Western Annex Lands – 141 Peter Street Transportation Impact Study

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1 Study Context

This Transportation Impact Study (TIS) has been prepared for the Golf Course Lands of the Town of Perth's Western Annex Lands, located at 141 Peter Street. It supports both the development's Plan of Subdivision application and the Municipal Class Environmental Assessment process.

1.1 Background

Subsequent to the addition of the Western Annex Lands to the Town of Perth's Urban Settlement Boundary, an Infrastructure Master Plan (IMP) was commissioned by the Town and prepared by Jp2g Consultants Inc. in 2019, in part to develop a transportation framework for the area, identifying high-level opportunities and constraints. This Infrastructure Master Plan has formed the foundation for future planning work to develop these lands.

A Transportation Review was conducted for the Golf Course Lands by CGH in 2022, which evaluated newly proposed changes from the high-level IMP plan as the design became more detailed. The Transportation Review concluded that the refined concept at full build-out and at the development's first phases were supportable from a transportation network perspective.

As planning work has continued for the new community, options for subdivision access across the Tay River have been explored, which are the subject of the Perth Golf Course Access Options Memo prepared by CGH in 2022. This Access Options Memo, provided in Appendix A, supersedes the recommendations from the IMP with respect to crossing options, and the Sunset Boulevard crossing is no longer recommended for the transportation servicing of the new community.

Given the new community has already been found to be supportable from a transportation perspective through the IMP and the subsequent Transportation Review, this TIS has been prepared to evaluate and understand the local impacts of the newly proposed crossing configuration.

1.2 Proposed Development

The proposed subdivision concept includes 640 detached single-family dwellings, and 299 townhouse dwellings. Access is proposed via the existing Peter Street Bridge and a new crossing adjacent to this existing bridge. The assumed full-buildout horizon is 2041, in line with the existing traffic planning for the Town. Figure 1 illustrates the study area context. Figure 2 illustrates the proposed concept plan.



Source: https://www.openstreetmap.org/ Accessed: December 20, 2021





2 Existing and Planned Conditions

2.1 Area Road Network

Wilson Street: Wilson Street is an arterial road to the north of Foster Street and a collector road to the south. Between the Perth Mews access and Sunset Boulevard, Wilson Street has a three-lane urban cross-section with two southbound lanes, and it has a two-lane urban cross-section to the south. Sidewalks are provided on both sides of the road and bike lanes are provided on both sides of the road between Sunset Boulevard and Leslie Street. Street parking is permitted on both sides of the road between Leslie Street and the Best Western, and on the east side of the road to the south. The posted speed limit is 50 km/h, and the existing right-of-way is typically 20 metres.

Gore Street: Gore Street is a local road north of Foster Street and an arterial Road to the south with a two-lane urban cross-section and with sidewalks on both sides of the road. Street parking is permitted on both sides of the road south of D'Arcy Street and on the east side to the north. The unposted speed limit is assumed to be 50 km/h and the existing right-of-way is 20 metres.

Foster Street: Foster Street is an arterial road between Wilson Street and Gore Street, a collector road between Gore Street and Drummond Street, and a local road east of Drummond Street. Sidewalks are provided on both sides of the road west of Beckwith Street. Street parking is permitted on both sides of the road west of Drummond Street and on the north side of the road to the east. The unposted speed limit is assumed to be 50 km/h, and the existing right-of-way is 20 metres.

Peter Street: Peter Street is a collector road with a two-lane urban cross-section east of Lustre Lane, and transitions to a rural cross-section to the west. Sidewalks are provided on the north side of the road between Rogers Road and Lustre Lane, and both sides east of Rogers Road. The posted speed limit is 40 km/h east of Lustre Lane and 30km/h to the west. The existing right-of-way is 12 metres.

Rogers Road: Rogers Road is a collector road with a two-lane urban cross-section with a sidewalk on the west side of the road north of John Street and south of Harvey Street, and sidewalks on both sides of the road between these locations. Street parking is permitted on the west side of the road north of John Street and south of Harvey Street. The posted speed limit is 50 km/h and the existing right-of-way varies between 15.5 and 18 metres in the study area.

North Street: North Street is an arterial road east of Wilson Street West, and a local road to the west, each with a two-lane urban cross-section. West of Sinclair Street, a sidewalk is present on the north side of the road, and sidewalks are present on both sides of the road to the east. West of Lewis Street, street parking is permitted on the north side of the road and overnight parking is permitted on the south side of the road. Between Lewis Street and Wilson Street West, street parking is permitted on both sides of the road. Between Wilson Street West and Gore Street West, layby parking is on the north side of the road. East of Gore Street West, street parking is permitted on the south side of the road. The posted speed limit is 50 km/h and the existing right-of-way varies between 19 and 20 metres in the study area.

Lustre Lane: Lustre Lane is a local road with a two-lane urban cross-section. The unposted speed limit is assumed to be 50 km/h and the existing right-of-way is 16 metres.



2.2 Existing Intersections

The key signalized area intersections have been summarized below:

Wilson Street W at North Street	The intersection of Wilson Street West at North Street is an unsignalized intersection, stop-controlled on the minor approaches of North Street. The northbound approach consists of shared all- movements lane and southbound approach consists of a left-turn lane (that operates as a shared left-turn/through lane) and an auxiliary through/right-turn lane. The eastbound approach consists of a shared all-movements lane (that operates as a shared left- turn/through lane and a short auxiliary right-turn lane), and the westbound approach consists of shared all-movement lane (that operates as a right-turn lane and a shared left-turn/through lane). No turn restrictions were noted.
Gore Street W at North Street	The intersection of Gore Street West at North Street is an unsignalized intersection stop controlled on the minor approaches of North Street. The northbound, southbound, and westbound approaches each consist of a shared all-movement lane (where the southbound approach operates as a shared left-turn/through lane and an auxiliary right-turn lane). The eastbound approach consists of an auxiliary shared left-turn/through lane and a right-turn lane. No turn restrictions were noted.
Peter Street at Roaers Road	The intersection of Peter Street and Rogers Road is an unsignalized T-

Peter Street at Rogers Road The intersection of Peter Street and Rogers Road is an unsignalized Iintersection, stop-controlled on Rogers Road. The northbound approach consists of a shared left-turn/right-turn lane. The eastbound approach consists of a shared through/right-turn lane and the westbound approach consists of a shared left-turn/through lane. No turn restrictions were noted.

Wilson Street W / Wilson Street E at
Peter Street / Foster StreetThe intersection of Wilson Street West/Wilson Street East at Peter
Street/Foster Street is a signalized intersection. The northbound and
eastbound approaches each consist of a shared all-movement lane.
The southbound approach consists of a left-turn lane and a shared
through/right-turn lane, and the westbound approach consists of a
shared left-turn/through lane and an auxiliary right-turn lane. No turn
restrictions were noted.

Gore Street W / Gore Street E at Foster Street
The intersection of Gore Street West/Gore Street East at Foster is a signalized intersection. The northbound approach consists of a leftturn lane and an auxiliary shared through/right-turn lane, and the southbound approach consists of a shared all-movement lane (with enough pavement width to operate as a shared left-turn/through lane and a short auxiliary right-turn lane). The eastbound approach consists of a shared left-turn/through lane and an auxiliary right-turn lane, and the westbound approach consists of a shared all-movement lane (with enough pavement width to operate as a shared leftturn/through lane and a short auxiliary right-turn lane). No turn restrictions were noted.



2.3 Cycling and Pedestrian Facilities

Sidewalks are provided on both sides of Wilson Street, Foster Street, North Street, Peter Street east of Rogers Road, on the north side of Peter Street between Rogers Road and Lustre, on the west side of Rogers Road. An existing trail is located along the Tay River that uses Rogers Road and John Street south of Peter Street.

Bike lanes are provided on both sides of Wilson Street West between Sunset Boulevard and Leslie Street.

Figure 3 illustrates the candidate pedestrian network routes, and Figure 4 illustrates the candidate bicycle network routes, each including existing facilities, from the 2017 Town of Perth Municipal Transportation Master Plan (TMP) prepared by Stantec Consulting Ltd.









Figure 4: TMP Bicycle Network Candidate Routes

2.4 Changes to the Area Transportation Network

From the Town's TMP, Wilson Street, Peter Street/Foster Street, Rogers Road, and Gore Street East are proposed pedestrian priority routes. Wilson Street, Gore Street East south of Herriot Street, Rogers Road, Peter Street west of Rogers Road, Lustre Lane, and North Street are proposed bike routes.

A trail along the Tay River north of Peter Street connecting to the existing trails near the Lanark County Administration Building is proposed. A portion of this project within the study area is presently planned from the County building, however this project's scope sees the trail's southern section terminate at Leslie Street.



3 Updated Subdivision Review

3.1 Site Design

3.1.1 New Streets

The proposed subdivision concept generally follows the one presented within the 2022 Transportation Review of a modified grid that is responsive to the environmental constraints. A collector road with a 23.0-metre-wide rightof-way is proposed between the central park within the new community and the Tay River crossing at Peter Street. The cross-section of this portion of the collector road is to include a parking lane, a bike lane, two travel lanes, a bike lane, and a sidewalk.

Typical local roads that permit access to other roads within the subdivision are proposed as having 18.5-metre rights-of-way including a sidewalk, two travel lanes, and a parking lane. Additional internal local roads oriented towards land access only are proposed as having 16.75-metre rights-of-way, including two travel lanes and a parking lane.

3.1.2 Design for Active Modes

Consistent with the Town Transportation Master Plan, whose vision is of "a safe, sustainable, and multi-modal transportation system," active transportation connections will be provided from the subject lands to the surrounding town and downtown. These connections will have the goal of increasing the recreational opportunities for the residents, and, importantly, ultimately enabling the reduction in auto traffic by providing opportunity for a higher proportion of trips to be walking and cycling.

The active transportation facilities planned include bike lanes along the collector road, connecting the central park and the existing surrounding community and proposed future trails and future bike routes within the TMP. Active transportation facilities are proposed across each bridge. Figure 5 illustrates the proposed rights-of-way, and sidewalk and internal crossing block locations (in light green) within the new community.







3.2 Internal Subdivision Traffic Calming

Within the new community, traffic calming elements are proposed throughout via several types of measures.

Horizontal deflection measured including bulb-outs are proposed to narrow roadways and intersections at strategic locations. Mid-block narrowings are proposed at key crossing locations, and intersection narrowing is proposed periodically along roadways to reduce vehicle speeds on straight stretches. Abrupt bends in the roadway also serve this function and will have the effect of calming traffic.

On-street parking will also be a key traffic calming feature of the new community and is generally included as part of all typical roadway cross-sections.

A geometric drawing of the new community's transportation elements detailing these recommendations will be submitted to the Town for review in future. Figure 6 illustrates the proposed locations of narrowings within the new community.



3.3 Subdivision Access and Network Traffic Calming

The proposed access and river crossing configurations result in the new community's traffic ingress and egress occurring exclusively on the east side of the development. Various treatments may be considered to reduce potential future impacts from new traffic on the existing local community.

3.3.1 Directional Restriction

To manage volumes within the local neighbourhood context, the introduction of a directional restriction via the installation of a bulb-out on Peter Street between Lustre Lane and Rogers Road is proposed. This concept is different from the IMP treatment of creating a one-way couplet of Peter Street and North Street for the subject development's traffic. While this restriction would ensure all inbound traffic uses North Street, outbound traffic may use North Street or Peter Street as is convenient to reach their ultimate destination. The location of this directional restriction would still permit two-way traffic on both Peter Street and North Street for the existing neighbourhood's traffic. The intended effect of this treatment would be to reduce traffic on Peter Street which has a narrow right-of-way and generally includes narrow building setbacks.



The IMP stated that creation of a couplet of North Street and Peter Steet would require investigation into the signalization of the intersection of North Street at Wilson Street West. Additionally, inbound traffic that would otherwise use Rogers Road would need to divert to arrive at North Street through the downtown area. A conceptual plan for the implementation in the neighbourhood context is illustrated in Figure 7. An example at street-level of a typical implementation of this type of treatment is illustrated in Figure 8, where applied to the proposed context, the image would, in effect, be looking west on Peter Street from the intersection.



Figure 7: Directional Closure Concept Plan

Figure 8: Directional Closure Treatment



Source: Traffic Calming Design Guidelines (City of Ottawa, 2018)



3.3.2 Peter Street Speed Treatments

Various options for reducing speeds on Peter Street may be employed to limit the impacts of potential traffic increases. While the existing narrow pavement width will limit the opportunity for speeding, flexible post centreline treatments may further augment this effect. Speed humps may also be explored, and provide calming effect year-round, unlike the seasonal flexible post installation. Bulb-outs at Thom Street, and/or Lewis Street may additionally be included to narrow the pavement width to 7.0 metres to reduce speeds. In accordance with the recommendations from the 2022 Traffic Review by CGH, it is recommended that any such measures be explored on an as-needed basis through monitoring of the conditions as the subject development builds out.

3.3.3 North Street Speed Treatments

Similarly to Peter Street, speed treatments may be explored for North Street in the presence of a couplet. Given the North Street roadway is wider than that of Peter Street, the same tools may be considered to reduce speeds. Flex posts and speed humps may be explored, bulb-outs at Alma Street, Sinclair Street, and/or Lewis Street may additionally be included to narrow the pavement width to 7.0 metres to reduce speeds. As with the potential Peter Street treatments, need, timing, and selection of North Street treatments would be subject to monitoring.

3.3.4 Rogers Road Speed Treatments

As discussed within the TMP, speeding on Rogers Road has been noted in the past. The pavement width of the road averages approximately 9.0 metres, and especially when on-street parking is not utilized, this width and the straightness of the travelled path are suspected to contribute to higher operating speeds.

Rogers Road is a direct path to/from the site from/to South Street and Scotch Line Road to the south, which a portion of outbound development traffic may use thereby bypassing the downtown core. As such, it is anticipated that speeding concerns will be applicable to site traffic, and therefore speeding treatments may be accordingly investigated. Recommended treatments for the Town to address this existing issue include electronic driver feedback speed display signs ("Your Speed" signs), or the installation of an automated speed enforcement device (speed trap). This latter treatment, however, is noted to impact existing area residents and should be considered through consultation with the potentially impacted communities. As with the potential Peter Street and North Street speed treatments, need, timing, and selection of Rogers Road treatments would be subject to monitoring.

Development Traffic Demand 4

4.1 Trip Generation

Traffic generation for the full subdivision build-out has been prepared using the vehicle trip rates for each residential dwelling type using the fitted curve equation rates from the ITE Trip Generation Manual 11th Edition (2021). Table 1 summarizes the vehicle trip rates for the proposed land uses.

Table 1: Trip Generation Vehicle Trip Rates								
Dwelling Type	ITE Land	Peak	Vehicle Trip					
	Use Code	Hour	Rate					
Single Family	210	AM	0.72					
Detached		PM	0.91					
Multi-Family Low Rise	220	AM PM	0.44					

Table	1:	Trip	Generation	Vehicle	Trip	Rates

Using the above vehicle trip rates and the new community's unit counts, the total vehicle trip generation for the new community by peak hour has been estimated. The vehicle trip generation for the new community is summarized in Table 2.



	Units /	AM Peak Hour			PM Peak Hour			
Land Use	GFA	In	Out	Total	In	Out	Total	
Single Family Detached	640	120	341	461	372	210	582	
Multi-Family Low Rise	299	32	100	132	100	61	161	
Total	939	152	441	593	472	271	743	

Table 2: Vehicle Trip Generation

As shown above, the new community is anticipated to generate 593 new AM and 743 new PM peak hour twoway auto trips.

4.2 Trip Distribution

The distribution of trips will be consistent with the Transportation Review, the Infrastructure Master Plan, and the Perth Transportation Master Plan Future Traffic Forecasting Memo (Stantec, 2016). This methodology, based upon the existing turning movement splits, and access to major infrastructure, is considered valid. Table 3 below summarizes the ultimate distribution of traffic, imported from the Future Traffic Forecasting Memo.

Table 3: Trip Distribution						
To/From Residential % of Trips						
North	5%					
South	50%					
East	25%					
West	20%					
Total	100%					

4.3 Trip Assignment

From the distribution summarized in Table 3, the new community's traffic has been assigned to the local study area road network. The directional assignment is summarized in Table 4 and the resultant new community-generated auto traffic volumes are illustrated in Figure 9.

Table 4: Trip Assignment									
To/From Inbound Outbound									
North	Wilson St W	Wilson St W							
South	Gore St E	25% Gore St E,							
		25% Rogers Rd							
East	10% Wilson St W (N),	10% Wilson St W (N),							
	15% North St	15% Foster St							
West	Wilson St W (N)	Wilson St W (N)							
Total	100%	100%							





5 Traffic Analysis

Traffic operations will be analyzed for the study area intersections in the existing conditions, the future background conditions without the development traffic, and the future total conditions with the development traffic. The level of service (LOS) for signalized intersections will be based on Highway Capacity Manual (HCM) scoring of the percentile delay for the individual lane movements and overall intersection, and will be based on HCM 6th Edition delay for unsignalized intersections. Synchro version 11 will be used to model the forecasted study area traffic operations.

HCM LOS scoring for signalized intersections is summarized in Table 5 and for unsignalized intersections is summarized in Table 6.

Table 5: HCM LOS Scoring at Signalized Intersections							
Level of Service (LOS)	Delay (seconds/vehicle)						
А	0 – 10 seconds						
В	> 10 – 20 seconds						
С	> 20 – 35 seconds						
D	> 35 – 55 seconds						
E	> 55 – 80 seconds						
F	> 80 seconds						

Table 6: HCM LOS Scoring at Unsignalized Intersections

Level of Service (LOS)	Delay (seconds/vehicle)				
Α	0 – 10 seconds				
В	> 10 – 15 seconds				
С	> 15 – 25 seconds				
D	> 25 – 35 seconds				
E	> 35 – 50 seconds				
F	> 50 seconds				



5.1 Existing Peak Hour Travel Demand

5.1.1 Intersection Operations

Traffic volumes were observed in the field at the study area intersections on Tuesday, January 24, 2023, and these data, collected by Ontario Traffic Incorporated, are provided in Appendix B. The counted traffic volumes are illustrated in Figure 10. Signal timing for the study area signalized intersections was provided by the Town, in plans dated February 2, 2022. The forecasted study area traffic operations are summarized in Table 7. The Synchro worksheets are provided in Appendix C.



Table 7: Existing Intersection Operations

Interception	Lana	AM Peak Hour			PM Peak Hour				
Intersection	Lane	LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
	EBL/T	А	0.01	7.4	0.0	А	0.00	7.4	0.0
	EBR	-	-	-	-	-	-	-	-
Miles Ch M/ Q	WBL/T	А	0.01	7.3	0.0	А	0.01	7.3	0.0
WIISON ST W &	WBR	-	-	-	-	-	-	-	-
NORIA SL	NB	В	0.50	14.5	21.0	С	0.60	17.2	30.8
Unsignunzeu	SBL/T	С	0.43	15.1	16.5	С	0.55	18.0	24.8
	SBT/R	В	0.24	10.7	6.8	В	0.30	11.1	9.8
	Overall	В	-	12.3	-	В	-	14.4	-



lateres stice	tion		AM Pe	ak Hour		PM Peak Hour			
Intersection	Lane	LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
	EB	В	0.44	19.9	26.5	С	0.47	21.2	31.7
	WBL/T	В	0.16	15.2	13.5	В	0.09	15.4	9.7
Wilson St E/Wilson	WBR	Α	0.27	1.8	6.7	А	0.29	1.7	6.6
St W & Peter	NB	В	0.13	13.6	10.6	В	0.18	15.9	15.8
Signalized	SBL	Α	0.23	5.8	19.3	А	0.32	6.6	28.8
Signunzeu	SBT/R	Α	0.17	3.7	10.4	А	0.20	3.5	12.0
	Overall	Α	-	8.0	-	Α	-	8.1	-
	EBL/T	В	0.12	13.2	3.0	В	0.16	13.5	4.5
	EBR	А	0.08	9.3	1.5	А	0.05	9.2	0.8
Cara St M/ 8	WB	В	0.15	13.6	3.8	В	0.17	13.7	4.5
North St	NBL	А	0.04	7.8	0.8	А	0.04	7.7	0.8
Insignalized	NBT/R	-	-	-	-	-	-	-	-
Unsignalized	SBL/T	А	0.00	7.6	0.0	А	0.01	7.6	0.0
	SBR	-	-	-	-	-	-	-	-
	Overall	Α	-	5.5	-	Α	-	6.2	-
	EBL/T	В	0.11	15.7	11.4	В	0.14	17.1	15.4
	EBR	А	0.23	1.3	5.3	А	0.27	1.3	5.5
	WBL/T	С	0.70	29.4	#61.2	D	0.84	44.7	#88.4
Gore St E/Gore St	WBR	А	0.04	0.1	0.0	А	0.04	0.1	0.0
W & Foster St	NBL	Α	0.35	9.9	24.9	В	0.43	11.7	29.4
Signalized	NBT/R	А	0.27	9.9	24.7	А	0.22	9.6	18.6
	SBL/T	С	0.44	27.1	31.5	С	0.46	30.0	32.3
	SBR	Α	0.11	2.5	2.4	А	0.13	3.2	2.9
	Overall	В	-	14.8	-	В	-	19.2	-
Rogers Rd &	EB	-	-	-	-	-	-	-	-
Datar St	WB	Α	0.08	7.5	1.5	А	0.10	7.5	2.3
l Insignalized	NB	Α	0.18	9.4	4.5	А	0.19	9.3	5.3
Shisighanzed	Overall	Α	-	8.1	-	Α	-	8.1	-

Notes: Saturation flow rate of 1800 veh/h/lane Queue is measured in metres Peak Hour Factor = 0.90 v/c = volume-to-capacity ratio

m = metered queue

= volume for the 95th %ile cycle exceeds capacity

The study area intersections operate well in the existing conditions. No capacity or delay issues are present. Extended queues which may not clear the intersection in a single cycle for some number of cycles is noted on the westbound left-turn/through movement at the intersection of Gore Street East/Gore Street West at Foster Street during both peak hours.

5.1.2 Queueing Analysis

A detailed queueing analysis was performed to better understand queueing in the existing conditions. Microsimulation was conducted using SimTraffic 11 with a 30-minute seed time and a 60-minute run time across three separate runs to obtain 95th percentile queue lengths, which are summarized along with the available storage distance for all movements in Table 8. SimTraffic worksheets are provided in Appendix C.



Intersection	Lane	Storage Dist. (m)	AM Q (95th)	PM Q (95th)
	EBL/T	125*	4.6	2.9
	EBR	8	3.7	3.8
Wilson St W &	WBL/T	15	1.6	4.8
North St	WBR	125	7.2	0.0
Unsignalized	NB	50	34.4	38.9
	SBL/T	125*	27.5	28.1
	SBT/R	55	19.4	18.0
	EB	125*	34.8	33.8
Wilson St E/Wilson	WBL/T	125	20.3	17.6
St W & Peter	WBR	15	25.5	26.1
St/Foster St	NB	270	17.6	20.4
Signalized	SBL	50*	30.1	40.6
	SBT/R	50*	20.3	20.4
	EBL/T	10	16.7	15.4
C Ch 144 B	EBR	125	16.8	13.3
Gore St W &	WB	125	20.9	18.7
North St Unsignalized	NB	50	9.6	7.3
Unsignunzeu	SBL/T	125*	3.5	4.0
	SBR	8	1.1	0.0
	EBL/T	125	12.1	15.7
	EBR	25	22.6	25.9
	WBL/T	125	51.7	106.4
Gore St E/Gore St	WBR	8	17.3	18.0
W & Foster St	NBL	135	37.4	44.9
Signalizea	NBT/R	20	32.3	28.5
	SBL/T	50	33.2	32.9
	SBR	10	16.8	17.8
Rogers Rd &	EB	-	0.0	0.0
Peter St	WB	-	7.3	4.0
Unsignalized	NB	200	20.3	16.1

Table 8: Existing Intersection Queue Lengths

es: *Distance to the nearest upstream road intersection with minor stop control, actual storage capacity is higher but will cause blockage of intersecting roadways

Examining queuing throughout the study area, all approaches have the required storage distances for the combined queues in each lane in the existing conditions. Minor blockage of adjacent lanes is noted but would typically be expected and is not considered to materially impact operations.

Examining the queueing on the westbound left-turn/through movement at the intersection of Gore Street East/Gore Street West at Foster Street, the queue lengths from SimTraffic are longer than those noted in the Synchro analysis during the PM peak hour, but do not extend past the block length. No queuing issues are noted.

5.2 2041 Future Background Peak Hour Traffic Demand

5.2.1 Intersection Operations

The forecasted 2041 future traffic volumes were obtained from the Perth Transportation Master Plan Future Traffic Forecasting Memo (Stantec, 2016) which are provided in Appendix D. The volumes included those forecasted for subject development using various, outdated assumptions which were required to be removed to



generate the future background conditions without site traffic. The existing volumes were used as a basis of comparison to remove the subject development traffic under the old set of assumptions which are detailed in the Future Traffic Forecasting Memo. The resultant 2041 future background volumes are illustrated in Figure 11 and the forecasted traffic operations are summarized in Table 9. The Synchro worksheets are provided in Appendix E.



Figure 11: 2041 Future Background Traffic Volumes

Table 9: 2041 Future Background Intersection Operations									
Interestien			AM Pe	ak Hour		PM Peak Hour			
Intersection	Lane	LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
	EBL/T	D	0.06	31.1	1.5	F	0.11	61.2	3.0
	EBR	В	0.02	10.1	0.0	В	0.03	10.9	0.8
	WBL/T	С	0.05	24.0	1.5	Е	0.09	38.3	2.3
Wilson St W &	WBR	В	0.10	12.5	2.3	В	0.20	14.6	5.3
North St	NB	Α	0.01	8.3	0.0	А	0.02	9.1	0.0
Unsignunzeu	SBL/T	А	0.09	9.2	2.3	А	0.08	9.5	2.3
	SBT/R	-	-	-	-	-	-	-	-
	Overall	Α	-	2.1	-	Α	-	2.4	-
	EB	С	0.42	20.1	26.7	С	0.47	23.6	32.3
	WBL/T	В	0.12	15.6	11.8	В	0.14	18.4	13.7
Wilson St E/Wilson	WBR	Α	0.38	2.0	7.8	А	0.43	2.0	8.1
St W & Peter	NB	В	0.11	14.1	9.7	В	0.28	19.6	22.3
Si/FUSLEF Si	SBL	Α	0.31	6.1	25.6	А	0.52	8.0	53.1
Signalizeu	SBT/R	Α	0.16	3.6	9.9	А	0.20	3.5	12.8
	Overall	Α	-	7.0	-	Α	-	8.5	-



Intersection	Lana		AM Pe	ak Hour		PM Peak Hour			
intersection	Lane	LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
	EBL/T	В	0.11	12.3	3.0	В	0.12	13.8	3.0
	EBR	А	0.03	9.1	0.8	А	0.06	9.3	1.5
	WB	В	0.10	12.0	2.3	С	0.27	15.6	8.3
Gore St W &	NBL	А	0.03	7.7	0.8	А	0.05	7.8	1.5
Inorth St	NBT/R	-	-	-	-	-	-	-	-
Unsignunzeu	SBL/T	А	0.01	7.5	0.0	А	0.01	7.6	0.0
	SBR	-	-	-	-	-	-	-	-
	Overall	Α	-	5.3	-	Α	-	6.7	-
	EBL/T	В	0.15	19.6	14.7	С	0.14	20.7	13.0
	EBR	А	0.29	1.7	5.6	А	0.52	2.9	10.0
	WBL/T	С	0.15	20.2	11.4	С	0.25	22.2	16.7
Gore St E/Gore St	WBR	Α	0.03	0.2	0.0	А	0.04	0.3	0.0
W & Foster St	NBL	А	0.39	5.2	28.0	А	0.43	5.4	32.3
Signalized	NBT/R	А	0.15	4.5	14.5	А	0.16	4.3	15.5
	SBL/T	С	0.30	20.7	26.9	С	0.34	21.8	29.6
	SBR	А	0.03	0.2	0.0	А	0.07	0.7	0.9
	Overall	Α	-	7.6	-	Α	-	7.4	-
Degens Dd 9	EB	-	-	-	-	-	-	-	-
Rugers Ru &	WB	А	0.07	7.4	1.5	А	0.09	7.5	2.3
relei Si	NB	А	0.16	9.3	4.5	А	0.17	9.2	4.5
Unsignalized	Overall	Α	-	8.1	-	Α	-	8.1	-
Notes: Saturation flo	w rate of 1800 v	/eh/h/lane			v/c = volume-t	to-capacity ra	tio		

Notes: Saturation flow rate of 1800 veh/h/lane Queue is measured in metres Peak Hour Factor = 1.00

m = metered queue

= volume for the 95th %ile cycle exceeds capacity

The study area intersections in the 2041 future background conditions generally operate well during both peak hours and similarly to the existing conditions with increases in delays and queueing noted throughout.

The minor approaches of North Street at the intersection of Wilson Street West at North Street are forecast to experience a higher increase in delays than typically noted in the study area during both peak hours, and with failing or near-failing levels of service during the PM peak hour. This effect is due to the limited availability of gaps in the traffic stream with the addition of the forecasted north-south through background volumes, and through and left-turning vehicles may detour to other intersections to avoid these approaches as delays become intolerable.

5.2.2 Queueing Analysis

A detailed queueing analysis using the methods and parameters described in Section 5.1 at the 2041 future background horizon. The results of this analysis are summarized in Table 10. SimTraffic worksheets are provided in Appendix E.



