following objectives in accordance with NSW Planning Guidelines for Walking and Cycling:

- **walking and cycling neighborhood** – Improves walkability and cycleability by providing pathways along site contours and connect to surrounding pathways, public transport routes and nearby local trip attractors such as Tweed Heights Shopping Centre.
- **street pattern** – The proposed developments street pattern minimises the impacts of the sites undulating terrain and provides permeability to existing road network. The street pattern generally provides a grid layout with a circulating collector street that connects to Market Parade and Broadwater Parkway.
- **mixed use neighborhoods** – The inclusion of the community facility in the centre of the proposed development aims to promote healthy living and recreational activities within walking distance to the entire development.
- **connection to local walk and cycle networks** – Footpaths and cycleways within the development integrate to both existing and future planned walk and cycle routes along Fraser Drive and Broadwater Parkway.
- **security and safety** – Footpaths are provided both along residential streets as well as connecting directly through the developments open space providing visually continuous pathways and avoiding areas of concealment.
- **design within road reserve** – Footpaths are provided along all streets within the proposed development. Pedestrian crossings are located are primary desire lines and within clear view of adjacent intersections. Footpaths are provided with disability kerb ramps for all road crossings. Intersections include paved areas to promote slow travel speeds.

- parks and open space – Open spaces areas include both circulating pathways as well as direct footpaths that follow desire lines and site contours to promote direct and convenient routes.

6.2.1 Internal Layout

The internal footpath network as shown in Figure 6.3 is consistent with objectives and principles of the NSW Planning Guidelines for Walking and Cycling. The street pattern provides good connectivity for pedestrians throughout the site and to the surrounding road network. Pathways are located along each road as well as strategically located along green space to connect areas and provide short-cuts for both pedestrians and cyclists.



Figure 6.3: Footpath Network

Upon closure of the temporary intersection at Fraser Drive, a pedestrian linkage will remain at this location so as to maintain connectivity for residents located in the south western corner of the site. In addition, this pedestrian connection improves connectivity for existing residents along Market Parade who no longer are required to travel around on Parkes Lane.

6.2.2 Connectivity to the Local Area

The proposed site is located in relative proximity to a number of local shopping facilities. However, the only convenience shopping centre close enough to attract pedestrian travel is Tweed Heights Shopping Village, which is located on the corner of Amaroo Drive and Ash Drive, approximately 500 metres from the site access roundabout with Broadwater Parkway. The topography constraints of the site, together with the limited nearby walking trip generators is expected to limit the amount of external pedestrian trips from the

site in the short term. However, with the inclusion of Broadwater Parkway and expected future development, surrounding the site, it is expected that external pedestrian travel will increase over time.

Broadwater Parkway is proposed to include pedestrian footpaths on both sides of the road. The southern side of Broadwater Parkway will include a 2.5 metre wide pathway to be shared by both pedestrians and cyclists.

6.3 CYCLIST PROVISION

Whilst the attractiveness of walking is limited due to the site constraints and lack of nearby trip generators, cycling to/from the proposed development is expected to be more attractive to residents of the proposed development. Figure 6.4 shows the existing cycle network and facilities for Banora Point and Terranora.



Figure 6.4: Existing Cycle Network (*Tweed Shire Council*)

Figure 6.4 demonstrates that there are currently limited facilities provided for cyclists within the vicinity of the proposed development. However, the local road network is widely used by cyclists in particular sports cyclists who use Fraser Drive as an alternate route instead of Minjungbal Drive through South Tweed Heads, which has high cycle impedance, due to traffic volumes and signalised intersections.

There is also a future cycleway extension along Amaroo Drive from Ash Drive to Bluegum Boulevard. It is suggested that as part of this future cycleway planning, Council should consider extending this facility to Fraser Drive. This would provide an ideal opportunity to connect to the future Broadwater Parkway corridor at Amaroo Drive intersection.

Council has indicated future planning of Fraser Drive will include the construction of shared pedestrian / cycle path north of Amaroo Drive, and on-road cycle lanes on either side of Fraser Drive between Amaroo Drive and Terranora Road.

It is important to consider providing safe and accessible routes that encourage the use of cyclists in the area. Broadwater Parkway will provide an alternate route to Terranora Road and connect to Mahers Lane. As such, the proposed development shall provide a 2.5 metre shared walkway along the southern side of the Broadwater Parkway to promote the use of this route for cyclists. As previously mentioned, Tweed Shire Council is currently still in the planning stages for the alignment and design of Broadwater Parkway.

Therefore, timing for construction of Broadwater Parkway is yet to be determined. As part of the overall planning of Terranora Urban Release Area E, Broadwater Parkway is recommended to include shared walk/cycle pathways. Figure 6.5 demonstrates the proposed development's connectivity to existing cycle routes surrounding the site.



Figure 6.5: Connectivity to Cycle Network

The design principals from NSW Planning Guidelines for Walking and Cycling have been adapted to the development to create a sustainable neighbourhood development. The inclusion of the proposed Broadwater Parkway will provide residents of the proposed development as well as existing residents at Terranora a viable pedestrian and cycle route instead of Terranora Road. Broadwater Parkway will also connect to future proposed Amaroo Drive cycle path and onto Darlington Drive's cycle path.

The internal road network together with the pathway network through parkland provides connectivity to Broadwater Parkway. In addition, the temporary access pathway connection provides an additional direct access to Fraser Drive for residents travelling towards Terranora Road.

An important consideration into cyclist usage and amenity is the connection of provided viable cyclist route that connect to local schools. Broadwater Parkway will connect the development to Lindisfarne Anglican Grammar School along Mahers Lane as well as improve connection to Fraser Drive and onto Banora Point High School and Centaur Primary School.

In addition, Banora State High School is located on Leisure Drive approximately 2 kms from the site access roundabout on Broadwater Parkway. School pupils have been observed using Fraser Drive to travel by bike to and from Banora Point High School and Centaur Primary School. The section of Fraser Drive between Amaroo Drive and Leisure Drive poses safety concerns for cyclists as it includes a meandering roadway with no kerb and channel treatment. Tweed Shire Council has indicated that this section of Fraser Drive is planned for future upgrades. As such, it is recommended that Council consider providing cycle lanes as part of any future planning along Fraser Drive between Terranora Road and Leisure Drive.

6.4 SERVICE VEHICLES

A swept path analysis has been carried out for the development using AutoTURN, the results are displayed in Appendix D. The design vehicle for the proposed development roadway is a Heavy Rigid Vehicle (HRV) which will cater for refuse and removalist vehicles. The swept path analysis shows that a 12.6 metre HRV can adequately manoeuvre throughout the proposed development roadway.

7. CONCLUSION

The proposed development consists of 317 dwellings located at Banora Point. The development is expected to generate 145 peak hour trips for Phase 1, and 264 peak hour trips for Phase 2 (Full Development). All surrounding intersections for the proposed development perform within capacity within each of the AM and PM peak periods for each development phase, out of the design horizon of 2025 with full development traffic.

All surrounding intersections perform within capacity with the inclusion of Phase 1 development traffic during AM and PM peak periods. The site access intersection can cater for full development traffic generation in the event that construction of Broadwater Parkway is delayed beyond release of the second phase of the development. In addition, surrounding intersection will be adversely impacted and continue to perform within capacity as a result of the increased traffic volumes at the site access intersection.

The inclusion of the future planned Broadwater Parkway will see a redistribution of background traffic from Fraser Drive south of Amaroo Drive and Terranora Road. A signalised intersection for Broadwater Parkway / Frazer Drive intersection will perform within capacity for both interim staging of Broadwater Parkway with development traffic only, as well as under the Tweed Shire Council's ultimate traffic scenario with full connection to Mahers Lane.

The proposed location for the temporary site access intersection is the most suitable along the western section of Fraser Drive. The proposed temporary intersection location complies with requirements for site distance, approach gradients, intersection spacing and impact on existing property access in accordance with Austroad's Intersections at Grade.

The proposed development is located approximately 4kms from the state-controlled road network and as a result, traffic generated by the proposed development will be distributed throughout the local road network and not impact on state-controlled roads.

The proposed development has been designed to minimise the impacts on walk and cycle travel modes associated with the topography constraints of the site. As such, the proposed development maximises the available connectivity opportunities to the existing and future planned surrounding road network.

Proposed bus stop locations comply with standard bus stop design practices by providing a maximum walking distance of 400 metres between stops and dwellings within the proposed development.

Pedestrian and cycling facilities will be provided to encourage these modes within the proposed development as well as to/from areas surrounding the site. The Department of Transport Infrastructure and Surfside Buslines are recommended to amend bus route 607 to include the development and enable residents to utilise other forms of transport opposed to the private vehicle. In addition, school bus services are expected to be included over time as the proposed development's population increases. Four potential bus stop locations have been strategically placed within the proposed development area to again encourage public transport modes.

A swept path analysis has been carried out, which shows that service vehicles can adequately manoeuvre within the proposed development.

The above findings indicate that no significant matters of a traffic and transport nature exist that would preclude development of the site as proposed.

APPENDIX A

RTA'S GUIDELINES FOR TRAFFIC GENERATING DEVELOPMENTS CHECKLIST



2.3 Issues to be addressed.

A traffic impact study should follow the standard format and structure that is listed in Table 2.1. This format covers the key issues to be addressed in determining the impact on traffic of a development. Use of this format and the checklist will ensure those involved in the preparation and / or assessment of Development Applications that the most significant matters are considered.

Table 2.1
Key issues in preparing traffic impact studies

Procedures & Key Parameters	Source	Check✓
Brief description of the development		✓
Application and study process		✓
Introduction		
Background		✓
Scope of report		✓
The key issues and objectives of a traffic impact study		✓
General Data Collection / Existing Conditions		
Description of the Site and Proposed Activity		✓
Site location		✓
Current land use characteristics (zoning) of the proposed site and land use in the vicinity	Development Consent Authority	✓
Site access		✓
The Existing Traffic Conditions		✓
Road hierarchy, including the identification of the classified road network (major and minor roads) which may be affected by the development proposal	Council / RTA	✓
Inventory of road widths, road conditions, traffic management and parking control	Council / RTA and Survey	✓
Current and proposed roadworks, traffic management works and bikeways	Council / RTA	✓
Traffic Flows		✓



Procedures & Key Parameters	Source	Check✓
Selection of key streets - possibly divided into the major and the minor road network; selection of key assessment periods, chosen to cover the times at which the development would be expected to have its major impacts	Section 3	✓
AADT on key streets	Council / RTA and Survey	✓
Daily traffic flow hourly distribution, particularly in or near residential areas	Survey	✓
Estimate of the speed of traffic on the road to which vehicular access is proposed	Survey	✓
Current traffic generation of site	Survey	NA
Daily and peak period heavy vehicle flows and percentages	Survey	NA
The adaptation of appropriate computer models or techniques for assessing levels of traffic congestion and queuing conditions		✓
Traffic Safety		✓
Accident history of road network in the area	Council / RTA	✓
Parking Supply and Demand		✓
On-street parking provision	Council	✓
Off-street parking provision	Council / Survey	✓
Current parking demand, including utilisation by time of day and turnover rates	Survey	✓
Short term pick up and set down areas	Council / Survey	NA
Modal Split		NA
Public Transport		✓
Rail station locations	State Rail / Cityrail	NA
Bus routes and bus stop locations; Pedestrian access to bus stops; Constraints and conflicts	STA / Private Operators / Council / Survey	✓
Rail and bus service frequencies, ideally separated into Monday to Friday, Saturday and Sunday, for both peak and off-peak times	State Rail / Cityrail / Survey	✓



Section 2 – Traffic Impact Studies

Procedures & Key Parameters	Source	Check✓
Commuter parking provision	State Rail / Cityrail / Survey	N/A
Pedestrian Network		
Identify major pedestrian routes	Survey	✓
Pedestrian flows and potential conflicts with vehicles, particularly where such conflicts cause capacity constraint on either vehicular or pedestrian movement	Survey	✓
Pedestrian infrastructure	Survey	✓
Proposed developments in the vicinity		✓
Proposed Development		
The Development		
Plan reference, if plans not contained in study report		✓
Nature of development		✓
Gross floor areas of each component of development		✓
Projected number of employees/users/residents		✓
Hours and days of operations		N/A
Staging and timing of development		✓
Selection of appropriate design vehicles for determining access and circulation requirements	Section 6	✓
Access		✓
Driveway location, including review of alternative locations	Sections 5, 6	✓
Sight distance of driveways and comparisons with stopping and desirable minimum sight distances	Section 6	✓
Service vehicle access	Section 6	✓
Analysis of projected queuing at entrances	Section 6	✓
Current access to site and comparison with proposed access		N/A
Provision for access to, and by, public transport	Section 6	✓



Section 2 – Traffic Impact Studies

Procedures & Key Parameters	Source	Check✓
Circulation		
Proposed pattern of circulation	Section 6	✓
Internal road widths	Section 6	✓
Provision for bus movements	Section 6	✓
Service area layout		N/A
Parking		
Proposed supply		✓
Parking provision recommended by State Government policy	RTA / DUAP	✓
Council code and local parking policies and plans	Council	✓
Parking layout		✓
Projected peak demand, based where appropriate on similar research reports and on surveys of similar developments; Parking for Service / courier vehicles and bicycles	Section 5	✓
Impact of Proposed Development		
Traffic generation during design periods		✓
Daily and seasonal factors		✓
Pedestrian generation and movements		✓
Traffic Distribution and Assignments		✓
Hourly distribution of trips		✓
Assignments of these trips to the road system based where possible on development feasibility studies or on origin/destination surveys undertaken at similar developments in the areas		✓
Impact on Traffic Safety		✓
Assessment of Road Safety Impact		✓
Impact of Generated Traffic		✓
Daily traffic flows and composition on key streets and their expected effect on the environment particularly in residential areas		✓



Section 2 – Traffic Impact Studies

Procedures & Key Parameters	Source	Check✓
Peak period volumes at key intersections and effect of generated traffic on congestion levels	Survey	✓
Impact of construction traffic during construction stages		NA
Other proposed developments in the vicinity their timing and likely impact, if known		✓
Assessment of traffic noise		NA
<i>Public Transport</i>		✓
Options for extensions and changes to bus routes and bus stops following discussions with the STA and or private bus operators	STA / Private Operators	✓
Provision for pedestrian access to bus stops		✓
<i>Recommended Works</i>		✓
Improvements to site access and circulation		✓
Improvements to roads, signals, roundabouts and other traffic management measures		✓
Improvements to pedestrian facilities		✓
Effect of recommended works on the operation of adjacent developments		✓
Effect of recommended works on public transport services including access to bus routes and bus stops		✓
Provision of LATM measures		NA
Funding of proposed improvement projects		NA
Noise attenuation measures		NA

APPENDIX B

COMMUNITY FACILITY PARKING ASSESSMENT

Gold Coast Office
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S: Studio 203, 3 Gladstone Street
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M: Studio 203, 3 Gladstone Street
Newtown NSW 2042
P: (02) 9557 6202
F: (02) 9557 6219

Our Reference: P0726.001L

Your Reference: -

28 September 2010

Metricon
Po Box 3407
Robina TC Qld 4230

Attention: Shaun Nicholson
Sent via email: shaunnicholson@metricon.com.au

Dear Shaun

RE: ALTITUDE 1 COMMUNITY FACILITY PARKING ASSESSMENT

This letter discusses the parking requirements (for vehicles and bicycles), regarding the proposed community facility to be constructed within the Altitude 1 development at Banora Point (see Figure 1). The proposed Altitude 1 development is to be located on the western side of Fraser Drive north of Parkes Lane. The intent of the community facility is to create a local recreational service for the residents of Altitude 1 development.

