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FAST TRACK REFERRAL

Subject:	Awanui Links Proposal, Puketaha, Waikato
Prepared By:	Michelle Seymour, Commute Transportation Consultants
Reviewed By:	Leo Hills, Commute Transportation Consultants
Date:	25 February 2026

1 INTRODUCTION

Awanui Links is a comprehensively masterplanned, mixed-use development in the Waikato region that combines high-end tourism, lifestyle living, retirement accommodation, and employment-generating industrial land uses within a rural setting.

Anchored by an 18-hole golf course, the development includes extensive visitor infrastructure such as a clubhouse, virtual golf centre, driving range, wellness centre, fine dining venue, hotel and event centre, and a café.

Accommodation offerings comprise 10 large and 52 small luxury villas. The residential component includes 70 rural residential lots and a retirement village with a dedicated care facility.

The project also features 9 light industrial lots, a solar farm, landscaped open spaces, wetlands, and integrated infrastructure, delivering a destination that supports regional growth, tourism, housing diversity, and environmental resilience.

To support the referral, this memo provides a high-level review of the transport aspects of the proposal, including:

- Summary of site and the proposal;
- High level analysis of transport effects;
- Further analysis to be completed and
- Conclusions.

2 SITE DESCRIPTION AND PROPOSAL

2.1 SITE DESCRIPTION

The site is located at 28 Telephone Road, Puketaha. Located within the Waikato region, the site is centrally located to the east of the Hamilton urban area, located approximately 10km from the Hamilton CBD, and 6.0km from Ruakura.

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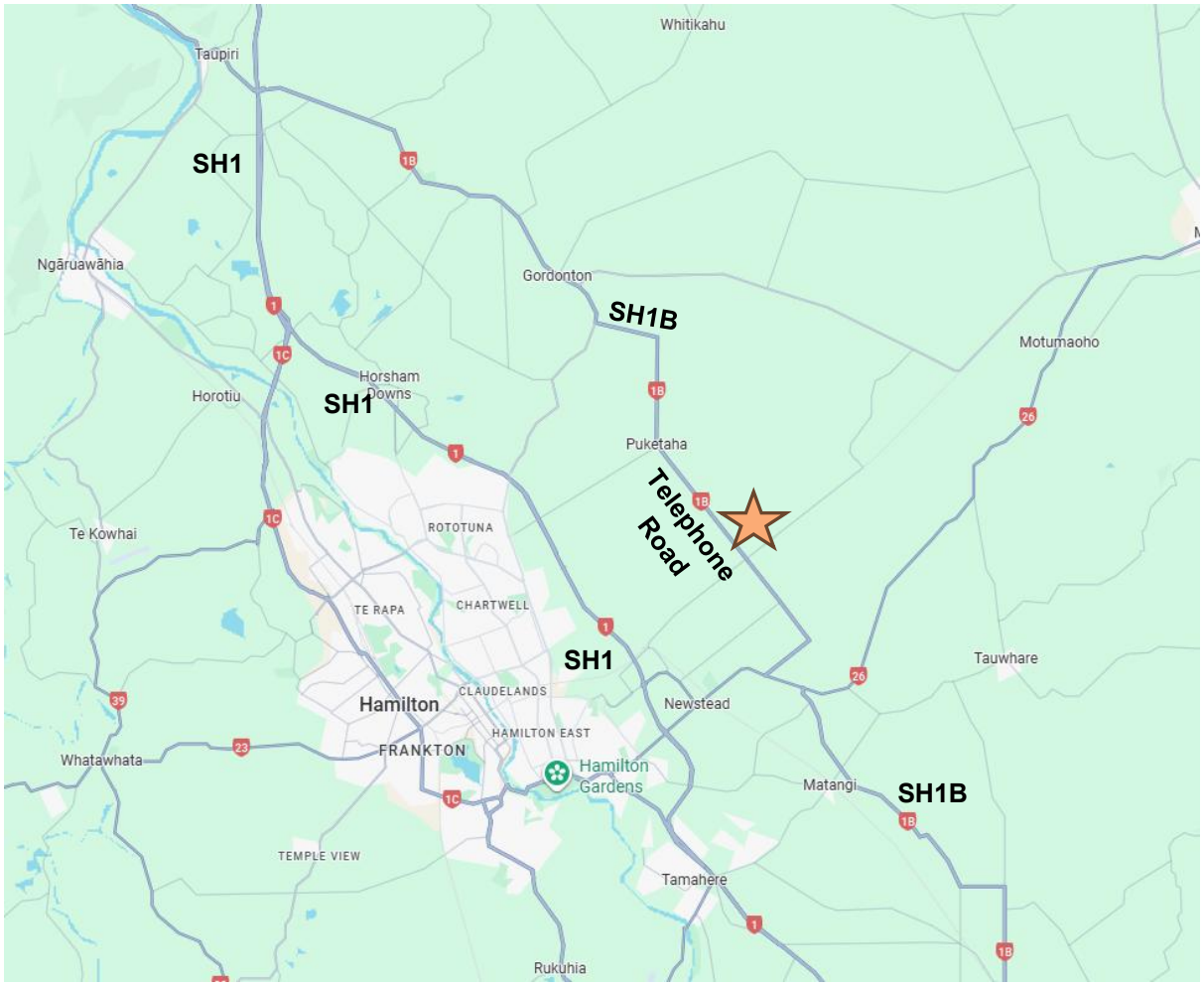
Figure 2-1: Site Location within the wider Network