Intersection	Lane	Storage Dist. (m)	AM Q (95th)	PM Q (95th)	
	EBL/T	125*	9.4	8.7	
	EBR	8	12.9	13.8	
Wilson St W &	WBL/T	15	8.4	9.8	
North St	WBR	125	21.7	23.3	
Unsignalized	NB	50	11.4	21.6	
	SBL/T	125*	30.6	55.1	
	SBT/R	55	2.3	14.3	
	EB	125*	37.4	43.7	
Wilson St E/Wilson	WBL/T	125	29.5	35.7	
St W & Peter	WBR	15	31.2	32.8	
St/Foster St	NB	270	16.2	32.7	
Signalized	SBL	50*	42.7	61.9	
	SBT/R	50*	20.6	26.8	
	EBL/T	10	17.7	14.1	
C Ch 144 B	EBR	125	16.5	15.4	
Gore St W &	WB	125	16.7	22.5	
North St Unsignalized	NB	50	5.9	20.4	
Unsignunzeu	SBL/T	125*	4.1	5.5	
	SBR	8	0.0	0.0	
	EBL/T	125	20.5	54.3	
	EBR	25	25.5	44.8	
	WBL/T	125	17.4	26.0	
Gore St E/Gore St	WBR	8	10.5	12.0	
W & FOSLER SL	NBL	135	43.3	56.9	
Signunzeu	NBT/R	20	31.8	36.2	
	SBL/T	50	33.4	38.9	
	SBR	10	13.4	19.1	
Rogers Rd &	EB	-	0.0	0.0	
Peter St	WB	-	6.2	6.3	
Unsignalized	NB	200	25.9	16.5	

	Table 10: 2041	Future	Background	Intersection	Queue	Lengths
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es: *Distance to the nearest upstream road intersection with minor stop control, actual storage capacity is higher but will cause blockage of intersecting roadways

As discussed in the existing conditions queueing analysis, minor blockage of adjacent lanes is forecast to occur at the 2041 future background horizon. The southbound left-turn movement at the intersection of Wilson St East/Wilson St West at Peter St/Foster St is forecast to spill back along the arterial corridor to halfway between the intersections of Wilson Street West at North Street and Wilson Street West at Glascott Street/D'Arcy Street. Queueing to or beyond adjacent intersection is a typical feature in urban conditions where short block lengths are present. Gaps in the traffic stream to permit conflicting movements will be limited to courtesy gaps at the intersection of Wilson Street West at North Street at those times during a peak hour where queues back up and cause blockages.



5.3 2041 Future Total Peak Hour Traffic Demand

5.3.1 Changes to Network Conditions

As discussed previously in this study and as stated in the Infrastructure Master Plan, the use of Peter Street and North Street as a couplet for access was understood to require the signalization of the intersection of Wilson Street West at North Street. All-way stop control will also be assumed for the intersection of Gore Street West at North Street to facilitate the change in traffic at this intersection as a result of the signalization of the intersection to the west. A number of other network changes will be assumed as part of the future total conditions to facilitate site access, and these modifications include turn restrictions, lane configuration adjustments, and storage lane extension. The full list of modifications, including forecasted design values based on best practices and operational needs are detailed in Section 5.4.2.5.

As a result of these changes, it is acknowledged that background traffic patterns will adjust to the new conditions. These changes are forecast to include additional use of the southbound left-turn lane at the intersection of North Street at Wilson Street West during the PM peak hour with the signalization of the intersection. Changes associated with the existing vehicles making movements that are to be restricted will also be resultant. The assumed changes in traffic patterns applied at the 2041 future total horizon are illustrated in Figure 12.



Figure 12: Changes to Background Traffic

5.3.2 Intersection Operations

Superimposing the forecasted subject development traffic volumes, illustrated in Figure 9, onto the future background traffic volumes illustrated in Figure 11, with the background changes illustrated in Figure 12, the forecasted 2041 future total traffic volumes have been projected. These volumes are illustrated in Figure 13 and the forecasted traffic operations are summarized in Table 11. Signal timing has been optimized at this horizon. The Synchro worksheets are provided in Appendix F.





Figure 13: 2041 Future Total Traffic Volumes

Table 11: 2041 Future Total Intersection Operations

Internetien	Lana		AM Pe	ak Hour		PM Peak Hour			
Intersection	Lane	LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
	EBL/T	С	0.65	33.0	30.2	E	0.79	64.3	#35.7
	EBR	А	0.04	3.5	1.6	А	0.05	4.0	2.8
	WBL/T	С	0.39	22.4	20.8	D	0.79	39.7	#72.2
Wilson St W &	WBR	А	0.16	6.9	6.2	А	0.24	6.8	9.6
North St Signalized	NB	А	0.56	7.7	41.0	В	0.59	14.1	84.8
Signunzeu	SBL	А	0.24	8.9	12.4	В	0.53	16.7	32.6
	SBT/R	А	0.42	7.8	48.6	В	0.76	16.6	#119.0
	Overall	В	-	11.5	-	С	-	21.4	-
	EB	С	0.77	33.6	#60.9	D	0.77	40.5	#58.7
	WBL/T	В	0.12	12.0	6.0	С	0.16	24.7	14.2
WIISON ST E/ WIISON	WBR	А	0.32	1.0	0.0	А	0.37	1.6	2.5
St W & Peter	NB	В	0.15	16.7	8.8	С	0.39	25.3	21.5
Signalized	SBL	В	0.32	14.5	49.7	А	0.43	3.2	m3.2
Signunzeu	SBT/R	В	0.17	10.1	25.2	А	0.21	1.1	m0.2
	Overall	В	-	15.0	-	В	-	11.6	-
	EB	В	0.31	10.2	9.8	С	0.74	23.4	48.0
Gore St W &	WB	А	0.11	8.3	3.0	В	0.33	11.4	10.5
North St	NB	А	0.11	8.5	3.0	В	0.34	12.3	11.3
Unsignalized	SB	А	0.12	8.3	3.0	В	0.21	10.6	6.0
	Overall	Α	-	9.2	-	С	-	17.1	-



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1		AM Peak Hour				PM Peak Hour			
Intersection	Lane	LOS	V/C	Delay (s)	Q (95 th)	LOS	V/C	Delay (s)	Q (95 th)
	EBL/T	С	0.42	20.3	m18.3	С	0.35	24.3	m18.7
	EBR	А	0.33	2.2	m12.0	А	0.46	5.8	31.0
	WBL/T	С	0.18	21.8	10.7	С	0.32	29.1	18.1
Gore St E/Gore St	WBR	А	0.03	0.2	0.0	А	0.05	0.4	0.0
W & Foster St	NBL	А	0.35	5.4	27.8	А	0.41	5.4	30.4
Signalized	NBT/R	А	0.23	5.4	22.1	А	0.37	5.9	39.6
	SBL/T	С	0.45	26.5	25.0	D	0.69	35.5	48.7
	SBR	А	0.04	0.2	0.0	А	0.08	0.4	0.0
	Overall	Α	-	8.6	-	В	-	11.7	-
De seus Del 9	EB	-	-	-	-	-	-	-	-
Rogers Kd &	WB	-	-	-	-	-	-	-	-
reter St	NB	В	0.21	10.9	6.0	В	0.19	10.0	5.3
Unsignalizea	Overall	Α	-	3.8	-	Α	-	4.8	-
Notes: Saturation flo	w rate of 1800 v	/eh/h/lane			v/c = volume-t	o-capacity ra	tio		

Queue is measured in metres Peak Hour Factor = 1.00 v/c = volume-to-capacity ratio m = metered queue

= volume for the 95th %ile cycle exceeds capacity

During both peak hours, the study area intersections are forecast to operate well in the 2041 future total conditions.

It is notable that delays on the arterial corridor of Wilson Street West, Foster Street, and Gore Street East are all comparable to the background conditions and in some cases even showing an improvement. This condition is due to priority being given to these arterial movements which is a typical practice consistent with the existing timing plans.

Moderate delays were forecast to be present on the conflicting movements to this corridor in the background conditions and where site vehicles are forecast to contribute to these movements, these delays are forecast to increase. This effect is mostly confined to the eastbound approach of the intersection of Peter Street/Foster Street at Wilson Street East/Wilson Street West, however these delays are forecast to remain at acceptable levels. In the case of Wilson Street West at North Street, during the PM peak hour, where the delays on the North Street approaches were high and contributing to low and failing level of service, the signalization of this intersection has improved the previously noted condition despite the increase in volumes.

While delays throughout the study area are not forecast to substantially increase, an increase in queueing is anticipated on several movements where stored queues may not clear the intersection in a single cycle for some number of cycles during a peak hour. This effect is forecast on the eastbound approach at the intersection of Peter Street/Foster Street at Wilson Street East/Wilson Street West during both peak hours, and on the eastbound left/through, westbound left/through, and southbound left/through movements of the intersection of Wilson Street West at North Street during the PM peak hour.

5.3.3 Queueing Analysis

As with the other horizons, a detailed queueing analysis has been performed using SimTraffic with the previously noted parameters to better understand the forecasted queueing within the study area at the 2041 future total conditions. The storage distances, and the forecasted 95th percentile queue lengths during each peak hour are summarized in Table 12. SimTraffic worksheets are provided in Appendix F.



Intersection	Lane	Storage Dist. (m)	AM Q (95th) (m)	PM Q (95th) (m)	
	EBL	125*	45.5	50.0	
	EBT/R	8	15.3	23.5	
Wilson St W &	WBL/T	15	29.4	33.4	
North St	WBR	125	38.4	74.2	
Signalized	NB	50	61.1	63.2	
	SBL	100†	38.4	64.5	
	SBT/R	125*	56.4	113.0	
	EB	125*	97.1	102.7	
Wilson St E/Wilson	WBL/T	125	17.6	32.4	
St W & Peter	WBR	15	25.4	31.0	
St/Foster St	NB	270	20.9	31.2	
Signalized	SBL	50	52.7	40.3	
	SBT/R	50	30.4	13.9	
Core St M/ P	EB	125	22.9	34.4	
Gore St W &	WB	125	20.6	28.8	
North St	NB	50	37.5	57.0	
Unsignalizea	SB	125*	17.5	21.3	
	EBL/T	125	37.2	45.1	
	EBR	25	37.1	43.4	
	WBL/T	125	19.6	39.6	
Gore St E/Gore St	WBR	8	13.2	14.8	
W & FOSLER SL	NBL	135	47.5	102.5	
Signalizea	NBT/R	20	37.2	42.9	
	SBL/T	50	37.9	61.1	
	SBR	10	10.7	22.8	
Rogers Rd &	EB	-	5.0	1.2	
Peter St	WB	-	16.2	16.1	
Unsignalized	NB	200	24.0	18.3	

Table 12: 2041 Future Total Intersection Queue Lengths

Notes: *Distance to the nearest upstream road intersection with minor stop control, actual storage capacity is higher †Distance assumed for the purposes of the analysis, design values are subject to further study

At the study area intersections, queueing is noted to increase generally—a trend that is consistent with the results from the Synchro analysis.

With the signalization of Wilson Street West at North Street and the remediation of delays on the eastbound and westbound approaches at this intersection, the previously noted southbound queuing from the downstream intersection of Wilson Street East/Wilson Street West at Peter Street/Foster Street will be interrupted by the signal control and pushed further upstream beyond North Street. This effect will be partly due to the elimination of queueing space within the intersection as was present in the background conditions where blockage of the intersection was noted.

Also, typical of urban conditions, queuing on the northbound approach at the intersection of Wilson Street West at North Street during both peak hours is anticipated to spill back to the westbound approach of the intersection of Wilson Street East/Wilson Street West at Peter Street/Foster Street, along the arterial corridor. This spillback



is limited in scale however, and the upstream queueing on the westbound approach at the intersection of Wilson Street East/Wilson Street West at Peter Street/Foster Street is not anticipated to reach Gore Street.

Ninety-fifth percentile queues on the eastbound approaches of Peter Street and on North Street at Wilson Street West are anticipated to be contained within the block and are typically double the values of the average queues.

During the PM peak hour, queueing at the proposed all-way stop controlled intersection of Gore Street West at North Street is anticipated to spill back into the intersection of Gore Street West/Gore Street East at Foster Street by one vehicle due to the short block length. Similarly during the PM peak hour, the southbound left-turn/through movement queue at the intersection of Gore Street West/Gore Street East at Foster Street to spill back to the all-way stop-controlled intersection of Gore Street West at North Street. These operations are considered acceptable.

5.4 Analysis and Discussion

The traffic analysis for the subject development is considered to be conservative due to a number of factors which will be discussed herein. The selection of a conservative analysis is appropriate as part of a long-term planning exercise to identify maximum anticipated impacts and required mitigations. It is noted that even under the conservative analysis constituting the foregoing work, the network intersections are forecast to operate well and queues within the study area are acceptable and no mitigation for these conditions is required beyond those elements required to facilitate access assumed in Section 5.3.1 and later refined in Section 5.4.2.

Traffic calming, as discussed above, should be employed. However, the extent to which it will be required may be based upon how development traffic ultimately gets realized as compared to forecasts within this study. Given the large proportion of forecasted traffic versus counted traffic from both the background conditions and from the subject development, the traffic on the Town's road network that is ultimately realized at the 2041 horizon will be highly contingent on mitigating factors.

5.4.1 Mitigating Factors

A number of factors will affect how much traffic the subject development will ultimately generate, and how much the background developments will also contribute to the network, however two of the most salient ones can be categorized as active mode trips and emerging trends.

5.4.1.1 Active Mode Trips

The trip generation employed within subject TIS and the Future Traffic Forecasting Memo represents industrystandard methods for directly forecasting auto trips based upon land use types. It is noteworthy that these rates for residential land uses have trended downward as subsequent versions have been published. What is not captured at this level of analysis, however, is the site-specific potential for auto trips to be converted to walking or cycling trips based upon access to active mode infrastructure.

The development concept includes high quality active mode connections to the surrounding network across the two bridges. Many employment and commercial destinations in town, including the downtown, are within walking distance of the new community. Where these trips in other community contexts would be made via personal auto, the subject community may meet a higher active mode share than would otherwise be assumed by the typical values.

5.4.1.2 Emerging Trends

Another series of factors which would reduce the background and site trip generation from the values forecasted, are emerging social and technological trends such as virtual travel.



Virtual travel describes all of the trips that were previously made by auto travel and other modes being captured by internet and telecommunication technologies. These trips include those reduced by work from home, either full-time or part-time, online services such as fitness, banking, medical, or consultation appointments, and e-commerce which converts retail trips during the peak hours into off-peak deliveries.

5.4.1.3 Enabling the Mitigating Factors

The updated subdivision concept already includes robust active mode connectivity, and thus further mitigation to shift travel towards walking and cycling is not required.

To take advantage of the shift from auto travel towards virtual travel, infrastructure connectivity solutions should be explored. The Town of Perth has high quality fibre-optic internet infrastructure whose extension to the subject community could increase the new community's potential for remote activities to supplant physical ones. Not only would such connectivity serve to shift subject development traffic towards virtual travel, but as adoption of virtual travel increases regionally, and as further employment and commercial activities go online, some proportion of background traffic may shift towards this emerging "mode" as well.

5.4.2 Network Design Elements

Various transportation network design elements were assumed in Section 5.3.1 for the facilitation of vehicular access to the new community whose design values were based upon operational suitability as determined by the modeled traffic conditions. These assumed configurations and design values will be examined within this section through a theoretical framework employing industry standard practices for determining design values to supplement the operational analysis.

Recommendations made herein are contingent on the ultimate network traffic reflecting those volumes forecast within the subject study and the Future Forecasting Memo. As such, verification of realized traffic volumes will need to be conducted as part of the future design of any proposed facility or modification.

5.4.2.1 Signalization

The signalization of the intersection of Wilson Street West at North Street was proposed as part of the IMP in the event that a couplet between North Street and Peter Street was contemplated for the new community's access. This conclusion is supported by the subject TIS and its analyses. It is noteworthy that coordination between the Wilson Street West at North Street and Wilson Street West/Wilson Street East at Peter Street/Foster Street will be required due to the proximity of the intersections, and this coordination has been assumed as part of the 2041 future total operational analysis' signal timing optimization.

While signalization has recommended based on operational need, signal warrants have also been evaluated. The results from the Ministry of Transportation of Ontario's (MTO) Ontario Traffic Manual (OTM) Book 12 – Traffic Signals' Justification 7 for projected volumes have been evaluated for the two North Street intersections at each study horizon, and the results are summarized in Table 13. Signal warrants are provided in Appendix G.

TUDIE 13. 3	ignunzution wurrunt Summury	
Intersection	Horizon	Warranted?
	Existing	No
Wilson St W & North St	2041 Future Background	No
	2041 Future Total	Yes/No
	Existing	No
Gore St W & North St	2041 Future Background	No
	2041 Future Total	No

Table 13: Signalization Warrant Summary



As shown above, the intersection of Gore Street West at North Street does not meet OTM signal justifications. Warrants at the intersection of Wilson Street West at North Street are not met at the existing and future background horizons, however, are on the cusp of being met in the future total conditions where an additional eight vehicles on any approach during either peak hour would meet warrants. If the warrant is met, however, it is in part due to the assumption of signalization and the shift in travel patterns anticipated from this change which are discussed in Section 5.3.1. While the warrant may or may not be met, signalization of Wilson Street West at North Street is proposed on the basis of operational need where in the future background conditions, low and failing levels of service were noted on the minor approaches, and in the future total conditions, signalization was required to facilitate access to the new community.

5.4.2.2 Approach Configurations and Turn-Lanes

At the intersection of Wilson Street West at North Street, the southbound left-turn lane in the existing and background conditions will operate as a shared left-turn/through lane. While the existing pavement markings nominally indicate that this lane is a left-turn lane at the minor stop-controlled intersection, the majority of traffic utilizes it as a through lane to eventually make the southbound left at the downstream intersection. Under the proposed signalization, the lane configuration will be formalized.

The MTO Design Supplement to Section 9.17 of the Geometric Design Guide for Canadian Roads manual (Transportation Association of Canada (TAC), 2017) prescribes warrants for when to include left-turn lanes. Using this framework, the results of the warrant analysis by study horizon are summarized in Table 14 and left-turn warrants are provided in Appendix H.

Intersection	Horizon	Approach	Peak Hour	Warranted?
	Evisting	Southbound	AM	Yes
Wilson St W & North St	Existing	Southbound	PM	Yes
	2041 Euture Background	Southbound	AM	Yes
	2041 Future Background	Southbound	PM	Yes
	2041 Euture Total	Southbound	AM	Yes
	2041 Future Total	Soumbound	PM	Yes

Table 14: Left-Turn Lane Warrant Summary

As shown above, the southbound left-turn lane is warranted at all study horizons. As such, this approach is proposed to have an auxiliary southbound left-turn lane. This condition is different from the existing line painting, where an auxiliary through/right-turn lane develops to the west of de facto left-turn/through lane. It is recommended that the line painting be modified to have the shared through/right-turn lane shift west of the newly designated auxiliary left-turn lane.

Left turns on the northbound approach of this intersection are proposed as being restricted to ensure site traffic arriving from the south and east make the westbound through movement on North Street which will not disrupt the function of Wilson Street West by introducing a new turn lane on the northbound approach or impacting the southbound operations by allocating split to a turning movement in the signal timing.

No changes are proposed for the westbound approach at this intersection due to the requirement for trucks to make the westbound right turn from the shared movements lane, and no changes are proposed to the eastbound approach.

The approach configurations at the intersection of Gore Street West at North Street are proposed to be converted to shared all-movements lanes on each approach. This modification would be to reduce potential safety issues where drivers have to track the arrival of multiple conflicting vehicles to determine which has the right-of-way.



The pavement width is not recommended to be changed, where right-turning vehicles may slip past a left-turning or through vehicle waiting for other vehicles to clear the intersection when judged safe to do so.

5.4.2.3 Storage Lane Lengths

The recommended methodology for the calculation of storage length from the Geometric Design Guide for Canadian Roads (Transportation Association of Canada (TAC), 2017) is from equation 9.14.1. This value may be contextualized with the forecasted queue lengths from the traffic models, as where the storage lane is full, it will block the adjacent through lane. In the case of this intersection, however, the auxiliary left-turn is forecast to be used to the extent that it is available, given drivers are anticipated to turn opportunistically given availability and signal phase, and are able to continue south to complete the left turn at the downstream intersection. It is noted that the traffic model assumed a storage length of 100 metres to remove this length constraint for queueing.

The existing storage length values, the calculated values from TAC, the 95th percentile values from the SimTraffic queueing analysis, and preliminary recommended design values, along with the number of impacted on-street parking spaces on the roadway are summarized in Table 15.

10	able 15: 2041	Future Total In	tersection Stor	age Lengths		
Intersection	Lane	Existing Storage Dist. (m)	Calculated Value from TAC (m)	SimTraffic Q (95th) (m)	Rec. Storage Dist. (m)	Impacted Parking Spaces
Wilson St W & North St	SBL	55‡	39.9	64.5	70	3-4
N	1 11 1		1 .1	1 0		

a Total Intersection Storage La 044 5.4

Notes: ‡Distance of the adjacent auxiliary lane based on the existing approach configuration

The southbound left-turn movement at the intersection of Wilson Street West at North Street is recommended at this time to include a storage length of 70 metres to meet forecasted queues and, with the taper, this length may impact three-to-four on-street parking spaces on Wilson Street West by the extension of the adjacent through lane around it.

5.4.2.4 Network Classifications

Peter Street is classified as a collector road. It is noted that the projected future total volumes are below typical maximum values for collector roads from Chapter 2 of the TAC manual. As such, the volumes are considered appropriate from the perspective of the network function and road classification. Notwithstanding the network considerations, the character of Peter Street is of a slow residential road where houses fronting onto it include narrow setbacks and all private driveways to these dwellings access the roadway.

The designations of North Street west of Wilson Street West (where it is a local road) and Lustre Lane would require upgrade to a collector road under the proposed access plan, which would be in line with their function under the future total conditions. In addition to the functional aspect, the projected volumes are within the envelope of typical volumes on a collector road from Chapter 2 of the TAC manual. The rights-of-way of North Street and Lustre Lane and their building setbacks are wider than the collector road of Peter Street, and this upgrade is considered appropriate, as is the shift of volumes from Peter Street to North Street as achieved by the directional restriction on Peter Street.

5.4.2.5 List of Network Modifications

The following is a list of modifications to the study area transportation network as documented through this TIS to support site access:

- North Street at Wilson Street West
 - Signalization of the intersection



- Shifting the auxiliary lane designation from the southbound through movement to the southbound left turn
- Extending the auxiliary storage length to 70 metres
- Restriction of the northbound left-turn movement
- North Street at Gore Street West
 - Instituting all-way stop control
 - Repainting all approaches to comprise shared all-movements lanes
- Peter Street at Rogers Road
 - Restriction of the northbound left-turn and westbound through movements through the introduction of a directional restriction on Peter Street

6 Summary of Improvements Indicated and Modifications Options

The following summarizes the analysis and results presented in this TIS report:

Proposed Development and Background

- This study has been prepared in support of a Plan of Subdivision application and a Municipal Class EA process
- An Infrastructure Master Plan was commissioned by the Town, partly to study the Golf Course Lands, which was the subject of a 2022 Transportation Review by CGH
- A new access solution for the community has been recommended since this transportation review and superseding this previous work, which comprises the construction of a new bridge adjacent to the Peter Street Bridge presently serving the development area
- The subject TIS has been prepared to evaluate the impacts of the new access solution for the new community where the resultant changes in traffic patterns are forecast to impact the network
- The proposed development includes 640 single detached dwellings and 299 townhome units assumed to be built out by 2041

Existing and Planned Conditions

- Wilson Street, Gore Street, and Foster Street are arterial roads, and Peter Street and Rogers Road are collector roads within the study area
- The study area comprises the intersections of:
 - Wilson Street W at North Street
 - Wilson Street W / Wilson Street E at Peter Street / Foster Street
 - Gore Street W at North Street
 - Gore Street W / Gore Street E at Foster Street
 - Rogers Road at Peter Street
- Sidewalks are provided on both sides of Wilson Street, Foster Street, North Street, Peter Street east of Rogers Road, on the north side of Peter Street between Rogers Road and Lustre Lane, on the west side of Rogers Road
- An existing trail is located along the Tay River that uses Rogers Road and John Street south of Peter Street
- Bike lanes are provided on both sides of Wilson Street W between Sunset Boulevard and Leslie Street
- The TMP proposes Wilson Street, Peter Street/Foster Street, Rogers Road, and Gore Street East as pedestrian priority routes and Wilson Street, Gore Street East south of Herriot Street, Rogers Road, Peter Street west of Rogers Road, Lustre Lane, and North Street as bike routes



• The TMP proposes a trail along the Tay River north of Peter Street connecting to the existing trails near the Lanark County Administration Building, of which the section north of Leslie Street is currently planned

Updated Subdivision Review

- The proposed subdivision concept generally follows the one presented within the 2022 Transportation Review of a modified grid that is responsive to environmental constraints
- Typical cross-sections for the new community are proposed as being:
 - o 23.0-metre collector road with two parking lanes, two bike lanes, two travel lanes and a sidewalk
 - 18.0-metre local roads facilitating network access with a parking lane, two travel lanes, and a sidewalk
 - 16.75-metre local roads facilitating land access only with a parking lane and two travel lanes
- Bike lanes and a sidewalk are proposed along the collector road and a sidewalk is proposed along key local roads with internal crossing blocks at key locations
- Traffic calming within the new community is focused on on-street parking and horizontal deflection measures including bulb-outs applied at strategic intersections and crossing blocks and abrupt roadway bends
- The major traffic calming measure in the existing neighbourhood to the east is proposed to be the directional restriction of westbound vehicles on Peter Street west of Rogers Road
- This treatment will greatly reduce the volumes anticipated on Peter Street where the right-of-way and setbacks are narrow and push all inbound traffic to North Street where these aspects are more generous
- Traffic calming in the existing neighbourhood to the east may also include centreline treatments like flex posts, vertical deflection measures like speed humps, and horizontal deflection measures like bulb-outs on Peter Street and/or North Street, and speed monitoring treatments on Rogers Road
- The need, timing, and selection of measures should be based on monitoring traffic volumes as the subdivision builds out

Development Traffic Demand

- The updated subdivision concept is forecasted to generate 593 total AM and 743 total PM peak hour twoway auto trips
- The site-generated vehicles are forecast to travel 5% north, 50% south, 25% east, and 20% west

Traffic Analysis

- Existing traffic data were collected in the field in January of 2023, the 2041 future background traffic was
 determined by subtracting the previously assumed subject development from the Future Traffic
 Forecasting Memo of the TMP by using the existing volumes as a basis, and the 2041 future total horizon
 traffic was determined by applying the forecasted development volumes along with any traffic
 reassignment from network modifications to the 2041 future background conditions
- The existing traffic conditions operate well with minor queueing on the westbound left-through movement at the intersection of Gore Street East/Gore Street West at Foster Street, where a detailed queueing analysis determined that while some blockage of adjacent lanes occurs, no issues are noted
- Delays and queueing were noted to increase from the existing conditions at the 2041 future background horizon where high mainline arterial volumes impact the function of the minor stop-controlled approaches of North Street at its intersection with Wilson Street West



- Queueing along the arterial corridor is forecast to increase in the 2041 future background horizon from the existing conditions
- In line with an analogous option within the IMP, the signalization of Wilson Street West at North Street is proposed for the conversion of North Street and Peter Street into a couplet for site access, and the conversion to all-way stop control for the intersection of North Street and Gore Street West is proposed as a result of the signalization to the west
- These modifications, along with additional lane restrictions and approach configuration changes are anticipated to result in a change in background traffic patterns
- The study are intersections at the 2041 future total horizon are forecast to operate well, with additional queueing on several movements throughout the study area and operational improvements on the minor approaches at the intersection of Wilson Street West at North Street with the signalization
- Queueing within the study area at the 2041 future total conditions has increased along the arterial corridor with longer queues on the eastbound approaches of North Street and Peter Street each at Wilson Street, and minor spillback to adjacent intersections with the short block lengths, but overall, no concern with queueing is noted

Traffic Analysis Discussion

- No mitigation for forecasted conditions is required beyond those modifications proposed to facilitate site access, and the analysis is considered conservative
- Mitigating social and geographical factors are anticipated to reduce the site and background trip generation from that modeled within this study, including proximity to downtown and the shift to virtual travel anticipated by 2041
- The development should capitalize on these opportunities by provided high quality active transportation connections across the site access bridges to facilitate higher active mode uptake, and the provision of high quality communications infrastructure supporting virtual activities

Network Design Elements

- The intersection of Wilson Street West at North Street may meet signalization warrants at the 2041 future total horizon, and will be provided to facilitate the proposed access solution for the new community
- This intersection at the remaining horizons and the intersection of Gore Street West at North Street at all horizons are not forecast to meet signal warrants
- The southbound approach at the intersection of Wilson Street West at North Street meets left-turn lane warrants at all study horizons, and an auxiliary left-turn is proposed to be included in the lane configuration by shifting the through/right lane to the west of the developing auxiliary lane at the 2041 future total horizon, the northbound right turn is proposed to be restricted at this intersection at this horizon, and no changes are proposed for the remaining approaches
- The intersection of Gore Street West at North Street is proposed to include all-way stop control with the repainting of all approaches to be shared all-movement lanes in support of the new control
- The storage lane for the redesignated auxiliary left-turn lane on the southbound approach of the intersection of Wilson Street west at North Street is recommended to be 70 metres based on traffic models and despite the calculated theoretical length of 40 metres, where three to four parking spaces may be impacted by this storage length



- North Street west of Wilson Street West and Lustre Lane are recommended to be redesignated to collector roads, in line with their function at the 2041 future total horizon, and this designation is supported by the projected volumes and its planning and physical characteristics
- The list of proposed changes to support site access for the new community are:
 - North Street at Wilson Street West
 - Signalization of the intersection
 - Shifting the auxiliary lane designation from the southbound through movement to the southbound left turn
 - Extending the auxiliary storage length to 70 metres
 - Restriction of the northbound left-turn movement
 - North Street at Gore Street West
 - Instituting all-way stop control
 - Repainting all approaches to comprise shared all-movements lanes
 - Peter Street at Rogers Road
 - Restriction of the northbound left-turn and westbound through movements through the introduction of a directional restriction on Peter Street

7 Conclusion

The full development is to planned to comprise 640 single detached dwellings and 299 townhouse units and is to be served by the existing Peter Street Bridge, and a new bridge adjacent to it, forming a one-way couplet. The development will be constructed in multiple phases, of which the first phase is currently planned to comprise fewer than 40 single detached dwellings to be accessed by the existing Peter Street Bridge. As development continues, the EA process for the second crossing will be completed and the appropriate timing for its construction will be determined.

As discussed throughout this TIS, traffic forecasts presented in the report are considered conservative, and the recommended design elements and timing of recommended improvements will be subject to future monitoring.

It is recommended that, from a transportation perspective, the proposed development applications proceed.