The community facility area comprises of two separate buildings and additional fitness recreational space. Building A will be used as a multipurpose recreational facility for the local residents, whereas Building B includes the gym and fitness amenities. The outdoor recreational area will consist of a 4 lane, 25 m swimming pool and a tennis court.

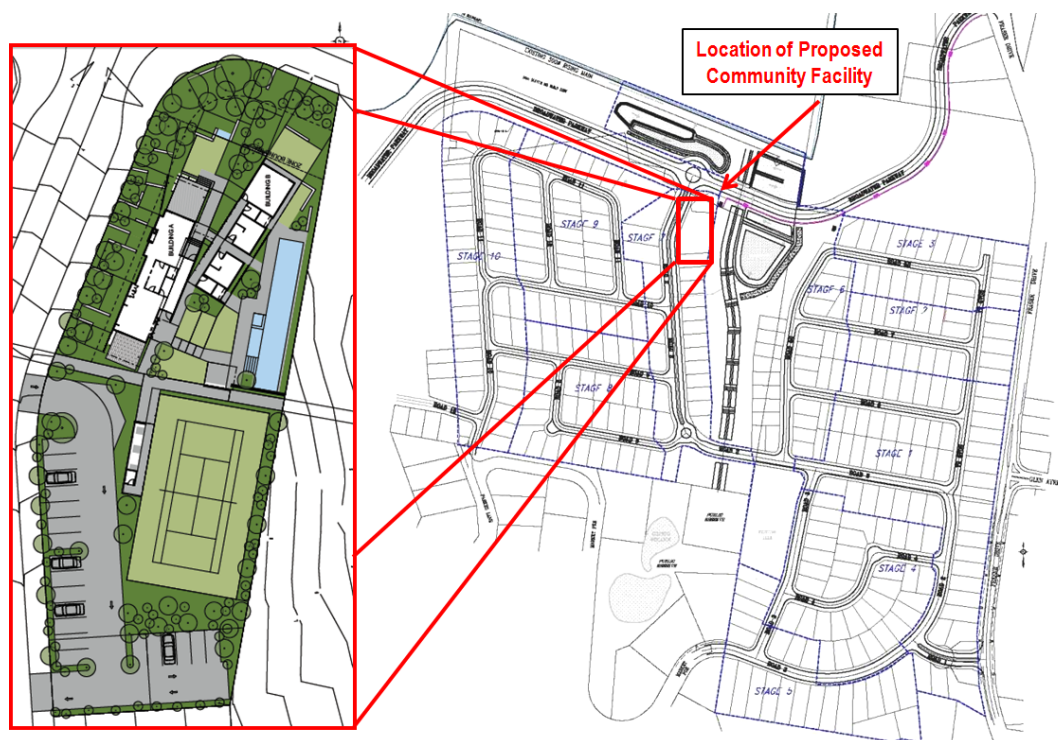


Figure 1: Location of the Proposed Community Facility

Car Parking Provisions

Table 1 displays the requirements for vehicle parking spaces of the proposed community facility. The parking rates provided are calculated in accordance with Table 4.9 – *Numerical Provision of Access Facilities and Parking Spaces* from Tweed Shire Council's (TSC) Development Control Plan. Altogether, the proposed development would require a total of 25 parking spaces based on the provided development yield for the individual land uses.

Table 1: Community Facility Proposed Vehicle Parking Requirements

Land Use	Development Yield	Parking Rate Item No.	Unit Parking Rate (Car)	Spaces Required
Community Centre	149.7 m ² of GFA	D10	6/100 m ² of GFA	9
Hall	7.7 m ² of GFA	F12	1 space per 1 m ² of net floor area	8
Office	4.5 m ² of GFA	G4	1/40 m ² of GFA	1
Gym / Sauna	44.4 m ² of GFA	D8	6/100 m ² GFA	3
Swimming Pool	100 m ² of GFA	D17	1/50 m ² of water surface	2
Tennis Court	1 tennis court	D19	2/court plus 1/6m ² of club house area + 0.3/spectator seat	2
Total Spaces Required				25
Total Proposed Spaces (20% reduction)				20

A proposed parking space provision of 20 bays has been recommended, which is considered sufficient for the site based on the following grounds;

Centrally Located within Residential Precinct

The proposed community centre is located centrally within the proposed Altitude 1 residential development. The proximity of the development to the surrounding residential catchment and available pedestrian and cycle network will encourage cycling and walking as alternate trip modes therefore reducing the on site parking demand. The facility is aimed at providing nearby local residents with a range of recreational facilities without the need to drive a vehicle to and from the facility.

Existing Nearby Facilities

There is an existing large scale community centre at Club Banora, which is approximately 3 km from the proposed development. Club Banora caters for the regions recreational needs, and comprises of numerous tennis courts, lawn bowl greens and an Olympic sized swimming pool in addition to providing a range of community services.

In addition to Club Banora, Banora Community Centre which is approximately 2.5 km from the proposed development (located on the corner of Leisure Drive and Woodlands Drive), also services the Banora Point community. This facility offers cultural services relating to: baby health, youth counselling and women's wellbeing. Because of these two community facilities and numerous fitness centres located within close proximity to the proposed development, it is expected that only residents from Altitude 1 would utilise the proposed community centres facilities.

Shared Parking

The car parking demand rates apply to isolated public use facilities catering for a larger catchment area. The parking rates do not consider shared parking, which has a considerable effect on reducing the parking demand. TSC's parking requirements assume that all development components peak at the same time.

The fitness facilities (gym, swimming pool and tennis court) are expected to experience a morning and evening peak period (specifically between 7:00AM-9:00AM and 5:00PM-7:00PM respectively). Whereas the community centre and hall would experience peaks throughout the duration of the day, dependant on the

various services it provides for the community. It is also expected that the largest parking generators (the community centre and hall) will unlikely be booked at the same time.

Similar Assessments

A study was carried out by Cardo Eppell Olsen in 2009 for a similar development located in Riverstone Crossing (Upper Coomera). For this assessment, Gold Coast City Council approved a 25% reduction in parking spaces for a community facility centrally located within the development primarily on the basis of development serving the local Riverstone development and not aimed at attracting external trips. Like Coomera for the northern Gold Coast, Banora Point is a primary outer residential suburb for the southern Gold Coast and Tweed Shire. As such, both suburbs share a similar trip generation and vehicle mode share. Therefore a reduction in 20% of the total community facilities required parking spaces should be comparable based on the comparable development.

Cycling Provisions

Bicycle storage facilities within the community facility are recommended to promote cycling as a sustainable form of transport within the development. Table 2 displays the proposed cycle spaces suggested within Table 4.9 – *Numerical Provision of Access Facilities and Parking Spaces* of TSC's Development Control Plan.

Table 2: Community Facility Proposed Bicycle Parking Requirements

Land Use	Development Yield	Parking Rate Item No.	Cycle Parking Rate	Cycle Spaces Required
Community Centre	149.7 m ² of GFA	D10	1/5 car park spaces	2
Hall	7.7 m ² of GFA	F12	1 space per 10 m ² of net floor area	1
Office	4.5 m ² of GFA	G4	1/100 m ² of GFA	1
Gym / Sauna	44.4 m ² of GFA	D8	1/5 car park spaces	1
Swimming Pool	100 m ² of GFA	D17	1/25 m ² of water surface	4
Tennis Court	1 tennis court	D19	1/car park	2
Total Spaces Required				11

Table 2 shows that 11 cycle parking spaces should desirably be provided for the community facility. This amount of bicycle parking spaces is adequate and will not be reduced for the community facility in order to promote a sustainable neighborhood.

Whilst the proposed development does not fully comply with Council's standard requirement in regards to parking provision, the abovementioned considerations demonstrate that the provided parking amenity would be sufficient and would not negatively impact on surrounding land uses or road network. Therefore, the proposed parking is deemed adequate to serve the local Altitude 1 community.

Yours faithfully



Andrew Eke
 Traffic Engineer / Transport Planner
 BITZIOS CONSULTING

APPENDIX C

AASIDRA ANALYSIS RESULTS

MOVEMENT SUMMARY

Site:
TerranoraRd_FraserDr_2010_AM_Base

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Terranora Rd (East)											
5	T	60	3.0	0.074	9.0	LOS A	1.0	7.2	0.67	0.00	45.1
6	R	15	3.0	0.074	17.4	LOS C	1.0	7.2	0.67	1.15	43.9
Approach		75	3.0	0.074	10.6	LOS C	1.0	7.2	0.67	0.23	44.9
North: Fraser Drive (North)											
7	L	48	3.0	0.079	9.2	LOS A	0.2	1.5	0.32	0.64	47.5
9	R	133	3.0	0.122	9.7	LOS A	0.6	4.5	0.38	0.68	47.2
Approach		181	3.0	0.122	9.6	LOS A	0.6	4.5	0.37	0.67	47.3
West: Terranora Rd (West)											
10	L	354	3.0	0.195	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
11	T	226	3.0	0.118	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		580	3.0	0.195	4.7	LOS A	0.0	0.0	0.00	0.37	53.3
All Vehicles		836	3.0	0.195	6.3	NA	1.0	7.2	0.14	0.42	51.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
TerranoraRd_FraserDr_2010_PM_Base

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Terranora Rd (East)											
5	T	192	3.0	0.250	2.0	LOS A	2.6	18.4	0.44	0.00	51.3
6	R	108	3.0	0.250	10.4	LOS B	2.6	18.4	0.44	0.95	48.9
Approach		300	3.0	0.250	5.0	LOS B	2.6	18.4	0.44	0.34	50.4
North: Fraser Drive (North)											
7	L	11	3.0	0.016	8.5	LOS A	0.0	0.3	0.15	0.61	48.3
9	R	208	3.0	0.185	9.6	LOS A	1.0	7.3	0.38	0.68	47.2
Approach		219	3.0	0.185	9.6	LOS A	1.0	7.3	0.37	0.68	47.3
West: Terranora Rd (West)											
10	L	80	3.0	0.044	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
11	T	65	3.0	0.034	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		145	3.0	0.044	4.2	LOS A	0.0	0.0	0.00	0.33	53.9
All Vehicles		664	3.0	0.250	6.4	NA	2.6	18.4	0.32	0.45	50.0

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
TerranoraRd_FraserDr_2010_AM_
Stage 1 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Terranora Rd (East)											
5	T	60	3.0	0.078	9.5	LOS A	1.0	7.5	0.68	0.00	44.5
6	R	16	3.0	0.079	17.9	LOS C	1.0	7.5	0.68	1.14	43.5
Approach		76	3.0	0.078	11.2	LOS C	1.0	7.5	0.68	0.24	44.3
North: Fraser Drive (North)											
7	L	57	3.0	0.093	9.2	LOS A	0.2	1.7	0.32	0.64	47.5
9	R	157	3.0	0.144	9.7	LOS A	0.8	5.4	0.39	0.69	47.2
Approach		214	3.0	0.144	9.6	LOS A	0.8	5.4	0.37	0.68	47.3
West: Terranora Rd (West)											
10	L	367	3.0	0.202	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
11	T	226	3.0	0.118	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		594	3.0	0.202	4.7	LOS A	0.0	0.0	0.00	0.37	53.2
All Vehicles		883	3.0	0.202	6.5	NA	1.0	7.5	0.15	0.43	50.8

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
TerranoraRd_FraserDr_2010_PM_
Stage 1 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Terranora Rd (East)											
5	T	192	3.0	0.278	2.3	LOS A	2.9	20.5	0.47	0.00	50.7
6	R	126	3.0	0.278	10.7	LOS B	2.9	20.5	0.47	0.93	48.6
Approach		318	3.0	0.278	5.6	LOS B	2.9	20.5	0.47	0.37	49.8
North: Fraser Drive (North)											
7	L	12	3.0	0.018	8.5	LOS A	0.0	0.3	0.15	0.61	48.3
9	R	221	3.0	0.197	9.7	LOS A	1.1	7.8	0.38	0.69	47.2
Approach		233	3.0	0.197	9.6	LOS A	1.1	7.8	0.37	0.68	47.3
West: Terranora Rd (West)											
10	L	93	3.0	0.051	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
11	T	65	3.0	0.034	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		158	3.0	0.051	4.5	LOS A	0.0	0.0	0.00	0.35	53.5
All Vehicles		708	3.0	0.278	6.7	NA	2.9	20.5	0.33	0.47	49.7

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
TerranoraRd_FraserDr_2015_AM_
Stage 1 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Terranora Rd (East)											
5	T	69	3.0	0.098	12.1	LOS B	1.4	10.1	0.75	0.00	42.0
6	R	18	3.0	0.098	20.5	LOS C	1.4	10.1	0.75	1.11	41.7
Approach		87	3.0	0.098	13.8	LOS C	1.4	10.1	0.75	0.23	42.0
North: Fraser Drive (North)											
7	L	64	3.0	0.107	9.4	LOS A	0.3	2.0	0.35	0.65	47.4
9	R	177	3.0	0.170	10.0	LOS B	0.9	6.5	0.43	0.71	47.1
Approach		241	3.0	0.170	9.8	LOS B	0.9	6.5	0.41	0.70	47.1
West: Terranora Rd (West)											
10	L	414	3.0	0.228	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
11	T	260	3.0	0.136	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		674	3.0	0.228	4.7	LOS A	0.0	0.0	0.00	0.37	53.3
All Vehicles		1002	3.0	0.228	6.7	NA	1.4	10.1	0.16	0.44	50.5