Telephone Road is classified as a Regional Arterial Road within the Waikato District Plan. The road reserve is approximately 20m wide, with a sealed width of 7.2m, accommodating one traffic lane in each direction. There are no footpaths or cycle provisions on Telephone Road, which is commensurate with the existing rural nature of the corridor. Telephone Road has a posted speed limit of 100 km per hour. Telephone Road currently carries in region of 790[1] vehicles per day north of the Holland Road intersection. Immediately adjacent to the southern edge of the site, is the North Island Main Trunk rail line.

Telephone Road, or State Highway 1B, provides an inter-regional link and provides access to Hamilton from the wider Waikato region. The corridor provides an alternative resilience route to the SH1 corridor, and following investment in the Waikato Expressway, it is expected that following a revocation process, this route will be transferred from New Zealand Transport Agency ownership to the Waikato District Council.

[1] Five Day ADT, Traffic volumes surveyed week of 10 November 2025 – 16 November 2025. .

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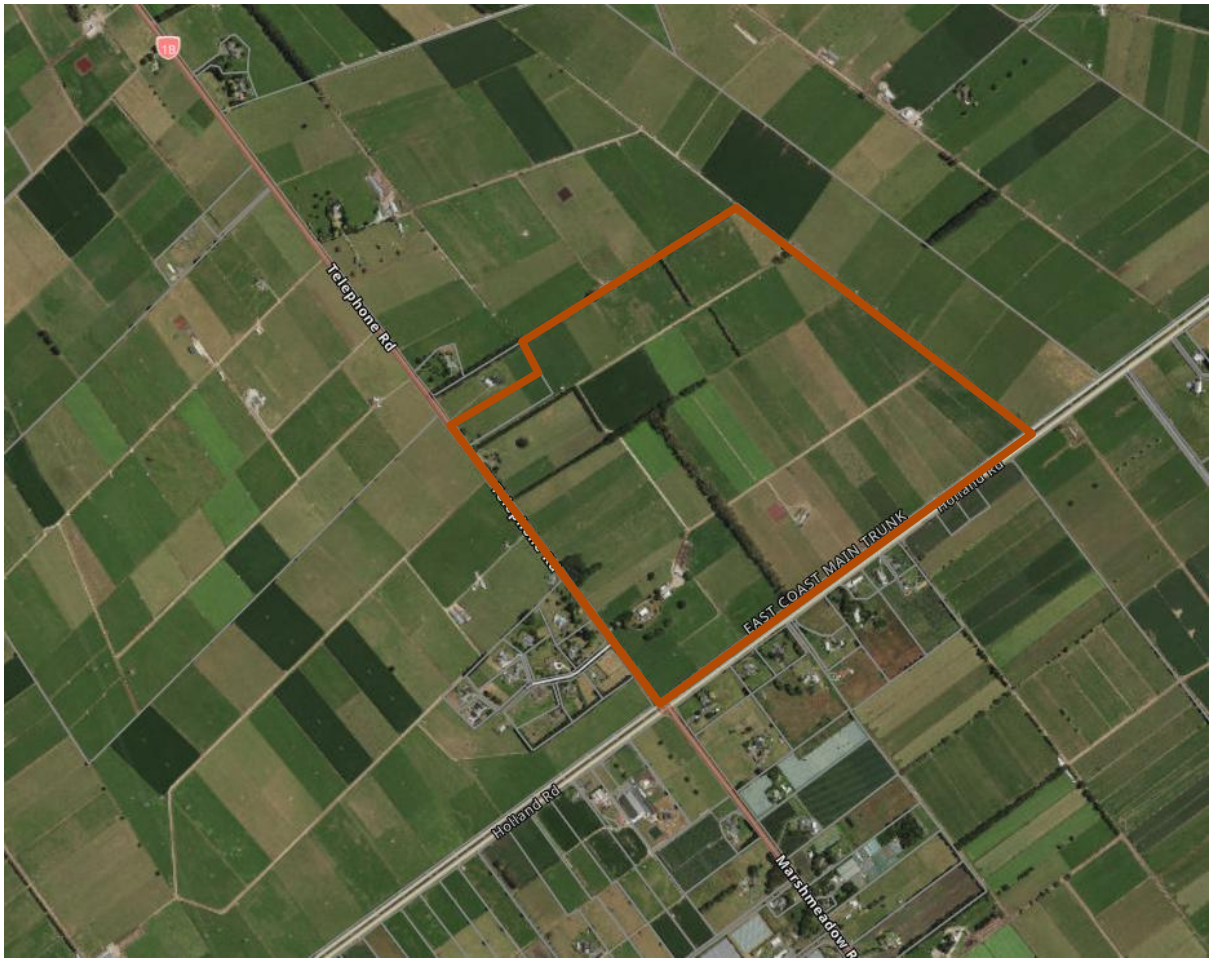
Figure 2-2: Site Location



The site is currently zoned General Rural Zone, with the surrounding land use activities being predominantly rural.