Prepared By:

John Kingsley, EIT Transportation Engineering-Intern

Reviewed By:



Christopher Gordon, P.Eng. Senior Transportation Engineer





Perth Golf Course Access Options Memo





Technical Memorandum

To:	Colin Haskin, Hugo Lalonde – Caivan	Date:	2022-11-24
Cc:			
From:	John Kingsley, Christopher Gordon – CGH	Project Number:	2021-117

Re: Perth Golf Course Access Options

1 Context

The Infrastructure Master Plan (IMP) for the Western Annexed Lands of the Town of Perth, prepared by JP2G Consultants Inc (2019) outlined options and selected a preferred alternative among them for access to the planned Golf Course Community which is separated from the town by the Tay River, all of which included the use of the existing Peter Street Bridge.

For community access, the IMP considered three scenarios.

- The first was that all traffic use the Peter Street Bridge, which was deemed not acceptable due to emergency access requirements, without examining the suitability of the existing bridge for the purpose of conveying traffic
- The second was the construction of a second bridge to the County Office, providing a second site access to Christie Lake Road/Sunset Boulevard
- The third scenario was the creation of a one-way couplet with Peter Street and North Street, by constructing a second bridge as an extension of North Street, and was not preferred partly due to the fact that a high traffic volume would be using North Street which is classified as a local road, and that a signal would need to be installed at the intersection of North Street at Wilson Street West

The IMP's recommendation was somewhat unclear about how much traffic could be accommodated on the Peter Street bridge before a second crossing is constructed. As such, further examination of the Peter Street Bridge options is warranted and documented herein.

The memo additionally discusses traffic impacts and traffic calming options for the surrounding neighbourhoods to the east of the planned development, both in the context of the proposed access options and for general consideration for the proposed development. As well, the second crossing preliminary concept is also developed in order to compare it to the preferred Peter Street Bridge alternative.

1.1 Tying Into the Existing Network

An area context map east of the Peter Street Bridge and noting approximate property parcels is illustrated in Figure 1. A description of the potentially implicated network elements for access and a discussion on the use of each follows.



1.1.1 Lanark County Administration Building Access

In addition to requiring a second bridge, access to the Lanark County Administration Building driveway would require County agreement, road upgrades to bring the driveway to public road standards, and coordination between Tay Valley Township, Drummond Township, Lanark County, and the Town of Perth, given the property impacts, as stated by Julie Stewart representing Lanark County at a meeting with the development team on September 16, 2022.

Alternative crossing locations to this access on the north of the planned Golf Course Community may be considered, including to the planned Tayview community to the northwest, however for the purposes of this memo, all alternative crossing locations beyond those hereafter explicitly discussed will be treated equally.

1.1.2 Peter Street

All access arrangements within this memo and the IMP consider the use of Peter Street via the existing bridge connection. This bridge has a narrow deck which, while comprising two travel lanes, will not permit collector road traffic, or local road traffic in excess of approximately 300 vehicles per peak hour. The shoulder-less rural cross-section of Peter Street pinches down to 5.5 metres of pavement width, and transitions to an urban cross-section of 7.5 metres pavement at Lustre Lane with a sidewalk on the north side of the road, and sidewalks are present on both sides of the road east of Rogers Road. In addition to the narrow right of way and narrow pavement width, building setbacks are unusually narrow on Peter Street as well, and this sensitive context contributes to the concerns for the increase of traffic of the roadway from the proposed development.

Immediately west of Lustre Lane, the roadway departs the protected right of way for the alignment across the Tay River, as illustrated in Figure 1. The right of way is still reserved south of this departure, however.


1.1.3 Lustre Lane

North Street terminates at a 90-degree bend and becomes Lustre Lane, which spans only between North Street and Peter Street. Lustre Lane's intersection with Peter Street is offset approximately 30 metres from roadway crown to roadway crown, which is considered too close for safe operations beyond minor traffic volumes. This offset distance may require mitigation generally, but especially in the event that additional volumes be added to Lustre Lane. Lustre Lane has an urban cross-section including 8.0 metres of pavement width.

1.1.4 North Street

All access arrangements can make use of North Street via Lustre Lane, but the one-way couplet option per the IMP proposes the extension of the road across the river to meet the unopened allowance of its extension west of the river. The Carolina Suites retirement complex property includes a parking lot west of the current terminus of North Street at the 90-degree bend to Lustre Lane. These features are illustrated in Figure 1.

1.2 Traffic Calming for the Existing Neighbourhood

Multiple options were explored for traffic calming within the neighbourhood surrounding the Peter Street bridge. The following elements were those with the most applicability to the context, and have implications for the crossing alternatives.

1.2.1 Mini Roundabout

A mini roundabout at the intersection of Lustre Lane and Peter Street was considered but discounted partly due to the footprint of such a treatment, especially in the context of limited property (parcel 0285). Compliance issues with control measures at a mini roundabout and appropriate configurations for active modes are also difficulties inherent to this type of treatment. However, if property constraints were alleviated, the treatment would improve the conditions for the Peter Street, Lustre Lane, and North Street interface, and provide traffic calming for Peter Street and is deserving of consideration should conditions change.

1.2.2 Peter Street Speed Treatments

Various options for reducing speeds on Peter Street may be employed. While the existing narrow pavement width will reduce the opportunity for speeding, flexible post centreline treatments may further augment this effect. Speed humps may also be explored, and provide calming effect year-round, unlike the seasonal flexible post installation. Bulb-outs at Rogers Road, Thom Street, and/or Lewis Street may additionally be included to narrow the pavement width to 7.0 metres to reduce speeds at these locations. In accordance with the recommendations from the Golf Course community Traffic Review by CGH, it is recommended that any such measures be explored on an as-needed basis through monitoring of the conditions as the subject development builds out.

1.2.3 Directional Restriction and Functional One-Way Couplet

All alternatives for access may include the introduction of a directional restriction via the installation of a bulb-out on Peter Street between Lustre Lane and Rogers Road. This treatment would functionally create a one-way couplet of Peter Street and North Street for site traffic, permitting two-way traffic for most of the existing neighbourhood. The majority of outbound site traffic would be anticipated use Peter Street, and all inbound site traffic would be required to use North Street. As with the one-way couplet scenario from the IMP, the signalization of the intersection of North Street and Wilson Street West would need to be investigated for this treatment. Additionally, inbound traffic that would otherwise use Rogers Road would either divert east on Peter Street, north on Lewis Street, and then west on North Street, or divert through the downtown area.

Conceptually, at the end of the first phase of development during the PM peak hour, this treatment would reduce site-generated traffic on Peter Street from an average of approximately six two-way vehicles per minute to



approximately two, by shifting the balance to North Street. During the AM peak hour, this reduction would be from approximately ten two-way vehicles every two minutes on Peter Street to approximately seven every two minutes. A conceptual implementation of this treatment is illustrated in Figure 2.



Figure 2: Directional Closure Treatment

1.2.4 Rogers Road Speed Treatments

As discussed within the TMP, speeding on Rogers Road is a consistent phenomenon. The pavement width of the road averages approximately 9.0 metres, and especially when on-street parking is not utilized, this width and the straightness of the travelled path are suspected to contribute to the high operating speeds, which may be a concern for residents.

Rogers Road is a direct path to/from the site from/to South Street/Scotch Line Road to the south, which a portion of site traffic may use, bypassing the downtown by using Rogers Road to do so. As such, it is anticipated that speeding concerns will be applicable to site traffic, and therefore speeding treatments may be accordingly investigated. Recommended treatments include electronic driver feedback speed display signs ("Your Speed" signs), or the installation of an automated speed enforcement device (speed trap). This latter treatment, however, is noted to impact area residents most frequently and should be considered through consultation with the potentially impacted communities.

2 Peter Street Bridge Alternatives

2.1 List of Access Alternatives

The following layouts present the conceptual alternatives explored through this memo, including a description of features, elements, costs, and phasing considerations.





















3 Evaluation

The evaluation will score the alternatives as either having relatively positive outcomes, relatively negative outcomes, or as having relatively neutral outcomes.

3.1 Criteria Definitions

The following definitions provide the methodology of ranking various bridge alternatives using multiple transportation and structural criteria presented below.

3.1.1 Pedestrian Needs

- Facilities with separated pedestrian infrastructure within the cross-section will result in a high Pedestrian Level of Service (PLOS) as people who are walking will experience a higher degree of comfort and safety
- In cases where the pedestrian facility is not physically separated from other traffic lanes but delineated (with painted lane markings/crosswalks) pedestrians will experience a moderate level of safety
- Where there are no pedestrian facilities whatsoever in the cross-section, pedestrians will experience a lower/moderate/higher degree of comfort and safety

3.1.2 Cyclist Needs

- Facilities with separated cyclist infrastructure within the cross-section will result in a high Bicycle Level of Service (BLOS) as people who are walking will experience a higher degree of comfort and safety
- In cases where the cyclist facility is not physically separated from other traffic lanes but delineated (with painted lane markings/crosswalks) cyclist will experience a moderate level of safety
- Where there are no cyclist facilities whatsoever in the cross-section, cyclist will experience a lower/moderate/higher degree of comfort and safety

3.1.3 Auto Needs

- Alternatives that provide a high degree of capacity across the river, using industry standard lane widths will be ranked higher
- Alternatives where the cross-sections will not provide adequate capacity will be ranked low

3.1.4 Emergency Vehicles

- Alternatives with secondary emergency vehicle access using roadway infrastructure will be ranked high
- Alternatives where emergency vehicles can cross the river using active mode infrastructure will be ranked moderate
- Alternatives that do not provide a secondary emergency access will be ranked low

3.1.5 Peter Street Traffic

Peter Street connects the new subdivision to the village of Perth's historic downtown area. Recognising this local street will experience additional golf course subdivision traffic. Traffic calming features will be implemented to mitigate the impact. All bridge options can accommodate the preferred Peter/Rodger traffic calming improvement.

3.1.6 Phasing

- Alternatives that enable full buildout of the subdivision are ranked high.
- Alternatives that accommodate phase one of the subdivision are ranked moderate.
- Alternatives that are unable to accommodate traffic are ranked low.



3.1.7 Structural Costs

The structural costs include various bridge and abutment elements required to span the Tay River. Additional costs associated with the complete access solution beyond the Peter Street area will require further study would be required to properly quantify them.

3.1.8 Transportation Costs

The transportation costs include elements within the cross-section that connect the various bridge scenarios to the Peter Street at Lustre Lane intersection and between the community and the Lanark County Administration Building drive aisle.

3.1.9 Land Requirements

- Alternatives that require no additional private land are ranked high.
- Alternatives that require coordination between multiple jurisdictions to secure access are ranked moderate.
- Alternatives that require private land at unknown cost and availability are ranked low.

3.2 Evaluation Scoring

The results of the evaluation are summarized in Table 1 on the following page.



Option 1

Option 2

Ontion 3

Option 5 Widen Deck for Collector Traffic, Sidewalk, MUP Option 7 Construct New Bridge South of Existing, MUP, Option 8 Construct New Bridge at the North End of the Option 6 Construct New Bridge Widen Deck for Collector Traffic, Sidewalk (One Do Nothing Construct a Separate MUP ict a Separate MUP Bridge (3m) Bridge (4.5m) North of Existing, Sidewalk, Westbound Side) Eastbound Travel Lane Community Travel Lane Will provide separated pedestrian connection to Will provide separated Does not provide a Pedestrian Does not provide a Will provide separated Will provide separated Will provide separated Will provide separated pedestrian connection to the downtown pedestrian connection to the downtown pedestrian connection to the downtown Needs separated pedestrian pedestrian connection to pedestrian connection to separated pedestrian the downtown connection to the the downtown the downtown connection to the downtown 0 0 Ο 0 0 0 downtown Cyclist Needs Shared use lanes on a narrow bridge deck will Adding a separated connection will encourage Adding a separated connection will encourage Absence of a separated connection will limit cycling Adding a separated connection will encourage Adding a separated connection will encourage Adding a separated connection will encourage Shared use lanes on a narrow bridge deck will reduce cycling trips cycling trips cycling trips trips cycling trips cycling trips cycling trips reduce cycling trips 0 0 \diamond 0 0 0 Auto connectivity is adequate, but capacity is Auto Needs Auto connectivity is Auto connectivity is Supports increased auto adequate, but capacity is adequate, but capacity is capacity and connectivity low and will be limited to low and will be limited to low and will be limited to past Phase 1 first phase traffic first phase traffic first phase traffic 0 0 0 0 0 No secondary access for MUP bridge will not MUP bridge may function No secondary access for No secondary access for New bridge will provide a New bridge will provide a New bridge will provide a Emergency Vehicles emergency vehicles typically caps development function as emergency as a secondary emergency emergency vehicles typically caps development emergency vehicles bically caps development full secondary emergency full secondary emergency full secondary emergency access capping development at 200 units access access access access at 200 units at 200 units \diamond at 200 units Ο 0 Ο Permits directional diverter Peter Street Permits directional diverter on Peter Street but allows Traffic on Peter Street for exploration of \diamond \diamond \diamond \diamond \diamond \diamond \diamond alternative treatments 0 Schedule and Development limited to 200 units Development limited to 200 units Development limited to Phase 1 Development limited to 200 units Development limited to 200 units May permit all phases of development May permit all phases of May permit all phases of Phasing development development \diamond Ó Ó Ó An estimated construction An estimated construction cost of **\$2,100,000** which An estimated construction Structural Costs No costs at present; future An estimated construction An estimated construction An estimated construction An estimated construction cost of \$500,000 for the cost of \$950,000 and cost of \$750,000 and cost of \$1,200,000 and cost of \$2,700,000 which cost of \$4,900,000rehabilitation cost schedule applies, future costs for MUP bridge, and \$4.900.000-\$9.800.000 for \$4.900.000-\$9.800.000 for \$4.900.000-\$9.800.000 for includes modifications to include modifications to \$9.800.000 \$4,900,000-\$9,800,000 for the future crossing for full the future crossing for full development traffic the future crossing for full development traffic the future crossing for full development traffic the existing bridge to convert to one-way with additional crossing(s) the existing bridge to convert to one-way with development traffic MUP sidewalk An estimated construction An estimated construction cost of \$1,100,000 at the An estimated construction An estimated construction An estimated construction An estimated construction cost of \$1,300,000 An estimated construction cost of \$1,245,000 An estimated construction Transportation cost of \$995,000 cost of \$1,140,000 at the cost of \$1,125,000 at the cost of \$1,190,000 at the cost of \$2,380,000 Costs east river crossing. east river crossing. east river crossing. east river crossing. \$2,380,000 for the north \$2.380.000 for the north \$2,380,000 for the north \$2.380.000 for the north river crossing river crossing river crossing river crossing Multi-jurisdictional Multi-iurisdictional Multi-jurisdictional Land No additional land required Multi-iurisdictional Private land required No additional land required Multi-iurisdictional Requirements coordination required coordination required coordination required coordination required coordination required 0 Ο \diamond Notes: O Relatively Positive 🛇 Relatively Neutral 🔲 Relatively Negative Ссен

Table 1: Evaluation Mai

Option 4

Perth Golf Course Access Options Memo

Criterion

November 24, 2022 Page 16

4 Recommendations

It is recommended that Options 6 and 7 be explored in parallel. Given the potential for these options to constitute the full community access solution, and having a more constrained and known overall cost, it is recommended that these options be provisionally selected as the preferred options.

Additionally, given the magnitude difference in cost, process challenges and constructability, it is recommended that the second crossing to the County Administration Building access be screened out and the accessibility requirements for these lands be accommodated using the Perth Street/North Street corridor and the Option 6 or 7 structure alternative.

5 Next Steps

Following the review of the findings of this memo, further work to properly quantify options will be required. As part of this work, an EA will need to be undertaken to determine costs and details associated with community access.



Appendix B

Existing Turning Movement Counts





Diagram One Hour Peak One Hour Peak Diagram To: 15,45:00 To: 16,45:00	Clear	Major Road: Wilson St W runs N/S	East Approach East Approach Court In Total Gost Approach Foster St South Approach South Approach Colspan="2">Colspan="2">Colspan="2" South Approach Colspan="2">Colspan="2" South Approach Totals Colspan="2">Colspan="2" South Approach Totals Colspan="2" Totals South Approach Totals Colspan= Colspan= Colspan="2" Totals South Approach Total Total <td 2"="" colspa="2</th><th></th></tr><tr><th>Peak Hour
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ak Hour Diagram fifed Period One Hour Peak 07:00:00 From: 09:00:00 10:00:00 To: 10:00:00	her Clear tions:	Major Road: Wilson St W runs N/S	Fast Approach East Approach East Approach East Approach See $\frac{1}{202}$ $\frac{1}{224}$ $\frac{1}{202}$ See $\frac{1}{202}$ $\frac{1}{202}$ $\frac{1}{232}$ $\frac{1}{298}$ See $\frac{1}{202}$ $\frac{1}{202}$ $\frac{1}{202}$ $\frac{1}{202}$ See Bigdue See $\frac{1}{202}$ $\frac{1}{212}$ $\frac{1}{212}$		
Peak Hour Diagram Ffic Inc. Specified Period One Hour Peak From: 07:00:00 From: 09:00:00 vices & Products To: 10:00:00 To: 10:00:00	Weather Clear conditions:	Major Road: Wilson St W runs N/S	vilion St w East Approach wilson St w East Approach $\frac{1}{22}$ $\frac{1}{22}$ $\frac{1}{22}$ $\frac{1}{22}$ $\frac{1}{28}$ $\frac{1}{28}$ $\frac{1}{28}$ $\frac{1}{28}$ $\frac{1}{28}$ $\frac{1}{28}$ $\frac{1}{28}$ Peds: 16 $\frac{1}{28}$ $\frac{1}{266}$ $\frac{1}{22}$ $\frac{1}{28}$ $\frac{1}{266}$ $\frac{1}{22}$ $\frac{1}{28}$ Peds: 16 $\frac{1}{8}$ $\frac{1}{16}$ $\frac{1}{26}$		
Peak Hour Diagram Peak Hour Diagram Intario Traffic Inc. Specified Period One Hour Peak Traffic Monitoring - Services & Products 700000 From: 0930000	Wilson St & Peter St-Foster St 2301600002 Cear Jan 24, 2023 Conditions: Clear	id Intersection ** Major Road: Wilson St W runs N/S	North Approach out a 318 312 680 a 333 366Wilson St W wilson St W Milson St W wilson St W Milson St W wilson St W Milson St W a 318 312 680 a 318 312 680 b 460 b 460 b 460 b 460 b 460 b 460 		





		~			0.0			
Diagram One Hour Peak 0 From: 1530:00 0 To: 1630:00	ear	Major Road: Peter St runs E/	East Approach Out In Total L3 143 148 291 L3 2 14 16 L4 0 0 0 0	145 162 307 Peter St Totals 20 00 0	2 2 143 141 2 0	South Approach Outh In Total 338 157 151 14 2 16 2 171 153 324		
Peak Hour Specified Period From: 15,0000 ducts To: 18,0000	Weather Gi			Ped: Get : 0 Se Se S	0 :s	11 11 146 0 146 0 146 0 0 0 0 0 Rogers Rd	æð. Bigdes	
Ontario Traffic In Traffic Monitoring • Services & Pro	ction: Peter 51 & Rogers Rd de: 2301600005 Date: Jan 24, 2023	Unsignalized Intersection **		Peter St & Chails 1 0 0 0	0 0 10 2 0 10 10 10 10 10 10 10 10 10 10 10 10 1	West Approach Totals Out In Total Ea 12 13 25 Eb 0 0 0 eb 12 13 25	📾 - Cars	iments
	Interse Site Co Count	*						Co
	Interse Site Co Count	*						
Diagram One Hour Peak 00 From: 08:45:00 00 To: 09:45:00	Interse Clear Site Co	Major Road: Peter St runs E/W	East Approach Out In Total La 105 135 240 La 4 18 22 La 0 0 0	109 133 262 Peter St Totals	1 1 108 104 4 0	South Approach a <u>out in Total</u> a <u>140</u> 111 251 b <u>19</u> 7 26 5 159 118 277	51	
Peak Hour Diagram Specified Period One Hour Peak & Products To: 10:00:00 From: 700:00 To: 09:45:00	Meacher Clear Site Co conditions: Clear Count	Major Road: Peter St runs E/W	East Approach Out East Approach 135 240 East Approach 135 240 See 0 0 0	Peds: 0 Peter St # 0	Peds: 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Als O South Approach als 11 148 0 als 10 130 0 als 1 148 0 als 1 148 0 als 1 11 251 als 0 0 26 als 0 0 0 als 0 0 0 als 0 0 0 als 139 13 26 als 139 13 27 Rogers Rd 139 138 277	ks As - Biydes	
Peak Hour Diagram Peak Hour Diagram Intario Traffic Inc. Specified Period One Hour Peak Traffic Monitoring • Services & Products 700,000 From: 00,45:00	Peter SL & Rogers Rd Interse 2301600005 Weather Clear State Co Jan 24, 2023 Conditions: Clear Count	ized Intersection ** Major Road: Peter St runs E/W	East Approach Out In Total Colspan="2">240 Colspan="2">Colspan="2">240 Colspan="2">Colspan="2">Colspan="2">Colspan="2" Colspan="2">Colspan="2" Colspan="2">Colspan="2" Colspan="2" Colspan="2" <	Peter St Peds: 0 153 262 0 0 0 0 0 0 0	0 5 5 5 • 0 1 1 0 0 3 7 10 4 4 0	West Approach Total 11 148 0 Out In Total 11 148 0 Image: Second	ats CD-Trucks & & Bigdes	

Appendix C

Synchro and SimTraffic Intersection Worksheets – Existing Conditions



imTraffic Simulation Summary :xisting					02-10-2023	Queuing	and Blocking	Report						
Summary of All Intervals						Intersect	tion: 3: Wilson	St W &	North S	ţţ				
un Number	-	¢	Δ			Movement		ä	an an	AM	aN	g	SB	
tart Time 6:30	6:30	6:30	6	30		Directions Se	erved] L	ы ж П		LTR	3 5	TR	
ind Time 8:00	9:00	8:00	8	00		Maximum Qu	neue (m)	9.0	.6 2.9	9 16.8	44.5	33.7	22.1	
otal Time (min) 90	06 0	06		06		Average Que	eue (m)	0.7 (.4 0.1	1.2	19.8	16.8	11.1	
Time Recorded (min) 60	09 00	99		30		95th Queue	(m)	4.6	.7 1.6	3 7.2	34.4	27.5	19.4	
t of Intervals 2	2	2		2		Link Distance	e (m) 4	30.4		116.4	52.1	658.3		
# of Recorded Intervals	-	-		-		Upstream BII	k Time (%)				0			
/ehs Entered 1486	5 1487	1469	14	31		Queuing Per	nalty (veh)				0			
Vehs Exited 1493	3 1483	1472	4	35		Storage Bay	Dist (m)		.0 15.0	_			65.0	
Starting Vehs 36	34	41		33		Storage Blk	Time (%)	0	0	0				
Ending Vehs 29	9 38	38		29		Queuing Per	nalty (veh)	0	0	0				
Travel Distance (km) 1230	1233	1210	12	24										
Travel Time (hr) 36.9	9 37.0	36.8	36	6.		Intersect	tion: 4: Wilson	St E/W	Ison St	W & Pe	eter St/	Foster	ot	
Total Delay (hr) 9.4	1 9.5	9.6	0,	.5										
Total Stops 2249	9 2288	2267	22	35		Movement		EB	/B WE	B	ß	ß		
Fuel Used (I) 113.4	112.7	111.5	112	.6		Directions Se	erved	LTR		LTR	-	TR		
						Maximum Qu	ueue (m)	43.8 26	28.3	19.5	43.4	29.9		
Interval #0 Information Seeding						Average Que	eue (m)	19.4 9	.1 14.6	5 7.3	16.2	9.0		
start Time 6:30						95th Queue	(m)	34.8 20	.3 25.5	17.6	30.1	20.3		
End Time 7:00						Link Distance	e (m) 3	16.3 114	5	134.6	52.1	52.1		
Total Time (min) 30						Upstream BII	k Time (%)				0			
Addumes adjusted by Growth Factors						Queuing Per	nalty (veh)				0			
volarios aujastea by oromin actors. No data recorded this interval						Storage Bay	Dist (m)		15.0	~				
vo uala recorded trils initelval.						Storage Blk	Time (%)		ი ო	~				
Interval #1 Information Recording						Queuing Per	nalty (veh)		7 2	01				
Start Time 7:00						Intersect	tion: 5: Gore S	it W & N	orth St					
End Time 8:00														
Total Time (min) 60						Movement		8	B	g	ß	ß		
Volumes adjusted by Growth Factors.						Directions Se	erved	LT	R LTF	r Ltr	Ц	ъ		
Run Number 1	1	e	A	D/		Maximum Qu	ueue (m)	19.3 20	.7 29.8	19.9	8.6	2.1		
Vehs Entered 1486	5 1487	1469	14	31		Average Que	eue (m)	8.6	.4 10.3	1.9	0.4	0.1		
Vehs Exited 1493	3 1483	1472	14	35		95th Queue	(m)	16.7 16	.8 20.5	9.6	3.5	. .		
Starting Vehs 36	34	41		33		Link Distance	e (m)	116	.4 140.5	52.4	108.1			
Ending Vehs 29	38	38		29		Upstream BII	k lime (%)							
Travel Distance (km) 1230	1233	1210	12	24		Queuing Per	nalty (veh)							
Travel Time (hr) 36.9	9 37.0	36.8	36	6		Storage Bay	Dist (m)	9.5				5.0		
Total Delav (hr) 9.4	1 9.5	9.6		15		Storage BIK	Time (%)	4	e		0	0		
Total Strins 2249	2288	2267	22	35		Queuing Per	nalty (veh)	2	—		0	0		
	1107	744 1		2										
- nei usea (i)	+ 112.1	0.111	7	0										

02-10-2023

SimTraffic Report Page 2

Scenario 1 Perth Golf Course Lands JK

SimTraffic Report Page 1

Scenario 1 Perth Golf Course Lands JK

Queuing and Block Existing	ing Rep	ort							02-10-2023
Intersection: 6: Gor	e St E/G	sore St	W & F	⁻ oster	St				
Movement	H	ä	WB	WB	NR	BN	a.	ac.	
Directions Served		£	E	æ	-	Ë	E	~	
Maximum Queue (m)	15.8	30.2	60.2	22.3	52.1	34.4	37.9	24.9	
Average Queue (m)	4.5	12.2	31.5	5.2	18.9	15.9	16.9	6.0	
95th Queue (m)	12.1	22.6	51.7	17.3	37.4	32.3	33.2	16.8	
Link Distance (m)	114.5		134.8		284.1		52.4		
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)		25.0		8.0		20.0		10.0	
Storage Blk Time (%)	0	-	51	2	4	4	16	-	
Queuing Penalty (veh)	0	0	œ	5	7	œ	5	-	
Intersection: 10: Ro	ogers Rc	l & Pet	er St						
Movement	WB	NB							
Directions Served	5	Я							
Maximum Queue (m)	12.9	22.4							
Average Queue (m)	1.2	13.2							
95th Queue (m)	7.3	20.3							
Link Distance (m)	316.3	114.8							
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

ovement	WB	NB	
irections Served	Ц	LR	
aximum Queue (m)	12.9	22.4	
verage Queue (m)	1.2	13.2	
5th Queue (m)	7.3	20.3	
nk Distance (m)	316.3	114.8	
pstream Blk Time (%)			
ueuing Penalty (veh)			
torage Bay Dist (m)			
torage Blk Time (%)			
ueuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 48

Sim Traffic Simulation Summary Existing

02-10-2023

	Avg	3:15	4:45	6	09	2		1728	1722	33	42	1423	45.1	13.2	2626	130.9
	3	3:15	4:45	06	60	2	-	1731	1702	28	57	1417	45.1	13.4	2592	129.8
	2	3:15	4:45	6	60	2	-	1768	1776	43	35	1466	46.9	14.0	2708	135.5
	1	3:15	4:45	06	60	2	-	1685	1686	46	45	1386	43.2	12.3	2568	127.5
Summary of All Intervals	Run Number	start Time	End Time	otal Time (min)	Time Recorded (min)	t of Intervals	t of Recorded Intervals	/ehs Entered	/ehs Exited	starting Vehs	Ending Vehs	ravel Distance (km)	ravel Time (hr)	otal Delay (hr)	otal Stops	(I) pest I len

Seeding	3:15	3.45
Information		
Interval #0	Start Time	End Time

3:15	3:45	in) 30	sted by Growth Factors.	ded this interval.	
Start Time	End Time	Total Time (min)	Volumes adjusted by Gro-	No data recorded this inte	

Recording	3:45	4:45
Information		
Interval #1	Start Time	End Time

			Avg	1728	1722	33	42	1423	45.1	13.2	2626	130.9
			ო	1731	1702	28	57	1417	45.1	13.4	2592	129.8
			2	1768	1776	43	35	1466	46.9	14.0	2708	135.5
				1685	1686	46	45	1386	43.2	12.3	2568	127.5
4:45	09	d by Growth Factors.						(km)				
End Time	Total Time (min)	Volumes adjuste	Run Number	Vehs Entered	Vehs Exited	Starting Vehs	Ending Vehs	Travel Distance (Travel Time (hr)	Total Delay (hr)	Total Stops	Fuel Used (I)