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
TerranoraRd_FraserDr_2015_PM_
Stage 1 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Terranora Rd (East)											
5	T	220	3.0	0.322	2.8	LOS A	3.6	25.6	0.54	0.00	49.7
6	R	142	3.0	0.322	11.3	LOS B	3.6	25.6	0.54	0.93	48.3
Approach		362	3.0	0.322	6.1	LOS B	3.6	25.6	0.54	0.36	49.1
North: Fraser Drive (North)											
7	L	14	3.0	0.021	8.6	LOS A	0.0	0.4	0.17	0.61	48.2
9	R	253	3.0	0.234	9.9	LOS A	1.3	9.4	0.42	0.71	47.1
Approach		266	3.0	0.234	9.8	LOS A	1.3	9.4	0.41	0.70	47.1
West: Terranora Rd (West)											
10	L	104	3.0	0.057	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
11	T	75	3.0	0.039	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		179	3.0	0.057	4.5	LOS A	0.0	0.0	0.00	0.35	53.6
All Vehicles		807	3.0	0.322	7.0	NA	3.6	25.6	0.38	0.47	49.4

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
TerranoraRd_FraserDr_2015_AM_
Stage 2 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Terranora Rd (East)											
5	T	69	3.0	0.145	13.2	LOS B	1.7	12.3	0.80	0.00	40.7
6	R	31	3.0	0.145	21.6	LOS C	1.7	12.3	0.80	1.05	40.5
Approach		100	3.0	0.145	15.8	LOS C	1.7	12.3	0.80	0.32	40.6
North: Fraser Drive (North)											
7	L	106	3.0	0.177	9.5	LOS A	0.5	3.5	0.36	0.67	47.4
9	R	155	3.0	0.148	10.0	LOS A	0.8	5.6	0.42	0.71	47.1
Approach		261	3.0	0.177	9.8	LOS A	0.8	5.6	0.40	0.69	47.2
West: Terranora Rd (West)											
10	L	407	3.0	0.224	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
11	T	260	3.0	0.136	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		667	3.0	0.224	4.7	LOS A	0.0	0.0	0.00	0.37	53.3
All Vehicles		1028	3.0	0.224	7.1	NA	1.7	12.3	0.18	0.44	50.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
TerranoraRd_FraserDr_2015_PM_
Stage 2 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Terranora Rd (East)											
5	T	220	3.0	0.367	3.0	LOS A	4.1	29.6	0.56	0.00	49.2
6	R	175	3.0	0.368	11.4	LOS B	4.1	29.6	0.56	0.89	48.0
Approach		395	3.0	0.368	6.7	LOS B	4.1	29.6	0.56	0.40	48.7
North: Fraser Drive (North)											
7	L	26	3.0	0.040	8.6	LOS A	0.1	0.7	0.17	0.61	48.2
9	R	241	3.0	0.223	9.9	LOS A	1.2	8.9	0.42	0.71	47.1
Approach		267	3.0	0.223	9.8	LOS A	1.2	8.9	0.39	0.70	47.2
West: Terranora Rd (West)											
10	L	94	3.0	0.052	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
11	T	75	3.0	0.039	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		168	3.0	0.052	4.3	LOS A	0.0	0.0	0.00	0.33	53.8
All Vehicles		831	3.0	0.368	7.2	NA	4.1	29.6	0.39	0.48	49.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
TerranoraRd_FraserDr_2015_AM_
Full Development (No Broadwater
Parkway)

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Terranora Rd (East)											
5	T	69	3.0	0.101	12.8	LOS B	1.5	10.5	0.77	0.00	41.4
6	R	18	3.0	0.101	21.3	LOS C	1.5	10.5	0.77	1.11	41.2
Approach		87	3.0	0.101	14.6	LOS C	1.5	10.5	0.77	0.23	41.3
North: Fraser Drive (North)											
7	L	73	3.0	0.121	9.4	LOS A	0.3	2.3	0.36	0.66	47.4
9	R	200	3.0	0.192	10.0	LOS B	1.0	7.4	0.43	0.72	47.0
Approach		273	3.0	0.192	9.9	LOS B	1.0	7.4	0.41	0.70	47.1
West: Terranora Rd (West)											
10	L	433	3.0	0.238	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
11	T	260	3.0	0.136	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		693	3.0	0.238	4.8	LOS A	0.0	0.0	0.00	0.38	53.1
All Vehicles		1053	3.0	0.238	6.9	NA	1.5	10.5	0.17	0.45	50.3

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site:
TerranoraRd_FraserDr_2015_PM_
Full Development (No Broadwater
Parkway)

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Terranora Rd (East)											
5	T	220	3.0	0.349	3.2	LOS A	3.9	28.1	0.57	0.00	49.0
6	R	157	3.0	0.349	11.7	LOS B	3.9	28.1	0.57	0.92	47.9
Approach		377	3.0	0.349	6.7	LOS B	3.9	28.1	0.57	0.38	48.6
North: Fraser Drive (North)											
7	L	16	3.0	0.024	8.6	LOS A	0.1	0.4	0.17	0.61	48.2
9	R	293	3.0	0.271	10.0	LOS A	1.6	11.2	0.44	0.71	47.0
Approach		308	3.0	0.271	9.9	LOS A	1.6	11.2	0.42	0.71	47.1
West: Terranora Rd (West)											
10	L	119	3.0	0.065	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
11	T	75	3.0	0.039	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		194	3.0	0.065	4.7	LOS A	0.0	0.0	0.00	0.37	53.2
All Vehicles		879	3.0	0.349	7.4	NA	3.9	28.1	0.39	0.49	49.0

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site:
TerranoraRd_FraserDr_2025_AM_
Stage 2 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Terranora Rd (East)											
5	T	87	3.0	0.221	22.8	LOS C	3.2	22.9	0.97	0.00	34.1
6	R	35	3.0	0.221	31.2	LOS D	3.2	22.9	0.97	1.04	34.9
Approach		122	3.0	0.221	25.2	LOS D	3.2	22.9	0.97	0.30	34.3
North: Fraser Drive (North)											
7	L	121	3.0	0.209	9.9	LOS A	0.6	4.3	0.42	0.70	47.1
9	R	195	3.0	0.205	10.6	LOS B	1.1	7.8	0.49	0.76	46.6
Approach		316	3.0	0.209	10.3	LOS B	1.1	7.8	0.46	0.73	46.8
West: Terranora Rd (West)											
10	L	514	3.0	0.283	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
11	T	328	3.0	0.172	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		842	3.0	0.283	4.7	LOS A	0.0	0.0	0.00	0.37	53.3
All Vehicles		1280	3.0	0.283	8.0	NA	3.2	22.9	0.21	0.45	49.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
TerranoraRd_FraserDr_2025_PM_
Stage 2 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Terranora Rd (East)											
5	T	278	3.0	0.466	5.6	LOS A	8.1	57.9	0.74	0.00	46.6
6	R	207	3.0	0.467	14.0	LOS B	8.1	57.9	0.74	0.98	46.2
Approach		485	3.0	0.467	9.2	LOS B	8.1	57.9	0.74	0.42	46.4
North: Fraser Drive (North)											
7	L	29	3.0	0.045	8.7	LOS A	0.1	0.8	0.19	0.61	48.1
9	R	303	3.0	0.305	10.5	LOS B	1.8	12.6	0.50	0.76	46.6
Approach		333	3.0	0.305	10.3	LOS B	1.8	12.6	0.47	0.75	46.8
West: Terranora Rd (West)											
10	L	118	3.0	0.065	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
11	T	95	3.0	0.050	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		213	3.0	0.065	4.3	LOS A	0.0	0.0	0.00	0.33	53.8
All Vehicles		1031	3.0	0.467	8.5	NA	8.1	57.9	0.50	0.51	47.9

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
TerranoraRd_FraserDr_2025_AM_
Full Development (No Broadwater
Parkway)

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Terranora Rd (East)											
5	T	87	3.0	0.159	21.4	LOS C	2.6	19.0	0.92	0.00	35.2
6	R	22	3.0	0.159	29.9	LOS D	2.6	19.0	0.92	1.04	36.0
Approach		109	3.0	0.159	23.1	LOS D	2.6	19.0	0.92	0.21	35.3
North: Fraser Drive (North)											
7	L	87	3.0	0.151	9.8	LOS A	0.4	3.0	0.41	0.69	47.2
9	R	240	3.0	0.253	10.7	LOS B	1.4	10.0	0.50	0.77	46.5
Approach		327	3.0	0.253	10.4	LOS B	1.4	10.0	0.48	0.75	46.7
West: Terranora Rd (West)											
10	L	539	3.0	0.296	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
11	T	328	3.0	0.172	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		867	3.0	0.296	4.8	LOS A	0.0	0.0	0.00	0.37	53.2
All Vehicles		1304	3.0	0.296	7.7	NA	2.6	19.0	0.20	0.45	49.4

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
TerranoraRd_FraserDr_2025_PM_
Full Development (No Broadwater
Parkway)

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Terranora Rd (East)											
5	T	278	3.0	0.448	5.8	LOS A	7.6	54.6	0.74	0.00	46.6
6	R	189	3.0	0.448	14.2	LOS B	7.6	54.6	0.74	1.00	46.1
Approach		467	3.0	0.448	9.2	LOS B	7.6	54.6	0.74	0.41	46.4
North: Fraser Drive (North)											
7	L	19	3.0	0.029	8.6	LOS A	0.1	0.5	0.19	0.61	48.1
9	R	355	3.0	0.357	10.8	LOS B	2.4	17.1	0.52	0.79	46.3
Approach		374	3.0	0.357	10.7	LOS B	2.4	17.1	0.50	0.78	46.4
West: Terranora Rd (West)											
10	L	143	3.0	0.079	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
11	T	95	3.0	0.050	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		238	3.0	0.079	4.6	LOS A	0.0	0.0	0.00	0.36	53.4
All Vehicles		1079	3.0	0.448	8.7	NA	7.6	54.6	0.50	0.53	47.8

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_ParksLane_2010_AM_Base

FraserDr_ParksLane_AM_Base
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	11	3.0	0.188	8.3	LOS A	0.0	0.0	0.00	1.08	49.0
2	T	347	3.0	0.187	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		358	3.0	0.187	0.2	LOS A	0.0	0.0	0.00	0.03	59.6
North: Fraser Drive (North)											
8	T	152	3.0	0.090	1.7	LOS A	0.8	5.9	0.48	0.00	51.6
9	R	11	3.0	0.090	10.3	LOS B	0.8	5.9	0.48	1.47	50.8
Approach		162	3.0	0.090	2.3	LOS B	0.8	5.9	0.48	0.10	51.5
West: Parks Lane (West)											
10	L	19	3.0	0.071	12.7	LOS B	0.3	2.3	0.52	0.72	44.5
12	R	19	3.0	0.071	13.0	LOS B	0.3	2.3	0.52	0.83	44.4
Approach		38	3.0	0.071	12.8	LOS B	0.3	2.3	0.52	0.77	44.4
All Vehicles		558	3.0	0.188	1.7	NA	0.8	5.9	0.17	0.10	55.8

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_ParksLane_2010_PM_Base

FraserDr_ParksLane_AM_Base
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	14	3.0	0.099	8.3	LOS A	0.0	0.0	0.00	1.05	49.0
2	T	175	3.0	0.099	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		188	3.0	0.099	0.6	LOS A	0.0	0.0	0.00	0.08	59.0
North: Fraser Drive (North)											
8	T	211	3.0	0.128	0.8	LOS A	1.0	7.4	0.34	0.00	53.6
9	R	21	3.0	0.128	9.4	LOS A	1.0	7.4	0.34	1.50	50.2
Approach		232	3.0	0.128	1.6	LOS A	1.0	7.4	0.34	0.14	53.3
West: Parks Lane (West)											
10	L	8	3.0	0.026	11.0	LOS B	0.1	0.8	0.39	0.61	46.1
12	R	8	3.0	0.026	11.2	LOS B	0.1	0.8	0.39	0.74	46.0
Approach		17	3.0	0.026	11.1	LOS B	0.1	0.8	0.39	0.67	46.0
All Vehicles		437	3.0	0.128	1.5	NA	1.0	7.4	0.20	0.13	55.3

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

FraserDr_ParksLane_AM_Base
Giveway / Yield (Two-Way)

Site:
FraserDr_ParksLane_2010_AM_St
age 1 Development

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	11	3.0	0.188	8.3	LOS A	0.0	0.0	0.00	1.08	49.0
1	L	11	3.0	0.195	8.3	LOS A	0.0	0.0	0.00	1.09	49.0
2	T	347	3.0	0.187	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
2	T	364	3.0	0.196	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		358	3.0	0.187	0.2	LOS A	0.0	0.0	0.00	0.03	59.6
South: Fraser Drive (South)											
1	L	11	3.0	0.188	8.3	LOS A	0.0	0.0	0.00	1.08	49.0
1	L	11	3.0	0.195	8.3	LOS A	0.0	0.0	0.00	1.09	49.0
2	T	347	3.0	0.187	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
2	T	364	3.0	0.196	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		375	3.0	0.196	0.2	LOS A	0.0	0.0	0.00	0.03	59.6
North: Fraser Drive (North)											
8	T	152	3.0	0.090	1.7	LOS A	0.8	5.9	0.48	0.00	51.6
8	T	184	3.0	0.107	1.9	LOS A	1.0	7.3	0.50	0.00	51.3
9	R	11	3.0	0.090	10.3	LOS B	0.8	5.9	0.48	1.47	50.8
9	R	11	3.0	0.107	10.5	LOS B	1.0	7.3	0.50	1.48	50.9
Approach		162	3.0	0.090	2.3	LOS B	0.8	5.9	0.48	0.10	51.5
North: Fraser Drive (North)											
8	T	152	3.0	0.090	1.7	LOS A	0.8	5.9	0.48	0.00	51.6
8	T	184	3.0	0.107	1.9	LOS A	1.0	7.3	0.50	0.00	51.3
9	R	11	3.0	0.090	10.3	LOS B	0.8	5.9	0.48	1.47	50.8
9	R	11	3.0	0.107	10.5	LOS B	1.0	7.3	0.50	1.48	50.9
Approach		195	3.0	0.107	2.4	LOS B	1.0	7.3	0.50	0.08	51.2
West: Parks Lane (West)											
10	L	19	3.0	0.071	12.7	LOS B	0.3	2.3	0.52	0.72	44.5
10	L	19	3.0	0.076	13.3	LOS B	0.3	2.4	0.54	0.73	43.9
12	R	19	3.0	0.071	13.0	LOS B	0.3	2.3	0.52	0.83	44.4
12	R	19	3.0	0.076	13.6	LOS B	0.3	2.4	0.54	0.86	43.8
Approach		38	3.0	0.071	12.8	LOS B	0.3	2.3	0.52	0.77	44.4
West: Parks Lane (West)											
10	L	19	3.0	0.071	12.7	LOS B	0.3	2.3	0.52	0.72	44.5
10	L	19	3.0	0.076	13.3	LOS B	0.3	2.4	0.54	0.73	43.9
12	R	19	3.0	0.071	13.0	LOS B	0.3	2.3	0.52	0.83	44.4
12	R	19	3.0	0.076	13.6	LOS B	0.3	2.4	0.54	0.86	43.8
Approach		38	3.0	0.076	13.4	LOS B	0.3	2.4	0.54	0.79	43.9
All Vehicles		558	3.0	0.188	1.7	NA	0.8	5.9	0.17	0.10	55.8