Across Telephone Road there is a small (~10 dwelling) residential subdivision accessed from Amber Lane.

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2.2 PROPOSAL

The applicant is proposing development of the site for a range of uses, including residential, recreational and industrial activities. The proposed development will include a network of internal primary and secondary roads, with three external connections to Telephone Road. The site will be comprehensively developed to include internal walking paths and connections within the site.

Figure 2-3 shows the proposed development including its internal roading configuration and proposed connections to existing roads.

Figure 2-3: Plan of proposed development

Figure 10 High-Level Masterplan

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3 HIGH LEVEL ANALYSIS OF TRANSPORT EFFECTS

3.1 TRAFFIC GENERATION

3.1.1 GOLF RESORT TRIP GENERATION

Although the development provides various different activities, not all of these activities will generate movements to the external road network. Several of the activities will be used by the same person at the development. For example, the restaurant and bar are unlikely to generate significant trips in their own right, as the majority of visitors to the restaurant and bar will already be on-site.

Information on similar sites in New Zealand is limited, however surveys of similar golf club/resorts have been undertaken in Sydney, Australia and provide an indication of a likely trip generation for similar types of development.

Trip Generation Surveys Golf Courses, Analysis Report, Transport for NSW (February 2022)

Using 15 sites across New South Wales and Sydney, a trip generation and parking research report was prepared for Transport for NSW. While based on Australian sites, the characteristics and trip dynamics in Australia are generally considered similar to New Zealand, and documents such as the Guide to Traffic Generating Developments (also developed by Transport for NSW) are generally accepted as industry standard in New Zealand.

Initial findings of this report were:

- On weekdays, peak trip volumes were generally generated in the middle of the day,
- Trip generation rates appeared consistent across all sites, with no strong trends
- On Saturdays, the sites showed higher vehicle trip generation on average than the weekday or Sunday peak periods

Average trips rates per hole identified in the study as shown in below

Table 3-1: Trip Generation Rates per hole as per Transport for NSW Study (2022)

Time	Trip Rate per number of holes
Weekday Daily	13.18
AM Peak	3.31
PM Peak	3.92
Saturday Peak	4.04

These rates were then benchmarked against the ITE Trip Generation Manual (US standard), and the TRICS database (UK standard). The trips rates were found to be similar to the US rates, and slightly higher than UK rates.

The study does note that there may be variation in the trip generation considering ancillary activities such as driving ranges, accommodation offerings on site, and restaurant and cafes. The use of the facility as a members only or public use may also result in further variability.

For the purpose of the referral, the average trip rates from the NSW study are considered to be appropriate and provide a conservative estimate of the number of trips from the golf club. The likely

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trip generation will be further refined within the substantive application. This results in the following trip generation for the golf resort.

Time	Total Trips
Weekday Daily	237
AM Peak	60
PM Peak	71
Saturday Peak	73

3.1.2 OTHER ACTIVITIES TRIP GENERATION

The RTA Guide is commonly used by traffic engineering practitioners in Australasia to assess the traffic generating potential of various land uses. Where possible, this guide has been used to estimate the expected trip generation rates for the range of activities as summarised in the below table.

Table 3-2: Other activities

Activity	Trip Rate in the peak hour	Number of Units	Estimated Peak Hour Trips
Retirement Village (Independent Living)	0.2 trips per dwelling	137 units	27
Retirement Village (Care centre)	0.15 trips per bed	50 beds	8
Light Industrial Lots	20 trips per hectare (net)	9 lots @ 5,000m^2 each	90
Rural Residential Lots	0.9 trips per dwelling	70	63
Visitor Accommodation	0.4 trips per unit	62	25
Solar Farm	Similar sites indicate 2 trips per site	3,000m^2	2

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3.1.3 ONE OFF ACTIVITIES

In addition to the day to day activities on the site, the golf course clubhouse is expected to host one off events for up to 150 people, occurring up to 20 times a year.

These events are expected to occur outside of peak weekday hours, and also outside of peak golfing times. There will also be a high likelihood of the visitor accommodation being utilised for those attending events such as weddings, which would further reduce the expected trip generation of the events facility.

Event occupancy	Vehicle occupancy	Expected trips (per direction)
150 guests	Assuming a car occupancy of 1.2 people per car	125 trips
20 staff	Assuming a car occupancy of 1 person per car	20 trips
Expected trip generation		145 trips

Further intersection modelling will be undertaken to understand the Saturday movements of the site as part of the substantive package.

3.1.4 INTERSECTION ASSESSMENTS

Based on surveys undertaken at the Telephone Road, and the expected trip generation, initial intersection modelling has been undertaken to understand the expected queue lengths at the Telephone Road intersection with Holland Road. This was considered necessary to understand the interface between the intersection and the recently opened rail crossing (as detailed further in Section 3.3).