Scenario 1 Perth Golf Course Lands JK

SimTraffic Report Page 3

Scenario 1 Perth Golf Course Lands JK

Existing 02-10-2023	Intersection: 6: Gore St E/Gore St W & Foster St	Movement EB EB WB WB NB NB SB SB	Directions Served LT R LT R L TR LT R	Maximum Queue (m) 16.2 35.5 122.8 23.0 68.0 33.8 47.8 24.1	Average Queue (m) 7.2 12.7 56.8 4.9 22.3 12.6 16.3 6.1	95th Queue (m) 15.7 25.9 106.4 18.0 44.9 28.5 32.9 17.8	Link Distance (m) 114.5 134.8 284.1 52.4	Upstream Blk Time (%) 1 0	Queuing Penalty (veh) 0 0	Storage Bay Dist (m) 25.0 8.0 20.0 10.0	Storage Bik Time (%) 0 1 63 1 9 2 16 1	Queuing Penalty (veh) 0 0 11 4 13 5 6 1	Intersection: 10: Peter St	111 11	Movement WB NB	Directions Served LT LR	Maximum Queue (m) 9.2 19.8	Average Queue (m) 0.5 10.7		95th Queue (m) 4.0 16.1	95th Queue (m) 4.0 16.1 Link Distance (m) 316.3 114.8	95th Queue (m) 4.0 16.1 Link Distance (m) 316.3 114.8 Upstream Bik Time (%)	B5th Queue (m) 4.0 16.1 Link Distance (m) 316.3 114.8 Upstream BK Time %) Queuing Pentry (veh)	B5th Queue (m) 4.0 16.1 Link Distance (m) 316.3 114.8 Ubstance (m) 216.3 114.8 Queuing Penalty (m) Storage Bay Dist (m)	95th Queue (m) 4.0 16.1 Link Distance (m) 316.3 114.8 Ubstream Bit Time (%) Querge Pauly (veh) Storage Bay Dist (m) Storage Bit Time (%)	B5th Queue (m) 4.0 16.1 Link Distance (m) 316.3 114.8 Unstream Bit Time (%) Queuing Penathy (veh) Storage Bay Dist (m) Storage Bay Dist (m) Queuing Penathy (veh)
Movement EB EB Directions Served L1 R Maximum Queue (m) 16.2 35.5 Areage Queue (m) 7.2 12.7	Movement EB EB Directions Served LT R Maximum Queue (m) 16.2 35.5 Average Queue (m) 7.2 12.7 Oct-Arrow Chance (m) 7.2 72.7	Directions Served LT R Maximum Queue (m) 16.2 35.5 A Average Queue (m) 7.2 12.7 0646 Arrows (m) 45.7 25 05.0	Maximum Queue (m) 16.2 35.5 A Average Queue (m) 7.2 12.7 Deten Oromono (m) 17.2 25.0 se 0	Average Queue (m) 7.2 12.7 05th Onorio (m) 7.5 0	0Eth Oriono (m) 4E 7 2E 0		Link Distance (m) 114.5	Upstream Blk Time (%)	Queuing Penalty (veh)	Storage Bay Dist (m) 25.0	Storage Blk Time (%) 0 1	Queuing Penalty (veh) 0 0	Intersection: 10: Peter St		Movement VVB NB	Directions Served LT LR	Maximum Queue (m) 9.2 19.8		Average Queue (m) 0.5 10.7	Average Queue (m) 0.5 10.7 95th Queue (m) 4.0 16.1	Average Queue (m) 0.5 10.7 95th Queue (m) 4.0 16.1 Link Distance (m) 316.3 114.8	Average Queue (m) 0.5 10.7 95th Queue (m) 0.5 10.7 Linkh Distance (m) 316.3 114.8 Upstream Bit Time (%)	Average Queue (m) 0.5 10.7 95th Queue (m) 0.5 10.7 95th Queue (m) 3.16.3 114.8 Upstream Bit Time (%) Queuing Penalty (veh)	Average Queue (m) 0.5 10.7 95th Queue (m) 0.5 10.7 95th Queue (m) 4.0 16.1 Link Distance (m) 3.16.3 114.8 Ustance (m) (m) (%) Queung Branty (veh) Storage Bay Dist (m)	Average Queue (m) 0.5 10.7 95M Queue (m) 0.5 10.7 1ink Distance (m) 316.3 114.8 Upstream Bik Time (%) 316.3 114.8 Queuing Penalty (veh) Storage Bay Dist (m) Storage Bik Time (%)	Average Queue (m) 0.5 10.7 B5th Queue (m) 0.5 10.7 D5th Queue (m) 3.16.3 114.8 Uptstream Bit Time (%) 3.16.3 114.8 Queuring Penatly (veh) Storage Bay Dist (m) Storage Bay Dist (m) Queuring Penatly (veh)

Intersection: 4: Wilson St E/Wilson St W & Peter St/Foster St

1

SB TR 10.6 18.0

SB LT 17.8 17.8 28.1 658.3 NB LTR 49.9 23.1 38.9 38.9 52.1

WB R 7.0 1.0 4.8 116.4

WB LT 5.8 3.8 3.8

EB LT 5.8 0.3 2.9 430.4

Intersection: 3: Wilson St W & North St

Queuing and Blocking Report

Existing

65.0

15.0

00

0 0

Directions Served Maximum Queue (m) Average Queue (m) Just Distance (m) Link Distance (m) Upstream Bik Time (%) Queuring Penalty (veh) Storage Bik Time (%) Queuring Penalty (veh)

SB	TR	27.7	10.2	20.4	52.1						
SB	_	49.4	23.3	40.6	52.1	0	0				
NB	LTR	23.8	10.5	20.4	134.6						
WB	£	28.0	15.3	26.1				15.0	4	-	
WB	L	25.4	5.3	17.6	114.5				~	2	
EΒ	LTR	43.6	19.1	33.8	316.3						
Movement	Directions Served	Maximum Queue (m)	Average Queue (m)	95th Queue (m)	Link Distance (m)	Upstream Blk Time (%)	Queuing Penalty (veh)	Storage Bay Dist (m)	Storage Blk Time (%)	Queuing Penalty (veh)	

Intersection: 5: Gore St W & North St

SB	LT	8.6	0.6	4.0	108.1				0	0	
NB	LTR	13.5	4.1	7.3	52.4						
WB	LTR	21.6	10.5	18.7	140.5						
B	æ	15.9	5.6	13.3	116.4				~	-	
B	Ц	20.4	8.5	15.4				9.5	4	-	
Movement	Directions Served	Maximum Queue (m)	Average Queue (m)	95th Queue (m)	-ink Distance (m)	Jpstream Blk Time (%)	Queuing Penalty (veh)	Storage Bay Dist (m)	Storage Blk Time (%)	Queuing Penalty (veh)	

Queuing and Blocking Report

Network wide Queuing Penalty: 47 Network Summary

Scenario 1 Perth Golf Course Lands JK

SimTraffic Report Page 3

Scenario 1 Perth Golf Course Lands JK

Lanes, Volumes, Tim 4: Wilson St E/Wilsor	n St W	' & Pet	er St/F	oster	St				Existing AM Peak Hou Perth Golf Course Lanc
	1	Ť	5	Ŧ	~	1	-	۶	-
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations		¢		€₹	¥.,		÷	٣	ţŤ
Traffic Volume (vph) Future Volume (vph)	66	88	16 16	45 45	205 205	44	36 36	192	52 52
Lane Group Flow (vph)	0	145	0	68	228	0	55	213	157
Turn Type	Perm	A	Perm	A	vo+mq	Perm	M	pm+pt	NA
Protected Phases		4		œ	.		2	.	9
Permitted Phases	4		~		~ ~	5		9	
Detector Phase	4	4	œ	œ	-	2	2	-	9
Switch Phase	0.01	0.01	0.07	0.01	0.01	0.01	0.01	0.01	
Minimum Initial (s)	0.01	10.0	0.01	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (S)	24.0	24.0	24.0	24.0	0.21	23.1	23.1	12.0	23.1 26.4
	5.CS	5.05 14 70/	5.05 14 70/	5.05 14 70/	23.0	21 20.4	21 20.4	23.0	20.4
I otal Split (%) Mavimum Cross (s)	30.0	20.0	20.0	30.0	01.2.12	017.0	017.0	010	01.2.10 0.1 0
Vallow Time (s)	0.00	0.00	0.00	0.00	0.12	2.3	2.3	0.12	21.0
All Ded Time (s)	0.0			0.0		0.0 7	0.0 F		0.0 1
All-Reu Tittle (s) Lost Time Adiust (s)	Z.U	0.0	7.0	0.0	0.0	7.1	- 00	0.0	1.2
Total Lost Time (s)		5.3		5.3	2.0		5.4	2.0	5.4
Lead/Lag					Lead	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	Min	Min	None	Min
Walk Time (s)	12.0	12.0	12.0	12.0		12.0	12.0		12.0
Flash Dont Walk (s)	6.7	6.7	6.7	6.7		5.7	5.7		5.7
Pedestrian Calls (#/hr)	2	22	16	16	0.00	14	14	0.00	13
Act Effet Green (s)		12.5		12.5	22.8		11.8	28.6	26.7
Actuated g/C Kato		0.28		0.28	0.52		0.27	0.65 0	0.61
Vic Katto		0.44		0.10	1.2.0		136	U.23 E 0	0.11
		2.9		7.0	0.0		0.0	0.0	0.0
Queue Delay		0.0		0.0 75.0	0.0 a		0.0 7 8 6	0.0 8	3.7
LOS		2		4 C	<u>e</u> 4		200	•	A
Approach Delav		19.9		4.9	:		13.6	:	4.9
Approach LOS		в		4			В		A
Queue Length 50th (m)		0.6		4.0	0.0		2.6	6.1	1.9
Queue Length 95th (m)		26.5		13.5	6.7		10.6	19.3	10.4
Internal Link Dist (m)		305.8		110.6			117.1		48.0
Turn Bay Length (m)					15.0				
Base Capacity (vph)		813		1090	1181		816	1007	1397
Starvation Cap Reductn		0		0	0		0	0	0
Spillback Cap Reductn		0		0	0		0	0	0
Storage Cap Reductn		0		0	0		0	0	0
Reduced v/c Ratio		0.18		0.06	0.19		0.07	0.21	0.11
Intersection Summary									
Cycle Length: 84.7									
Actuated Cycle Length: 44									
Control Cycle: 60	rdin at ad								
CONTINUT I Spe. Actuated-Unicou	niliateu								
02-03-2023 JK									CGH Transportatio Page

HCM 6th TWSC 3: Wilson St W 8	& Nor	th St										Existing AM Peak Hour Perth Golf Course Lands
Intersection												
Int Delay, s/veh	12.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		¢	۳.,		÷	۴.		¢			đþ	
Traffic Vol, veh/h	œ	ო	2	7	2	2	6	299	26	8	321	18
Future Vol, veh/h	œ	ო	2	~	2	2	ი	299	26	8	321	18
Conflicting Peds, #/hr	0	0	4	4	0	0	15	0	12	12	0	15
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
KI Channelized	1	1	None	ι ή	1	None	1	1	None	•	1	None GE
Veh in Median Storade	 #		יס	2	' C	- ·	•	· c	•	•	' C	
Grade %	 E	0										
Peak Hour Factor	06	° 6	60	6	90 06	6	60	° 6	60	6	° 6	60
Heavy Vehicles, %	2	ЗЗ	20	2	29	23	2	9	œ	23	4	22
Mvmt Flow	6	ŝ	9	~	œ	78	10	332	29	89	357	20
Maior/Minor N	laiord			(aior)		2	- Luci		2	in or 0		
Conflicting Flow All	90 90	C	C	13	C		202	107	10	241	55	23
Stage 1	8 '	'	'	2 '	'	· ·	25	52	2 '	24	54	3 '
Stage 2	1	'	1	'	1	•	267	102	1	217	3	
Critical Hdwy	4.12	1	1	4.12	1	1	7.12	6.56	6.28	7.33	6.54	6.42
Critical Hdwy Stg 1	1	•	1	•	1	1	6.12	5.56	1	6.33	5.54	
Critical Hdwy Stg 2	1	1	1	1	1	1	6.12	5.56	1	6.33	5.54	
Follow-up Hdwy	2.218	1	1	2.218	1	1	3.518	4.054	3.372	3.707	4.036	3.498
Pot Cap-1 Maneuver	1510	1	1	1606	ł	ł	660	756	1042	671	832	666
Stage 1	1	1	1	1	1	1	993	866	1	943	871	
Stage 2	1	1	1	1	1	1	738	803	1	740	865	
Platoon blocked, %		1	1		1	1						
Mov Cap-1 Maneuver	1510	1	1	1601	1	1	417	745	1029	417	820	987
Mov Cap-2 Maneuver	1	1	1	1	1	1	417	745	1	417	820	
Stage 1	1	1	1	1	1	1	984	858	1	93/	/98	
Stage 2	•	•	•	•	•	•	419	799	•	434	857	
Approach	B			WB			BB			SB		
HCM Control Delay, s	3.7			0.6			14.5			13.2		
HCM LOS							B			m		
Minor Lane/Major Mvmt	Z	BLn1	EBL	EBT	EBR	WBL	WBT	WBR S	BLn1S	BLn2		
Capacity (veh/h)		745	1510	1	1	1601	1	1	621	834		
HCM Lane V/C Ratio	-	0.498	0.006	'	1	0.005	•	•	0.43	0.238		
HCM Control Delay (s)		14.5	7.4	0	1	7.3	0	1	15.1	10.7		
HCM Lane LOS			<	×	1	<	∢	•	с I			
HCM 95th %tile Q(veh)		2.8	0	1	1	0	1	1	2.2	0.9		

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Existing AM Peak Hour Peth Gof Course Lands	HCM 6th TWSC 5: Gore St W & N	Vorth	St									Existing AM Peak Hour Perth Golf Course Lands
	Intersection											
	Int Delay, síveh	5.5										
	Movement	EBL	EBT	EBR M	/BL WI	BT WB	R NB	L NB	T NBI	R SBI	. SBT	- SBR
	Lane Configurations		ţ	۴.,	Ĭ	4		Ŧ			Ŧ	R
	Traffic Vol, veh/h	7	45	61	25	37	6 4	3 11	с С	7 5	7	13
	Future Vol, veh/h	~	45	61	25	37	6	3	с С	2	7	13
	Conflicting Peds, #/hr	5	0	9	9	0	5	6	-	7 17		б
	Sign Control	Stop	Stop	Stop S	top St	op Sto	p Fre	e Fre	e E	e Free	Free	e Free
	RT Channelized	' '	'	one		- Nor	e	,	- Non	D	Ì	- None
	Storage Length	9.5	• •	0		· .						5
	Ven in Median Storage,	, ⊭	-	ł.								'
	Daak Hour Factor	90	6	5	' Uo		- U	- C	o	. 0	00	- 6
	Heavy Vehicles. %	2	20	20	4	16	2				9	2
	Mvmt Flow	œ	20	88	28	41	7 4	8 12	6 4	-	79	9 14
	Major/Minor M	inor2		Min	or1		Major	.		Major2		
	Conflicting Flow All	372	380	<u>8</u>	123 3	74 16	39 10	5		0 184		0 0
	Stage 1	100	100		260 2	<u> 80</u>				ļ	Ì	
	Stage 2	272	280	` '	63 1	14					İ	
	Critical Hdwy	7.12	6.7	6.4 7	.14 6.	36 6.2	22 4.3	8		- 4.12	Ċ	
	Critical Hdwy Stg 1	6.12	5.7	9	.14 5.	36						
	Critical Hdwy Stg 2	6.12	5.7	9	.14 5.	36		÷		Ì	į	
	Follow-up Hdwy	3.518	4.18	3.48 3.5	536 4.1	44 3.31	8 2.45	5		- 2.218		
	Pot Cap-1 Maneuver	585	525	916	538 5	35 87	75 134	2		- 1391	1	•
	Stage 1	906	779	'	740 6	80				Ì	Ì	•
	Stage 2	734	648	'	334 7	75	,	į.		ļ	Ì	
	Platoon blocked, %	001	101	200	00	10	001 00	~		- 1070		
	Mov Cap-1 Maneuver		404	202	100 001		0 133	°		- 13/3		
	MUV Cap-2 Marieuver	070	124	•	001 901 901							
	Chane 2	651	614		11 0	2 4						
	1 2600	8	5	-	- -	ş						
	A	£			ç					2		
	Approach				NB 000			, 1		5		
	HUM CONTROL DELAY, S				0.0 I		-	_		0.4		
	HCM LOS	n			ъ							
	Minor Lane/Major Mvmt		NBL	NBT N	BR EBL	n1 EBLr	12WBLn	1 SB	E SB.	T SBR		
	Capacity (veh/h)		1333	÷	-	95 9(5 49	2 137	m	÷		
	HCM Lane V/C Ratio	-	0.036	•	- 0.1	17 0.07	5 0.15	4 0.00	4			
	HCM Control Delay (s)		7.8	0	, ,	3.2 9	.3 13.	67.	- 			
	HCM Lane LOS		A	A		ш	A	ш	-	4		
	HCM 95th %tile Q(veh)		0.1	ł		.4 0	.2	5	~	ļ		

4²35.3s

Splits and Phases: 4: Wilson St EWilson St W & Peter StFoster St

90e

Intersection LOS: A ICU Level of Service A

Maximum v/c Ratio: 0.44 Intersection Signal Delay: 8.0 Intersection Capacity Utilization 47.4% Analysis Period (min) 15

Lanes, Volumes, Timings 4: Wilson St E/Wilson St W & Peter St/Foster St CGH Transportation Page 6

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CGH Transportation Page 4

Lanes, Volumes, Tin 6: Gore St E/Gore St	nings t W &	Foster	st						Existi	ng AM Perth Go	Peak H	our
	1	t	۲	1	Ŧ	~	4	+	۶	-	¥	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations		÷	*		ب	R . 1	*	æ.		÷.	k .;	
I raffic Volume (vph) Fritture Volume (vph)	ច ជ	<u></u>	191 101	203	8 8	ច ជ	<u>8</u> 0	1/2		125	34	
Lane Group Flow (vph)	20	3 6	212	0	268	₽ ₽	221	208	- 0	140	5 88	
Turn Type	Perm	Ν	vo+mq	Perm	NA	Perm	pm+pt	Ø	Perm	A	Perm	
Protected Phases		4	· ۲	•	œ	•	2 2	2	•	9	•	
Permitted Phases	4		4	∞ α	c	~ ~	C1 1	c	9 0	c	9	
Detector Phase	4	4	с С	×	×	×	C C	2	9	9	9	
Minimum Initial (s)	10.0	10.0	4.0	4.0	4.0	4.0	4.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	20.0	20.0	0.0	20.0	20.0	20.0	0.6	15.0	19.0	19.0	19.0	
Total Split (s)	29.0	29.0	25.0	29.0	29.0	29.0	25.0	48.0	31.0	31.0	31.0	
Total Split (%)	34.1%	34.1%	29.4%	34.1%	34.1%	34.1%	29.4%	56.5%	36.5%	36.5%	36.5%	
Maximum Green (s)	23.0	23.0	22.0	23.0	23.0	23.0	22.0	43.0	26.0	26.0	26.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	0.0	3.0	3.0	3.0	0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	3.0		6.0	6.0	3.0	5.0		5.0	5.0	
Lead/Lag			Lead				Lead		Lag	Lag	Lag	1
Lead-Lag Optimize?	Ċ	Ċ	ć	0	Ċ	Ċ	ć	Ċ	ć	6	6	
Venicie Extension (s)	0.0 Mono	0.0 Nono	0.0 Mano	0.0 Nono	0.0 Mono	0.0 Mono	0.0 Mano	0.0 Min	3.U	0.0 Min	0.0 Min	
Malk Time (s)	110	110	INOLIE	11 0	11 D		NOIE		110	110	110	
Flash Dont Walk (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Pedestrian Calls (#/hr)	14	4		28	28	58		4	15	15	15	
Act Effct Green (s)		17.8	33.5		17.8	17.8	29.3	27.2		11.6	11.6	
Actuated g/C Ratio		0.32	0.59		0.32	0.32	0.52	0.48		0.21	0.21	
v/c Ratio		0.11	0.23		0.70	0.04	0.35	0.27		0.44	0.11	
Control Delay		15.7	1.3		29.4	0.1	6.6	6.6		27.1	2.5	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
I otal Delay		/ ·CL	د. ا		4.62	0.1	א א יפ	א א א		21.12	Q.7	
LUS Annroach Dalaw			×		77 B	≮	×	₹ 0		2 2 2	×	
Approach L OS		0; ⊄			0.12			0.0 V				
Oueue Lenath 50th (m)		33.5	00		225	00	116	11 2		12.7	0 0	
Queue Length 95th (m)		11.4	5.3		#61.2	0.0	24.9	24.7		31.5	2.4	
Internal Link Dist (m)		110.6			119.1			270.3		48.4		
Tum Bay Length (m)			25.0			8.0					10.0	
Base Capacity (vph)		606	1150		511	570	111	1416		741	200	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.08	0.18		0.52	0.03	0.29	0.15		0.19	0.05	
Intersection Summary												
Cycle Length: 85												1
Actuated Cycle Length: 56.4												
Control Type: Semi Act-Uncoo	prd											
02-03-2023 JK										CO	H Transport Pa	ation ige 7

Lanes, Volumes, Timings 6: Gore St ElGore St W & Foster St	Existing AM Peak Hour Perth Golf Course Lands
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 14.8 Intersection LOS: B	
Intersection Capacity Utilization 55.3% ICU Level of Service B	
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
Splits and Phases: 6: Gore St E/Gore St W & Foster St	
📢 😡	104

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HCM 6th TWSC 10: Rogers Rd & Peter St	Existing AM Peak Hour Perth Golf Course Lands	HCM 6th TWSC 3: Wilson St W & North St Existing PM Peak Hour
Intersection		Intersection
Int Delay, s/veh 8.1		Int Delay, siveh 14.4
Movement EBT EBR WBL WBT NBL NBR		Movement EBL EBT EBR WBL WBR NBL NBR NBR SBL SBT SBR
Lane Configurations 🖒 🔥 🐴 🏋		Lane Configurations at 7 at 7 at the
Traffic Vol, veh/h 5 10 108 1 11 148		Traffic Vol, veh/h 6 2 6 10 2 80 9 370 17 84 422 16
Future Vol, veh/h 5 10 108 1 11 148		Future Vol, veh/h 6 2 6 10 2 80 9 370 17 84 422 16
Conflicting Peds, #/hr 0 4 4 0 4 0		Conflicting Peds, #/hr 0 0 3 3 0 0 15 0 12 12 0 15
Sign Control Free Free Free Stop Stop		Sign Control Free Free Free Free Free Stop Stop Stop Stop Stop
RT Channelized - None - None - None		RT Channelized None None None None
Storage Length 0		Storage Length 5 15 - 0 65
Veh in Median Storage, # 0 0 0 -		Veh in Median Storage, # - 0 - 0 - 0 -
Grade, % 0 0 0 -		Grade, % - 0 0 0 0 -
Peak Hour Factor 90 90 90 90 90 90 90		Peak Hour Factor 90 90 90 90 90 90 90 90 90 90 90 90 90
Heavy Vehicles, % 2 30 4 2 9 12		Heavy Vehicles, % 2 2 2 2 13 2 5 6 1/ 2 13
MVTRLF10W 0 11 12U 1 12 104		WMIIFOW / Z / 11 Z 03 10 411 19 33 403 10
Major/Minor Major' Major' Minor'		
Conflicting Flow All U U 21 U 261 16		Conficing Flow All 91 U U 12 U U 346 132 17 2/1 9U 1/
Stage 1		Stage 1
Stage 2		Stage 2
Critical Howy 4.14 - 6.49 6.32		Critical Howy 4.12 - 4.12 - 4.12 - 4.12 - 5.05 6.26 7.27 6.55 6.33
Critical Howy Stg 1 5.49 -		Critical Howy Sig 1 2.1 5.5.2
Follow-up HOWY 2.356 3.361 3.4U8		Follow-UP Flawy Z.218 Z.218 5.518 4.145 3.554 3.554 3.118 3.417
Pot Cap-1 Maneuver 1582 - /13 1035 Store 4		Pot Cap-i Maneuver 1504 160/ 608 /33 1050 652 841 1051
01dge 1		Stager
Dathon blocked %		Diarto adde z
Mov Can-1 Maneuver		Travers and service 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Mov Cap-7 Maneuver 655 -		Mov dept. Instantation 1001 1001 1001 1001 1001 1001 1001 10
Stade 1		State
Stage 2 718 -		Stade 2 305 790 - 369 868 -
Ammonde ED M/D ND		Amazanda ED MD ND CD
		Photocol DPM Control Delay a 2 2 0 00 170 16
Minor ane/Maior Mumt NRI n1 FBT FBR WBI WBT		Minor Lana Mainr Monte NRI n F ER ERE WR WRT WRS SRI n SRI no
Canacity (veh/h) 909 - 1577 -		Canactár (Johnhu) 770 1504 - 1663 - 1663 - 1664 - 170 170 170 170 170 170 170 170 170 170
HCMI ane V/C Ratio 0178 0076 -		HCML and V/C Ratio 0.644 0.004 - 0.007 - 0.547 0.3
HCM Control Delav (s) 9.4 7.5 0		HCM Control Delay (s) 172 7.4 0 - 7.3 0 - 18 111
HCM Lane LOS A A A		HCM Jane LOS
HCM 95th %tile O(veh) 0.6 0.2 -		HCM 95th %/iie O(veh) 4.1 0 - 0 - 3.3 1.3
02-03-2023	CGH Transportation	02-03-2023 CGH Transportation
JK	Page 10	JK Page 2