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

FraserDr_ParksLane_AM_Base
Giveway / Yield (Two-Way)

Site:
FraserDr_ParksLane_2015_AM_St
age 1 Development

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	13	3.0	0.226	8.3	LOS A	0.0	0.0	0.00	1.08	49.0
2	T	415	3.0	0.224	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		427	3.0	0.224	0.2	LOS A	0.0	0.0	0.00	0.03	59.6
North: Fraser Drive (North)											
8	T	207	3.0	0.122	2.3	LOS A	1.2	8.9	0.54	0.00	50.6
9	R	13	3.0	0.123	10.9	LOS B	1.2	8.9	0.54	1.44	50.7
Approach		220	3.0	0.122	2.8	LOS B	1.2	8.9	0.54	0.08	50.6
West: Parks Lane (West)											
10	L	21	3.0	0.096	14.5	LOS B	0.4	3.0	0.58	0.77	42.8
12	R	21	3.0	0.096	14.8	LOS B	0.4	3.0	0.58	0.88	42.8
Approach		42	3.0	0.096	14.7	LOS B	0.4	3.0	0.58	0.83	42.8
All Vehicles		689	3.0	0.226	2.0	NA	1.2	8.9	0.21	0.10	55.2

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site:
FraserDr_ParksLane_2015_PM_Stage 1 Development

FraserDr_ParksLane_AM_Base
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	16	3.0	0.129	8.3	LOS A	0.0	0.0	0.00	1.06	49.0
2	T	232	3.0	0.130	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		247	3.0	0.130	0.5	LOS A	0.0	0.0	0.00	0.07	59.2
North: Fraser Drive (North)											
8	T	256	3.0	0.156	1.2	LOS A	1.4	9.7	0.41	0.00	52.5
9	R	25	3.0	0.156	9.8	LOS A	1.4	9.7	0.41	1.44	50.5
Approach		281	3.0	0.156	2.0	LOS A	1.4	9.7	0.41	0.13	52.3
West: Parks Lane (West)											
10	L	12	3.0	0.036	11.8	LOS B	0.2	1.1	0.45	0.64	45.3
12	R	9	3.0	0.036	12.1	LOS B	0.2	1.1	0.45	0.79	45.2
Approach		21	3.0	0.036	11.9	LOS B	0.2	1.1	0.45	0.71	45.2
All Vehicles		549	3.0	0.156	1.7	NA	1.4	9.7	0.23	0.12	54.8

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_ParksLane_2015_AM_Stage 2 Development

FraserDr_ParksLane_AM_Base
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	21	3.0	0.224	8.3	LOS A	0.0	0.0	0.00	1.07	49.0
2	T	406	3.0	0.224	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		427	3.0	0.224	0.4	LOS A	0.0	0.0	0.00	0.05	59.3
North: Fraser Drive (North)											
8	T	206	3.0	0.126	2.3	LOS A	1.3	9.0	0.54	0.00	50.6
9	R	17	3.0	0.127	11.0	LOS B	1.3	9.0	0.54	1.40	50.6
Approach		223	3.0	0.126	3.0	LOS B	1.3	9.0	0.54	0.11	50.6
West: Parks Lane (West)											
10	L	29	3.0	0.173	15.4	LOS C	0.8	5.6	0.61	0.80	42.1
12	R	42	3.0	0.173	15.7	LOS C	0.8	5.6	0.61	0.89	42.0
Approach		72	3.0	0.173	15.6	LOS C	0.8	5.6	0.61	0.85	42.1
All Vehicles		722	3.0	0.224	2.7	NA	1.3	9.0	0.23	0.15	54.2

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_ParksLane_2015_PM_St
age 2 Development

FraserDr_ParksLane_AM_Base
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	37	3.0	0.142	8.3	LOS A	0.0	0.0	0.00	1.01	49.0
2	T	233	3.0	0.142	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		269	3.0	0.142	1.1	LOS A	0.0	0.0	0.00	0.14	58.2
North: Fraser Drive (North)											
8	T	248	3.0	0.160	1.3	LOS A	1.4	10.0	0.43	0.00	52.1
9	R	33	3.0	0.160	9.9	LOS A	1.4	10.0	0.43	1.36	50.4
Approach		281	3.0	0.160	2.3	LOS A	1.4	10.0	0.43	0.16	51.9
West: Parks Lane (West)											
10	L	14	3.0	0.059	12.6	LOS B	0.3	1.9	0.49	0.66	44.5
12	R	18	3.0	0.059	12.9	LOS B	0.3	1.9	0.49	0.82	44.4
Approach		32	3.0	0.059	12.8	LOS B	0.3	1.9	0.49	0.75	44.5
All Vehicles		582	3.0	0.160	2.4	NA	1.4	10.0	0.23	0.18	54.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_ParksLane_2015_AM_F
ull Development (No Broadwater
Parkway)

FraserDr_ParksLane_AM_Base
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	25	3.0	0.234	8.3	LOS A	0.0	0.0	0.00	1.06	49.0
2	T	421	3.0	0.234	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		446	3.0	0.234	0.5	LOS A	0.0	0.0	0.00	0.06	59.2
North: Fraser Drive (North)											
8	T	224	3.0	0.132	2.5	LOS A	1.4	9.8	0.56	0.00	50.4
9	R	13	3.0	0.132	11.1	LOS B	1.4	9.8	0.56	1.44	50.7
Approach		237	3.0	0.132	3.0	LOS B	1.4	9.8	0.56	0.08	50.4
West: Parks Lane (West)											
10	L	36	3.0	0.171	15.3	LOS C	0.8	5.5	0.61	0.81	42.2
12	R	36	3.0	0.171	15.6	LOS C	0.8	5.5	0.61	0.89	42.1
Approach		72	3.0	0.171	15.5	LOS C	0.8	5.5	0.61	0.85	42.1
All Vehicles		755	3.0	0.234	2.7	NA	1.4	9.8	0.23	0.14	54.2

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_ParksLane_2015_PM_Fu
II Development (No Broadwater
Parkway)

FraserDr_ParksLane_AM_Base
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	27	3.0	0.146	8.3	LOS A	0.0	0.0	0.00	1.03	49.0
2	T	249	3.0	0.145	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		277	3.0	0.145	0.8	LOS A	0.0	0.0	0.00	0.10	58.7
North: Fraser Drive (North)											
8	T	281	3.0	0.186	1.4	LOS A	1.7	11.9	0.45	0.00	51.8
9	R	42	3.0	0.185	10.0	LOS B	1.7	11.9	0.45	1.32	50.4
Approach		323	3.0	0.186	2.6	LOS B	1.7	11.9	0.45	0.17	51.6
West: Parks Lane (West)											
10	L	16	3.0	0.060	12.8	LOS B	0.3	1.9	0.49	0.66	44.4
12	R	16	3.0	0.060	13.0	LOS B	0.3	1.9	0.49	0.83	44.3
Approach		32	3.0	0.060	12.9	LOS B	0.3	1.9	0.49	0.75	44.3
All Vehicles		632	3.0	0.186	2.3	NA	1.7	11.9	0.25	0.17	54.0

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_ParksLane_2025_PM_St
age 1 Development

FraserDr_ParksLane_AM_Base
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	20	3.0	0.160	8.3	LOS A	0.0	0.0	0.00	1.06	49.0
2	T	284	3.0	0.160	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		304	3.0	0.160	0.5	LOS A	0.0	0.0	0.00	0.07	59.1
North: Fraser Drive (North)											
8	T	319	3.0	0.197	1.7	LOS A	1.9	13.3	0.48	0.00	51.4
9	R	32	3.0	0.196	10.3	LOS B	1.9	13.3	0.48	1.39	50.8
Approach		351	3.0	0.197	2.4	LOS B	1.9	13.3	0.48	0.13	51.4
West: Parks Lane (West)											
10	L	13	3.0	0.047	13.3	LOS B	0.2	1.5	0.51	0.67	43.9
12	R	11	3.0	0.047	13.6	LOS B	0.2	1.5	0.51	0.84	43.8
Approach		23	3.0	0.047	13.4	LOS B	0.2	1.5	0.51	0.75	43.9
All Vehicles		678	3.0	0.197	2.0	NA	1.9	13.3	0.27	0.12	54.2

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_ParksLane_2025_AM_St
age 2 Development

FraserDr_ParksLane_AM_Base
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	24	3.0	0.282	8.3	LOS A	0.0	0.0	0.00	1.07	49.0
2	T	511	3.0	0.280	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		535	3.0	0.280	0.4	LOS A	0.0	0.0	0.00	0.05	59.4
North: Fraser Drive (North)											
8	T	252	3.0	0.157	3.4	LOS A	1.8	12.8	0.62	0.00	49.4
9	R	20	3.0	0.157	12.0	LOS B	1.8	12.8	0.62	1.36	50.0
Approach		272	3.0	0.157	4.1	LOS B	1.8	12.8	0.62	0.10	49.5
West: Parks Lane (West)											
10	L	33	3.0	0.247	19.6	LOS C	1.2	8.4	0.72	0.93	38.9
12	R	45	3.0	0.247	19.9	LOS C	1.2	8.4	0.72	0.94	38.9
Approach		78	3.0	0.247	19.8	LOS C	1.2	8.4	0.72	0.93	38.9
All Vehicles		884	3.0	0.282	3.2	NA	1.8	12.8	0.25	0.14	53.6

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_ParksLane_2025_PM_St
age 2 Development

FraserDr_ParksLane_AM_Base
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	41	3.0	0.172	8.3	LOS A	0.0	0.0	0.00	1.02	49.0
2	T	285	3.0	0.172	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		326	3.0	0.172	1.0	LOS A	0.0	0.0	0.00	0.13	58.3
North: Fraser Drive (North)											
8	T	312	3.0	0.201	1.8	LOS A	1.9	13.7	0.50	0.00	51.1
9	R	39	3.0	0.201	10.4	LOS B	1.9	13.7	0.50	1.33	50.6
Approach		351	3.0	0.201	2.8	LOS B	1.9	13.7	0.50	0.15	51.0
West: Parks Lane (West)											
10	L	15	3.0	0.076	14.3	LOS B	0.3	2.4	0.55	0.70	43.0
12	R	19	3.0	0.076	14.6	LOS B	0.3	2.4	0.55	0.87	42.9
Approach		34	3.0	0.076	14.5	LOS B	0.3	2.4	0.55	0.80	43.0
All Vehicles		711	3.0	0.201	2.5	NA	1.9	13.7	0.27	0.17	53.6

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_ParksLane_2025_AM_F
ull Development (No Broadwater
Parkway)

FraserDr_ParksLane_AM_Base
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	22	3.0	0.287	8.3	LOS A	0.0	0.0	0.00	1.08	49.0
2	T	525	3.0	0.287	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		547	3.0	0.287	0.3	LOS A	0.0	0.0	0.00	0.04	59.5
North: Fraser Drive (North)											
8	T	269	3.0	0.170	3.6	LOS A	2.0	14.1	0.63	0.00	49.2
9	R	22	3.0	0.170	12.2	LOS B	2.0	14.1	0.63	1.35	49.9
Approach		292	3.0	0.170	4.3	LOS B	2.0	14.1	0.63	0.10	49.3
West: Parks Lane (West)											
10	L	39	3.0	0.243	19.3	LOS C	1.1	8.1	0.72	0.92	39.1
12	R	39	3.0	0.243	19.6	LOS C	1.1	8.1	0.72	0.94	39.1
Approach		78	3.0	0.244	19.5	LOS C	1.1	8.1	0.72	0.93	39.1
All Vehicles		917	3.0	0.287	3.2	NA	2.0	14.1	0.26	0.14	53.6

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site:
FraserDr_ParksLane_2025_PM_Fu
ll Development (No Broadwater
Parkway)

FraserDr_ParksLane_AM_Base
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	32	3.0	0.150	8.3	LOS A	0.0	0.0	0.00	1.03	49.0
2	T	254	3.0	0.150	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		285	3.0	0.150	0.9	LOS A	0.0	0.0	0.00	0.11	58.5
North: Fraser Drive (North)											
8	T	305	3.0	0.205	1.5	LOS A	1.9	13.4	0.46	0.00	51.6
9	R	48	3.0	0.204	10.1	LOS B	1.9	13.4	0.46	1.29	50.4
Approach		354	3.0	0.205	2.7	LOS B	1.9	13.4	0.46	0.18	51.4
West: Parks Lane (West)											
10	L	17	3.0	0.067	13.2	LOS B	0.3	2.1	0.50	0.67	44.0
12	R	17	3.0	0.067	13.4	LOS B	0.3	2.1	0.50	0.85	43.9
Approach		34	3.0	0.067	13.3	LOS B	0.3	2.1	0.50	0.76	44.0
All Vehicles		673	3.0	0.205	2.5	NA	1.9	13.4	0.27	0.18	53.7

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site:
FraserDr_SiteAccessRd_2010_AM
_Stage1Development

Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	15	3.0	0.008	8.3	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	366	3.0	0.191	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		381	3.0	0.192	0.3	LOS A	0.0	0.0	0.00	0.03	59.5
North: Fraser Drive (North)											
8	T	162	3.0	0.085	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	34	3.0	0.038	10.0	LOS B	0.2	1.2	0.42	0.68	47.1
Approach		196	3.0	0.085	1.7	LOS B	0.2	1.2	0.07	0.12	57.3
West: Stage 1 Development Site Access Road (West)											
10	L	78	3.0	0.186	12.4	LOS B	0.9	6.4	0.53	0.76	44.8
12	R	33	3.0	0.185	12.5	LOS B	0.9	6.4	0.53	0.85	44.8
Approach		111	3.0	0.186	12.4	LOS B	0.9	6.4	0.53	0.79	44.8
All Vehicles		687	3.0	0.191	2.7	NA	0.9	6.4	0.11	0.17	55.9