The intersection modelling has been undertaken with the following assumptions

- Trip generation as per the above table, for a weekday AM and PM period
- Trip distribution has been tested under two scenarios
    - 50% of traffic generated utilising the Holland Road intersection
    - 90% of traffic generated utilising the Holland Road intersection
- Distributions at the intersection have been based on existing surveyed distributions
- Based on video surveys of the intersection, while technically a staggered intersection, the intersection currently operates as a four way intersection and has been modelled as such.

The intersection modelling confirms that under a 90% scenario, the average queue length in both the AM and PM peak period is no more than one vehicle, with an average delay of 8.2 seconds in the PM peak, and 8.5 seconds in the AM peak period.

The railway level crossing provides for approximately 10m, which would safely enable up to two vehicles, or one truck, to queue from the limit lines before reaching the barrier arms.

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Notwithstanding this, a number of supporting mitigation measures are recommended to minimise the traffic utilising the Holland Road intersection and travelling through the level crossing. These are detailed in Section 4.

3.2 PROPOSED ACCESS

Two separate access points are proposed to the development along Telephone Road. These are shown in Figure 3-1.

Figure 3-1: Proposed Access Location to the site

The exact design of the intersection and driveway is still in progress, however the locations identified are consistent with the underlying subdivision as shown below in Figure 3-2.

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Figure 3-2: Underlying subdivision consent and access locations

There are no identified sight distance issues with the proposed locations.

With regard to separation requirements under the Waikato District Plan, Table 3-3 provides an assessment of this under a 100km/hr speed environment and Telephone Road categorised as a Regional Arterial Road.

Table 3-3: Intersection Separation Assessment as per Table

Intersection	Requirement	Provision	Comment
Telephone Road and proposed Northern Road access	200m between access and roads	96m to the north 290m to the south	The proposed access location aligns with the underlying access that could serve eight subdivided lots. Although it will generate higher traffic volumes, it will function as a formed intersection, and further design work will ensure sight lines are optimised.
	800m between road intersections	670m between Amber Lane and proposed Road	The location is 130m short of the required 800m separation, however, there is significant sight distance available, and Amber Lane is a cul de sac expected to generate limited trips. It is also the most northern location available.

Intersection	Requirement	Provision	Comment
Telephone Road and Golf access	200m between access and roads	150m	This intersection will need further design consideration. This location is consistent with the existing subdivision access for 15 lots. The proposal also removes the requirement for three additional residential access points onto Telephone Road.
	200m between accesses	20m to single dwelling on opposite side of the road to the south 95m to the consolidated access on opposite side of the road to the north	

3.3 LEVEL RAIL CROSSING

There is an existing level crossing located at the intersection Telephone Road and Holland Road. This crossing was closed from April 2022 and was recently reopened on 30 July 2025[2] following a significant upgrade to improve safety.

The safety improvements undertaken at this level crossing include barrier arms, the road level raised, new escape lanes built and improved signage and road marking.

With these upgrades in place, the additional movements across the level crossing are not expected to present safety concerns, however ongoing monitoring is recommended as part of the staged delivery of the proposal.

[2] SH1B Telephone Road rail crossing | NZ Transport Agency Waka Kotahi

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Figure 3-3: Previous intersection arrangements at SH1B Level Crossing

Figure 3-4: Existing Upgraded Level Crossing at Holland Road and SH1B (looking to Holland Road)

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Figure 3-5: Existing Upgraded Level Crossing at Holland Road and SH1B (looking to SH1B)

3.4 ACTIVE MODES

There are limited landuse activities within walking or cycling distances from the proposed site. As such no provisions for active modes are proposed on Telephone Road. There is however a comprehensive network internal to the site, with access between the activities available. The specific widths and design of these networks will be confirmed in the ITA.

3.5 PUBLIC TRANSPORT

There is currently limited public transport in vicinity to the site, which is not unexpected given the rural nature of the surrounding area.

It is not expected that the site would generate sufficient demand to warrant a public transport offering.

A private service for the retirement village could be provided by the operator, and these are typically considered based on demand.

3.6 PARKING

Each use will have its own dedicated parking provision, with the quantity per activity to be determined as part of the ITA prepared for the substantive application. The site is considered large enough that sufficient space will be available to meet the expected demands on site, resulting in no parking effects on the surrounding road network.

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4 RECOMMENDED MITIGATIONS

With regard to the proposed development occurring in proximity to the Telephone Road/Holland Road intersection and the recently opened SH1B Telephone Road level crossing, it is considered appropriate to provide for the following conditions:

Conditions during Construction

- All construction vehicles are to enter the site from the north via Puketaha Road

Staged Conditions

- Following each stage of development, an updated ITA shall be provided to Waikato District Council that provides an assessment of the performance of the Holland Road/Telephone Road intersection and an updated safety assessment of the level crossing.

Ongoing Conditions

- All heavy vehicles accessing the retirement village, the care centre, and the golf course including waste vehicles and regular deliveries are required to enter the site from the north, via Puketaha Road
- Any private bus operators are required to enter the site from the north via Puketaha Road.

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5 DETAILED TRANSPORT EFFECTS ASSESSMENT

Following on from this high-level assessment, further detailed analysis will be undertaken to confirm these initial findings.