And Com Els MB <	Lanes, Volumes, Ti 4: Wilson St E/Wils	imings on St V	V & Pe	ter St/F	⁻ oster	St				Existing	3 PM Peak Hour
and Group EIL ET WEL NEL NE		٩	Ť	1	Ŧ	~	*	+	۶	-	
And the following (a) And the following (b)	ane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Answer Answer<	ane Configurations		÷	3	€ ₽ (* _ 0		€÷	* - 100	4	
The second provided in the second provered provided in the second provided in the second pr	raffic Volume (vph)	113	57 72	= =	2 2	232	4 4	3 2	792	20 20 20 20 20 20 20 20 20 20 20 20 20 2	
Un Team NA Parme NA Parme NA Parme NA Parme NA retreder/Preses 4 4 8 1 2 1 6 6 enterder/Preses 4 8 8 1 2 1 6 6 6 6 6 6 6 6 6 6 6 6 6 7 7 8 8 2 6 6 6 6 7 7 8 8 2 2 6 6 7	ane Group Flow (vph)	0	160	0	ဗ္ဂ	258	0	62	297	195	
Other Dises 4 8 1 2 1 6 Interfer Dises 4 8 1 2 2 1 6 Interfer Dises 4 8 1 2 2 1 6 Interfer Dises 4 4 8 1 2 2 1 6 Interfer Dises 100 100 100 100 100 100 100 100 Interfer Dise 333	rum Type	Perm	NA	Perm	NA	vo+mq	Perm	NA	pm+pt	AA	
Amment Phases 4 8 8 2 5 6 Memory Phases 4 8 8 1 2 2 6 6 Memory Phases 4 8 8 1 2 2 6 6 Memory Phases 4 8 8 1 2 2 6 6 Memory Phases 240 240 240 220 231 231 233 333 333 314 313 314 313 313 313<	Protected Phases		4		œ	-		2	-	9	
Antion Prese 4 4 8 1 2 2 1 6 Minum Infial (s) 100	Dermitted Phases	4		∞ •	4	∞ •	0	•	9	•	
Amount inteles 100	Detector Phase	4	4	×	×	-	2	2	-	9	
Affinium Split(s) 240	SWITCD PUBSE	10.0	10.0	10.0	10.0	10.0	10.0	10.01	10.0	10.0	
Model Shift (s) 3.33	Ainimum Sulit (s)	0.01	0.01	0.01	0.01	10.0	23.1	23.1	10.0	23.1	
(cial Split (cial) 41.7% 41.7% 41.7% 41.7% 27.2% 31.2% 21.2% 31.2% <td>rotal Solit (s)</td> <td>35.3</td> <td>35.3</td> <td>35.3</td> <td>35.3</td> <td>23.0</td> <td>26.4</td> <td>26.4</td> <td>23.0</td> <td>26.4</td> <td></td>	rotal Solit (s)	35.3	35.3	35.3	35.3	23.0	26.4	26.4	23.0	26.4	
Alaximum Green (s) 300 300 300 210	Fotal Split (%)	41.7%	41.7%	41.7%	41.7%	27.2%	31.2%	31.2%	27.2%	31.2%	
(ellow)Time (s) 33	Maximum Green (s)	30.0	30.0	30.0	30.0	21.0	21.0	21.0	21.0	21.0	
Wirkerd Time (s) 2.0 2.0 2.0 2.1 0.0 0.1 cert Time Adjust (s) 5.3 2.0 0.0 0.0 0.0 0.0 cert Time Adjust (s) 5.3 2.0 0.0 0.0 0.0 0.0 cert Ling Adjust (s) 5.3 2.0 3.0	(ellow Time (s)	3.3	3.3	3.3	3.3	2.0	3.3	3.3	2.0	3.3	
Case Time Adjust (s) 0.0	All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.1	2.1	0.0	2.1	
Ordal Lost Time (s) 5.3 5.3 2.0 5.4 2.0 5.4 Gold Lost Time (s) 6.01 Lost Time (s) 5.3 3.0 </td <td>-ost Time Adjust (s)</td> <td></td> <td>0.0</td> <td></td> <td>0.0</td> <td>0.0</td> <td></td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td></td>	-ost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	
call Lag Lead Lag Lead Lag Lead Lead <thlead< th=""> Lead Lead <t< td=""><td>Fotal Lost Time (s)</td><td></td><td>5.3</td><td></td><td>5.3</td><td>2.0</td><td></td><td>5.4</td><td>2.0</td><td>5.4</td><td></td></t<></thlead<>	Fotal Lost Time (s)		5.3		5.3	2.0		5.4	2.0	5.4	
Accord Yes Yes<	.ead/Lag					Lead	Lag	Lag	Lead		
Reaction (s) 3.0 <t< td=""><td>.ead-Lag Optimize?</td><td></td><td></td><td></td><td></td><td>Yes</td><td>Yes</td><td>Yes</td><td>Yes</td><td></td><td></td></t<>	.ead-Lag Optimize?					Yes	Yes	Yes	Yes		
Min None	(ehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Mar. Ime (s) 1.20	tecall Mode	None	None	None	None	None	UIN 0	uN d	None	Min	
Constraint 11 13 13 247 14 14 19 9 exelection Calls (#hr) 11 11 13 13 247 119 301 282 exelection Calls (#hr) 11 11 13 13 247 119 301 282 exelection Calls (#hr) 11 13 13 247 119 301 282 created g/C Ratio 0.29 0.29 0.29 0.23 0.20 0.00 0.0	Valk Time (S) Clach Doot Malk (c)	0.21	0.71 8.7	0.21	0.21 12.0		0.21	0.21		0.21	
Access Constraint 1 <th1< th=""> 1 1</th1<>	iasri Durit walk (s)	0.7	1.0	- · ·	1.0		1.0	1.0		7.0	
Activation Construct of an incomponent (s) Construct (s) <thconst(s)< th=""> Const Construc</thconst(s)<>	edestrian Calls (#/hr)	F	10 C	<u>.</u>	5. 10.0	2 4 7	4	4 C	1 00	Р с с	
Control Delay 0.47 0.09 0.29 0.18 0.32 0.20 Control Delay 212 15.4 17 15.9 6.6 3.5 Control Delay 212 15.4 17 15.9 6.6 3.5 Control Delay 212 15.4 17 15.9 6.6 3.5 Cost Delay 212 15.4 17 15.9 6.6 3.5 Cost Delay 212 3.5 15.9 6.6 3.5 A Oral Denay 212 3.5 10.0 9.7 2.3 0.0 9.7 2.3 Develoce Length Sch (m) 30.5 110.6 117.1 4.80 A A Develoce Length Sch (m) 30.5 110.6 117.1 4.80 A A Develoce Length Sch (m) 30.5 110.4 117.1 4.80 A A Develoce Length Sch (m) 30.5 110.4 117.1 4.80 A A A	Actuated of C Batio		0.00		0.00	24.1 0.53		90.0	0.65	20.2 0.61	
Sorticl Delay 212 15.4 17 15.9 6.6 3.5 Develo Delay 0.0 0.0 0.0 0.0 0.0 0.0 Call Delay 212 15.4 1.7 15.9 6.6 3.5 Develo Delay 212 15.4 1.7 15.9 6.6 3.5 Oproach Delay 212 3.5 1.7 15.9 6.8 3.5 Oproach Delay 212 3.5 1.7 15.9 6.4 3.5 Oproach Delay 212 3.5 1.7 15.9 6.4 3.5 Oproach Delay 212 3.5 1.7 15.9 5.4 4.80 Oproach Logs 31.0 3.1 3.7 2.3 3.6 6.4 3.5 Developer Length Sch (m) 31.6 117.4 8.1 1017 1390 Um Bay Length (m) 813 1045 117 48.0 6 6 Districon 0 0 <td< td=""><td>Actuated g/ > Natio</td><td></td><td>0.47</td><td></td><td>0.09</td><td>0.29</td><td></td><td>0.18</td><td>0.32</td><td>0.20</td><td></td></td<>	Actuated g/ > Natio		0.47		0.09	0.29		0.18	0.32	0.20	
Developed 0.0 0	Control Delay		212		15.4	17		15.9	99	3.5	
oral Delay 212 15,4 1.7 15,9 6.6 3.5 OS C B A B A A Approach Delay 212 3.5 15,9 5.4 A Approach Delay 212 3.5 103 5.4 5.4 Approach Delay 212 3.5 103 5.4 5.4 Approach Delay 10.3 2.3 0.0 4.0 9.7 2.3 Abpreach Delay 10.3 2.3 0.0 4.0 9.7 2.3 Abbreach Delay 10.3 10.6 117.1 48.0 Abbreach Delay 110.6 117.4 813 1017 1300 Abbreach Delay 110.6 117.4 813 1017 1300 Abbreach Delay 0 0 0 0 0 0 Abbreach Delay 0.20 0.04 0.22 0.14 1300 Abbreach Delay 0.20 0.04 0.29 0.14 1300 Abbreach Delay 0.20 0.04 0.29 0.14 1300 Abbreach Delay 0.20 0.04 0.29 0.14 1300 Abbreach Delay 0.20	Dueue Delav		0.0		0.0	0.0		0.0	0.0	0.0	
OS C B A A A Approach Delay 212 35 159 54 Approach Delay 212 35 159 54 Approach Delay 212 35 159 54 Approach Delay 212 35 10 97 2.3 Devel Length Sth (m) 317 9.7 6.6 158 120 Devel Length Sth (m) 305.8 110.6 117.1 48.0 168 nemal Link Dist (m) 305.8 110.6 117.1 48.0 0 atem Link Dist (m) 305.8 10.45 117.4 813 1017 1390 atem Station Cap Reduction 0 <td< td=""><td>otal Delay</td><td></td><td>21.2</td><td></td><td>15.4</td><td>1.7</td><td></td><td>15.9</td><td>9.9</td><td>3.5</td><td></td></td<>	otal Delay		21.2		15.4	1.7		15.9	9.9	3.5	
opproach Delay 212 35 159 54 opproach Delay C A A A Dueue Length 50th (m) 103 2 3 00 40 97 54 Dueue Length 50th (m) 103 2 3 00 40 97 23 Dueue Length 50th (m) 317 97 6.6 15.8 8.8 12.0 Deue Length 50th (m) 317 9.7 6.6 15.8 28.8 12.0 Deue Length 50th (m) 31.7 9.7 6.6 15.8 28.8 12.0 Deue Length 50th (m) 31.7 9.7 6.6 15.8 28.8 12.0 Um Bay Length (m) 31.3 1045 117.4 8.83 1017 1300 Dimes Cap Reductin 0 0 0 0 0 0 0 Starstion Cap Reductin 0 0 0 0 0 0 0 48.14 117.4 1301 1301 <td>SO</td> <td></td> <td>C</td> <td></td> <td>ш</td> <td>۷</td> <td></td> <td>ш</td> <td>A</td> <td>A</td> <td></td>	SO		C		ш	۷		ш	A	A	
opproach LOS C A B A Devel Length SFh (m) 10.3 2.3 0.0 9.7 2.3 Devel Length SFh (m) 11.3 2.3 0.0 9.7 2.3 Devel Length SFh (m) 31.7 2.3 0.0 9.7 2.3 Devel Length SFh (m) 31.7 10.5 117.4 8.8 12.0 Imball Link Dist (m) 305.8 110.6 117.4 8.13 1017 1390 Imball Link Dist (m) 813 1045 117.4 8.13 1017 1390 Imball Length (m) 813 1045 117.4 8.13 1017 1390 Istraction Cap Reductin 0 0 0 0 0 0 Restored vic Ratio 0.20 0.04 0.22 0.14 0.23 0.14 Restored vic Ratio 0.20 0.04 0.22 0.14 0.14 1.14 Intersection Summary 120 0.20 0.10 0.20 0.	Approach Delay		21.2		3.5			15.9		5.4	
Device length S0h (m) 10.3 2.3 0.0 4.0 9.7 5.8 2.8 12.0 Device length S6h (m) 31.7 9.7 6.6 15.8 2.8 12.0 Nemal Link D1st (m) 35.8 110.6 117.1 4.80 4.0 Nemal Link D1st (m) 31.3 10.45 117.4 81.3 1017 1390 Save Gapacity (xph) 81.3 1045 117.4 81.3 1017 1390 Save Gapacity (xph) 81.3 1045 117.4 81.3 1017 1390 Save Gapacity (xph) 81.3 1045 117.4 81.3 1017 1390 Save Gapacity (xph) 0 14 14 14 14 14 14 14 14	Approach LOS		ပ		۷			В		A	
Journel Length Sph (m) 31.7 9.7 6.6 15.8 28.8 12.0 niemal Link Dist (m) 305.8 110.6 117.1 48.0 117.1 48.0 niemal Link Dist (m) 305.8 110.6 117.1 48.0 117.1 48.0 niema Link Dist (m) 31.3 1045 117.4 813 1017 1390 asse Capacity (wh) 81.3 1045 117.4 813 1017 1390 asse Capacity (wh) 81.3 1045 117.4 813 1017 1390 asse Capacity (wh) 81.3 1045 117.4 813 1017 1390 asse Capacity (wh) 0 0 0 0 0 0 0 billuback Cap Reductin 0 0 0 0 0 0 14 45 catural Cycle Ength 0.17 0.12 0.10 0.29 0.14 45 44 44 44 44 44 44 44	Queue Length 50th (m)		10.3		2.3	0.0		4.0	9.7	2.3	
Inemal Link Dist 117.1 48.0 um Bay Length (m) 305.8 110.6 117.1 48.0 um Bay Length (m) 81.3 1017 1390 1386 area Capacity (wh) 81.3 1045 117.4 88.1 1017 1390 Starvation Cap Reductin 0 </td <td>Queue Length 95th (m)</td> <td></td> <td>31.7</td> <td></td> <td>9.7</td> <td>6.6</td> <td></td> <td>15.8</td> <td>28.8</td> <td>12.0</td> <td></td>	Queue Length 95th (m)		31.7		9.7	6.6		15.8	28.8	12.0	
Turn Bay Length (m) 15.0 15.0 Lave Capacity (hpl) 813 1017 1390 Lave Capacity (hpl) 813 1017 1390 Lave Capacity (hpl) 813 1017 1390 Starvation Cap Reductin 0 0 0 0 Dipliback Cap Reductin 0 0 0 0 Starvation Cap Reductin 0 0 0 0 Starvation Cap Reductin 0 0 0 0 Actual of K Ratio 0.20 0.04 0.22 0.14 Actualed Vic Ratio 0.20 0.04 0.22 0.14 Actualed Scan Reductin 0.20 0.04 0.22 0.14 Actualed Vic Ratio 0.20 0.04 0.22 0.14 Actualed Scan Reductin 0.20 0.04 0.22 0.14 Scales for Summary Actualed Scales Reductin 0.14 0.22 Joint actual Cycle tength: 4.1 Actualed Scales Reduction 0.14 0.22 Joint actual Cycle: 60 Actualed Vice Scales Reduction Actualed Scales Reduction 0.22 Joint actual Cycle: 60 Actualed Vice Scales Reduction Actualed Vice Scales Reduction 0.22	nternal Link Dist (m)		305.8		110.6			117.1		48.0	
ases capacity (vpr) 813 1017 1390 Slavstand cap Reductin 0 0 0 0 0 0 0 Silvask Cap Reductin 0 0 0 0 0 0 0 0 Suback Cap Reductin 0 0 0 0 0 0 0 0 Research Cap Reductin 0 0 0 0 0 0 0 0 0 Research Statio 0.20 0.04 0.22 0.14 0.29 0.14 Actualed Vor Ratio 0.20 0.04 0.22 0.10 0.29 0.14 Actualed Systel Length: 84.7 Actualed Cycle Length: 84.7 Actualed Cycle Length: 84.2 Control Type: Actualed-Uncoordinated Cycle Solution Cycle Solu	rum Bay Length (m)					15.0					
Iteration Cap Reductin 0	3ase Capacity (vph)		813		1045	1174		813	1017	1390	
Initial Cap Reductin 0	starvation Cap Reductn		0		0	0		0	0	0	
Creage Cap Reductin 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	spillback Cap Reductn		0		0	0		0	0	0	
Reduced Vic Ratio 0.20 0.04 0.22 0.10 0.29 0.14 Intersection Summary Vide Length: 84.7 Cutrated Cycle Length: 46.2 Joural Cycle: 60 Control Type: Actuated Uncoordinated CCH Transcontation 2010: 373 CCH Transcontation	storage Cap Reductn		0		0	0		0	0	0	
hersection Summary yde Length: 84.7 curated Cycle Length: 46.2 Jaural Cycle: 60 Sontrol Type: Actuated Uncoordinated Sontrol Type: Actuated Uncoordinated	Reduced v/c Ratio		0.20		0.04	0.22		0.10	0.29	0.14	
yde Length: 04.7 kctuated Cycle Length: 46.2 Jatural Cycle: 60 Sontrol Type: Actuated Uncoordinated Sontrol Type: Actuated Uncoordinated	ntersection Summary										
cenated Cycle Length: 46.2 latural Cycle: 60 control Type: Actuated-Uncoordinated 2-03-2073 CGH Transcontation	Cvale Lenath: 84.7										
tatural Cycle: 60 control Type: Actuated-Uncoordinated CGH Transcontation CGH Transcontation CGH Transcontation	Actuated Cycle Length: 46.2	01									
Sontrol Type: Actuated-Uncoordinated CGH Transportation CGH Transportation	Vatural Cycle: 60										
CGH Transportation	Control Type: Actuated-Uno	oordinated									
	12-03-2023										CGH Transportation

Lanes, Volumes, Timings 4: Wilson St E/Wilson St W & Peter St/Fc	Existing PM Peak Ho oster St Perth Golf Course Lar
Maximum v/c Ratio: 0.47	
Intersection Signal Delay: 8.1	Intersection LOS: A
Intersection Capacity Utilization 50.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Wilson St E/Wilson St W & Peter St/Foster St

≪¶02	26.4s 35.3 s	¢⊅ ≬ 08	35.3 5	
01 01	23 s	↓ Ø6	26.4 s	

HCM 6th TWSC 5: Gore St W & North St

Existing PM Peak Hour Perth Golf Course Lands

Intersection													
Int Delay, s/veh 6.	1.2												
Movement EB	3L EE	3T E	BR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		÷	۴.,		¢			¢			÷	×	
Traffic Vol, veh/h	~	75	38	24	42	9	47	8	36	16	23	13	
Future Vol, veh/h	8	7	38	24	42	9	47	88	36	16	73	13	
Conflicting Peds, #/hr 1	10	0	13	ന	0	9	9	0	14	4	0	10	
Sign Control Sto	op Sto	d S	stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized		Ż	one	'	1	None	1	1	None	1	1	None	
Storage Length 9.	9.5		0	1	1	1	1	'	1	1	1	5	
Veh in Median Storage, #		0	÷	1	0	1	1	0	1	1	0		
Grade, %		0	•	•	0	1	•	0	1	1	0		
Peak Hour Factor 9	06	8	60	6	6	6	6	6	6	6	6	06	
Heavy Vehicles, %	2	œ	16	∞	12	2	19	5	2	9	2	2	
Mvmt Flow	6	7	42	27	47	÷	52	8	40	\$	<u>8</u>	14	
Major/Minor Minor	2		Σ	inor1		2	lajor1		2	lajor2			
Conflicting Flow All 38	38 38	33	104	430	377	142	105	0	0	152	0	0	
Stage 1 12	27 12	27	÷	236	236	1	1	1	1	1	1		
Stage 2 26	51 25	20	•	<u>1</u> 8	141	'	1	1	•	'	•		
Critical Hdwy 7.1	12 6.	8	3.36	7.18	6.62	6.22	4.29	1	1	4.16	1		
Critical Hdwy Stg 1 6.1	12 5.	ŝ	÷	6.18	5.62	1	1	•	1	1	•		
Critical Hdwy Stg 2 6.1	12 5.5	8	÷	6.18	5.62	1	1	1	1	1	1		
Follow-up Hdwy 3.51	18 4.0	72 3.	4	3.572	1.108	3.318	2.371	•	1	2.254	•		
Pot Cap-1 Maneuver 57	71 54	Ŧ	914	525	539	906	1387	1	1	1405	•		
Stage 1 87	77 78	റ്റ	÷	754	692	1	•	ł	1	1	ł		
Stage 2 74	44 68	35	•	794	761	1	1	1	1	1	1		
Platoon blocked, %								•	1		•		
Mov Cap-1 Maneuver 49	94 5(8	898	419	200	889	1376	ł	1	1390	1		
Mov Cap-2 Maneuver 49	94 5(8	÷	419	200	1	1	•	1	1	•		
Stage 1 83	35 74	ŝ	•	716	656	1	1	ł	1	1	1		
Stage 2 64	49 62	6	÷	670	74	'	•	'	1	'	'		
Approach E.	en.			WB			g			SB			
HCM Control Delay, s 1	12			13.7			2.1			1:2			
HCMLOS	в			ш									
Minor Lane/Major Mvmt	Ë	2	IBT	NBR E	BLn1E	BLn2W	BLn1	SBL	SBT	SBR			
Capacity (veh/h)	13.	76		1	501	868	498	1390	'	1			
HCM Lane V/C Ratio	0.0	œ	•	•	0.16	0.047	0.17	0.013	'	•			
HCM Control Delay (s)	2	2	0	1	13.5	9.2	13.7	7.6	0	1			
HCM Lane LOS		A	A	1	m	A	ш	A	4	1			
HCM 95th %tile Q(veh)	0	.	•	1	0.6	0.1	0.6	0	1	1			

ortation	Page 6
Transp	

Lanes, Volumes, Tim 6: Gore St E/Gore St	ings W &	Foster	St						Existi	ng PM Perth Go	Peak Hou	ds ur
	1	Ť	1	1	Ŧ	~	*	-	۶	-	*	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations		ţ	۴.		ţ	*-	۶	\$		÷	×.	
Traffic Volume (vph)	28 28	¥ 5	236 236	238 238	30	17	237	128 128	9 9	117	36 36	
Lane Group Flow (vph)	9 0	67	262	0	307	6	263	161	0	137	8 4	
Turn Type	Perm	A	vo+mq	Perm	M	Perm	pm+pt	NA	Perm	NA	Perm	
Protected Phases		4	· ی	,	8	•	2 2	2	'	9		
Permitted Phases	4		4 u	∞ ∘	0	∞ •	~ 4	c	به ص	G	9 4	
Detector Priase Switch Dhase	4	4	C	0	0	0	n	7	٥	o	0	
Minimum Initial (s)	10.0	10.0	4.0	4.0	4.0	40	4.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	20.0	20.0	0.6	20.0	20.0	20.0	0.6	15.0	19.0	19.0	19.0	
Total Split (s)	29.0	29.0	25.0	29.0	29.0	29.0	25.0	48.0	31.0	31.0	31.0	
Total Split (%)	34.1%	34.1%	29.4%	34.1%	34.1%	34.1%	29.4%	56.5%	36.5%	36.5%	36.5%	
Maximum Green (s)	23.0	23.0	22.0	23.0	23.0	23.0	22.0	43.0	26.0	26.0	26.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	0.0	3.0	3.0	3.0	0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	1
Total Lost Time (s)		6.0	3.0		6.0	6.0	3.0	5.0		5.0	5.0	
Lead/Lag			Lead				Lead		Lag	Lag	Lag	
Lead-Lag Uptimize?	000	0	0	0 0	00	0	0	00	00	000	00	
Venicie Extension (s) Recall Mode	0.c	o.c	0.0	o.c	0.0	0.0	0.0	0.0	0.0	0.0 Min	0.0 Min	
Walk Time (s)	11.0	11.0	200	11.0	11.0	11.0		7.0	11.0	11.0	11.0	
Flash Dont Walk (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Pedestrian Calls (#/hr)	-	-		26	26	26		26	31	31	31	
Act Effct Green (s)		23.2	41.0		23.2	23.2	31.5	29.4		11.7	11.7	
Actuated g/C Ratio		0.36	0.64		0.36	0.36	0.49	0.46		0.18	0.18	
v/c Ratio		0.14	0.27		0.84	0.04	0.43	0.22		0.46	0.13	
Control Delay		17.1	<u>د.</u> د		44.7	0.1	11.7	9.6		30.0	3.2	h
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
I Otal Delay		- a	C. ⊲		C	- 0	- -	0.0 ▼		0.00	7.C	
Annroach Delav		45	c		40.1	c	c	001		23.9	c	
Approach LOS		4						B		0		
Queue Length 50th (m)		4.9	0.0		30.4	0.0	17.2	9.6		14.4	0.0	
Queue Length 95th (m)		15.4	5.5		#88.4	0.0	29.4	18.6		32.3	2.9	
Internal Link Dist (m)		110.6			119.1			270.3		48.4		
Turn Bay Length (m)			25.0		000	8.0				000	10.0	
Base Capacity (vph)		480	1123		366	271	۲03 ۱03	1296		699	5/3 2	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductin												
Keduced V/C Katlo		0.14	0.23		0.84	0.04	0.37	21.0		07.0	0.07	
Intersection Summary												
Cycle Length: 85												
Actuated Cycle Length: 03.0 Natural Cycle: 60												
Control Type: Semi Act-Uncool	rd											
02-03-2023 JK										CGI	H Transportati Page	u Le

02-03-2023 JK

CGH 1

Lanes, Volumes, Timings 6: Gore St E/Gore St W & Foster St	Existing PM Peak Hour Peth Golf Course Lands	HCM 6th 10: Peter	TWSC St			
Maximum v/c Ratio: 0.84						
Intersection Signal Delay: 19.2 Intersection LOS: B						
Intersection Capacity Utilization 57.2% Intersection Culture Control of Service B		Intersection				
Analysis Period (min) 15		Int Delay, s/v	h 8.	-		
# 95th percentile volume exceeds capacity, queue may be longer.			ľ	í I		
Queue shown is maximum after two cycles.		Movement	EB	EB	K WBI	- WB
		Lane Configu	ations	4		•
Solits and Phases' 6. Core St E/Core St W & Foster St		Traffic Vol, ve	h/r	2	14:	~
		Future Vol, ve	h/h	2	14:	~
V @2		Conflicting Pe	ds, #/hr	0	_	
48 s	29 s	Sign Control	Fre	e Fre	e Fre	Fre
*	¢	RT Channeliz	þ	- Non	0	- Non
→105 → 106 21	28 28	Storage Leng	٩			
S15 S17	29 S	Veh in Media	Storage, #	0		
		Grade, %		0		
		Peak Hour Fa	ctor 9	60	6	6
		Heavy Vehicl	s, %	2	~	
		Mvmt Flow		2	15	~

Existing PM Peak Hour Perth Golf Course Lands

EET EBR WB1 MB1 MB1 <th>BL NBR 11 11 160 11 160 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 12 178 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 4 2 - - 4 2 - - 4 2 - - 4 2 - - 1 1 1 1 3</th> <th>Ж. 220 29.1.1.20.0.</th>	BL NBR 11 11 160 11 160 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 12 178 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 4 2 - - 4 2 - - 4 2 - - 4 2 - - 1 1 1 1 3	Ж. 220 29.1.1.20.0.
Theorem A </th <th>11 160 11 160 14 0 15 0 0 0 0 0 0 0 12 178 12 173 12 173 12 12 13 9 14 5.33 15 1.42 16 3.316 178 3.318 13 3.318 14 - 15 1.42 16 1.42 178 3.318 14 - 15 1.42 16 1.4 178 3.318</th> <th>8,80,80,1,81,185,1</th>	11 160 11 160 14 0 15 0 0 0 0 0 0 0 12 178 12 173 12 173 12 12 13 9 14 5.33 15 1.42 16 3.316 178 3.318 13 3.318 14 - 15 1.42 16 1.42 178 3.318 14 - 15 1.42 16 1.4 178 3.318	8,80,80,1,81,185,1
Z 10 143 Z 10 143 Z 10 143 Z 10 11 0 11 0 11 0 11 0 11 0 11 0 11 0 11 11 0 11 11 0 11 11 0 10 0 10<	11 160 4 0 0 4 0 0 16 None 0 1 1 0 0 1 1 100 0 1 1 100 1 1 100 1 1	220391.180
Tree Free Free Free Free Free Stree	4 0 10p Stop 0 - 0 - 0 0 0 0 0 0 0 0 12 178 12 178 12 178 12 2 22 2 23 9 9 9 9 9 13 3.318 133 - 134 -	0 8 9 ' ' ' 8 0 8
Free Free Free Free Free Str - - - - - - - 0 - - - - - - - 0 - 13 -	tip Stop - None 0 0 - 0 0 - 2 2 2 2 2 2 2 42 5 2 42 5 2 42 5 12 178 3 3 16 3 3 3 16 14 6 1 3 3 16 14 1 1 1 1 1 1 1 1 1 1 1 1 1 1	φω····Ω···αυ···
- None - None - None None 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -	- None 0 - 0 99 90 90 - 22 2 333 9 - 42 6.22 - 42 - 42 - 43 3.318 - 318 3.318 - 318 3.318 - 318 318	9. · · · 8. · 8. · · 8. · · 8. · · 8. · · 8. · · 8. · ·
e,# 0 0 90 90 90 90 90 9 2 11 159 2 2 2 11 159 2 1 Major1 Major2 Mino 0 0 14 0 3 4.12 - 6.4 2.218 - 3.5 2.218 - 3.5 1603 - 64 1603 - 56 1603 - 56 66 1603 - 56 66 1603 - 56 1603 - 56 1603 - 56 100 66 100 100 66 100 66 100 100 100 00 00 00 00 00 00 00 00 	0 0 0 0 0 - 0 - 0 - 0 -	- · · · Q ~ · · 8 2 · · ·
e.# 0 0 90 90 90 90 9 2 2 11 159 2 1 2 11 159 2 2 2 11 159 2 35 4,12 - 55 2,18 - 35 1604 - 6 1604 - 6 - 10 10 10 10 10 10 10 10 10 10 	0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -	- ' 8 0 0 - ' 1 1 - 1 2 5 - '
0 - 0 0 0 0 2 2 2 2 2 1 2 1 159 2 1 0 0 14 0 3 0 1 14 0 3 1 - - 4 12 5 - - - 4 12 5 - - - - 35 - 16 - - - - - - 16 35 - - - - - - 16 35 - - - - - - 16 16 - - - - - - 17 16 - - - - - - 17 16 - - - - - - 17	0 0	- 8 6 6 8 6
90 90 90 90 90 11 159 2 1 159 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 1 1 159 2 2 1 1 159 2 2 1 1 159 2 2 1 150 2 2 1 14 0 357 2 1 14 0 357 2 1 160 4 1 2 15 1 160 4 1 2 15 1 160 4 1 2 15 1 160 4 1 2 15 1 160 4 1 2 15 1 160 4 1 2 15 1 160 4 1 2 15 1 160 4 1 1 160 4 1 1 160 4 1 1 160 4 1 160 4 1 160 4 1 160 4 1 160 4 1 160 4 1 160 4 1 160 4 1 160 4 1 160 4 1 1 160 4 1 1 1 160 4 1 1 1	90 90 90 22 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 4 6 0 ' ' 8 7 ' 8 6 ' '
2 2 2 2 2 2 11 159 2 3 0 0 14 0 36 - - - - 5 - - - - 5 - - - - 5 - - - - 5 - - - - 5 - - 1604 - 6 - - - - 7 7 - - 1604 - 6 6 - - - - - 7 7 - - - - - - 7 7 - - - - - - 7 7 - - - - - - 55 - 55 - -	2 2 12 178 ort 12 333 9 229 - 229 - 242 - 242 - 242 - 218 3.318 318 3.318 318 3.318 318 - 318 3.318 318 - 318 3.318 318 - 318	ο. Δ. Δ. Δ. Δ. Δ. Δ. Δ. Δ. Δ. Δ. Δ. Δ. Δ.
2 11 159 2 1 Major Major Mino	12 178 or1 178 333 9 333 9 224 - 42 - 42 - 42 - 518 3.318 518 3.318 518 - 518 - 5	φ σ. ' · ζι ' · φ. φ. '
Major1 Major2 Mino 0 0 14 0 33 - - - - - 34 - - - - - 35 -	or1 01 333 9 924 - 224 5.22 42 6.22 442 - 142 - 118 3.3318 3.33	ο, · · Ο, · · ο Ο, · ·
Major2 Milor2 Mino 0 0 14 0 33 - - - - 2 35 - - - - 5 5 5 5 - - - - - 5	or1 333 9 9 - 224 - 42 6.22 42 - 42 - 518 3.318 562 1073 562 1073	ο···Ο···
0 0 14 0 33 - - - - 35 - - - 14 0 33 - - - - 5 - 5 - - - - - 5 - 5 - 5 - 5 - 5 - 5 - 55 - 101 - 101 - - 101 - - - 55 55 55 55 55 55 55 56 - - - - - - - - - - - - 55 55 55 56 - <td>333 9 9 - 224 - 224 - 42 6.22 42 - 18 3.318 862 1073 862 1073 333 -</td> <td>ი., შ., გნ.,</td>	333 9 9 - 224 - 224 - 42 6.22 42 - 18 3.318 862 1073 862 1073 333 -	ი., შ., გნ.,
- - <td>9 - 224 - 224 - 224 - 224 - 224 - 2255 - 225518 3.318 2518 2518 2518 2518 2518 2518 2518 25</td> <td>- · Q · · · ∞ g · ·</td>	9 - 224 - 224 - 224 - 224 - 224 - 2255 - 225518 3.318 2518 2518 2518 2518 2518 2518 2518 25	- · Q · · · ∞ g · ·
multiple 4.12 3.35 - - 4.12 5.4 - - - 5.4 - - - 5.4 - - - - 5.4 - - - - 5.4 - - - - 5.4 - - - - 5.4 - - - - 101 - - - - 7.7 - - - - 7.7 - - - - 7.7 - - - - 7.7 - - - - 7.7 - - - - 7.7 - - - - 101 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - <	224 - 22442 6.22 4.2 6.22 - 4.2 6.22 4.2 1073 518 3.318 562 1073 - 1073	· Ο΄ · · ∞ Θ΄ · ·
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- - 2.218 - 357 - - - 1604 - 160 - - - - 160 - 160 - - - - - 77 160 - 77 - - - - - - 73 55 55 r - - - - - 73 55 55 r - - - - - 73 55 55 r - - - - - - 101 55 - - - - - - - 56 - - - - - - - 101 - - - - - - - - 66 m NBLn1 EBT EBR Wit - - - 1000 7.4 9 9 - - - -	518 3.318 562 1073 514 - 733 -	8 g ' '
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T)14 - 733 -	
T 73 T 1603 - 55 T 55 55 55 55 55 55 55 55 55 	'33 -	
r 55 r 55 101 101 65 EB WBLh1 EBT EBR WE		
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EB WB NB NB NB MILLINI EBT WB N 9 MILLINI EBT WB A 40	594 1072	72
EB WB 101	594 -	
EB WB h EB WB h s 0 7.4 9 mt NBLn1 EBT EBR WE	113 -	
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s) 9.3 7	7.5 0	0
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h) 0.7 0	0.3 -	

02-03-2023 JK

> CGH Transportation Page 8

Appendix D

Future Traffic Forecasting Memo Traffic Volumes





Appendix E

Synchro and SimTraffic Intersection Worksheets – 2041 Future Background Conditions