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_SiteAccessRd_2010_PM
_Stage1Development

Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	33	3.0	0.018	8.3	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	181	3.0	0.095	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		214	3.0	0.095	1.3	LOS A	0.0	0.0	0.00	0.10	58.0
North: Fraser Drive (North)											
8	T	232	3.0	0.121	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	78	3.0	0.083	9.3	LOS A	0.3	2.4	0.31	0.65	47.5
Approach		309	3.0	0.121	2.3	LOS A	0.3	2.4	0.08	0.16	56.3
West: Stage 1 Development Site Access Road (West)											
10	L	34	3.0	0.070	11.0	LOS B	0.3	2.3	0.38	0.64	46.2
12	R	15	3.0	0.070	11.1	LOS B	0.3	2.3	0.38	0.78	46.1
Approach		48	3.0	0.070	11.0	LOS B	0.3	2.3	0.38	0.68	46.2
All Vehicles		572	3.0	0.121	2.7	NA	0.3	2.4	0.07	0.18	55.9

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_SiteAccessRd_2015_AM
_Stage1Development

Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	15	3.0	0.008	8.3	LOS A	0.0	0.0	0.00	0.67	49.0
1	L	15	3.0	0.008	8.3	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	366	3.0	0.191	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
2	T	423	3.0	0.221	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		381	3.0	0.192	0.3	LOS A	0.0	0.0	0.00	0.03	59.5
South: Fraser Drive (South)											
1	L	15	3.0	0.008	8.3	LOS A	0.0	0.0	0.00	0.67	49.0
1	L	15	3.0	0.008	8.3	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	366	3.0	0.191	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
2	T	423	3.0	0.221	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		438	3.0	0.221	0.3	LOS A	0.0	0.0	0.00	0.02	59.5
North: Fraser Drive (North)											
8	T	162	3.0	0.085	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
8	T	186	3.0	0.097	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	34	3.0	0.038	10.0	LOS B	0.2	1.2	0.42	0.68	47.1
9	R	34	3.0	0.039	10.4	LOS B	0.2	1.3	0.45	0.70	46.8
Approach		196	3.0	0.085	1.7	LOS B	0.2	1.2	0.07	0.12	57.3
North: Fraser Drive (North)											
8	T	162	3.0	0.085	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
8	T	186	3.0	0.097	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	34	3.0	0.038	10.0	LOS B	0.2	1.2	0.42	0.68	47.1
9	R	34	3.0	0.039	10.4	LOS B	0.2	1.3	0.45	0.70	46.8
Approach		220	3.0	0.097	1.6	LOS B	0.2	1.3	0.07	0.11	57.5
West: Stage 1 Development Site Access Road (West)											
10	L	78	3.0	0.186	12.4	LOS B	0.9	6.4	0.53	0.76	44.8
10	L	78	3.0	0.207	13.3	LOS B	1.0	7.0	0.57	0.80	44.0
12	R	33	3.0	0.185	12.5	LOS B	0.9	6.4	0.53	0.85	44.8
12	R	33	3.0	0.207	13.5	LOS B	1.0	7.0	0.57	0.87	43.9
Approach		111	3.0	0.186	12.4	LOS B	0.9	6.4	0.53	0.79	44.8
West: Stage 1 Development Site Access Road (West)											
10	L	78	3.0	0.186	12.4	LOS B	0.9	6.4	0.53	0.76	44.8
10	L	78	3.0	0.207	13.3	LOS B	1.0	7.0	0.57	0.80	44.0
12	R	33	3.0	0.185	12.5	LOS B	0.9	6.4	0.53	0.85	44.8
12	R	33	3.0	0.207	13.5	LOS B	1.0	7.0	0.57	0.87	43.9
Approach		111	3.0	0.206	13.4	LOS B	1.0	7.0	0.57	0.82	44.0
All Vehicles		687	3.0	0.191	2.7	NA	0.9	6.4	0.11	0.17	55.9

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site:
FraserDr_SiteAccessRd_2015_PM
_Stage1Development

Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	33	3.0	0.018	8.3	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	208	3.0	0.109	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		241	3.0	0.109	1.1	LOS A	0.0	0.0	0.00	0.09	58.2
North: Fraser Drive (North)											
8	T	266	3.0	0.139	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	78	3.0	0.084	9.4	LOS A	0.3	2.5	0.34	0.66	47.4
Approach		344	3.0	0.139	2.1	LOS A	0.3	2.5	0.08	0.15	56.6
West: Stage 1 Development Site Access Road (West)											
10	L	34	3.0	0.075	11.5	LOS B	0.3	2.5	0.41	0.65	45.7
12	R	15	3.0	0.076	11.6	LOS B	0.3	2.5	0.41	0.81	45.6
Approach		48	3.0	0.075	11.5	LOS B	0.3	2.5	0.41	0.70	45.7
All Vehicles		634	3.0	0.139	2.5	NA	0.3	2.5	0.07	0.17	56.2

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site:
FraserDr_SiteAccessRd_2015_AM
_Full Development (No Broad-
water Parkway)

Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	22	3.0	0.012	8.3	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	435	3.0	0.227	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		457	3.0	0.227	0.4	LOS A	0.0	0.0	0.00	0.03	59.4
North: Fraser Drive (North)											
8	T	191	3.0	0.100	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	49	3.0	0.055	10.5	LOS B	0.3	1.9	0.47	0.72	46.6
Approach		240	3.0	0.100	2.2	LOS B	0.3	1.9	0.10	0.15	56.7
West: Stage 1 Development Site Access Road (West)											
10	L	116	3.0	0.323	14.9	LOS B	1.8	13.1	0.61	0.89	42.6
12	R	49	3.0	0.323	15.0	LOS B	1.8	13.1	0.61	0.92	42.6
Approach		165	3.0	0.323	14.9	LOS B	1.8	13.1	0.61	0.90	42.6
All Vehicles		862	3.0	0.323	3.7	NA	1.8	13.1	0.14	0.23	54.5

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_SiteAccessRd_2015_PM
_Full Development (No Broad-
water Parkway)

Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	48	3.0	0.027	8.3	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	217	3.0	0.113	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		265	3.0	0.113	1.5	LOS A	0.0	0.0	0.00	0.12	57.6
North: Fraser Drive (North)											
8	T	229	3.0	0.120	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	117	3.0	0.127	9.6	LOS A	0.5	3.9	0.36	0.67	47.3
Approach		346	3.0	0.127	3.2	LOS A	0.5	3.9	0.12	0.23	55.0
West: Stage 1 Development Site Access Road (West)											
10	L	21	3.0	0.161	14.7	LOS B	0.7	5.4	0.55	0.69	42.8
12	R	49	3.0	0.161	14.8	LOS B	0.7	5.4	0.55	0.86	42.7
Approach		71	3.0	0.161	14.8	LOS B	0.7	5.4	0.55	0.81	42.7
All Vehicles		682	3.0	0.161	3.8	NA	0.7	5.4	0.12	0.25	54.4

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_SiteAccessRd_2025_AM
_Full Development (No Broad-
water Parkway)

Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	22	3.0	0.012	8.3	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	542	3.0	0.283	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		564	3.0	0.283	0.3	LOS A	0.0	0.0	0.00	0.03	59.5
North: Fraser Drive (North)											
8	T	235	3.0	0.123	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	49	3.0	0.062	11.2	LOS B	0.3	2.1	0.52	0.76	45.9
Approach		284	3.0	0.123	2.0	LOS B	0.3	2.1	0.09	0.13	57.0
West: Stage 1 Development Site Access Road (West)											
10	L	116	3.0	0.401	18.4	LOS C	2.4	17.1	0.69	0.98	39.9
12	R	49	3.0	0.399	18.5	LOS C	2.4	17.1	0.69	0.97	39.9
Approach		165	3.0	0.401	18.4	LOS C	2.4	17.1	0.69	0.98	39.9
All Vehicles		1014	3.0	0.401	3.7	NA	2.4	17.1	0.14	0.21	54.5

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_SiteAccessRd_2025_PM
_Full Development (No Broad-
water Parkway)

Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	48	3.0	0.027	8.3	LOS A	0.0	0.0	0.00	0.67	49.0
2	T	271	3.0	0.141	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		319	3.0	0.141	1.3	LOS A	0.0	0.0	0.00	0.10	58.0
North: Fraser Drive (North)											
8	T	284	3.0	0.149	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R	117	3.0	0.129	9.9	LOS A	0.6	4.1	0.40	0.69	47.1
Approach		401	3.0	0.149	2.9	LOS A	0.6	4.1	0.12	0.20	55.6
West: Stage 1 Development Site Access Road (West)											
10	L	21	3.0	0.193	16.8	LOS C	0.9	6.3	0.61	0.73	41.1
12	R	49	3.0	0.193	16.9	LOS C	0.9	6.3	0.61	0.88	41.0
Approach		71	3.0	0.192	16.8	LOS C	0.9	6.3	0.61	0.83	41.1
All Vehicles		791	3.0	0.193	3.5	NA	0.9	6.3	0.11	0.22	54.8

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_GlenAyrDr_2010_AM_Base

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	329	3.0	0.172	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	37	3.0	0.032	8.9	LOS A	0.1	1.0	0.22	0.63	47.9
Approach		366	3.0	0.172	0.9	LOS A	0.1	1.0	0.02	0.06	58.5
East: Glen Ayr Drive (East)											
4	L	45	3.0	0.043	8.2	LOS A	0.2	1.4	0.22	0.57	48.6
6	R	45	3.0	0.107	14.6	LOS B	0.5	3.6	0.57	0.84	42.8
Approach		91	3.0	0.107	11.4	LOS B	0.5	3.6	0.40	0.71	45.5
North: Fraser Drive (North)											
7	L	7	3.0	0.005	7.8	LOS A	0.0	0.2	0.11	0.56	49.2
8	T	117	3.0	0.061	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		124	3.0	0.061	0.5	LOS A	0.0	0.2	0.01	0.03	59.2
All Vehicles		581	3.0	0.172	2.4	NA	0.5	3.6	0.08	0.16	56.2

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_GlenAyrDr_2010_PM_Base

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	158	3.0	0.083	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	25	3.0	0.022	9.2	LOS A	0.1	0.7	0.30	0.63	47.5
Approach		183	3.0	0.083	1.3	LOS A	0.1	0.7	0.04	0.09	57.9
East: Glen Ayr Drive (East)											
4	L	22	3.0	0.024	9.0	LOS A	0.1	0.8	0.35	0.61	47.9
6	R	38	3.0	0.084	14.0	LOS B	0.4	2.8	0.55	0.81	43.4
Approach		60	3.0	0.084	12.1	LOS B	0.4	2.8	0.48	0.73	45.0
North: Fraser Drive (North)											
7	L	123	3.0	0.088	7.8	LOS A	0.5	3.3	0.09	0.57	49.3
8	T	209	3.0	0.110	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		333	3.0	0.110	2.9	LOS A	0.5	3.3	0.03	0.21	55.5
All Vehicles		576	3.0	0.110	3.3	NA	0.5	3.3	0.08	0.23	54.9

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_GlenAyrDr_2010_AM_St
age 1 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	329	3.0	0.172	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
2	T	399	3.0	0.209	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	37	3.0	0.032	8.9	LOS A	0.1	1.0	0.22	0.63	47.9
3	R	45	3.0	0.039	9.0	LOS A	0.2	1.3	0.25	0.63	47.8
Approach		366	3.0	0.172	0.9	LOS A	0.1	1.0	0.02	0.06	58.5
South: Fraser Drive (South)											
2	T	329	3.0	0.172	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
2	T	399	3.0	0.209	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	37	3.0	0.032	8.9	LOS A	0.1	1.0	0.22	0.63	47.9
3	R	45	3.0	0.039	9.0	LOS A	0.2	1.3	0.25	0.63	47.8
Approach		444	3.0	0.209	0.9	LOS A	0.2	1.3	0.02	0.06	58.5
East: Glen Ayr Drive (East)											
4	L	45	3.0	0.043	8.2	LOS A	0.2	1.4	0.22	0.57	48.6
4	L	55	3.0	0.053	8.3	LOS A	0.2	1.7	0.25	0.58	48.4
6	R	45	3.0	0.107	14.6	LOS B	0.5	3.6	0.57	0.84	42.8
6	R	45	3.0	0.127	16.7	LOS C	0.6	4.2	0.64	0.88	41.1
Approach		91	3.0	0.107	11.4	LOS B	0.5	3.6	0.40	0.71	45.5
East: Glen Ayr Drive (East)											
4	L	45	3.0	0.043	8.2	LOS A	0.2	1.4	0.22	0.57	48.6
4	L	55	3.0	0.053	8.3	LOS A	0.2	1.7	0.25	0.58	48.4
6	R	45	3.0	0.107	14.6	LOS B	0.5	3.6	0.57	0.84	42.8
6	R	45	3.0	0.127	16.7	LOS C	0.6	4.2	0.64	0.88	41.1
Approach		100	3.0	0.127	12.1	LOS C	0.6	4.2	0.43	0.72	44.9
North: Fraser Drive (North)											
7	L	7	3.0	0.005	7.8	LOS A	0.0	0.2	0.11	0.56	49.2
7	L	7	3.0	0.005	7.8	LOS A	0.0	0.2	0.12	0.56	49.1
8	T	117	3.0	0.061	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
8	T	141	3.0	0.074	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		124	3.0	0.061	0.5	LOS A	0.0	0.2	0.01	0.03	59.2
North: Fraser Drive (North)											
7	L	7	3.0	0.005	7.8	LOS A	0.0	0.2	0.11	0.56	49.2
7	L	7	3.0	0.005	7.8	LOS A	0.0	0.2	0.12	0.56	49.1
8	T	117	3.0	0.061	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
8	T	141	3.0	0.074	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		148	3.0	0.074	0.4	LOS A	0.0	0.2	0.01	0.03	59.3
All Vehicles		581	3.0	0.172	2.4	NA	0.5	3.6	0.08	0.16	56.2