Traffic Modelling

Refined intersection modelling will be undertaken for the key interfaces between the development and the existing road network. This will include updated network peak hour modelling and Saturday modelling of the following intersections:

- Telephone Road (SH1B and Holland Road)
- Telephone Road and the access points to the site

Given that there is limited area traffic modelling available for the rural parts of the Waikato region, the methodology proposed to complete this will utilise existing counts, that are then subsequently factored to reflect background traffic growth. The expected traffic generation of the site will then be distributed across the network based on likely destinations and existing census data. This traffic modelling will be undertaken using intersection modelling software (SIDRA).

Intersection Design

Each intersection on SH1B/Telephone will require further intersection design consideration to ensure that vehicles can access the site in the identified locations in a safe and efficient manner. This will include consideration of right turn treatments.

Vehicle Tracking

Vehicle tracking will be completed to confirm that all relevant development standards will be met to support the internal design and the interface with the existing network.

Integrated Transport Assessment

An Integrated Transport Assessment will be developed to undertake a more detailed assessment of the transport effects of the proposal. The ITA will include the following key assessments areas:

- **Background**: A description of the proposed activity, purpose and intended use of ITA
- **Existing Land Data:** A description of location, site layout, existing use, adjacent and surrounding land use
- **Existing Transport Data:** Description of access arrangements, onsite car parking, surrounding road network (including hierarchy, updated traffic volumes (if necessary) and crash analysis). Comment on public transport, walking and cycling networks
- **Existing travel characteristics**: Trip generation of existing use, and baseline development potential of the site
- **Proposal details**: Description of the proposal including site layout, vehicle access, on site car parking, internal vehicle circulation, and end of journey facilities (if any).
- **Predicted travel data**: Trip generation of the proposal including consideration of other modes
- **Appraisal of transportation effects**: Assessment of safety, efficiency and environmental effects
- **Avoiding or mitigating actions:** Details of any mitigating measures and revised effects

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- **Compliance with policy and other frameworks**: Waikato District Plan objectives, policies and rules
  Discussion and conclusions: Assessment of effects and conclusion of effects

6 COMMUTE TEAM

Commute has significant experience working with public and private organisations including large residential developments, commercial developments and providing advice to Auckland Transport, NZTA, the Ministry of Education and other government agencies.

Leo Hills is a Director at Commute Transportation. Leo has over 25 years' experience in traffic and transportation engineering, including intersection design, traffic safety engineering and design of passenger transport routes and facilities. His work has included projects that focussed on strategic assessment of roading and passenger transport routes through to detailed design tasks of transport schemes.

Michelle Seymour is an Associate Transport Planner with Commute Transportation. Michelle has over 17 years' of transport planning experience. Having experience in both the private and public sector, Michelle delivers a keen understanding project drivers and provides a pragmatic solution-based approach. She has a wide range of experience including Integrated Transport Assessments for large scale plan changes, notice of requirements, and resource consent applications.

7 PREVIOUS EXPERIENCE

Commute have provided transport advice on a wide range of developments, below are two similar developments where we have provided transport planning and traffic engineering advice.

Auranga Town Centre, Drury, Auckland

Commute was responsible for transport inputs into the town centre development of Auranga in Drury, Auckland. This development included a Plan Change and subsequent resource consents for the rezoning and development of 33.65ha from Future Urban Zone to a mix of Residential and Business zonings. Commute undertook a range of transport assessments including network modelling, intersection modelling and provided design advice including network access plans to determine the internal roading networks and proposed cross sections to support a multimodal outcome. This development was approved and is currently under construction.

River Road, Retirement Village, Hamilton

Commute was responsible for the transport inputs into a large retirement village located in Flagstaff, Hamilton. The village provided 120 care beds, in addition to 211 apartments for independent living. Commute undertook a transport assessment to understand the transport implications of the proposal, including proposed accesses onto River Road, on site parking and servicing, pedestrian connectivity throughout the site and connectivity to the wider network and the overall internal site design. This development was approved, constructed and currently occupied.

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8 CONCLUSION

Based on our experience and information received to date, it is concluded that there are no transport related reasons why the development as described above could not proceed under a fast-track application process.

We acknowledge that further assessment will be required as part of the Integrated Transport Assessment, however at this stage, with the proposed mitigations, we have not identified any significant transport effects that would preclude this development from occurring.

We trust this meets your requirements. Please do not hesitate to contact us if you have any questions or require any additional information.