SimTraffic Simulation Summary Future Background 2041					Queuing a 02-10-2023	and Blocking R ckground 204	teport 1						02-10-2023
Summary of All Intervals					Intersectio	on: 3: Wilson S	it W &	North S	st				
Run Number	<u></u>	2	ę	Avg	Movement	ш	8	B	8 WE	B	8	SB	
Start Time	6:30	6:30	6:30	6:30	Directions Serv	ved L	F.	с Ц		LTR	Ц	TR	
End Time	8:00	8:00	8:00	8:00	Maximum Quer	tue (m) 16	2 18	.1 8.	8 25.2	24.4	43.8	6.1	
Total Time (min)	06	06	6	06	Average Queue	e (m) 2	2	.9	2 10.8	2.2	12.6	0.3	
Time Recorded (min)	99	60	60	60	95th Queue (m)	۵ (۱	.4 12	.9 8.	4 21.7	11.4	30.6	2.3	
# of Intervals	2	2	2	2	Link Distance (r	(m) 430	4		116.4	52.1	658.3		
# of Recorded Intervals	-	~	-	-	Upstream BIK T	Time (%)							
Vehs Entered	1423	1547	1503	1491	Queuing Penalt	lty (veh)							
Vehs Exited	1437	1532	1512	1493	Storage Bay Di	list (m)		.0 15.	_			65.0	
Starting Vehs	51	27	42	38	Storage Blk Tin	me (%)	2	2					
Ending Vehs	37	42	33	36	Queuing Penalt	lty (veh)	0	0	U				
Travel Distance (km)	1289	1381	1363	1344									
Travel Time (hr)	36.0	39.2	38.4	37.9	Intersection	on: 4: Wilson S	it E/Wi	lson St	W&Ρ	eter St	t/Foste	r St	
Total Delay (hr)	7.2	8.5	8.0	7.9									
Total Stops	1445	1586	1584	1537	Movement	Ш	B	B WI	8 NE	SB	SB		
Fuel Used (I)	111.1	119.8	118.1	116.3	Directions Serv	ved LT	Ч.	E.	R LTF		TR		
					Maximum Quer	eue (m) 49	.4 48	.4 30.	19.7	50.5	27.0		
Interval #0 Information Seeding					Average Queue	ie (m) 20	.9 10	.5 18.	3 6.4	22.7	9.4		
Start Time 6:30					95th Queue (m)	n) 37	.4 25	.5 31.	2 16.2	42.7	20.6		
End Time 7:00					Link Distance (r	(m) 316	.3 114	5	134.6	52.1	52.1		
Total Time (min) 30					Upstream BIK T	Time (%)				0			
Volumes adjusted by Growth Factors.					Queuing Penalt	lty (veh)				-			
No data recorded this interval.					Storage Bay Di	list (m)		. 15.	~				
					Storage Blk Tim	me (%)		4	m -				
Interval #1 Information Recordin	b				Queuing Penalt	lty (veh)		<u></u>	51				
Start Time 7:00					inter creter		N 0 101	10 qto					
End Time 8:00						11. 0. OOLC OL	2 2 2						
Total Time (min) 60					Movement		8	B	BN	ß			
Volumes adjusted by Growth Factors.					Directions Service	ved L	⊢	R	LTF				
Run Number	-	2	ę	Ava	Maximum Quer	sue (m) 18	.4 19	.7 22.	1 15.0	5.9			
Vehs Entered	1423	1547	1503	1491	Average Queue	le (m) 8	Ø.	.3	9.0 0.6	0.6			
Vehs Exited	1437	1532	1512	1493	95th Queue (m)	u) 17	.7 16	.5 16.	2.5	4.1			
Starting Vehs	51	27	42	88	Link Distance (r	(m)	116	4 140.	52.4	108.1			
Ending Vehs	37	42	33	36	Upstream BIK 1	lime (%)							
Travel Distance (km)	1289	1381	1363	1344		lity (ven)	L						
Travel Time (hr)	36.0	39.2	38.4	37.9	Storage Bay UI	vist (m) 9	υ, o			¢			
Total Delay (hr)	7.2	8.5	8.0	7.9		me (%)	ლ.	. .		50			
Total Stops	1445	1586	1584	1537		lty (ven)				D			
Fuel Used (I)	111.1	119.8	118.1	116.3									

Scenario 1 Perth Golf Course Lands JK

SimTraffic Report Page 1

Scenario 1 Perth Golf Course Lands JK
ng and Blocking Report	Background 2041	
Queuing an	Future Back	

Intersection: 6: Gore St E/Gore St W & Foster St

SB	ж	24.9	3.4	13.4				10.0	0	~
SB	5	46.5	15.3	33.4	52.4	0	0		14	ç
BB	Ħ	35.0	13.5	31.8				20.0	2	Ľ
BB	_	54.4	25.2	43.3	284.1				10	18
WB	ъ	16.1	2.7	10.5				8.0	-	-
WB	5	22.1	8.1	17.4	134.8				16	~
留	ĸ	34.2	12.6	25.5				25.0	-	c
8	5	26.3	8.8	20.5	114.5				-	-
Movement	Directions Served	Maximum Queue (m)	Average Queue (m)	95th Queue (m)	Link Distance (m)	Upstream Blk Time (%)	Queuing Penalty (veh)	Storage Bay Dist (m)	Storage Blk Time (%)	Orierting Penalty (vah)

Movement	WB	NB	
Directions Served	Ц	LR	
Maximum Queue (m)	6.2	25.9	
Average Queue (m)	0.6	13.5	
95th Queue (m)	4.4	22.2	
Link Distance (m)	316.3	114.8	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 50

Summary	
SimTraffic Simulation	Future Total 2041

02-10-2023

02-10-2023

Seeding	
Information	
al #0	
Interva	

3:15	3:45	30	th Factors.	val.	
Start Time	End Time	Total Time (min)	Volumes adjusted by Grow	No data recorded this interv	

Recording
Information
£
Interval

Start Time	3:45					
End Time	4:45					
Total Time (min)	60					
Volumes adjusted by Growth Factors						
Run Number		. 	2	ę	Avg	
Vehs Entered		2078	2114	2104	2102	
Vehs Exited		2086	2118	2100	2103	
Starting Vehs		56	62	54	56	
Ending Vehs		48	28	58	49	
Travel Distance (km)		1917	1937	1917	1924	
Travel Time (hr)		57.6	59.0	58.4	58.4	
Total Delay (hr)		14.7	15.5	15.7	15.3	
Total Stops		2358	2566	2452	2458	
Fuel Used (I)		167.8	171.2	168.5	169.2	

Scenario 1 Perth Golf Course Lands JK

SimTraffic Report Page 3

Scenario 1 Perth Golf Course Lands JK

02-10-2023

SB TR 27.7 0.9 14.3

SB LT 85.0 85.0 22.3 22.3 55.1 658.3

NB LTR 43.6 4.6 21.6 52.1

WB R 34.7 13.0 23.3 23.3 116.4

WB LT 14.4 2.7 9.8

EB R 5.2 13.8

EB LT 9.2 2.3 8.7 430.4

Intersection: 3: Wilson St W & North St

Queuing and Blocking Report Future Total 2041 65.0

4 0

4 -

15.0 0 0

5.0 6 0

Directions Served Maximum Queue (m) Average Queue (m) Average Queue (m) Link Distance (m) Link Distance (m) Upstream Bik Time (%) Queuring Panality (veh) Storage Bik Time (%) Queuring Panality (veh)

00

Intersection: 4: Wilson St E/Wilson St W & Peter St/Foster St

SB TR 31.9 13.4 26.8 52.1

NB LTR 40.6 16.2 32.7 32.7 134.6

WB R 30.0 21.5 32.8

WB LT 51.3 13.2 35.7 114.5

EB LTR 55.4 24.1 43.7 316.3

> Directors Served Maximum Queue (m) Aversed Queue (m) Aversed Queue (m) Link Distance (m) Link Distance (m) Upstream Bik Time (%) Queuring Penalty (veh) Storage Bik Time (%) Queuring Penalty (veh)

ß

L 57.6 42.1 61.9 52.1

<mark>6</mark> 21

> 15.0 11

> > 4 8

SB LT 11.0 0.9 5.5 108.1

52.4

WB LTR 29.8 13.1 22.5 22.5 140.5

> R 17.4 7.8 15.4 116.4

Directons Served Maximum Queue (m) Averge Queue (m) Averge Queue (m) Link Distance (m) Link Distance (m) Upstream Bik Time (%) Queung Penalty (veh) Storage Bik Time (%) Queung Penalty (veh)

B

留

EB LT 19.2 7.4 14.1

St W & North St

Intersection: 5: Gore

00

7 5

9.5 3 2

Lands	
Course	
Golf	
Perth	
~	
Scenario	۲

SimTraffic Report Page 2

Scenario 1 Perth Golf Course Lands JK

Lanes, Volumes, Tin 4: Wilson St E/Wilso	nings in St M	/ & Pet	er St/F	oster	st	Fut	ure Ba	ckgrou	nd 2041 . Per	AM Peak Hour th Golf Course Lands
	1	Ť	5	Ļ	~	•	-	۶	-	
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Configurations		ŧ		÷	ĸ		ŧ	۶	æ	
Traffic Volume (vph)	95	30	7	46	350	5	30	284	57	
Future Volume (vph)	35	30	2	46	350	2	30	284	57	
Lane Group Flow (vph)	0 (137	۰ ۱	53	350	0 (45	284	149	
Iurn Iype	Perm	¥.	Perm	¥	vo+mq	Perm	¥٩	pm+pt	NA	
Protected Phases	4	4	¢	×	α	~	2	- u	9	
Detector Phase	4	4	o «	~	o ←	10	~		ç	
Switch Phase	-	-	>	b	-	ı	ı	-	,	
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	24.0	24.0	24.0	24.0	12.0	23.1	23.1	12.0	23.1	
Total Split (s)	35.3	35.3	35.3	35.3	23.0	26.4	26.4	23.0	26.4	
Total Split (%)	41.7%	41.7%	41.7%	41.7%	27.2%	31.2%	31.2%	27.2%	31.2%	
Maximum Green (s)	30.0	30.0	30.0	30.0	21.0	21.0	21.0	21.0	21.0	
Yellow Time (s)	τ. τ. τ	3.3 2.0	х. х х. х	3.3 0	0.2	τ.υ. Γ.υ.	τ.υ ε	7.0	3.3 P	
All-Red IIIIIe (s)	7.0	0.2	7.0			7.1	- 0		- 00	
Total Lost Time (s)		0.0		0.0	0.0		0.0	0.0	0.0	
I otal Lust IIIIE (s)		0.0		0.0	Pad Pad	Da	τ. 2.	v.2	t.0	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	Min	Min	None	Min	
Walk Time (s)	12.0	12.0	12.0	12.0		12.0	12.0		12.0	
Flash Dont Walk (s)	6.7	6.7	6.7	6.7		5.7	5.7		5.7	
Pedestrian Calls (#/hr)	5	22	16	16	0.00	14	14		13	
Act Effct Green (s)		12.5		12.5	23.6		11.8	29.5	27.6	
Actuated g/C Ratio		0.28		0.28	0.53		0.26	0.66	0.61	
v/c Ratio		0.42		0.12	0.38		0.11	0.31	0.16	
Control Delay		20.1		15.6	50		14.1	6.1	3.6	
Total Delav		20.1		15.6	2.0		14.1	6.1	3.6	
, SOT		ပ		ш	A		ш	A	A	
Approach Delay		20.1		3.8			14.1		5.2	
Approach LOS		O		A			ß		A	
Queue Length 50th (m)		8.3		3.1	0.0		2.1	8.4	1.9	
Queue Length 95th (m)		26.7		11.8	7.8		9.7	25.6	9.9	
Internal Link Dist (m)		305.8		110.6			117.1		48.0	
Turn Bay Length (m)					15.0					
Base Capacity (vph)		813		1156	1195		793	1015	1382	
Starvation Cap Reductn		0		0	0		0	0	0	
Spillback Cap Reductn		0		0	0		0	0	0 0	
Storage Cap Reductin		; C							0	
Reduced v/c Katio		0.17		C0.0	0.29		0.06	0.28	0.11	
Intersection Summary										
Cycle Length: 84.7										
Actuated Cycle Length: 44.9										
Natural Cycle: ou Control Type: Actuated-Uncoc	ordinated									

Intreaction Intreaction Intreaction E E E Mo With NB SN SN <t< th=""><th>Interaction Interaction In Deay, siveh 21 Into Configurations EBL EPL EPL MBR MBL MPL MBL Traffic Vol. within 5 4 11 7 3 50 7 453 17 83 397 19 Configurations EDL EDL<!--</th--><th>HCM 6th TWSC 3: Wilson St W 8</th><th>& Nor</th><th>th St</th><th></th><th></th><th></th><th></th><th></th><th>Ē</th><th>uture</th><th>Back</th><th>grou</th><th>nd 2041 AM Pea Perth Golf Co</th><th>ak Hour urse Lands</th></th></t<>	Interaction Interaction In Deay, siveh 21 Into Configurations EBL EPL EPL MBR MBL MPL MBL Traffic Vol. within 5 4 11 7 3 50 7 453 17 83 397 19 Configurations EDL EDL </th <th>HCM 6th TWSC 3: Wilson St W 8</th> <th>& Nor</th> <th>th St</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Ē</th> <th>uture</th> <th>Back</th> <th>grou</th> <th>nd 2041 AM Pea Perth Golf Co</th> <th>ak Hour urse Lands</th>	HCM 6th TWSC 3: Wilson St W 8	& Nor	th St						Ē	uture	Back	grou	nd 2041 AM Pea Perth Golf Co	ak Hour urse Lands
Interaction	Interaction Interaction														
Int Dalay, S'veh 2.1 Ame Configurations EII EII WEI WEI WEI WEI WEI NEN NEI SIS SIS Ame Configurations 5 4 11 7 3 50 7 453 17 83 397 19 Enter VOI wehn 5 4 11 7 3 50 7 453 17 83 397 19 Configurations Stop Stop Stop Stop Stop Stop Free Free Free Free Free Free Free Fre	Int Date, Sveh 21 Mountain Ed. Ed. Ed. Mol. Wei Wei Nie Nie Nie Nie Nie St. Ser Ser Montaines de la conjauration 5 d 11 7 3 50 7 453 17 83 397 19 Faute Conjauration 5 d 11 7 3 50 7 453 17 83 397 19 Faute Conjauration 5 d 11 7 3 50 7 453 17 83 397 19 Faute View et al. Ser	Intersection													
	Movement EIL EIL EIR Weil Weil Weil Weil Weil Weil Weil Weil	Int Delay, s/veh	2.1												
Tarabolic 1 7 3 5 7 45 17 84 19 Train (volverh) 5 4 11 7 3 50 7 453 17 83 37 19 Future (volverh) 5 4 11 7 3 50 7 453 17 83 37 19 Future (volverh) 5 4 11 7 3 50 7 453 17 83 37 19 Strongelength - - 5 15 0 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0	Lame Configurations 4 7 4 7 4 7 4 7 4 7 4 7 4 7 5 1 7 3 3 7 4 1 7 3 3 7 4 1 7 3 3 7 4 1 1 3 3 19 10 <th10< th=""> 10 10 10<</th10<>	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Function (N) 5 4 11 7 3 50 7 453 17 83 397 19 Function (N) Set 4 11 7 3 50 7 453 17 83 397 19 Conflicting Petel, #hr 0 0 4 4 0 0 15 10 11 13 337 19 Stronge Length ·<	Functional wethin 5 4 11 7 3 50 7 463 17 83 397 19 Conficting Peck, #hn 0 0 4 4 1 7 3 50 7 463 17 83 397 19 Conficting Peck, #hn 0 0 4 4 1 7 3 50 7 463 17 83 397 19 KT Obannization	Lane Configurations		¢	¥.,		¢	۴.		¢			đþ		
Contribution Preds, Mirr 5 4 1 7 3 0 1 83 19 Contriding Preds, Mirr Sign Contrid Sign Cont	Channelizad - 1 7 3 0 7 463 17 83 91 Sign Control Sign Contr	Traffic Vol, veh/h	S	4		~	m	20	2	463	17	8	397	19	
Control Filt D 1 2 1	Sign Control Sign State Fine Fine <td>Future Vol, veh/h</td> <td>S I</td> <td>4</td> <td>÷.</td> <td>~ ·</td> <td>m 1</td> <td>22</td> <td>- !</td> <td>463</td> <td>1</td> <td>8</td> <td>397</td> <td>19</td> <td></td>	Future Vol, veh/h	S I	4	÷.	~ ·	m 1	22	- !	463	1	8	397	19	
Synthesize Sold state The rest interer The res interer The res interer <	Synthesized Support	Conflicting Peds, #/hr	0	0	4	4	0	0	15	0	12	12	0	15	
KI Contribution Major	NT Unitation Noise	Sign Control	Stop	stop	Stop	Stop	stop	stop	Free	Free	Free	Free	Free	Free	
Major All All All All All All All All All Al	Materianyan Materianyan	KI Channelized	1	1	None	ιť	1	None	1	•	None	•	•	None RE	
Grade, % - 0 - 0 100	Grade, % - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 100	Veh in Median Storade	, , #		יכ	2 '		'	•		•	•		° '	
Peak Hour Factor 100	Peak Hour Factor 100	Grade %			'	'		'	'	, c	•	1	• c		
Heavy Vehicles, % 2 33 20 2 23 20 2 23 20 7 483 17 83 397 19 Maint Flow 5 4 11 7 3 50 7 483 17 83 397 19 Maint Flow 1100 104 27 899 1095 484 411 0 0 422 0 0 Stage 1 588 5 13 595 1 31 591 1 441 1	Heavy Vehicles, % 2 33 20 2 20 2 20 7 463 17 83 397 19 Moint Flow 5 4 11 7 3 50 7 463 17 83 397 19 Moint Flow Minor Minor Minor Major	Peak Hour Factor	100	10	100	100	90	100	100	100	100	100	90	100	
Mumt Flow 5 4 11 7 3 50 7 463 17 83 397 19 Minori	Munt Flow 5 4 11 7 3 50 7 453 17 83 397 19 Major Minori Minori Minori Major Major 10 0 421 0 0 422 60 105 105 105 10 10 10 100 110 100	Heavy Vehicles, %	2	R	20	2	59	53	2	9	œ	53	4	22	
Majorithingr Minorial Minorial Majorial	Major Major Major Major Conficting Flow All 1100 104 27 89 105 44 431 0 0 422 0 0 Stage 1 510 515 505 - 371 597 -<	Mvmt Flow	2	4	7	7	e	20	7	463	17	8	397	19	
Majori Minor Minor Majori Majori </td <td>Major/Minor Minor Minor Major Major Major Conflicting Flow All 1100 103 227 869 1056 434 431 0 0 492 0 0 Stage 1 558 - 315 597 -<td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td>	Major/Minor Minor Minor Major Major Major Conflicting Flow All 1100 103 227 869 1056 434 431 0 0 492 0 0 Stage 1 558 - 315 597 - <td></td>														
Conflicting Flow All 1100 103 227 869 1036 431 0 0 492 0 0 Stage 1 588 - 498 -<	Conflicting Flow All 1100 1034 227 869 434 431 0 6 432 0 0 Stage 1 568 - 498 -<	Maior/Minor	linor2		2	linor1		2	Aaior1		Σ	aior2			
Stage 1 588 58 498 58 595 51 597 597 597 597 597 597 597 597 597 597 597 597 597 597 597 597 593 513 593 513 593 513 593 513 593 513 593 513 <td>Stage 1 588 58 498 58 595 7 371 597 5</td> <td>Conflicting Flow All</td> <td>1100</td> <td>1094</td> <td>227</td> <td>869</td> <td>1095</td> <td>484</td> <td>431</td> <td>0</td> <td>0</td> <td>492</td> <td>0</td> <td>0</td> <td></td>	Stage 1 588 58 498 58 595 7 371 597 5	Conflicting Flow All	1100	1094	227	869	1095	484	431	0	0	492	0	0	
Stage 2 512 503 371 537 -	Stage 2 512 503 271 537 -	Stage 1	588	588	1	498	498	1	1	1	1	1	1		
Critical Holwy 7.33 6.935 5.1 7.33 6.935 5.1 7.33 6.935 5.1 7.33 6.935 5.1 7.33 6.935 5.1 5.335 5.1 5.335 5.1 5.335 5.1 5.335 5.1 5.335 5.1 5.335 5.1 5.335 5.1 5.335 5.1 5.335 5.1 5.33 1127 1 2.2 113 7.30 2.99 183 5.33 1127 1 2.2 4.157 5.2 4.11 1 9.2 4.157 5.2 1114 1 9.2 1 9.2 1 2.2 1 2.2 1 2.2 1 2.2 1 2.2 1 2.2 1 2.2 1 2.2 1 2.2 1 2.2 1 2.2 1 2.2 1 2.2 1 2.2 1 2.2 1 2.2 1 2.2 1 2.2 1 2.2 <th< td=""><td>Critical Holwy 7.33 6.995 7.2 7.33 6.935 5.2 7.3 6.935 5.3 4.445 5 5 Critical Holwy 35194 1.5 5.936 -6.13 5.935 -</td><td>Stage 2</td><td>512</td><td>506</td><td>•</td><td>371</td><td>597</td><td>•</td><td>'</td><td>•</td><td>•</td><td>•</td><td>•</td><td></td><td></td></th<>	Critical Holwy 7.33 6.995 7.2 7.33 6.935 5.2 7.3 6.935 5.3 4.445 5 5 Critical Holwy 35194 1.5 5.936 -6.13 5.935 -	Stage 2	512	506	•	371	597	•	'	•	•	•	•		
Critical Hdvy Sig1 6.53 5.935 - <td>Critical Hdvv Sig1 6.53 5.35 5.55 5</td> <td>Critical Hdwy</td> <td>7.33</td> <td>6.995</td> <td>7.2</td> <td>7.33</td> <td>6.935</td> <td>6.545</td> <td>4.13</td> <td>1</td> <td></td> <td>1.445</td> <td>ł</td> <td></td> <td></td>	Critical Hdvv Sig1 6.53 5.35 5.55 5	Critical Hdwy	7.33	6.995	7.2	7.33	6.935	6.545	4.13	1		1.445	ł		
Critical Hdws Sig 6.33 5.34 5.33 5.34 5.33 5.34 5.33 5.34 5.33 5.34 5.33 5.34 5.33 5.34 5.33 5.34 5.34 3.32 5.34 3.32 5.34 3.32 5.33 3.34 5.34 5.34 5.34 5.34 5.34 5.34 5.34 5.34 5.34 5.34 5.34 5.34 5.34 5.34 5.34 5.34 <td>Critical Holw Sig 6 13 5935 - 6 23 5 3035 </td> <td>Critical Hdwy Stg 1</td> <td>6.53</td> <td>5.995</td> <td>1</td> <td>6.13</td> <td>5.935</td> <td>1</td> <td>'</td> <td>•</td> <td>•</td> <td>•</td> <td>1</td> <td></td> <td></td>	Critical Holw Sig 6 13 5935 - 6 23 5 3035	Critical Hdwy Stg 1	6.53	5.995	1	6.13	5.935	1	'	•	•	•	1		
Follow-up Howy 35194.21563.5185 2.219 - - 2.4185 - - Shage 2 544 479 - 553 135 533 127 - 922 - - Shage 2 544 479 - 622 439 -	Follow-up Irlow 35194.21563.5165 2.219 -	Critical Hdwy Stg 2	6.13	5.995	1	6.53	5.935	1	1	1	1	1	ł		
Pot Cap-1 Maneuver 178 730 253 491 - - 952 - - Stage 1 463 473 523 491 -	Pot Cap-1 Maneuver 178 730 253 112 - - 922 - - Stage 1 463 373 129 533 127 - - 922 -<	Follow-up Hdwy	3.5194.	.3135	3.49	3.5194	.27553	.5185	2.219	•	-i	4185	ł		
Sage 1 433	Sage 1 433 437 5 53 491 -	Pot Cap-1 Maneuver	178	179	730	259	8	533	1127	1	1	952	ł		
Stage 2 544 479 622 439 -	Stage 2 544 479 - 52 439 -	Stage 1	463	437	'	553	491	•	'	'	'	•	•		
Phatoon blocked, % -	Platon blocked, % -	Stage 2	544	479	1	622	439	1	1	1	1	1	1		
Mov Cap-1 Maneuver 12 719 224 157 528 1114 - - 933 - - Mov Cap-1 Maneuver 142 154 - 224 157 58 157 -	Mov Cap-1 Maneuver 142 154 719 224 157 558 1114 - - 933 - - Mov Cap-1 Maneuver 142 154 - 224 157 58 1 - - 933 - <td>Platoon blocked, %</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td>1</td> <td>ł</td> <td></td> <td>÷</td> <td></td> <td></td>	Platoon blocked, %						-		1	ł		÷		
Mov Cap-2 Mareuver 12 74 2.24 15/ - <td>Mov Cap-2 Mareuver 142 154 2.24 157 -<</td> <td>Mov Cap-1 Maneuver</td> <td>142</td> <td><u>t</u></td> <td>719</td> <td>224</td> <td>157</td> <td>528</td> <td>1114</td> <td>1</td> <td>1</td> <td>943</td> <td>ł</td> <td></td> <td></td>	Mov Cap-2 Mareuver 142 154 2.24 157 -<	Mov Cap-1 Maneuver	142	<u>t</u>	719	224	157	528	1114	1	1	943	ł		
Stage 1 433 382 - 543 482 -	Stage 1 433 332 - 543 482 -	Mov Cap-2 Maneuver	142	15	1	224	157	1	ľ	1	·	1	e.		
Stage 2 485 470 5.35 384 -	Stage 2 485 470 5.35 384 -	Stage 1	453	382	1	543	482	t.	1	1	t.	1	ł		
Approach EB WB NB SB HCM Control Delay, s 19.6 14.4 0.1 1.8 Minor Lane/Major Mmt NB1 NB7 NB1 NB1 NB1 Minor Lane/Major Mmt NB1 NB1 NB7 199 528 943 - Capacity (veh/h) 1114 - - 147 719 199 528 943 - - HCM Lane V/C Ratio 0.006 - 0.61 0.11 2.04 - - HCM Lane V/C Ratio 0.006 - 3.11 10.1 2.4 -	Approach EB WB NB SB HCM Control Delay, s 19.6 14.4 0.1 1.8 HCM Control Delay, s 19.6 14.4 0.1 1.8 HCM LOS C B 1.4 0.1 1.8 HCM LOS C B 1.4 0.1 1.8 Minor LaneMajor Mmt NBL NBT NBR EBLI-TEBLI-ZWBL-1/WBL-12 SBL SBT SBR Minor LaneMajor Mmt 1114 - - 147 719 199 528 943 - - Capacity (veh/h) 1114 - - 1061 005 0.095 0.088 - - CMControl Delay(s) 8.3 0 - 11 2 0 4 - HCM Lane VIC Ratio 0.006 - 0.11 2 12 9 0 - HCM Lane VIC Ratio 0.05 0.1 2 0 - - HCM Lane VIC Rati	Stage 2	485	470	•	535	384	•	•	•	•	•	·		
Approach EB WB NB SB HCMControl Delay s 19.6 14.4 0.1 1.8 Minor LaneMajor Mmt NB1 NB7 NB1 NB7 SB1 SB1 SB1 Minor LaneMajor Mmt 1114 - 147 719 199 528 943 - - Capacity (wehth) 1114 - - 1.65 0.05 0.095 0.085 0.08 - - HCMLane VC Ratio 0.006 - 0.11 1.1 2.4 -	Approach EB WB NB SB HCMControl Delay, s 19.6 14.4 0.1 1.8 HCMControl Delay, s 19.6 14.4 0.1 1.8 HCMLOS C B 1.8 HCMLOS C B 1.8 Minor Lane/Major Minut NBL NBT NBR EBLI/TEBL/RWBL/NBL/2 SBL SBT SBR Minor Lane/Major Minut 1114 - - 147 719 199 528 943 - - Capacity (verhin) 1114 - - 0.051 0.05 0.088 - - Chane V/C Ratio 0.006 - 0.061 0.015 0.05 0.088 - - HCM Lane LOS A A - D B C B A - HCM Lane LOS A - D 1 1 - - - - HCM Lane LOS														
HCM Control Delay, s 19.6 14.4 0.1 1.8 HCM LOS C B 14.4 0.1 1.8 HCM LOS C B 14.4 0.1 1.8 Minor Lane/Major Mvmt NBL NBT NBR EBLI-IEBL-IZWBLINWBL/R SBL SBT SBT Gapacity (we/h) 1114 - - 147 719 199 528 943 - - ACM Lane V/C Ratio 0.006 - - 0.661 0.15 0.05 0.088 - - HCM Lane V/C Ratio 0.006 - - 1101 24 125 9.2 0.4 - HCM Lane V/C Ratio 0.03 - - 0.4 126 9.2 0.4 - HCM Lane LOS A - - 0.2 0.2 0.3 - -	HCM Control Delay, s 19.6 T4.4 0.1 18 HCM LOS C B Minor Lane Major Mvmt NBL NBT BBLn1 EBLn2WBLn1WBLn2 SBL SBT SBR Capacity (verbh) 1114 - 147 719 199 528 943 - 1 HCM Lane V/C Ratio 0.006 - 0.061 0.015 0.05 0.088 - 1 HCM Lane LOS A A - 0 B C B A A - HCM Control Delay (s) 83 0 - 31,1 10,1 24 125 92 0,4 - HCM Control Delay (s) 8,3 0 - 31,1 10,1 24 125 92 0,4 - HCM Control Delay (s) 0 - 2 0 0,2 0,3 0,3 - 1	Approach	EB			WB			BB			SB			
HCMLOS C B Minor LaneMajor Mvmt NB1 NBT	HCMLOS C B Minor LaneMajor Mmit NBL NBT NBR SBL SBT SBR Minor LaneMajor Mmit NBL NBT NBR SBL SBT SBR Capacity (veh/h) 114 - - 147 719 199 528 943 - - HCM Lane V/C Ratio 0.006 - - 0.015 0.05 0.038 - - HCM Control Delay (s) 8.3 0 - 31.1 101 24 125 9.2 0.4 - HCM Lane LOS A A - D B C B A -	HCM Control Delay, s	19.6			14.4			0.1			1.8			
Minor Lane/Major Minut NBL NBT NBR EBL/1 EBL/2WBL/1WBL/2 SBL SBT SBR Capacity (veh/h) 1114 - - 147 719 199 528 943 - - Capacity (veh/h) 1114 - - 147 719 199 528 943 - - HCM Lane V/C Ratio 0.006 - - 0.061 0.055 0.085 0.086 - - - HCM Lane V/C Ratio 0.006 - 3.11 1.01 2.4 1.25 9.2 0.4 - HCM Lane V/C Ratio 0.3 - 3.1 1.01 2.4 2 A	Minor Lane/Major Mmmt NBL NBT NBR EBL/1 EBL/2WBL/1WBL/2 SBL SBT SBR Capacity (veh/h) 1114 - - 147 719 199 528 943 - - Capacity (veh/h) 1114 - - 147 719 199 528 943 - - HCMLane V/C Ratio 0.006 - - 0.051 0.055 0.085 0.085 0.08 - - HCM Lane V/C Ratio 8.3 0 - 31.1 10.1 24 12.5 9.2 0.4 - HCM Lane V/C Ratio 0.03 0.13 10.1 24 12.5 9.2 0.4 - HCM Lane LOS A A - 10 12 24 - - HCM Lane LOS A - 0 2 0.2 0.3 0.3 - -	HCMLOS	ပ			ш									
Minor Lane/Major Mwnt NB1 NB7 NB7 NB1 NB7 NB7 NB1 NB1 NB7 NB1 SB1	Minor Lane/Major Minit NBT NBT NBT NBT NBT NBT NBT NBT NBT SBT														
Capacity (veh/h) 1114 - 147 719 199 528 943 -	Capacity (veh/h) 1114 - 147 719 199 528 943 - 1 HCMLane V.C Ratio 0006 - 0.061 0.115 005 0.095 0.089 - 1 HCM Controlleg(s) 8.3 0 - 31.1 10.1 24 12.5 9.2 0.4 - HCML ane US A A - D B C B A A - HCML ane US HCM Sine G(veh) 0 - 0.2 0.3 0.3 - 1	Minor Lane/Major Mvmt		NBL	NBT	NBR E	BLn1E	BLn2W	/BLn1W	BLn2	SBL	SBT	SBR		
HCM Lane VIC Ratio 0.006 0.061 0.015 0.05 0.088 HCM Lane VIC Ratio 0.006 0.061 0.015 0.05 0.088 HCM Control Delay (s) 8.3 0 - 31.1 10.1 24 12.5 9.2 0.4 - HCM Lane LOS A A - D B C B A A - HCM S5th %tile Q(veh) 0 0.2 0 0.2 0.3 0.3	HCM Lañe V/C Ratio 0.006 0.061 0.015 0.05 0.088 HCM Lañe V/C Ratio 0.006 0.061 0.015 0.05 0.088	Capacity (veh/h)		1114	'	'	147	719	199	528	943	1	1		
HCM Control Delay (s) 8.3 0 - 31.1 10.1 24 12.5 9.2 0.4 - HCM Lane LOS A A - D B C B A A - HCM 95th %rlie Q(veh) 0 0.2 0 0.2 0.3 0.3	HCM Control Delay (s) 8.3 0 - 31.1 10.1 24 12.5 9.2 0.4 - HCM Lane LOS A A - D B C B A A - HCM 95th %tile Q(veh) 0 0.2 0.2 0.3 0.3	HCM Lane V/C Ratio		0.006	1	1	0.061	0.015	0.05	0.095 (0.088	ľ	ł		
HCMLaneLOS A A - D B C B A A - HCMLaneLOS A 02 0 0.2 0.3 0.3	HCMLaneLOS A A - D B C B A A - HCM95th %tile Q(veh) 0 0.2 0.2 0.3 0.3	HCM Control Delay (s)		8.3	0	1	31.1	10.1	24	12.5	9.2	0.4	1		
HCM 95th %tile Q(veh) 0 0.2 0 0.2 0.3 0.3	HCM95th %tile Q(veh) 0 0.2 0 0.2 0.3 0.3	HCM Lane LOS		A	A	1		ш	ပ	ш	A	A	1		
		HCM 95th %tile Q(veh)		0	1	1	0.2	0	0.2	0.3	0.3	ł	ł		