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site:
FraserDr_GlenAyrDr_2015_AM_St
age 1 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	446	3.0	0.233	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	51	3.0	0.044	9.0	LOS A	0.2	1.4	0.26	0.63	47.7
Approach		497	3.0	0.233	0.9	LOS A	0.2	1.4	0.03	0.06	58.5
East: Glen Ayr Drive (East)											
4	L	59	3.0	0.058	8.4	LOS A	0.3	1.9	0.27	0.59	48.3
6	R	49	3.0	0.158	18.5	LOS C	0.7	5.1	0.69	0.90	39.8
Approach		108	3.0	0.158	13.0	LOS C	0.7	5.1	0.46	0.73	44.0
North: Fraser Drive (North)											
7	L	8	3.0	0.006	7.8	LOS A	0.0	0.2	0.13	0.56	49.1
8	T	159	3.0	0.083	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		167	3.0	0.083	0.4	LOS A	0.0	0.2	0.01	0.03	59.3
All Vehicles		773	3.0	0.233	2.5	NA	0.7	5.1	0.08	0.15	56.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site:
FraserDr_GlenAyrDr_2015_PM_St
age 1 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	211	3.0	0.110	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	35	3.0	0.033	9.8	LOS A	0.2	1.1	0.38	0.67	47.2
Approach		245	3.0	0.110	1.4	LOS A	0.2	1.1	0.05	0.09	57.8
East: Glen Ayr Drive (East)											
4	L	32	3.0	0.040	9.7	LOS A	0.2	1.3	0.42	0.66	47.5
6	R	42	3.0	0.127	17.6	LOS C	0.6	4.1	0.66	0.89	40.5
Approach		74	3.0	0.127	14.2	LOS C	0.6	4.1	0.56	0.79	43.3
North: Fraser Drive (North)											
7	L	142	3.0	0.102	7.8	LOS A	0.5	3.9	0.11	0.57	49.2
8	T	312	3.0	0.163	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		454	3.0	0.163	2.4	LOS A	0.5	3.9	0.04	0.18	56.1
All Vehicles		773	3.0	0.163	3.2	NA	0.6	4.1	0.09	0.21	55.0

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_GlenAyrDr_2015_AM_St
age 2 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	394	3.0	0.206	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	42	3.0	0.037	9.1	LOS A	0.2	1.2	0.27	0.63	47.7
Approach		436	3.0	0.206	0.9	LOS A	0.2	1.2	0.03	0.06	58.5
East: Glen Ayr Drive (East)											
4	L	49	3.0	0.049	8.5	LOS A	0.2	1.6	0.28	0.59	48.3
6	R	49	3.0	0.144	17.3	LOS C	0.7	4.7	0.66	0.89	40.7
Approach		99	3.0	0.144	12.9	LOS C	0.7	4.7	0.47	0.74	44.2
North: Fraser Drive (North)											
7	L	8	3.0	0.006	7.8	LOS A	0.0	0.2	0.12	0.56	49.1
8	T	171	3.0	0.089	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		179	3.0	0.089	0.4	LOS A	0.0	0.2	0.01	0.03	59.4
All Vehicles		714	3.0	0.206	2.4	NA	0.7	4.7	0.08	0.15	56.2

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_GlenAyrDr_2015_PM_St
age 2 Development

New Site
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	218	3.0	0.114	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	29	3.0	0.026	9.5	LOS A	0.1	0.9	0.34	0.65	47.4
Approach		247	3.0	0.114	1.1	LOS A	0.1	0.9	0.04	0.08	58.2
East: Glen Ayr Drive (East)											
4	L	24	3.0	0.029	9.3	LOS A	0.1	0.9	0.39	0.63	47.7
6	R	42	3.0	0.115	16.4	LOS C	0.5	3.8	0.62	0.88	41.4
Approach		66	3.0	0.115	13.8	LOS C	0.5	3.8	0.54	0.79	43.5
North: Fraser Drive (North)											
7	L	142	3.0	0.101	7.8	LOS A	0.5	3.9	0.10	0.57	49.2
8	T	256	3.0	0.134	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		398	3.0	0.134	2.8	LOS A	0.5	3.9	0.04	0.20	55.6
All Vehicles		712	3.0	0.134	3.2	NA	0.5	3.9	0.08	0.21	55.0

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_GlenAyrDr_2015_AM_Fu
ll Development (No Broadwater
Parkway)

New Site
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	496	3.0	0.259	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	55	3.0	0.048	9.1	LOS A	0.2	1.6	0.28	0.64	47.6
Approach		551	3.0	0.259	0.9	LOS A	0.2	1.6	0.03	0.06	58.5
East: Glen Ayr Drive (East)											
4	L	65	3.0	0.065	8.5	LOS A	0.3	2.2	0.29	0.59	48.2
6	R	49	3.0	0.179	20.5	LOS C	0.8	5.7	0.73	0.92	38.4
Approach		115	3.0	0.179	13.7	LOS C	0.8	5.7	0.48	0.73	43.5
North: Fraser Drive (North)											
7	L	8	3.0	0.006	7.9	LOS A	0.0	0.2	0.14	0.56	49.0
8	T	175	3.0	0.091	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		183	3.0	0.091	0.4	LOS A	0.0	0.2	0.01	0.03	59.4
All Vehicles		848	3.0	0.259	2.5	NA	0.8	5.7	0.08	0.15	56.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_GlenAyrDr_2015_PM_Fu
II Developmnt (No Broadwater
Parkway)

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	205	3.0	0.107	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	34	3.0	0.034	10.0	LOS B	0.2	1.2	0.42	0.68	47.1
Approach		239	3.0	0.107	1.4	LOS B	0.2	1.2	0.06	0.10	57.8
East: Glen Ayr Drive (East)											
4	L	37	3.0	0.049	10.1	LOS B	0.2	1.6	0.45	0.68	47.2
6	R	42	3.0	0.138	18.7	LOS C	0.6	4.4	0.69	0.90	39.6
Approach		79	3.0	0.138	14.7	LOS C	0.6	4.4	0.58	0.80	42.9
North: Fraser Drive (North)											
7	L	142	3.0	0.102	7.8	LOS A	0.5	3.9	0.11	0.57	49.2
8	T	363	3.0	0.190	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		505	3.0	0.190	2.2	LOS A	0.5	3.9	0.03	0.16	56.5
All Vehicles		823	3.0	0.190	3.2	NA	0.6	4.4	0.09	0.20	55.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site:
FraserDr_GlenAyrDr_2025_PM_St
age 1 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	258	3.0	0.135	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	42	3.0	0.043	10.1	LOS B	0.2	1.5	0.43	0.69	47.0
Approach		300	3.0	0.135	1.4	LOS B	0.2	1.5	0.06	0.10	57.8
East: Glen Ayr Drive (East)											
4	L	36	3.0	0.050	10.3	LOS B	0.2	1.6	0.47	0.70	47.0
6	R	49	3.0	0.191	21.7	LOS C	0.9	6.1	0.75	0.93	37.6
Approach		85	3.0	0.191	16.9	LOS C	0.9	6.1	0.63	0.83	41.1
North: Fraser Drive (North)											
7	L	179	3.0	0.129	7.8	LOS A	0.7	5.0	0.13	0.57	49.1
8	T	375	3.0	0.196	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		554	3.0	0.196	2.5	LOS A	0.7	5.0	0.04	0.18	55.9
All Vehicles		939	3.0	0.196	3.5	NA	0.9	6.1	0.10	0.21	54.7

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site:
FraserDr_GlenAyrDr_2025_AM_St
age 2 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	488	3.0	0.255	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	54	3.0	0.046	9.3	LOS A	0.2	1.6	0.31	0.64	47.5
Approach		542	3.0	0.255	0.9	LOS A	0.2	1.6	0.03	0.06	58.5
East: Glen Ayr Drive (East)											
4	L	59	3.0	0.061	8.7	LOS A	0.3	2.0	0.31	0.60	48.1
6	R	59	3.0	0.223	21.9	LOS C	1.0	7.4	0.76	0.94	37.4
Approach		118	3.0	0.223	15.3	LOS C	1.0	7.4	0.53	0.77	42.2
North: Fraser Drive (North)											
7	L	11	3.0	0.008	7.9	LOS A	0.0	0.3	0.14	0.56	49.0
8	T	205	3.0	0.107	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		216	3.0	0.107	0.4	LOS A	0.0	0.3	0.01	0.03	59.3
All Vehicles		876	3.0	0.255	2.7	NA	1.0	7.4	0.09	0.15	55.8

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_GlenAyrDr_2025_PM_St
age 2 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	265	3.0	0.139	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	37	3.0	0.036	9.8	LOS A	0.2	1.2	0.39	0.67	47.2
Approach		302	3.0	0.139	1.2	LOS A	0.2	1.2	0.05	0.08	58.1
East: Glen Ayr Drive (East)											
4	L	28	3.0	0.037	9.9	LOS A	0.2	1.2	0.44	0.66	47.4
6	R	49	3.0	0.173	19.9	LOS C	0.8	5.5	0.72	0.91	38.8
Approach		78	3.0	0.173	16.3	LOS C	0.8	5.5	0.62	0.82	41.6
North: Fraser Drive (North)											
7	L	179	3.0	0.129	7.8	LOS A	0.7	5.0	0.12	0.57	49.1
8	T	319	3.0	0.167	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		498	3.0	0.167	2.8	LOS A	0.7	5.0	0.04	0.20	55.5
All Vehicles		878	3.0	0.173	3.4	NA	0.8	5.5	0.10	0.22	54.7

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_GlenAyrDr_2025_AM_Fu
II Development (No Broadwater
Parkway)

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	595	3.0	0.311	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	66	3.0	0.057	9.3	LOS A	0.3	2.0	0.31	0.65	47.5
Approach		661	3.0	0.311	0.9	LOS A	0.3	2.0	0.03	0.07	58.5
East: Glen Ayr Drive (East)											
4	L	75	3.0	0.078	8.8	LOS A	0.4	2.6	0.32	0.61	48.1
6	R	59	3.0	0.282	27.6	LOS D	1.3	9.5	0.82	0.98	34.1
Approach		134	3.0	0.282	17.1	LOS D	1.3	9.5	0.54	0.77	40.8
North: Fraser Drive (North)											
7	L	11	3.0	0.008	7.9	LOS A	0.0	0.3	0.15	0.55	48.9
8	T	209	3.0	0.110	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		220	3.0	0.110	0.4	LOS A	0.0	0.3	0.01	0.03	59.3
All Vehicles		1015	3.0	0.311	2.9	NA	1.3	9.5	0.09	0.15	55.5

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_GlenAyrDr_2025_PM_Fu
II Development (No Broadwater
Parkway)

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	253	3.0	0.132	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	41	3.0	0.045	10.5	LOS B	0.2	1.5	0.46	0.71	46.7
Approach		294	3.0	0.132	1.5	LOS B	0.2	1.5	0.06	0.10	57.7
East: Glen Ayr Drive (East)											
4	L	41	3.0	0.061	10.8	LOS B	0.3	1.9	0.50	0.73	46.5
6	R	49	3.0	0.209	23.5	LOS C	0.9	6.7	0.78	0.94	36.4
Approach		91	3.0	0.208	17.7	LOS C	0.9	6.7	0.65	0.84	40.5
North: Fraser Drive (North)											
7	L	179	3.0	0.129	7.8	LOS A	0.7	5.0	0.13	0.57	49.1
8	T	426	3.0	0.223	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		605	3.0	0.223	2.3	LOS A	0.7	5.0	0.04	0.17	56.3
All Vehicles		989	3.0	0.223	3.5	NA	0.9	6.7	0.10	0.21	54.7

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_AmarooDr_2010_AM_Ba
se

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	277	3.0	0.145	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	98	3.0	0.085	9.0	LOS A	0.4	2.9	0.26	0.64	47.7
Approach		375	3.0	0.145	2.4	LOS A	0.4	2.9	0.07	0.17	56.2
East: Amaroo Drive (East)											
4	L	16	3.0	0.015	8.2	LOS A	0.1	0.5	0.23	0.56	48.5
6	R	147	3.0	0.303	14.6	LOS B	1.8	12.7	0.60	0.90	42.9
Approach		163	3.0	0.303	14.0	LOS B	1.8	12.7	0.56	0.87	43.4
North: Fraser Drive (North)											
7	L	42	3.0	0.023	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
8	T	108	3.0	0.057	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		151	3.0	0.057	2.1	LOS A	0.0	0.0	0.00	0.17	56.7
All Vehicles		688	3.0	0.303	5.1	NA	1.8	12.7	0.17	0.33	52.6

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site:
FraserDr_AmarooDr_2010_PM_Ba
se

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	141	3.0	0.074	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	55	3.0	0.054	9.9	LOS A	0.3	1.9	0.41	0.68	47.1
Approach		196	3.0	0.074	2.8	LOS A	0.3	1.9	0.11	0.19	55.8
East: Amaroo Drive (East)											
4	L	73	3.0	0.084	9.3	LOS A	0.4	2.8	0.39	0.65	47.7
6	R	36	3.0	0.079	13.8	LOS B	0.4	2.6	0.55	0.80	43.5
Approach		108	3.0	0.084	10.8	LOS B	0.4	2.8	0.44	0.70	46.3
North: Fraser Drive (North)											
7	L	92	3.0	0.050	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
8	T	260	3.0	0.136	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		352	3.0	0.136	2.0	LOS A	0.0	0.0	0.00	0.16	56.9
All Vehicles		656	3.0	0.136	3.7	NA	0.4	2.8	0.11	0.26	54.5

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site:
FraserDr_AmarooDr_2010_AM_St
age 1 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	328	3.0	0.172	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	116	3.0	0.101	9.1	LOS A	0.5	3.5	0.28	0.64	47.6
Approach		444	3.0	0.172	2.4	LOS A	0.5	3.5	0.07	0.17	56.2
East: Amaroo Drive (East)											
4	L	19	3.0	0.018	8.3	LOS A	0.1	0.6	0.25	0.57	48.4
6	R	147	3.0	0.343	16.6	LOS C	2.1	14.8	0.64	0.94	41.3
Approach		166	3.0	0.342	15.6	LOS C	2.1	14.8	0.60	0.89	42.0
North: Fraser Drive (North)											
7	L	42	3.0	0.023	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
8	T	129	3.0	0.068	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		172	3.0	0.068	1.9	LOS A	0.0	0.0	0.00	0.15	57.1
All Vehicles		782	3.0	0.343	5.1	NA	2.1	14.8	0.17	0.32	52.6