Michelle Seymour
Associate Transport Planner

Commute Transportation Consultants

25 February 2026

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APPENDIX: INTERSECTION MODELLING

MOVEMENT SUMMARY

Site: 101 [AM Wk Existing (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Holland Rd															
1	L2	All MCs	15	0.0	15	0.0	0.017	4.6	LOS A	0.0	0.1	0.02	0.27	0.02	47.3
2	T1	All MCs	16	0.0	16	0.0	0.017	0.0	LOS A	0.0	0.1	0.02	0.27	0.02	48.4
3	R2	All MCs	1	0.0	1	0.0	0.017	4.7	LOS A	0.0	0.1	0.02	0.27	0.02	47.1
Approach			32	0.0	32	0.0	0.017	2.3	NA	0.0	0.1	0.02	0.27	0.02	47.8
East: Marshmeadow Rd															
4	L2	All MCs	6	0.0	6	0.0	0.030	7.8	LOS A	0.1	0.7	0.23	0.92	0.23	44.4
5	T1	All MCs	19	0.0	19	0.0	0.030	7.8	LOS A	0.1	0.7	0.23	0.92	0.23	44.4
6	R2	All MCs	6	0.0	6	0.0	0.030	7.7	LOS A	0.1	0.7	0.23	0.92	0.23	44.3
Approach			32	0.0	32	0.0	0.030	7.8	LOS A	0.1	0.7	0.23	0.92	0.23	44.4
North: Holland Rd															
7	L2	All MCs	7	0.0	7	0.0	0.056	4.6	LOS A	0.0	0.2	0.01	0.06	0.01	48.4
8	T1	All MCs	97	0.0	97	0.0	0.056	0.0	LOS A	0.0	0.2	0.01	0.06	0.01	49.6
9	R2	All MCs	4	0.0	4	0.0	0.056	4.6	LOS A	0.0	0.2	0.01	0.06	0.01	48.2
Approach			108	0.0	108	0.0	0.056	0.5	NA	0.0	0.2	0.01	0.06	0.01	49.5
West: Telephone Rd															
10	L2	All MCs	5	0.0	5	0.0	0.058	7.5	LOS A	0.2	1.4	0.19	0.92	0.19	44.4
11	T1	All MCs	20	0.0	20	0.0	0.058	7.8	LOS A	0.2	1.4	0.19	0.92	0.19	44.4
12	R2	All MCs	31	0.0	31	0.0	0.058	7.8	LOS A	0.2	1.4	0.19	0.92	0.19	44.2
Approach			56	0.0	56	0.0	0.058	7.8	LOS A	0.2	1.4	0.19	0.92	0.19	44.3
All Vehicles			227	0.0	227	0.0	0.058	3.5	NA	0.2	1.4	0.09	0.42	0.09	47.1

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

MOVEMENT SUMMARY

Site: 101 [AM Wk 50% Scenario (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Holland Rd															
1	L2	All MCs	43	0.0	43	0.0	0.032	4.6	LOS A	0.0	0.1	0.01	0.39	0.01	46.6
2	T1	All MCs	16	0.0	16	0.0	0.032	0.0	LOS A	0.0	0.1	0.01	0.39	0.01	47.8
3	R2	All MCs	1	0.0	1	0.0	0.032	4.6	LOS A	0.0	0.1	0.01	0.39	0.01	46.4
Approach			60	0.0	60	0.0	0.032	3.4	NA	0.0	0.1	0.01	0.39	0.01	46.9
East: Marshmeadow Rd															
4	L2	All MCs	6	0.0	6	0.0	0.067	7.8	LOS A	0.2	1.7	0.27	0.94	0.27	44.4
5	T1	All MCs	55	0.0	55	0.0	0.067	8.0	LOS A	0.2	1.7	0.27	0.94	0.27	44.4
6	R2	All MCs	6	0.0	6	0.0	0.067	8.0	LOS A	0.2	1.7	0.27	0.94	0.27	44.2
Approach			67	0.0	67	0.0	0.067	8.0	LOS A	0.2	1.7	0.27	0.94	0.27	44.4
North: Holland Rd															
7	L2	All MCs	7	0.0	7	0.0	0.061	4.6	LOS A	0.1	0.6	0.04	0.10	0.04	48.2
8	T1	All MCs	97	0.0	97	0.0	0.061	0.0	LOS A	0.1	0.6	0.04	0.10	0.04	49.4
9	R2	All MCs	12	0.0	12	0.0	0.061	4.7	LOS A	0.1	0.6	0.04	0.10	0.04	48.0
Approach			116	0.0	116	0.0	0.061	0.8	NA	0.1	0.6	0.04	0.10	0.04	49.2
West: Telephone Rd															
10	L2	All MCs	13	0.0	13	0.0	0.142	7.5	LOS A	0.5	3.8	0.23	0.91	0.23	44.2
11	T1	All MCs	46	0.0	46	0.0	0.142	8.0	LOS A	0.5	3.8	0.23	0.91	0.23	44.2
12	R2	All MCs	72	0.0	72	0.0	0.142	8.3	LOS A	0.5	3.8	0.23	0.91	0.23	44.0
Approach			131	0.0	131	0.0	0.142	8.1	LOS A	0.5	3.8	0.23	0.91	0.23	44.1
All Vehicles			374	0.0	374	0.0	0.142	5.1	NA	0.5	3.8	0.14	0.58	0.14	46.1