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CGH Transportation Page 2

Intersection Int Delay, s/veh	5.3										
Movement	EBL	EBT E	BR WE	3L WB	T WBF	R NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		¢	×	*	4		÷			÷	ĸ.
Traffic Vol, veh/h	e	55	53	8	5	35 35	85	25	13	73	œ
Future Vol, veh/h	ę	55	29	33	5	35	85	25	13	73	œ
Conflicting Peds, #/hr	S	0	9	9	0	5	0	17	17	0	6
Sign Control	Stop	Stop S	top Sto	p Sto	p Stop	o Free	Free	Free	Free	Free	Free
RT Channelized	'	. '	ne		- None	' 0	1	None	1	1	None
Storage Length	9.5		0			ļ	ľ	1	•	1	5
Veh in Median Storage.	' #	0			0	1	0	1	ł	0	
Grade, %	ł	0			0	1	0	1	•	0	
Peak Hour Factor	100	100	100 10	0 10	100	0 100	100	100	10	100	100
Heavy Vehicles, %	2	20	20	4	9	2 28	ო	∞	2	9	2
Mvmt Flow	e	55	53	33	5	35 35	85	25	13	73	œ
Major/Minor N	linor2		Mino	τ		Major1		Σ	lajor2		
Conflicting Flow All	292	305	88	30 30	11 120	06 0	0	0	127	0	0
Stage 1	108	108	-	35 18	22	ļ	ľ	ł	ł	ł	ł
Stage 2	184	197	- 15	51 11	9	'	'	'	'	'	
Critical Hdwy	7.12	6.7	6.4 7.7	4 6.6	6 6.22	2 4.38	1	ł	4.12	ł	
Critical Hdwy Stg 1	6.12	5.7	ن ن	4 5.6	99		'	•	•	•	
Critical Hdwy Stg 2	6.12	5.7	ο̈́	4 5.6	99		1	1	ł	ł	
Follow-up Hdwy	3.518	4.18 3	48 3.50	36 4.14	4 3.318	8 2.452	1	1	2.218	ł	
Pot Cap-1 Maneuver	660	580	923 6	4 58	10 03 1	1 1357	ľ	ł	1459	1	
Stage 1	897	772	òo '	2 72	2	Ì	'	•	•	•	
Stage 2	818	705	- 8	11 11	e e	1	1	ł	ł	ł	1
Platoon blocked, %							1	1		•	
Mov Cap-1 Maneuver	616	548	912 52	24 55	6 915	5 1348	1	ł	1440	1	
Mov Cap-2 Maneuver	616	548	22	55	90	1	'	•	•	•	
Stage 1	866	760	- 7	29 60	Ξ	ľ.	1	ł	ł	ł	ł
Stage 2	768	676	- 75	92	2		'	'	'	'	
Approach	韶		5	æ		NB			ß		
HCM Control Delav.s	11.2		Ì	2		1.9			-		
HCM LOS	ш			ш							
Minor Lane/Major Mvmt		NBL N	IBT NB	R EBLr	11 EBLn2	2WBLn1	SBL	SBT	SBR		
Capacity (veh/h)		1348		- 55	1 912	2 567	1440	•	•		
HCM Lane V/C Ratio	0	0.026		- 0.10	15 0.032	2 0.099	0.009	•	•		
HCM Control Delay (s)		7.7	0	- 12	.3 9.1	1 12	7.5	0	ł		
HCM Lane LOS		A	A		В	B	4	۷	•		
HCM 95th %tile Q(veh)		0.1		0 '	4 0.1	1 0.3	0	1	1		

Lanes, Volumes, Timings 4: Wilson St E/Wilson St W & Peter St/Foster St

Maximum v/c Ratio: 0.42 Intersection Signal Delay: 7.0 Intersection Capacity Utilization 56.9% Analysis Period (min) 15

Splits and Phases: 4: Wilson St EWilson St W & Peter St/Foster St

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Lanes, Volumes, Tim 6: Gore St E/Gore St	nings W &	Foster	st			Fut	ure Ba	ckgrou	nd 204	1 AM Perth Go	Peak Hour If Course Lands
	•	Ť	1	1	Ŧ	~	•	+	۶	-	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations		÷Ŧ	*-		÷	*-	*	æ		÷	*-
Traffic Volume (vph) Future Volume (vnh)	ლ ლ	49	239	6 6	% %	66	356 356	160	ო ო	127	13
Lane Group Flow (vph)	0	62	239	0	34	2 0	356	176	0	130	13
Tum Type	Perm	NA	∧o+ шd	Perm	NA	Perm	pm+pt	A	Perm	M	Perm
Protected Phases		4	· ي	,	œ	'	5	2	•	9	4
Permitted Phases	4		4 r	∞ «	c	∞ «	2	c	9 0	c	9
Detector Phase	4	4	5	×	×	×	5	2	9	9	9
Switch Phase	10.0	0.01		0 1	0 1	0 F	U V	10.0	10.0	10.0	10.0
Minimum Entral (S)	0.01	0.01	0.4 0.0	0.4	0.4	0.40	0, C	0.0	0.0	0.0	0.01
Minimum Split (S) Total Split (c)	20.0	20.0	35.0	0.02	0.02	0.02	35.0	0.01	31.0	31.0	31.0
Lotal Split (S) Total Split (%)	24 1%	24 1%	70.4%	24 1%	24 1%	24 1%	707 00	40.U	36 5%	36 F %	36 F%
I otal oplit (70) Mavimum Green (c)	23 O	04.1%	23.470	04.1%	04.1%	04.1%	23.4%	0.570	0.0.00	0.0.0%	20.0 %
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	0.0	3.0	3.0	3.0	0.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)		6.0	3.0		0.9	6.0	3.0	5.0		5.0	5.0
Lead/Lag			Lead				Lead		Lag	Lag	Lag
Lead-Lag Optimize?											
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Min Min	Min 4	Min	Min
Walk Time (s)	11.0	11.0		11.0	11.0	11.0		0.7	11.0	11.0	11.0 î.î
Flash Dont Walk (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0 7 E	3.0 4 F	3.0 1 F
Act Effor Green (c)	±	12 0	01 F	70	0 1	0 1	30 R	33 B	2	10.0	10.0
Actuated of C Ratio		0.21	0.48		0.00	0.20	0.74	0.76		0.27	0.27
v/c Ratio		0.15	0.29		0.15	0.03	0.39	0.15		0.30	0.03
Control Delay		19.6	1.7		20.2	0.2	5.2	4.5		20.7	0.2
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0
Total Delay		19.6	1.7		20.2	0.2	5.2	4.5		20.7	0.2
LOS		B	A		ပ	A	A	A		ပ	A
Approach Delay		5.4			16.5			5.0		18.9	
Approach LOS		4			B			A		ß	
Queue Length 50th (m)		4.6	0.0		3.2	0.0	12.5	5.8		10.1	0.0
Queue Length 95th (m)		14./	0.0		4.11.4	0.0	78.0	G. 4F		20.9	0.0
Time David Short (m)		110.0	0E 0		- ה - ה	ď		5.012		40.4	10.0
Rase Canacity (vnh)		100	1110		858	780	1008	1408		1030	05.0
Starvation Can Deducto		170			8	8					- 0
Spillback Can Reductin		0	• •		0	0	0	• •		0	- C
Storage Cap Reductn		0	0		0	0	0	0		0	0
Reduced v/c Ratio		0.07	0.21		0.05	0.01	0.32	0.12		0.13	0.01
Intersection Summary											
Cvale Lenath: 85											
Actuated Cycle Length: 44.4											
Natural Cycle: 50											
Control Type: Semi Act-Uncoo	p										
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Lanes, Volumes, Timings 6: Gore St E/Gore St W & Foster St	Future Background 2041 AM Peak Hour Perth Golf Course Lands
Maximum v/c Ratio: 0.39	
Intersection Signal Delay: 7.6	Intersection LOS: A
Intersection Capacity Utilization 54.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Gore St E/Gore St W & Foster St

1 0 0 0		
48 s		29 s
🐴 Ø5	4 ∕06	♦
25 s	31s	29 s

Golf Course Lands																																										
Perth																																										
			SBR		15	15	15	Free	None	65	ł	•	100	с	15		0	÷	•	÷	•	÷	ł	ł	·	ł.	·	•	•	•												
			SBT	đħ	674	674	-	rree.	'	' (-	0	100	2	674		0	ł	•	ł	•	ł	ł	ł.	·	1	•	•	•	•							NDN	•	•	•	•	
			SBL		7	4	12	Free	ł	ł	ł	1 00	100	1	4	lajor2	614	ł	•	4.355	•	ł	3615	881	·	1	010	873	•	•		er.	13	<u>;</u>		ED2	2DI	•	- U	0.0	₹	
			NBR		9	8	12	LIGE	None	ł	ł		100	9	8	Σ	0	ł	•	-	•	ł	-' -'	1	•	1	•	•	•	•						ā	2DL 070	013 7 004	0.00	م. م	₹ 0	0.0
			NBT	¢	584	584	۰ ۱	Free	•	· .	-	0	90	S	284		0	ł	•	1	•	ł	ł	1	•	1	•	•	•	•						2	BLIZ	400	1133 1	<u>6</u>		1.0
			NBL		13	0	15	Free	1	1	ł.	1 0	100	~	ന	lajor1	704	ł	'	4.13	1	1	2.219	892	•	1	000	882	•	•		g	00	4		101 a 111	BLIIVV		28.2	00 0.0	ц с	0.0
			WBR	۰.	33	8	- ;	Stop	None	0	ł.	1	100	с	33	2	605	ł	'	6.395	1	1	4235	472	•	1	007	468	•	•						V/C~ 10.	N ZUJ	070	10.02	ם פו	<u>م</u>	
			WBT	¢	9	9	0	dois	1	' (-	0	100	2	9		1477	631	846	6.53	5.53	5.53	4.0193	125	473	3//	101	104	104	202	242					10		7 11 1	610	7 L 0		1.0
			WBL		2	S	m t	stop	1	15	t,		100	2	S	linor1	1115	631	484	7.33	6.13	6.53	3.519	174	468	252		4	# 5	2014	F	M	17.1		>		NDK	•	•	1	1	
			EBR	۳.,	20	2	m i	Stop	None	2	ľ	1 00	100	2	20	2	363	1	'	6.93	1	1	3.319	635	•	1	000	626	•							Edia		•		> <	۲.	•
th St			EBT	÷	e	m	0	stop	1	· .		0	100	2	m		1479	839	640	6.53	5.53	5.53	4.019	125	88	469	101	4	#0	JZ0	Ş					Q		0 01E	0.010	ר - מ	< <	2
& Nor		2.4	EBL		2	S	0	Stop	1	- #	' #	' .	100	7	S	Ainor2	1508	839	699	7.33	6.53	6.13	3.519	91	327	440	2	5 5	10	245	25	£	25.3	0.07	د							
st W 8				ions		٩	, #/hr				otorage,		or	%		2	All				g 1	g 2		euver		6	%	euver	enver				S Velo	vidy, o		ton A ton		, T	Källu	elay (s)	(dou)O	(vei)
son	ion	, síveh	int	nfigurat	ol, veh/	ol, veh/	ng Peds		nelized	Length	lealan S		ur Fact	ehicles,	M	nor	ng Flow	age 1	age 2	łdwy	Idwy St	Idwy St	p Hdwy	-1 Mane	age 1	age Z	blocked	-1 Man			4	_	ntrol De		2	iow woo	UB/INIA	(Venin				011 /0111C
N	itersect	it Delay	loveme	ane Co	raffic V	uture V	onflictir		T Char	torage		irade, %	eak Ho	eavy V	Ivmt Flo	lajor/Mi	onflictir	ŝ	ŝ	ritical F	ritical F	ritical F	ollow-u	ot Cap	50 0	IS and	latoon	lov Cap	ov Cap	ถี ข้	5	nnrnan	CM Co			- Luci		apacity				
Perth Golf Course Lands 3: 1																																										
Perth Golf Course Lands 3: 1			C.		Ω.	80	0	0	Q.					2	80		4			2			8	80				2													×.	
Perth Golf Course Lands 3: 1			L NBR		1 148	148	4 0		- None	. 0			0 100	9 12	1 148		5 14	4 -		9 6.32	- 6	- 6	1 3.408	8 1038		-		13 1035									June 1					
Perth Golf Course Lands 3: 1			IT NBL NBR	A 4	1 11 148	1 11 148	0 4 0		ne - None		. כ	- 0 0	00 100 100	2 9 12	1 11 148	Minor1	0 235 14	- 14 -	- 221 -	- 6.49 6.32	- 5.49 -	- 5.49 -	- 3.581 3.408	- 738 1038	- 991 -	- /88 -		- 683 1035	- 000 -	- 000 -	1.16	2	6.9	00 A	c	Tan an		- NOCI -				- 7h -
Perth Golf Course Lands 3: 1			3L WBT NBL NBR	4 A	18 1 11 148	38 1 11 148	4 0 4 0 r 2, 2, 2		- None - None	. 0 .		- 0 0 -	70 100 100 100	4 2 9 12	08 1 11 148	2 Minor1	19 0 235 14	14 -	221 -	14 - 6.49 6.32	5.49 -	- 5.49 -	36 - 3.581 3.408	55 - 738 1038	991 -	- 66/		30 - 683 1035 22	- 000 000	- 000	104		4 93	2 d	c			- NOCI 0001 0001 0001 0001 0001 0001				
St Perth Golf Course Lands 3: 1			R WBL WBT NBL NBR	A 4	0 108 1 11 148	10 108 1 11 148	4 4 0 4 0	HE FIGE STOP STOP	re - None - None	. 0 .			00 100 100 100 100	30 4 2 9 12	0 108 1 11 148	Major2 Minor1	0 19 0 235 14	14 -	221 -	- 4.14 - 6.49 6.32	5.49 -	5.49 -	- 2.236 - 3.581 3.408	- 1585 - 738 1038				-1580 - 683 - 1035			1.16	82	74 93		c	A EDT EDD MUDI	II EDI EDN WDL WDI	- noci - no	2		7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	
eter St Perth Gaf Course Lands <u>3: \</u>		1	VIT EBR WBL WBT NBL NBR	۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲	5 10 108 1 11 148	5 10 108 1 11 148	040040	de riee riee stop stop	- None - None - None	· 0 · · ·			70 100 100 100 100 100	2 30 4 2 9 12	5 10 108 1 11 148	d Major2 Minor1	0 0 19 0 235 14	14 -	221 -		5.49 -	5.49 -	2.236 - 3.581 3.408	1585 - 738 1038		- 68/		1580 - 683 1035			1.00	MB MB	0 74 93		c	Taw Jaw Page 12	NDLIII EDI EDA WDL WDI AAA 1500		U.I.U		τ τ τ τ τ τ τ τ τ τ τ τ τ τ τ τ τ τ τ	
3: V Pettr Goff Course Lands 3: V		8.1	EBT EBR WBL WBT NBL NBR	4 ¥	5 10 108 1 11 148	5 10 108 1 11 148	r 0 4 4 0 1 1 1 2 2 0 4 0	FIGE FIGE STOP STOP	- None - None - None		ge, # 0 0 0 -	- 0 0 0 0 0	100 100 100 100 100 100	2 30 4 2 9 12	5 10 108 1 11 148	Major1 Major2 Minor1	0 0 19 0 235 14		221 -	4.14 - 6.49 6.32	5.49 -	5.49 -	2.236 - 3.581 3.408	r - 1585 - 738 1038		- 66/		er 1580 - 683 1035				RB NB	s 0 7.4 9.3	5 d	c	NILL-4 EDT MUDI MOT	VIII, INDERI EDI VAB VIDI VIII, INDERI EDI VAB VIDI					- 70 An his

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_anes, Volumes, Ti 4: Wilson St E/Wils	imings on St M	/ & Pet	ter St/F	-oster	st		LU LU	ture To	tal 2041 P Perth	M Peak Hour Golf Course Lands
	1	1	1	Ŧ	~	•	-	۶	-	
ane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
ane Configurations		÷		÷	*-		÷	*	(2)	
raffic Volume (vph)	110	<u>R</u> 8	77	38	430	= =	9/	507	82	
ane Group Flow (vph)	0	153	0	20	430	0	110	507	206	
um Type	Perm	AN	Perm	AN	vo+mq	Perm	٩N	pm+pt	AA	
Protected Phases		4		œ	-		2	-	9	
Permitted Phases	4		ω,		ω ·	0	4	9	4	
Detector Phase	4	4	×	×	-	2	2	-	9	
SWITCH Phase	10.0	0.01	10.0	10.0	10.0	10.0	0.01	0.01	10.0	
VINIMUM INITIAI (S)	0.01	0.01	0.01	0.01	0.0	0.01	0.01	0.0	0.01	
/Inimum Split (S) - otal Split (c)	24.0	24.0	24.0	24.0	0.21	23.1 26.4	23.1 26.4	0.21	23.1	
otal Split (%)	41.7%	41.7%	41.7%	41.7%	%6 26	31.2%	31.2%	27.2%	31.2%	
faximum Green (s)	30.0	30.0	30.0	30.0	21.0	21.0	21.0	21.0	21.0	
ellow Time (s)	3.3	3.3	3.3	3.3	2.0	3.3	3.3	2.0	3.3	
JI-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.1	2.1	0.0	2.1	
ost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	
otal Lost Time (s)		5.3		5.3	2.0		5.4	2.0	5.4	
ead/Lag					Lead	Lag	Lag	Lead		
ead-Lag Optimize?					Yes	Yes	Yes	Yes		
ehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
ecall Mode	None	None	None	None	None	Min	Min	None	Min	
/alk Time (s)	12.0	12.0	12.0	12.0		12.0	12.0		12.0	
idSri DUrit Walk (S)	0.7	0.7). (). (1.0	/.0		7.0	
edestrian Calls (#/hr)	F	11 a ct	<u>.</u>	13 61	1 00	4	4 c	0.00	5 F	
ct Lated o/C. Ratio		0.01		0.01	0.56		777U	0.68	0.64	
Ic Ratio		0.47		0.14	0.43		0.28	0.52	0.20	
Control Delay		23.6		18.4	000		19.6	80	3.5	
biletie Delav		0.07			0 0 0 0		0.0	0.0	0.0	
otal Delav		23.6		18.4	2.0		19.6	8.0	3.5	
, so		O		в	A		ш	A	٨	
pproach Delay		23.6		3.9			19.6		6.7	
pproach LOS		O		A			ш		A	
tueue Length 50th (m)		11.4		4.0	0.0		7.3	20.4	3.0	
tueue Length 95th (m)		32.3		13.7	8.1		22.3	53.1	12.8	
nternal Link Dist (m)		305.8		110.6			117.1		48.0	
um Bay Length (m)					15.0					
iase Capacity (vph)		764		945	1162		744	1035	1331	
tarvation Cap Reductn		0		0	0		0	0	0	
pillback Cap Reductn		0		0	0		0	0	0	
torage Cap Reductn		0		0	0		0	0	0	
educed v/c Ratio		0.20		0.06	0.37		0.15	0.49	0.15	
Itersection Summary										
yde Length: 84.7										
ctuated Cycle Length: 49.9	~									
latural Cycle: 60										
ontrol Type: Actuated-Uno	oordinated									
2-21-2023										CGH Transportation
										Page 3

Lanes, Volumes, Timings	Future Total 2041 PM Peak Hour
4: Wilson St E/Wilson St W & Peter St/Foster St	Perth Golf Course Lands
Maximum v/c Ratio: 0.52	
Intersection Signal Delay: 8.5 Intersection LOS: A	
Intersection Capacity Utilization 63.4% ICU Level of Service	а
Analysis Period (min) 15	

Splits and Phases: 4: Wilson St E/Wilson St W & Peter St/Foster St

5	-	-
01	1 02	1 04
23 s	26.4 s	35.3 s
⁹⁰		45 ♥ Ø8
26.4s		35.3 s

HCM 6th TWSC 5: Gore St W & North St

Future Total 2041 PM Peak Hour Perth Golf Course Lands

Itersection												
t Delay, s/veh	6.7											
ovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations		¢	*-		¢			¢			÷	×.
affic Vol, veh/h	ო	22	54	4	61	19	72	115	27	13	92	20
uture Vol, veh/h	ო	52	54	4	61	19	72	115	27	9	92	20
onflicting Peds, #/hr	10	0	13	13	0	9	10	0	14	4	0	10
gn Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
T Channelized	1	1	None	1	1	None	1	1	None	1	1	None
torage Length	9.5	1	0	1	1	1	1	1	1	1	1	5
eh in Median Storage	· # '	0	1	1	0	1	1	0	1	1	0	•
rade, %	'	0	•	'	0	1	1	0	1	•	0	•
eak Hour Factor	100	10	100	100	9	100	100	10	<u>1</u> 0	100	6	100
avy Vehicles, %	2	∞	16	œ	12	2	19	S	2	9	2	2
vmt Flow	e	52	54	4	61	19	72	115	27	13	92	20
ajor/Minor	Minor2		2	linor1		2	lajor1		2	lajor2		
onflicting Flow All	451	428	115	481	435	153	122	0	0	156	0	0
Stage 1	128	128	t.	287	287	1	1	1	1	1	1	ł
Stage 2	323	300	'	<u>1</u>	148	'	•	'	•	'	•	•
itical Hdwy	7.12	6.58	6.36	7.18	6.62	6.22	4.29	1	1	4.16	1	•
itical Hdwy Stg 1	6.12	5.58	1	6.18	5.62	•	1	•	1	1	1	•
itical Hdwy Stg 2	6.12	5.58	1	6.18	5.62	1	1	1	1	1	1	•
llow-up Hdwy	3.518	4.072	3.444	3.572	4.108	3.318	2.371	'	'	2.254	'	
ot Cap-1 Maneuver	519	510	901	486	200	893	1366	1	ľ	1400	ľ	•
Stage 1	876	779	'	708	657	'	•	'	•	'	•	•
Stage 2	689	655	1	794	756	1	1	1	1	1	1	•
atoon blocked, %								'	1		1	
ov Cap-1 Maneuver	426	467	885	388	458	876	1355	ľ	ł	1385	ł	•
ov Cap-2 Maneuver	426	467	1	388	458	'	1	'	'	1	'	,
Stage 1	819	765	ľ	660	612	ł	ľ	ľ	ł	ł	ł	•
Stage 2	567	610	'	681	742	'	'	'	'	1	'	
proach	田			WB			g			SB		
CM Control Delay, s	11.6			15.6			2.6			0.8		
CMLOS	B			ပ								
inor Lane/Major Mvn	t	NBL	NBT	NBR E	EBLn1E	BLn2W	'BLn1	SBL	SBT	SBR		
apacity (veh/h)		1355	÷.	1	465	885	462	1385	a.	1		
CM Lane V/C Ratio		0.053	'	•	0.118	0.061	0.268	0.009	1	1		
CM Control Delay (s)		7.8	0	1	13.8	9.3	15.6	7.6	0	1		
CM Lane LOS		4	۷	'	ш	4	ပ	4	A	'		
CM 95th %tile O(veh		0.2	1	1	0.4	0.2		0	1	•		

Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary	Cycle Length: 85	Actuated Cycle Length: 46.8	Natural Cycle: 50	Control Type: Semi Act-Uncoord
---------------------	-------------------	----------------------	------------------	-----------------------------	-------------------	--------------------------------

Lanes, Volumes, Tirr 6: Gore St E/Gore St	ings W & I	-oster	St				Fut	ure To	otal 204	41 PM Perth Go	Peak Hou	ds IL
	•	Ť	۲	>	ŧ	~	*	+	۶	-	*	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations		÷	¥.,		÷	¥.,	F	\$		÷	¥	
Traffic Volume (vph)	14	37	499	19	52	14	402	167	e	145	59	
Future Volume (vph)	4	37	499	19	52	4	402	167	с с	145	53	
Lane Group Flow (vpn) Turn Tyne	Darm	LC MA	499	Darm	L V	Dorm 14	40.2 nm±nt	193 NA	Dam	148 NA	Parm P	
Protected Phases	b	4	۵. ۱۳	5	<u></u> ~		2			<u></u>		
Permitted Phases	4	F	04	∞	þ	œ	0	4	9	>	9	
Detector Phase	4	4	5	∞	∞	ω	5	2	9	9	9	
Switch Phase												
Minimum Initial (s)	10.0	10.0	4.0	4.0	4.0	4.0	4.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	20.0	20.0	9.0	20.0	20.0	20.0	9.0	15.0	19.0	19.0	19.0	
Total Split (s)	29.0	29.0	25.0	29.0	29.0	29.0	25.0	48.0	31.0	31.0	31.0	
Total Split (%)	34.1%	34.1%	29.4%	34.1%	34.1%	34.1%	29.4%	56.5%	36.5%	36.5%	36.5%	
Maximum Green (s)	23.0	23.0	22.0	23.0	23.0	23.0	22.0	43.0	26.0	26.0	26.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	0.0	3.0	3.0	3.0	0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	3.0		6.0	6.0	3.0	5.0		5.0	5.0	
Lead/Lag			Lead				Lead		Lag	Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Min	Min	Min	Min	
Walk Time (s)	11.0	11.0		11.0	11.0	11.0		7.0	11.0	11.0	11.0	
Flash Dont Walk (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
Pedestrian Calls (#/hr)	-	-		26	26	26		26		31	31	
Act Effct Green (s)		11.9	24.0		9.3	9.3	35.1	36.1		12.3	12.3	
Actuated g/C Ratio		0.25	0.51		0.20	0.20	0.75	0.77		0.26	0.26	
v/c Ratio		0.14	0.52		0.25	0.04	0.43	0.16		0.34	0.07	
Control Delay		20.7	2.9		22.2	0.3	5.4	4.3		21.8	0.7	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		20.7	2.9		22.2	0.3	5.4	4.3		21.8	0.7	
LOS		0	4		0	4	4	4		0	A	
Approach Delay		4.5			18.6			5.1		18.3		
Approach LOS		<			m			<		m		
Queue Length 50th (m)		4.1	1.0		5.8	0.0	14.6	6.3		12.6	0.0	
Queue Length 95th (m)		13.0	10.0		16.7	0.0	32.3	15.5		29.6	0.9	
Internal Link Dist (m)		110.6			119.1			270.3		48.4		
Turn Bay Length (m)			25.0			8.0					10.0	
Base Capacity (vph)		812	1130		808	762	1071	1481		1036	834	
Starvation Cap Reductn		0	0		0	о (0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.06	0.44		0.09	0.02	0.38	0.13		0.14	0.03	
Intersection Summary												
Cycle Length: 85												
Actuated Cycle Length: 46.8												
Natural Cycle: 50												
Control Tyme: Cami Ant-I Incon	hrd											