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_AmarooDr_2010_PM_St
age 1 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	161	3.0	0.084	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	63	3.0	0.066	10.3	LOS B	0.3	2.3	0.44	0.71	46.9
Approach		224	3.0	0.084	2.9	LOS B	0.3	2.3	0.12	0.20	55.6
East: Amaroo Drive (East)											
4	L	88	3.0	0.109	9.7	LOS A	0.5	3.6	0.43	0.68	47.5
6	R	36	3.0	0.089	15.2	LOS C	0.4	2.9	0.58	0.84	42.4
Approach		124	3.0	0.109	11.3	LOS C	0.5	3.6	0.47	0.73	45.9
North: Fraser Drive (North)											
7	L	92	3.0	0.050	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
8	T	315	3.0	0.165	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		406	3.0	0.165	1.7	LOS A	0.0	0.0	0.00	0.14	57.3
All Vehicles		755	3.0	0.165	3.6	NA	0.5	3.6	0.11	0.25	54.6

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_AmarooDr_2015_AM_St
age 1 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	371	3.0	0.194	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	131	3.0	0.114	9.2	LOS A	0.6	4.1	0.31	0.65	47.5
Approach		501	3.0	0.194	2.4	LOS A	0.6	4.1	0.08	0.17	56.2
East: Amaroo Drive (East)											
4	L	21	3.0	0.021	8.4	LOS A	0.1	0.7	0.27	0.58	48.3
6	R	162	3.0	0.419	19.1	LOS C	2.7	19.5	0.70	0.99	39.3
Approach		183	3.0	0.419	17.9	LOS C	2.7	19.5	0.65	0.94	40.2
North: Fraser Drive (North)											
7	L	48	3.0	0.027	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
8	T	146	3.0	0.076	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		195	3.0	0.076	1.9	LOS A	0.0	0.0	0.00	0.15	57.1
All Vehicles		879	3.0	0.419	5.5	NA	2.7	19.5	0.18	0.33	52.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_AmarooDr_2015_PM_St
age 1 Development

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	182	3.0	0.095	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	72	3.0	0.079	10.6	LOS B	0.4	2.8	0.47	0.73	46.6
Approach		254	3.0	0.095	3.0	LOS B	0.4	2.8	0.13	0.21	55.5
East: Amaroo Drive (East)											
4	L	96	3.0	0.124	10.1	LOS B	0.6	4.1	0.46	0.71	47.2
6	R	39	3.0	0.109	16.6	LOS C	0.5	3.6	0.63	0.88	41.2
Approach		135	3.0	0.124	12.0	LOS C	0.6	4.1	0.51	0.76	45.3
North: Fraser Drive (North)											
7	L	105	3.0	0.058	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
8	T	354	3.0	0.185	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		459	3.0	0.185	1.8	LOS A	0.0	0.0	0.00	0.14	57.3
All Vehicles		847	3.0	0.185	3.8	NA	0.6	4.1	0.12	0.26	54.5

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.



MOVEMENT SUMMARY

Site:
FraserDr_AmarooDr_2015_PM_St
age 2 Development

New Site
Signals - Fixed Time Cycle Time = 100 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	32	0.0	0.023	8.0	LOS A	0.2	1.2	0.14	0.62	49.0
2	T	166	3.0	0.143	8.8	LOS A	4.7	33.9	0.45	0.38	46.7
3	R	63	3.0	0.182	20.5	LOS C	2.2	16.2	0.51	0.74	38.4
Approach		261	2.6	0.183	11.5	LOS B	4.7	33.9	0.43	0.49	44.6
East: Amaro Drive (East)											
4	L	80	3.0	0.069	8.6	LOS A	0.8	5.5	0.19	0.64	48.6
5	T	46	0.0	0.266	39.6	LOS D	5.1	35.9	0.91	0.71	26.9
6	R	39	3.0	0.266	47.9	LOS D	5.1	35.9	0.91	0.79	26.5
Approach		165	2.2	0.266	26.6	LOS C	5.1	35.9	0.56	0.69	34.2
North: Fraser Drive (North)											
7	L	105	3.0	0.073	8.0	LOS A	0.5	3.9	0.12	0.62	49.1
8	T	312	3.0	0.267	9.6	LOS A	8.7	62.2	0.50	0.43	45.7
9	R	78	0.0	0.198	18.3	LOS B	2.5	17.6	0.47	0.74	39.8
Approach		495	2.5	0.267	10.7	LOS B	8.7	62.2	0.41	0.52	45.3
West: Stage 2 Development Access Road (West)											
10	L	34	0.0	0.027	8.2	LOS A	0.2	1.6	0.15	0.63	49.0
11	T	27	0.0	0.249	50.1	LOS D	2.4	17.1	0.98	0.71	24.0
12	R	6	0.0	0.249	58.2	LOS E	2.4	17.1	0.98	0.73	23.9
Approach		67	0.0	0.249	29.9	LOS C	2.4	17.1	0.56	0.67	32.3
All Vehicles		988	2.3	0.267	14.9	LOS B	8.7	62.2	0.45	0.55	41.7

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS E. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on average delay for all vehicle movements.



MOVEMENT SUMMARY

Site:
FraserDr_AmarooDr_2015_AM_St
age 2 Development

New Site
Signals - Fixed Time Cycle Time = 100 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
1	L	6	0.0	0.004	7.9	LOS A	0.0	0.2	0.11	0.61	49.2
2	T	327	3.0	0.372	18.8	LOS B	12.0	85.8	0.70	0.60	37.9
3	R	113	3.0	0.363	27.6	LOS C	4.8	34.2	0.66	0.77	34.1
Approach		446	3.0	0.372	20.9	LOS C	12.0	85.8	0.68	0.64	37.0
East: Amaro Drive (East)											
4	L	18	3.0	0.013	8.2	LOS A	0.1	0.9	0.15	0.62	49.0
5	T	27	0.0	0.369	31.3	LOS C	9.2	65.7	0.85	0.70	29.5
6	R	162	3.0	0.369	39.6	LOS D	9.2	65.7	0.85	0.81	28.9
Approach		207	2.6	0.369	35.8	LOS D	9.2	65.7	0.79	0.78	30.1
North: Fraser Drive (North)											
7	L	48	3.0	0.034	8.2	LOS A	0.3	2.0	0.15	0.63	49.0
8	T	129	3.0	0.147	16.6	LOS B	5.0	35.7	0.61	0.50	39.6
9	R	34	0.0	0.122	31.9	LOS C	1.7	11.8	0.70	0.74	31.9
Approach		212	2.5	0.147	17.1	LOS B	5.0	35.7	0.52	0.57	39.8
West: Stage 2 Development Access Road (West)											
10	L	78	0.0	0.077	10.7	LOS B	1.4	9.9	0.31	0.66	46.4
11	T	46	0.0	0.371	46.3	LOS D	5.0	35.3	0.97	0.75	24.8
12	R	32	0.0	0.370	54.4	LOS D	5.0	35.3	0.97	0.77	24.7
Approach		156	0.0	0.371	30.1	LOS C	5.0	35.3	0.64	0.71	32.4
All Vehicles		1021	2.3	0.372	24.5	LOS C	12.0	85.8	0.66	0.66	35.1

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on average delay for all vehicle movements.



MOVEMENT SUMMARY

Site:
FraserDr_AmarooDr_2015_AM_Fu
II Development (No Broadwater
Parkway)

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	405	3.0	0.212	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	143	3.0	0.126	9.3	LOS A	0.6	4.6	0.32	0.66	47.5
Approach		548	3.0	0.212	2.4	LOS A	0.6	4.6	0.08	0.17	56.1
East: Amaroo Drive (East)											
4	L	23	3.0	0.023	8.5	LOS A	0.1	0.7	0.28	0.58	48.3
6	R	162	3.0	0.455	21.1	LOS C	3.0	21.5	0.74	1.02	38.0
Approach		185	3.0	0.456	19.5	LOS C	3.0	21.5	0.68	0.96	39.1
North: Fraser Drive (North)											
7	L	48	3.0	0.027	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
8	T	160	3.0	0.084	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		208	3.0	0.084	1.8	LOS A	0.0	0.0	0.00	0.14	57.2
All Vehicles		942	3.0	0.455	5.6	NA	3.0	21.5	0.18	0.32	51.9

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site:
FraserDr_AmarooDr_2015_PM_Fu
II Development (No Broadwater
Parkway)

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive (South)											
2	T	179	3.0	0.094	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	69	3.0	0.081	10.8	LOS B	0.4	2.8	0.49	0.75	46.3
Approach		248	3.0	0.094	3.0	LOS B	0.4	2.8	0.14	0.21	55.4
East: Amaroo Drive (East)											
4	L	106	3.0	0.145	10.5	LOS B	0.7	4.8	0.49	0.74	46.8
6	R	39	3.0	0.117	17.5	LOS C	0.5	3.8	0.66	0.89	40.5
Approach		145	3.0	0.145	12.3	LOS C	0.7	4.8	0.53	0.78	45.0
North: Fraser Drive (North)											
7	L	105	3.0	0.058	7.7	LOS A	0.0	0.0	0.00	0.60	49.8
8	T	395	3.0	0.206	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		500	3.0	0.206	1.6	LOS A	0.0	0.0	0.00	0.13	57.5
All Vehicles		894	3.0	0.206	3.8	NA	0.7	4.8	0.12	0.26	54.5

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on the worst delay for any vehicle movement.

MOVEMENT SUMMARY

Site: Broadwater Pwy/Fraser Dr -
2015 AM-with devel_no through
connection

2015 AM - Broadwater Parkway & Fraser Drive without full connection through to Maher Lane (Development Traffic only)
Signals - Fixed Time Cycle Time = 45 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive											
1	L	34	5.0	0.027	8.6	LOS A	0.2	1.2	0.28	0.64	48.3
3	R	481	5.0	0.549	17.3	LOS B	9.3	67.8	0.75	0.82	40.7
Approach		515	5.0	0.549	16.8	LOS B	9.3	67.8	0.72	0.81	41.1
East: Fraser Drive											
4	L	174	5.0	0.143	8.7	LOS A	0.9	6.8	0.31	0.67	48.1
5	T	36	5.0	0.078	14.6	LOS B	1.0	7.1	0.80	0.59	40.6
Approach		209	5.0	0.143	9.7	LOS A	1.0	7.1	0.40	0.65	46.6
West: Broadwater Parkway											
11	T	78	5.0	0.169	15.0	LOS B	2.1	15.4	0.82	0.63	40.2
12	R	78	5.0	0.198	23.8	LOS C	2.1	15.7	0.83	0.76	36.3
Approach		156	5.0	0.198	19.4	LOS B	2.1	15.7	0.83	0.70	38.2
All Vehicles		880	5.0	0.549	15.5	LOS B	9.3	67.8	0.66	0.75	41.7

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	11	16.9	LOS B	0.0	0.0	0.87	0.87
P7	Across W approach	11	10.0	LOS A	0.0	0.0	0.67	0.67
All Pedestrians		22	13.5				0.77	0.77

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS B. LOS Method for individual pedestrian movements: Delay (HCM).



MOVEMENT SUMMARY

Site: Broadwater Pwy/Fraser Dr -
2015 PM-with devel_no through
connection

2015 PM - Broadwater Parkway & Fraser Drive without full connection through to Maher Lane (Development Traffic only)
Signals - Fixed Time Cycle Time = 36 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive											
1	L	32	5.0	0.027	9.0	LOS A	0.2	1.3	0.38	0.65	47.7
3	R	205	5.0	0.317	17.8	LOS B	3.9	28.3	0.76	0.79	40.3
Approach		237	5.0	0.317	16.6	LOS B	3.9	28.3	0.71	0.77	41.2
East: Fraser Drive											
4	L	402	5.0	0.333	9.1	LOS A	2.4	17.5	0.45	0.71	47.4
5	T	78	5.0	0.135	10.2	LOS B	1.6	11.5	0.76	0.58	44.4
Approach		480	5.0	0.333	9.3	LOS A	2.4	17.5	0.50	0.69	46.9
West: Broadwater Parkway											
11	T	34	5.0	0.058	9.8	LOS A	0.7	5.0	0.73	0.54	44.7
12	R	34	5.0	0.072	19.2	LOS B	0.7	5.2	0.76	0.72	39.3
Approach		67	5.0	0.072	14.5	LOS B	0.7	5.2	0.75	0.63	41.8
All Vehicles		784	5.0	0.333	12.0	LOS B	3.9	28.3	0.59	0.71	44.6

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	11	12.5	LOS B	0.0	0.0	0.83	0.83
P7	Across W approach	11	12.5	LOS B	0.0	0.0	0.83	0.83
All Pedestrians		22	12.5				0.83	0.83

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS B. LOS Method for individual pedestrian movements: Delay (HCM).



MOVEMENT SUMMARY

Site: Broadwater Pwy/Fraser Dr -
2025 AM-with Development

2025 AM - Broadwater Parkway & Fraser Drive. with full connection to Mahers Lane (network redistribution)
Signals - Fixed Time Cycle Time = 50 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive											
1	L	105	5.0	0.097	9.3	LOS A	0.9	6.6	0.36	0.67	47.8
3	R	143	5.0	0.307	25.1	LOS C	4.1	30.2	0.85	0.78	35.5
Approach		248	5.0	0.307	18.4	LOS B	4.1	30.2	0.64	0.73	39.9
East: Fraser Drive											
4	L	105	5.0	0.087	8.5	LOS A	0.6	4.0	0.27	0.65	48.3
5	T	197	5.0	0.401	17.1	LOS B	5.6	40.9	0.87	0.71	38.6
Approach		302	5.0	0.401	14.1	LOS B	5.6	40.9	0.66	0.69	41.5
West: Broadwater Parkway											
11	T	737	5.0	0.780	14.1	LOS B	18.0	131.1	0.88	0.87	40.7
12	R	36	5.0	0.071	17.0	LOS B	0.8	5.5	0.74	0.72	40.9
Approach		773	5.0	0.780	14.2	LOS B	18.0	131.1	0.87	0.86	40.7
All Vehicles		1323	5.0	0.780	15.0	LOS B	18.0	131.1	0.78	0.80	40.7

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	17.6	LOS B	0.1	0.1	0.84	0.84
P7	Across W approach	53	19.4	LOS B	0.1	0.1	0.88	0.88
All Pedestrians		106	18.5				0.86	0.86

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS B. LOS Method for individual pedestrian movements: Delay (HCM).