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

MOVEMENT SUMMARY

Site: 101 [AM Wk 90% Scenario (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Holland Rd															
1	L2	All MCs	66	0.0	66	0.0	0.044	4.6	LOS A	0.0	0.1	0.01	0.43	0.01	46.5
2	T1	All MCs	16	0.0	16	0.0	0.044	0.0	LOS A	0.0	0.1	0.01	0.43	0.01	47.6
3	R2	All MCs	1	0.0	1	0.0	0.044	4.6	LOS A	0.0	0.1	0.01	0.43	0.01	46.2
Approach			83	0.0	83	0.0	0.044	3.7	NA	0.0	0.1	0.01	0.43	0.01	46.7
East: Marshmeadow Rd															
4	L2	All MCs	6	0.0	6	0.0	0.098	7.8	LOS A	0.4	2.6	0.30	0.94	0.30	44.3
5	T1	All MCs	83	0.0	83	0.0	0.098	8.2	LOS A	0.4	2.6	0.30	0.94	0.30	44.3
6	R2	All MCs	6	0.0	6	0.0	0.098	8.3	LOS A	0.4	2.6	0.30	0.94	0.30	44.1
Approach			96	0.0	96	0.0	0.098	8.2	LOS A	0.4	2.6	0.30	0.94	0.30	44.3
North: Holland Rd															
7	L2	All MCs	7	0.0	7	0.0	0.064	4.7	LOS A	0.1	0.8	0.07	0.13	0.07	48.0
8	T1	All MCs	97	0.0	97	0.0	0.064	0.0	LOS A	0.1	0.8	0.07	0.13	0.07	49.2
9	R2	All MCs	17	0.0	17	0.0	0.064	4.8	LOS A	0.1	0.8	0.07	0.13	0.07	47.8
Approach			121	0.0	121	0.0	0.064	1.0	NA	0.1	0.8	0.07	0.13	0.07	48.9
West: Telephone Rd															
10	L2	All MCs	19	0.0	19	0.0	0.216	7.5	LOS A	0.9	6.1	0.26	0.90	0.26	44.1
11	T1	All MCs	67	0.0	67	0.0	0.216	8.2	LOS A	0.9	6.1	0.26	0.90	0.26	44.1
12	R2	All MCs	105	0.0	105	0.0	0.216	8.8	LOS A	0.9	6.1	0.26	0.90	0.26	43.9
Approach			192	0.0	192	0.0	0.216	8.5	LOS A	0.9	6.1	0.26	0.90	0.26	44.0
All Vehicles			492	0.0	492	0.0	0.216	5.8	NA	0.9	6.1	0.18	0.64	0.18	45.6

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

MOVEMENT SUMMARY

Site: 101 [PM Wk Existing (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Holland Rd															
1	L2	All MCs	14	0.0	14	0.0	0.042	4.6	LOS A	0.0	0.1	0.01	0.10	0.01	48.2
2	T1	All MCs	66	0.0	66	0.0	0.042	0.0	LOS A	0.0	0.1	0.01	0.10	0.01	49.4
3	R2	All MCs	1	0.0	1	0.0	0.042	4.6	LOS A	0.0	0.1	0.01	0.10	0.01	48.0
Approach			81	0.0	81	0.0	0.042	0.8	NA	0.0	0.1	0.01	0.10	0.01	49.2
East: Marshmeadow Rd															
4	L2	All MCs	1	0.0	1	0.0	0.032	7.6	LOS A	0.1	0.8	0.23	0.93	0.23	44.5
5	T1	All MCs	21	0.0	21	0.0	0.032	7.8	LOS A	0.1	0.8	0.23	0.93	0.23	44.4
6	R2	All MCs	9	0.0	9	0.0	0.032	7.7	LOS A	0.1	0.8	0.23	0.93	0.23	44.3
Approach			32	0.0	32	0.0	0.032	7.8	LOS A	0.1	0.8	0.23	0.93	0.23	44.4
North: Holland Rd															
7	L2	All MCs	11	0.0	11	0.0	0.032	4.6	LOS A	0.0	0.3	0.05	0.15	0.05	47.9
8	T1	All MCs	45	0.0	45	0.0	0.032	0.0	LOS A	0.0	0.3	0.05	0.15	0.05	49.1
9	R2	All MCs	5	0.0	5	0.0	0.032	4.7	LOS A	0.0	0.3	0.05	0.15	0.05	47.7
Approach			61	0.0	61	0.0	0.032	1.2	NA	0.0	0.3	0.05	0.15	0.05	48.7
West: Telephone Rd															
10	L2	All MCs	7	0.0	7	0.0	0.027	7.7	LOS A	0.1	0.7	0.21	0.92	0.21	44.4
11	T1	All MCs	15	0.0	15	0.0	0.027	7.8	LOS A	0.1	0.7	0.21	0.92	0.21	44.4
12	R2	All MCs	6	0.0	6	0.0	0.027	7.7	LOS A	0.1	0.7	0.21	0.92	0.21	44.3
Approach			28	0.0	28	0.0	0.027	7.7	LOS A	0.1	0.7	0.21	0.92	0.21	44.4
All Vehicles			202	0.0	202	0.0	0.042	3.0	NA	0.1	0.8	0.08	0.36	0.08	47.5

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

MOVEMENT SUMMARY

Site: 101 [PM Wk 50% Scenario (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Holland Rd															
1	L2	All MCs	40	0.0	40	0.0	0.056	4.6	LOS A	0.0	0.1	0.00	0.21	0.00	47.6
2	T1	All MCs	66	0.0	66	0.0	0.056	0.0	LOS A	0.0	0.1	0.00	0.21	0.00	48.8
3	R2	All MCs	1	0.0	1	0.0	0.056	4.6	LOS A	0.0	0.1	0.00	0.21	0.00	47.4
Approach			107	0.0	107	0.0	0.056	1.7	NA	0.0	0.1	0.00	0.21	0.00	48.4
East: Marshmeadow Rd															
4	L2	All MCs	1	0.0	1	0.0	0.071	7.6	LOS A	0.3	1.8	0.28	0.94	0.28	44.4
5	T1	All MCs	59	0.0	59	0.0	0.071	8.0	LOS A	0.3	1.8	0.28	0.94	0.28	44.4
6	R2	All MCs	9	0.0	9	0.0	0.071	8.2	LOS A	0.3	1.8	0.28	0.94	0.28	44.2
Approach			69	0.0	69	0.0	0.071	8.0	LOS A	0.3	1.8	0.28	0.94	0.28	44.3
North: Holland Rd															
7	L2	All MCs	11	0.0	11	0.0	0.039	4.8	LOS A	0.1	0.8	0.12	0.23	0.12	47.4
8	T1	All MCs	45	0.0	45	0.0	0.039	0.1	LOS A	0.1	0.8	0.12	0.23	0.12	48.5
9	R2	All MCs	17	0.0	17	0.0	0.039	4.9	LOS A	0.1	0.8	0.12	0.23	0.12	47.1
Approach			73	0.0	73	0.0	0.039	1.9	NA	0.1	0.8	0.12	0.23	0.12	48.0
West: Telephone Rd															
10	L2	All MCs	25	0.0	25	0.0	0.098	7.7	LOS A	0.4	2.6	0.25	0.92	0.25	44.4
11	T1	All MCs	51	0.0	51	0.0	0.098	8.0	LOS A	0.4	2.6	0.25	0.92	0.25	44.3
12	R2	All MCs	24	0.0	24	0.0	0.098	8.2	LOS A	0.4	2.6	0.25	0.92	0.25	44.2
Approach			100	0.0	100	0.0	0.098	8.0	LOS A	0.4	2.6	0.25	0.92	0.25	44.3
All Vehicles			349	0.0	349	0.0	0.098	4.8	NA	0.4	2.6	0.15	0.56	0.15	46.2

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

MOVEMENT SUMMARY

Site: 101 [PM Wk 90% Scenario (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Holland Rd															
1	L2	All MCs	61	0.0	61	0.0	0.068	4.6	LOS A	0.0	0.1	0.00	0.26	0.00	47.4
2	T1	All MCs	66	0.0	66	0.0	0.068	0.0	LOS A	0.0	0.1	0.00	0.26	0.00	48.5
3	R2	All MCs	1	0.0	1	0.0	0.068	4.6	LOS A	0.0	0.1	0.00	0.26	0.00	47.1
Approach			128	0.0	128	0.0	0.068	2.2	NA	0.0	0.1	0.00	0.26	0.00	47.9
East: Marshmeadow Rd															
4	L2	All MCs	1	0.0	1	0.0	0.101	7.6	LOS A	0.4	2.6	0.32	0.95	0.32	44.3
5	T1	All MCs	85	0.0	85	0.0	0.101	8.2	LOS A	0.4	2.6	0.32	0.95	0.32	44.3
6	R2	All MCs	9	0.0	9	0.0	0.101	8.6	LOS A	0.4	2.6	0.32	0.95	0.32	44.1
Approach			96	0.0	96	0.0	0.101	8.2	LOS A	0.4	2.6	0.32	0.95	0.32	44.3
North: Holland Rd															
7	L2	All MCs	11	0.0	11	0.0	0.045	4.9	LOS A	0.2	1.1	0.17	0.27	0.17	47.1
8	T1	All MCs	45	0.0	45	0.0	0.045	0.2	LOS A	0.2	1.1	0.17	0.27	0.17	48.2
9	R2	All MCs	25	0.0	25	0.0	0.045	4.9	LOS A	0.2	1.1	0.17	0.27	0.17	46.9
Approach			81	0.0	81	0.0	0.045	2.3	NA	0.2	1.1	0.17	0.27	0.17	47.6
West: Telephone Rd															
10	L2	All MCs	39	0.0	39	0.0	0.157	7.7	LOS A	0.6	4.3	0.27	0.92	0.27	44.3
11	T1	All MCs	79	0.0	79	0.0	0.157	8.1	LOS A	0.6	4.3	0.27	0.92	0.27	44.3
12	R2	All MCs	38	0.0	38	0.0	0.157	8.7	LOS A	0.6	4.3	0.27	0.92	0.27	44.1
Approach			156	0.0	156	0.0	0.157	8.2	LOS A	0.6	4.3	0.27	0.92	0.27	44.2
All Vehicles			461	0.0	461	0.0	0.157	5.5	NA	0.6	4.3	0.19	0.63	0.19	45.8

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