MOVEMENT SUMMARY

Site: Broadwater Pwy/Fraser Dr -
2025 PM-with Development

2025 PM - Broadwater Parkway & Fraser Drive. with full connection to Mahers Lane (network redistribution)
Signals - Fixed Time Cycle Time = 60 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Fraser Drive											
1	L	254	5.0	0.309	12.7	LOS B	4.5	32.8	0.54	0.73	44.5
3	R	173	5.0	0.444	31.4	LOS C	6.1	44.5	0.91	0.80	32.2
Approach		426	5.0	0.444	20.3	LOS C	6.1	44.5	0.69	0.76	38.6
East: Fraser Drive											
4	L	144	5.0	0.128	8.5	LOS A	0.9	6.6	0.25	0.65	48.4
5	T	526	5.0	0.727	18.7	LOS B	15.4	112.6	0.91	0.84	37.5
Approach		671	5.0	0.727	16.5	LOS B	15.4	112.6	0.77	0.80	39.4
West: Broadwater Parkway											
11	T	316	5.0	0.287	6.7	LOS A	6.2	45.0	0.53	0.46	48.5
12	R	129	5.0	0.338	19.4	LOS B	2.7	20.1	0.86	0.78	39.2
Approach		445	5.0	0.338	10.4	LOS B	6.2	45.0	0.63	0.55	45.4
All Vehicles		1542	5.0	0.727	15.8	LOS B	15.4	112.6	0.71	0.72	40.7

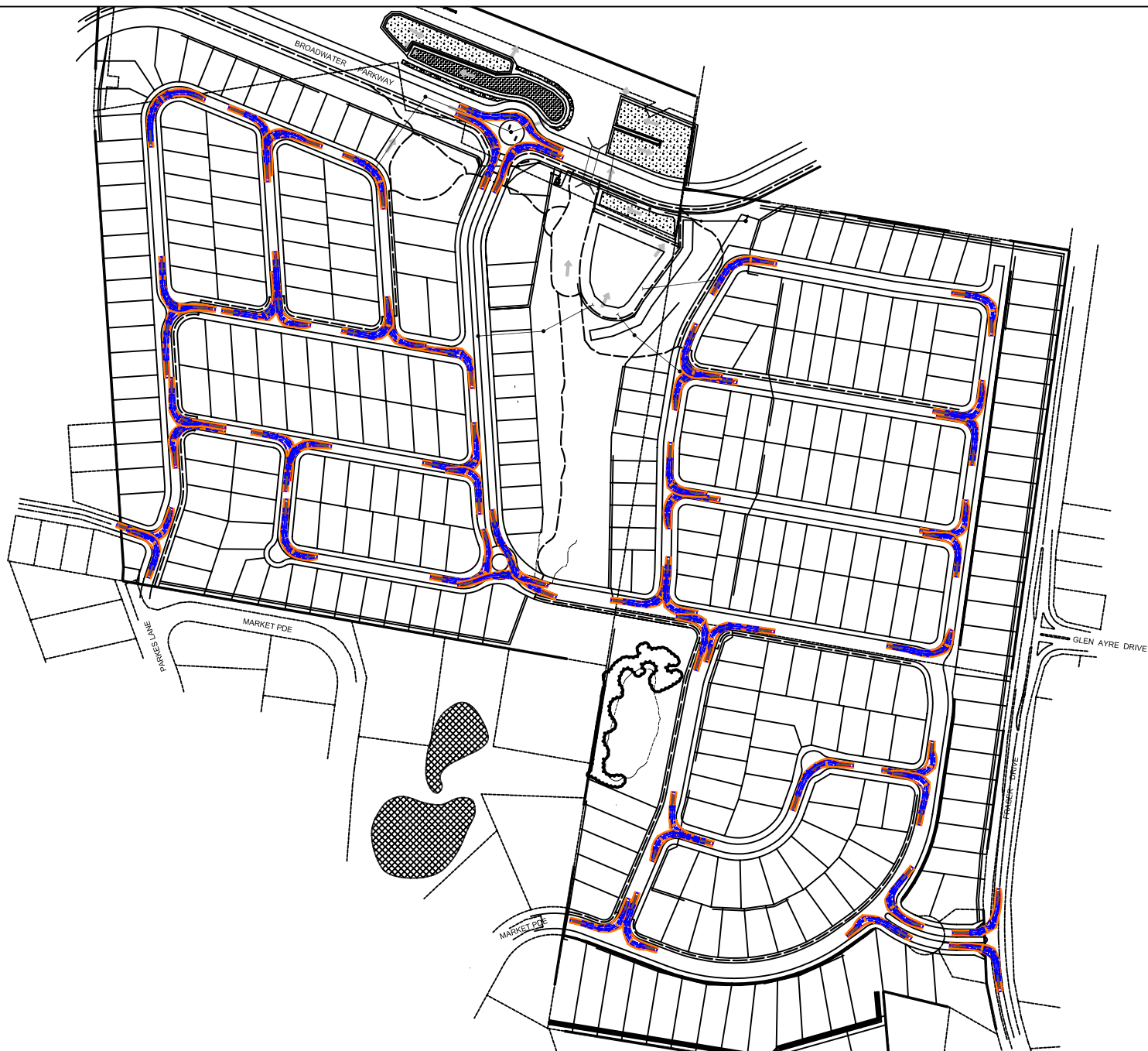
Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (HCM).
Approach LOS values are based on average delay for all vehicle movements.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	14.7	LOS B	0.1	0.1	0.70	0.70
P7	Across W approach	53	24.3	LOS C	0.1	0.1	0.90	0.90
All Pedestrians		106	19.5				0.80	0.80

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).
Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

APPENDIX D

SWEPT PATH ANALYSIS RESULTS



Date:
07/05/2010

Drawing Name:

Swept Path Analysis

Project No:
PO640

Project Name:

Banora Point TIA

BITZIOS
consulting
Figure No:
001



Date:
07/05/2010

Drawing Name:

Swept Path Analysis

Project No:
PO640

Project Name:

Banora Point TIA



Date: 07/05/2010	Drawing Name: Swept Path Analysis	BITZIOS consulting
Project No: PO640	Project Name: Banora Point TIA	
		Figure No: 005



Date:
07/05/2010

Drawing Name:

Swept Path Analysis

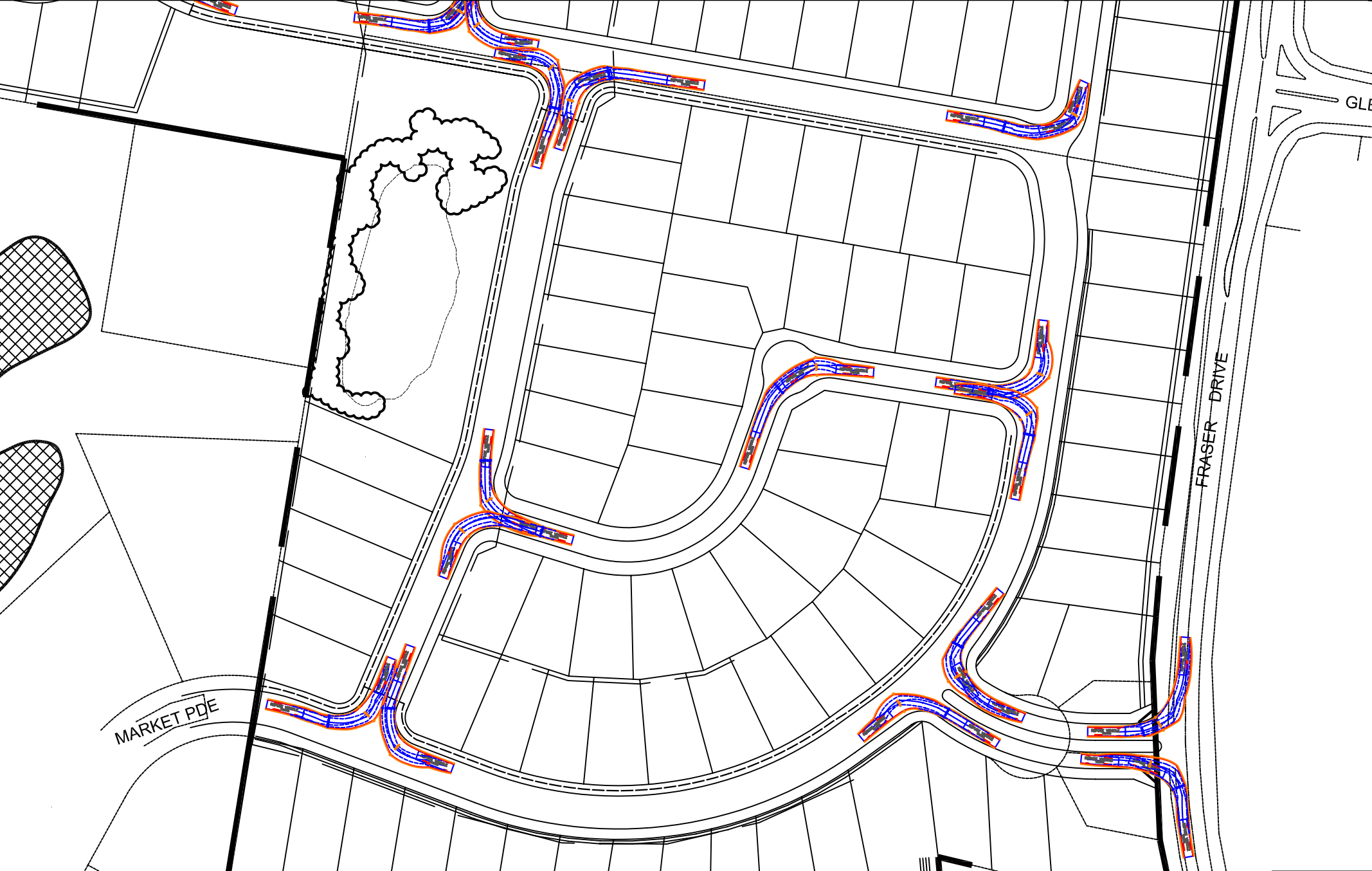
Project No:
PO640

Project Name:

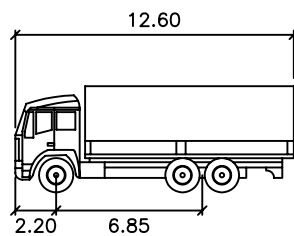
Banora Point TIA

BITZIOS
consulting

Figure No:
004

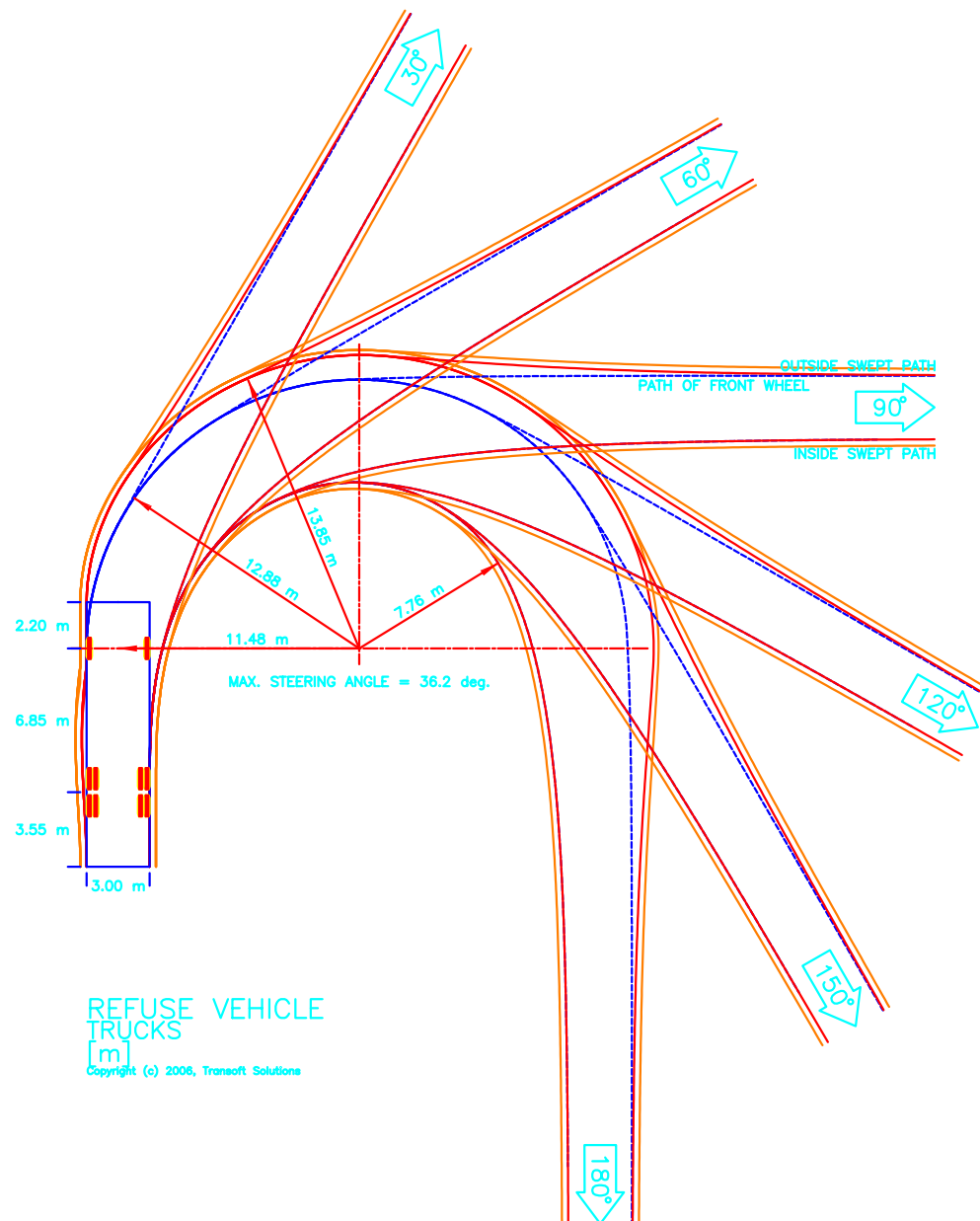


Date: 07/05/2010	Drawing Name: Swept Path Analysis	BITZIOS consulting
Project No: PO640	Project Name: Banora Point TIA	



REFUSE VEHICLE

Width	: 3.00
Track	: 3.00
Lock to Lock Time	: 6.00
Steering Angle	: 36.60



REFUSE VEHICLE
TRUCKS
[m]
Copyright (c) 2006, Transoft Solutions

Date:	07/05/2010	Drawing Name:	Service Vehicle Data	BITZIOS -consulting Figure No: 006
Project No:	PO640	Project Name:	Banora Point TIA	