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Future Total 2041 PM Peak Hour Peth Gof Course Lands	HCM 6th TWSC 10: Peter St						Future Total 2041 PM Peak Hour Perth Colf Course Lands
	Intersection						
	Int Delay, s/veh	8.1					
	Movement	EBT E	BR WB	L WBT	NBL	NBR	
*	Lane Configurations	\$		¢,	×		
- ∳04	Traffic Vol, veh/h	2	10 14	3 2	7	160	
29 s	Future Vol, veh/h	7	10 14	3	7	160	
	Conflicting Peds, #/hr	0	-	1	4	0	
24 s	Sign Control	Free	ree Fre	e Free	Stop	Stop	
	RT Channelized	ĕ '	one	- None		None	
	Storage Length	•			0		
	Veh in Median Storage,	0		-	0		
	Grade, %	0		0	0		
	Peak Hour Factor	100	100 10	0 100	100	100	
	Heavy Vehicles, %	5	5	2	5	2	
	Mvmt Flow	2	10 14	3 2		160	
	Major/Minor M	ajor1	Major	5	Minor1		
	Conflicting Flow All	0	0	0	300	80	
	Stage 1	ł		1	8		
	Stage 2				292		
	Critical Hdwv	•	- 4.1	2	6.42	6.22	
	Critical Hdwv Sta 1	•		1	5.42		
	Critical Hdwv Sta 2	1			5.42	1	
	Follow-up Hdwv	•	- 2.21	, 	3.518	3.318	
	Pot Can-1 Manelwer		- 160	י م د	691	1074	
	Chara 1		2		1015	-	
	Chage -	•			75.0		
	Distant blacked 0/	•			001		
	Platoon blocked, 70		-		100	0101	
	Mov Cap-1 Maneuver	•	- 160	י ג	179	10/3	
	Mov Cap-2 Maneuver			:	627		
	Stage 1	•		1	1014		
	Stage 2	ł			688		
	Approach	8	×		R		
	HCM Control Delav s	c	2	4	66		
	HCM LOS	•			Þ		
					¢		
	Minor Lane/Major Mvmt	NBI	n1 EB	T EBR	WBL	WBT	
	Capacity (veh/h)	1	026	1	1605		
	HCM Lane V/C Ratio	Ö	167	·	0.089		
	HCM Control Delav (s)		9.2	1	7.5	0	
	HCM Lane LOS		A	1	∢	A	
	HCM 95th %tile Q(veh)		0.6	1	0.3	,	

90

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Splits and Phases: 6: Gore St E/Gore St W & Foster St \blacksquare_{02}

Intersection LOS: A ICU Level of Service C

Maximum v/c Ratio: 0.52 Intersection Signal Delay: 7.4 Intersection Capacity Utilization 67.1% Analysis Period (min) 15

Lanes, Volumes, Timings 6: Gore St E/Gore St W & Foster St

02-21-2023 JK

CGH Transportation Page 10

CGH Transportation Page 8

Appendix F

Synchro and SimTraffic Intersection Worksheets – 2041 Future Total Conditions



Intersection: 3: Wilson St W & North St Movement EB WB We Drections Served LT R L R L Drections Served LT R L R L R L Drections Served L R R L R L R L R L R L R L R L R L R L R L R L R L R L R L R L R L R R L R L R L R L R R L R L R L R L R L R L R L R L R L R L R L R L R L L L L L L L L L	NB 77 575 1411 1411 1411 1411 14 14 14 14 14 14 1	SB L 62.7 16.5 38.4 100.0 100.0 SB T R 38.7 14.7 14.7 52.2	SB 78.1 56.4 56.8 56.8 3 56.8 1 1 1
Movement EB EB WB WB Directions Served LT R LT R LT F L String Clauele (m) 438 5 32 324 355 324 355 String Clauele (m) 436 153 234 324 33 11 136. Ubstring Panalty (weh) 455 153 234 33 11 34 3 17 4 9 3 17 4 9 3 17 4 9 3 17 4 9 3 17 4 9 3 17 4 9 3 17 4 9 3 17 4 9 134. 0 150 5 3 14 134. 134. 134. 134. 134. 134. 134. 134. 134. 134. 134. 134. 134. 134. 134. 134. 134. 134. 134.	NB 57.5 57.5 57.5 56.1 1 41.1	SB 6.27 16.5 16.5 16.5 16.5 28.4 100.0 28 TR 38.7 14.7 30.4 52.2	S83 4 8 2 8 3 4 8 2 8 3 4 8 2 8 3 4 8 2 8 3 4 8 2 8 3 4 8 2 8 9 3 4 8 2 8 9 4 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8
Directions Served LT R LT R <th< th=""><th>TR 575 611 611 523 33 14 14 14 14 65 7 55 7 7 55 7 7 55 7 7 55 7 7 7 55 7</th><th>L 62.7 16.5 38.4 100.0 100.0 28 S SB TR 38.7 38.7 38.7 30.4 52.2</th><th>17 781 568 568 568 568 3 568 3 4 588 3 588 3 588 3 588 3 588 3 588 3 588 3 588 5 588 5 588 5 588 5 588 5 588 5 588 5 588 5 588 5 588 5 588 5</th></th<>	TR 575 611 611 523 33 14 14 14 14 65 7 55 7 7 55 7 7 55 7 7 55 7 7 7 55 7	L 62.7 16.5 38.4 100.0 100.0 28 S SB TR 38.7 38.7 38.7 30.4 52.2	17 781 568 568 568 568 3 568 3 4 588 3 588 3 588 3 588 3 588 3 588 3 588 3 588 5 588 5 588 5 588 5 588 5 588 5 588 5 588 5 588 5 588 5 588 5
Maximum Queue (m) 498 238 236 55 Stringe Queue (m) 458 153 24 313.1 Stringe Queuing Penalty (wel) 455 153 24 33 113.1 Useuing Penalty (wel) 5 4 9 117 4 Dueuing Penalty (wel) 5 4 9 117 4 Dueuing Penalty (wel) 5 4 9 117 4 Dueuing Penalty (wel) 5 4 9 117 4 Moment Clueuing Penalty (wel) 5 4 9 26 Moment Dueue (m) 116 5 4 26 26 26 Moment Clueue (m) 55.1 6 4 26 26 27 26 27 26 26 Maximum Queue (m) 55.1 14.15 134.1 134.5 134.1 134.5 134.5 26 Stringe Bit Vieue (m) 97.1 17.6 27.2 20 27 4 20 Stringe Bit Vieue (m) 97.1	61.1 61.1 61.1 7 5 5 6 1 4 1 4 1 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8	62.7 16.5 16.5 16.5 38.4 Coster \$ SB 17.R 38.7 38.7 38.7 38.7 52.2	2881 566 9 568 3 588 3 588 4 588 4 5888 4 588 4 588 4 588 4 588 4 588 4 588 4 588 4 588 4 588 4
Shorage use (m) 43.5 5.3 24 74.3 Upstreen Bit Time (%) Upstreen Bit Time (%) 49 3 116.1 Upstreen Bit Time (%) 49 3 17 4 9 Ustreep Bit Time (%) 49 3 17 4 9 116.1 Ustreep Bit Time (%) 55.1 5.4 9 3 17 4 9 17 4 9 17 4 9 17 4 9 17 4 9 17 4 9 17 4 9 17 4 9 17 4 9 17 4 9 17 4 9 13.1 13.4	641.1 52.2 3 14 14 14 14 5 5 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	100.0 100.0 SB TR 38.7 14.7 30.4 52.2	2 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
Link Distance (m) 429 143. Upstream Bit Time (%) 49 3 17 Upstream Bit Time (%) 49 3 17 1 Strage Bit Time (%) 49 3 17 1 Movement EB WB MB MB 1	52.2 52.2 14 14 5 5 5 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	100.0 100.0 SB TR 38.7 14.7 38.7 38.7 38.7 38.7 52.2 52.2	0 0 0 33
Upstream Bit Time (%) 80 150 Storage Bit Time (%) 49 3 17 5 Oueuing Penalty (veh) 5 1 9 7 Among Council Stored LTR LTR R 134 Directions Served LTR LTR LTR 134 Directions Served Ubstream Bit Time (%) 97.1 134.5 233 Ubstream Bit Time (%) 97.1 114.5 234 234 Directions Served Ubstream Bit Time (%) 37.1 134.5 134.5 Directions Served Upstream Bit Time (%) 23.1 134.5 134.5 Directions Served Upstream Bit Time (%) 23.1 134.5 134.5 Directions Served UPStream Bit Time (%) 23.1 134.5 134.5 Directions Served TTR TR 134.5 134.5 Directions Served TTR TR 134.5 Directions Served TT	3 14 14 5 6 6 14 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	100.0 10	00 #
Queuing Penalty (veh) 80 150 Storage Bix Time (%) 49 3 17 5 Storage Bix Time (%) 5 4 9 5 Storage Bix Time (%) 5 4 9 5 Storage Bix Time (%) 5 4 9 5 Dueuning Penalty (veh) 5 4 9 5 Average Outeuring Terrations Served LTR LT R LT R Maximum Queue (m) 97.1 17.5 23.134 203 134.5 203 Link Distance (m) 97.1 114.5 214.5 23.434 134.5 234 Dueuing Penalty (veh) 55.1 6.8 4.1 53 4 33 Cueuing Penalty (veh) 55.1 6.8 4.1 55 34 34 Dueuing Penalty (veh) 55.1 4.37.3 144.5 134.5 34 34 Dueuing Penalty (veh) 55.1 6.8 4.1 56 37 34 Dueuing Penalty (veh) 57.6 714.5 73.4 144.5 <	14 eter St/F 8 88 8 88 8 16 7 55.7	100.0 100.0 100.0 10.	° 0 T
Storage Bix Time (%) 80 150 Storage Bix Time (%) 49 3 17 5 Queuing Penaity (vel) 5 4 9 6 Queuing Penaity (vel) 5 4 9 7 Directions Served LTR UT R R Maximum Queue (m) 97.1 17.6 23.3 Average Queue (m) 97.1 17.6 23.4 23.4 Directions Served Link Distance (m) 97.1 17.6 23.4 24.4 Directions Served Link Distance (m) 97.1 17.6 23.4 23.6 Storage Bix Time (%) 97.1 17.6 23.4 23.6 Queuing Penaity (vel) S5.1 6.8 4.4 23.6 Storage Bix Time (%) 0.4 37.3 14.4.5 23.6 Queuing Penaity (vel) S5.1 6.4 20.6 24.4 Queuing Penaity (vel) S5.6 24.4 24.4 26.6 Morement S6.7 <td< td=""><td>s eter St/F 8 88 8 88 8 1 7 55.7 2 55.7</td><td>100.0 SB TR 38.7 14.7 30.4 52.2</td><td>00</td></td<>	s eter St/F 8 88 8 88 8 1 7 55.7 2 55.7	100.0 SB TR 38.7 14.7 30.4 52.2	00
Storage Bik Time (%) 49 3 17 7 Queuing Penalty (veh) 5 4 9 5 Intersection: 4: Wilson St E/Wilson St W & F Movement EB WB WB Directions Served UR LT R MF Movement EB WB WB MB MB Directions Served UR 134, 4 33 141, 5 28: Average Queue (m) 55, 1 68 14, 1 83 28: Storage Bay Dist (m) 55, 1 68 144, 5 34 134, 1 Distream Bik Time (%) 97, 1 144, 5 28: 134, 1 134 Distream Bik Time (%) 0.014, 16% 8 2 4 28 Distream Bik Time (%) 0.1 437, 3 144, 5 134, 1 134, 1 Distream Bik Time (%) 0.1 437, 3 144, 5 2 24 Distream (%) 0.1 437, 3 144, 5 2 4 2 Distream (%) 0.1 141, 6 134, 1 <td< td=""><td>eter St/F</td><td>-oster 5 SB TR 38.7 14.7 30.4 52.2</td><td>00</td></td<>	eter St/F	-oster 5 SB TR 38.7 14.7 30.4 52.2	00
Queuing Penalty (vei) 5 4 9 6 Intersection: 4: Wilson St E/Wilson St Wilson St W & P Directions Served LTR LT R Directions Served LTR LT R LT Directions Served UP 203 141.5 203 Directions Served UP 37.1 17.6 23.4 38.5 Directions Served UP 37.1 17.6 23.4 38.5 Directions Served UP 37.1 17.6 23.4 38.7 Directions Served UP 37.1 17.6 23.4 38.7 Directions Served UP 37.1 14.5 23.4 38.7 Directions Served UP 37.6 37.6 37.6 37.6 Directions Served UR Core St W & North St 24.0 24.0 24.0 Directions Served UR R 26.7 20.6 37.6 37.6 37.6 Directions Served UR R 26.0 27.6 20.6 27.7 00.7 27.6 27	eter St/F	-oster S SB TR 38.7 14.7 30.4 52.2	0
Intersection: 4: Wilson St E/Wilson St W & P Movement EB WB WMB MMB	eter St/F	Coster S SB TR 38.7 14.7 30.4 52.2	÷
Movement EB WB WB WB Directors Served LTR LT R LTR P R Z19 28.1 38.1 <td>SB S5.7 31.6</td> <td>SB TR 38.7 38.7 30.4 52.2</td> <td></td>	SB S5.7 31.6	SB TR 38.7 38.7 30.4 52.2	
Directions Served LTR LT R LTF Maximum Queue (m) 122 208 279 321 Maximum Queue (m) 951 16.8 44.1 85 Sh Queue (m) 97.3 14.5 54.1 34.6 Upstream Bik Time (%) 97.3 14.5 54.1 34.6 Queuing Penalty (veh) 15.0 2 4 Storage Bik Time (%) 2 4 Queuing Penalty (veh) 15.0 2 4 Ducuing Penalty (veh) 8 2 4 Maximum Queue (m) 57.1 14.5 2 4 Maximum (Mueue (m) 57.6 21.1 10. Movement 56.1 77.6 31.1 10. Maximum (Mueue (m) 57.1 10.5 21.1 10. Maximum (Mueue (m) 52.3 2.1.1 10. Maximum (Mueue (m) 22.9 2.1.1 10. Maximum (Mueue (m) 52.3 21.1 10.	255.7 34.6	TR 38.7 14.7 30.4 52.2	
Maximum Queue (m) 122.2 20.8 27.9 28.1 Average Queue (m) 55.1 6.8 14.1 8.1 Stance (m) 97.1 17.6 28.4 20.5 Stance (m) 97.1 17.6 28.4 20.5 Unk Distance (m) 437.3 114.5 28.4 20.5 Useream Bik Time (%) 0.437.3 114.5 134.6 Queuing Penalty (veh) 5.0 2 4 Storage Bix Time (%) 0.15.0 2 4 Queuing Penalty (veh) 8 2 2 Movement Filme (%) 2 4 2 Movement 5.6 Gre St W & North St 17.7 17.8 17.8 Movement 5.6 Gre St W & North St 27.6 27.1 10.0 Movement 5.7 Gre St W & North St 14.2 10.5 27.6 27.1 10.0 Movement 5.7 Gre St W & North St 14.4.2 10.6 27.6 21.1 10.0 Movement 5.7 Gre St W & North St 14.2 10.5 21.1 10.0 10.0	31.6	38.7 14.7 30.4 52.2	Ш
Average Queue (m) 55.1 6.8 14.1 8.5 S6th Queue (m) 97.1 17.6 23.4 23.1 Link Distance (m) 97.1 17.6 23.4 23.1 Upstream Bit Time (%) 0.437.3 114.5 13.4 Dueuding Penaty (veh) 50.1 6.8 14.1 8.5 Dueuding Penaty (veh) 23.4 13.6 13.6 Storage Bay Dist 20.6 21.6 13.6 Dueuding Penaty (veh) 2 4 2 Autoring Penaty (veh) 2 4 2 Autoring Penaty (veh) 8 2 2 Movement EB WB North St Directions Served LTR 17R 17R Directions Served TTR 27.6 20.6 Movement 5.1 10.5 27.6 21.1 Directions Served 12.8 10.6 27.6 21.1 Directions Served 14.2 10.6 27.6 21.1 10.6	316	14.7 30.4 52.2	
Bith Queue (m) 97.1 17.6 25.4 20.5 Upstream (m) 437.3 14.4.5 13.4 Upstream (m) 437.3 14.4.5 13.4 Upstream (m) 437.3 14.4.5 13.4 Upstream (m) 437.3 14.5 13.4 Upstream (m) 25.14.5 13.4 13.4 Upstream (m) 50.00 50.00 5 Storage Bix (m) 5 2 14.5 Storage Bix (m) 8 2 14.5 Storage Bix (m) 8 2 14.5 Out-outing Penalty (wh) 8 2 2 Understoration Factoric Factoric Stored 1.1R 1.1R 1.1R Understorat Stored 1.1R 1.1R 1.1R 1.1R Understorat Stored 1.1R 1.1R 1.1R 1.1R Understorat Stored 1.1R 1.1R 1.1R 1.1R 1.1R Understorat Stored 1.1R 1.1R 1.1R 1.1R 1.1R Understorat Stored 1.1R 1.1R 1.1R 1.1R 1.1R 1.1R Understorat Stored 1.1R 1.1R 1.1R 1.1R 1.1R Undetage Outer (m) 2	0.10	30.4 52.2	
Link Distance (m) 437.3 114.5 134.6 Useriean Bix Time (%) 0.45.0 135.0 Questing Paralty (veh) 15.0 15.0 Storage Bix Time (%) 2 4 Questing Paralty (veh) 8 2 Storage Bix Time (%) 2 4 Questing Paralty (veh) 8 2 Intersection: 5: Gore St W & North St 8 2 Movement EB MB MB Maximun Overed LTR LTR LTR Direction Served CTR 27.6 97.1 Directione (m) 22.9 20.6 77.6 String Quese (m) 22.9 20.6 77.6	52.7	52.2	
Upstream Bik Time (%) Oueuing Penaty (vei) Storage Bik Time (%) Storage Bik Time (%) Bit Storage Chene (m) Storage Chene (m	52.2		
Queuing Penalty (vel) 50 Storage Bay Dist (m) 50 Storage Bay Dist (m) 50 Storage Bay Dist (m) 2 Storage Bay Dist (m) 2 Storage Bay Dist (m) 8 Queuing Penalty (vel) 8 Acuacy Penalty (vel) 8 Differencin: 5: Gore St W & North St Directions Served 11R Directions Served 11R Areage ducue (m) 5:1 St Outen (m) 72:6 St Outen (m) 22:9 St Outen (m) 4:2 Distribution 4:0	-		
Storage Bay Dist (m) 15.0 Storage BK Time (%) 2 4 Bready (ref) 5 2 4 Movement EB WB St Directions Served LTR LTR LTR Maximum Queue (m) 25:1 21:6 4910 21:1 Morenage Queue (m) 72:3 20:5 21:1 10:1 St Queue (m) 22:3 20:5 21:1 10:1	2		
Storage Bik Time (%) 2 4 Queuing Penalty (veit) 8 2 Intersection: 5: Gore St W & North St 8 2 Movement EB Movement EB MB 5 Movement Case St W & North St 1 10: 1<			
Queuing Penalty (vel) 8 2 Intersection: 5: Gore St W & North St Movement EB WB NB Directions Served LTR LTR LTR Maximu Queue (m) 5.14 101 Sh Queue (m) 72.6 31.6 101 Sh Queue (m) 22.9 20.6 31.6 11			
Intersection: 5: Gore St W & North St Movement EB WB NB St Directions Served LTR LTR LTR LTR Maximm Queue (m) 55,1 00, 95h Queue (m) 14,2 00,5 31,5 10, 95h Queue (m) 22,9 20,6 31,5 11,00, 95h Queue (m) 22,9 20,6 31,5 11,00,10,10,10,10,10,10,10,10,10,10,10,1			
Movement EB WB NB SF Directions Served LTR			
Directions Served LTR LTR LTF LTF Maximum Queue (m) 25.1 27.6 49.0 20.1 Average Queue (m) 14.2 10.5 21.1 10.1 951h Queue (m) 22.9 20.6 37.5 17.1 154h Queue (m) 22.9 20.6 37.5 17.1	~		
Maximum Queue (m) 25.1 27.6 49.0 20.7 Average Queue (m) 14.2 10.5 21.1 10.1 951h Queue (m) 22.9 20.6 37.5 17.1 14.1 Not 20.6 37.5 17.1			
Average Queue (m) 14.2 10.5 21.1 10.1 95 Notement (m) 22.9 20.6 37.5 17.1 154 Notement (m) 42.0 6 37.5 17.1	~		
95th Queue (m) 22.9 20.6 37.5 17.5	~		
	10		
Upstream BIK Time (%) 0			
Queuing Penalty (veh) 0			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Scenario 1 Perth Golf Course Lands JK

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Scenario 1 Perth Golf Course Lands JK

SimTraffic Simulation Summary Future Total 2041 Summary of All Intervals

Avg	6:30	8:00	06	60	2	-	2294	2305	71	83	2052	65.3	20.2	2967	184.8
ო	6:30	8:00	6	09	2	÷	2325	2311	02	25	2083	66.3	20.6	3048	187.7
2	6:30	8:00	06	60	2	-	2303	2318	68	53	2071	66.1	20.6	2980	185.0
-	6:30	8:00	6	09	2	-	2254	2279	62	54	2004	63.5	19.6	2876	181.5
Run Number	Start Time	End Time	Total Time (min)	Time Recorded (min)	# of Intervals	# of Recorded Intervals	Vehs Entered	Vehs Exited	Starting Vehs	Ending Vehs	Travel Distance (km)	Travel Time (hr)	Total Delay (hr)	Total Stops	Fuel Used (I)

Interval #0 Information Seeding Start Time 6:30

6:30	7:00	30	Growth Factors.	interval.
start Time	End Time	otal Time (min)	/olumes adjusted by (Io data recorded this

ţ,

					Avg	2294	2305	71	8	2052	65.3	20.2	2967	184.8
					e	2325	2311	20	84	2083	66.3	20.6	3048	187.7
					2	2303	2318	68	53	2071	66.1	20.6	2980	185.0
ing					-	2254	2279	62	54	2004	63.5	19.6	2876	181.5
Record	7:00	8:00	60	ctors.										
Interval #1 Information	Start Time	End Time	Total Time (min)	Volumes adjusted by Growth Fac	Run Number	Vehs Entered	Vehs Exited	Starting Vehs	Ending Vehs	Travel Distance (km)	Travel Time (hr)	Total Delay (hr)	Total Stops	Fuel Used (I)

Report	
Blocking	2041
g and	Tota
Queuin	Future

Intersection: 6: Gore St E/Gore St W & Foster St

SB	Я	18.8	2.6	10.7				10.0	0
SB	Ľ	45.9	20.0	37.9	54.0	0	0		24
NB	Ħ	35.0	17.9	37.2				20.0	ო
NB	_	64.4	22.9	47.5	284.1				œ
WB	æ	22.6	3.5	13.2				8.0	2
WB	5	30.0	9.1	19.6	134.8				24
EB	æ	39.6	19.8	37.1				25.0	2
EB	5	57.8	18.9	37.2	114.5				4
lovement	irections Served	laximum Queue (m)	verage Queue (m)	5th Queue (m)	ink Distance (m)	pstream Blk Time (%)	tueuing Penalty (veh)	torage Bay Dist (m)	torage Blk Time (%)

Intersection: 10: Rogers Rd & Peter St

Movement	EB	WB	NB	
Directions Served	Ц	_	ы	
Maximum Queue (m)	10.8	20.3	30.0	
Average Queue (m)	0.6	7.4	15.2	
95th Queue (m)	5.0	16.2	24.0	
Link Distance (m) 1	82.0	437.3	113.2	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 104

SimTraffic Simulation Summary Future Total 2041

02-15-2023

02-15-2023

Seeding
Information
Interval #0

3:15	3:45	30	l by Growth Factors.	this interval.	
Start Time	End Time	Fotal Time (min)	/olumes adjusted by Growth F	Vo data recorded this interval.	

Recording
Information
Ħ
Interval

				Avg	2848	2854	86	95	2631	92.2	34.4	4398	242.0
				e	2760	2750	96	106	2538	86.1	30.4	4095	231.5
				2	2898	2902	86	8	2670	96.9	38.2	4601	248.4
				-	2892	2913	103	82	2685	93.6	34.4	4501	246.0
3:45	4:45	90	oy Growth Factors.						(-				
Start Time	End Time	Total Time (min)	Volumes adjusted b	Run Number	Vehs Entered	Vehs Exited	Starting Vehs	Ending Vehs	Travel Distance (km	Travel Time (hr)	Total Delay (hr)	Total Stops	Fuel Used (I)

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SimTraffic Report Page 1

Scenario 1 Perth Golf Course Lands JK

Queuing and Blockin Future Total 2041	ig Rep	ort							02-15-202	53
Intersection: 6: Gore	St E/O	sore S	t W & F	-oster	St					
Movement	B	田	WB	MB	BB	æ	SB	SB		
Directions Served	5	£	5	£	-	TR	5	ш		
Maximum Queue (m)	66.8	40.0	53.0	23.0	135.3	35.0	58.7	25.0		
Average Queue (m)	17.5	25.8	19.0	3.7	51.2	28.7	39.1	7.8		
95th Queue (m)	45.1	43.4	39.6	14.8	102.5	42.9	61.1	22.8		
Link Distance (m)	114.5		134.8		284.1		54.0			
Upstream Blk Time (%)							2			
Queuing Penalty (veh)							7			
Storage Bay Dist (m)	-	25.0 0	ţ	8.0	ę	20.0	Ş	10.0		
Storage bik Time (%) Queuing Penalty (veh)	- 4	οœ	4/	v ←	72	515	12	- 0		
Intersection: 10: Pete	er St									
Movement	8	WB	BB							
Directions Served	TR	-	£							
Maximum Queue (m)	2.3	20.3	21.0							
Average Queue (m)	0.1	6.3	11.9							
95th Queue (m)	1.2	16.1	18.3							
Link Distance (m)	230.8	437.3	113.2							
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (m)										
Storage Blk Time (%)										
Queuing Penalty (veh)										
Network Summary										
Network wide Queuing Penalty	y: 306									
0										

02-15-2023

SB TR 156.0 59.0 113.0 658.3 2 100.0 93.2 32.0 64.5 8 NB TR 57.6 42.9 63.2 52.2 3 3 15 WB R 73.8 43.5 74.2 118.7 8 15.0 46 42 WB LT 29.9 28.0 33.4 Intersection: 3: Wilson St W & North St EB R 23.0 7.9 23.5 8.0 44 EB LT 57.9 26.4 50.0 428.9 65 13 Directions Served Maximum Queue (m) Average Queue (m) Average Queue (m) Link Distance (m) Link Distance (m) Link Distance (m) Upstream Bik Time (%) Queuring Penalty (veh) Storage Bik Time (%) Queuring Penalty (veh)

Intersection: 4: Wilson St E/Wilson St W & Peter St/Foster St

SB	TR	14.2	5.9	13.9	52.2						
SB	_	48.0	21.8	40.3	52.2	0	0				
NB	LTR	37.4	16.8	31.2	134.6						
WB	Ж	30.0	19.1	31.0				15.0	œ	2	
WB	L	56.8	13.2	32.4	114.5				7	8	
EB	LTR	122.3	57.5	102.7	437.3						
Movement	Directions Served	Maximum Queue (m)	Average Queue (m)	95th Queue (m)	Link Distance (m)	Upstream Blk Time (%)	Queuing Penalty (veh)	Storage Bay Dist (m)	Storage Blk Time (%)	Queuing Penalty (veh)	

Intersection: 5: Gore St W & North St

Scenario 1 Perth Golf Course Lands JK

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Scenario 1 Perth Golf Course Lands JK

A B B	Ame Group EN MBI MBI MBI MBI SBI SBI ame Group EN EN FI 7 10 50 FI SBI Taffer (Wing region) 153 4 11 7 100 50 FI SBI SBI Taffer (Wing region) 153 4 11 7 100 50 50 50 Taffer (Wing region) 153 4 1 7 100 50 50 50 Taffer (Wing region) 153 35	Lanes, Volumes, Ti 3: Wilson St W & N	imings orth St						μ	ture To	otal 204	1 AM Peak Hour
and Grag ERI ERI ERI ERI MBI MB	and Group EBL EPL EPL EPL MBI NBI NBI SBI S		•	Ť	1	1	Ŧ	~	+	۶	-	
are Configurations and for the form of the	And Configurations And T T 100 130 4 11 7 100 500 617 83 83 anter Volume (pti) 159 4 11 7 109 50 617 83 83 anter Volume (pti) 159 4 11 7 109 50 617 83 849 anter Volume (ptises 4 4 8 8 5	ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	
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Androm Signed Signed<	Affinitum Split (s) 50 <td>Detector Phase</td> <td>4</td> <td>4</td> <td>4</td> <td>8</td> <td>œ</td> <td>8</td> <td>2</td> <td>9</td> <td>9</td> <td></td>	Detector Phase	4	4	4	8	œ	8	2	9	9	
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Minum Split(s) 225 235 330	Minum Spli(s) 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 225 235 330 <	Ainimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Ocal Split (s) 225 225 225 225 225 235 376 376 376 376 376 376 376 376 376 376	Ord Split (s) 2.2.5 2.2.5 2.2.5 2.2.5 2.3.5 3.7.5	Ainimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Call Shit (%) 37.5% 37.5% 37.5% 37.5% 37.5% 25.5% 62.5%	Call Shift (%) 37.5% 33.6 33.0<	otal Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	37.5	37.5	37.5	
All contraction 180	All me (s) 180	otal Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%	37.5%	62.5%	62.5%	62.5%	
ellow Time (s) 35 35 35 35 35 35 35 35 35 35 35 35 35	efficie Exersion (s) 35 35 35 35 35 35 35 35 35 36 dialor filme (s) 35 35 35 35 35 35 35 35 35 35 35 36 dialor filme (s) 31 10 10 10 10 10 10 10 10 00 00 00 00 00	/aximum Green (s)	18.0	18.0	18.0	18.0	18.0	18.0	33.0	33.0	33.0	
Ul-Reduction 10	ult Rate (a) 10	ellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
cst Time Adjust (s) 0.0	otal Lost Time (s) 00 00 00 00 00 00 00 00 00 00 00 00 00	vII-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
All 4.5 <td>circle Lost Time (s) 4.5</td> <td>.ost Time Adjust (s)</td> <td></td> <td>0.0</td> <td>0.0</td> <td></td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td></td>	circle Lost Time (s) 4.5	.ost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
aeridag aer	aerical aerical age aerical age aerical age aerical age and tag encide kansion (s) areal Malk (s) thick Tarks (s) areal Malk (s) thick Tarks (s) areal Malk (s) thick Tarks (s) thick	otal Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5	
and 30	activity 30 <	ead/Lag										
Mark State	Temper Extension (s) 30 <td>eac-rag Optimizer</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>6</td> <td>0</td> <td>0</td> <td>6</td> <td>0</td> <td></td>	eac-rag Optimizer	0	0	0	0	6	0	0	6	0	
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Bash Durivals (s) 110	Table The field of	vedali mode Valk Time (s)	202				202		202		2 0	
elestran Calls (#hr) 0	defating 0<	tash Dont Walk (s)	110	110	11 0	11 0	11 0	11 0	11 0	11 0	110	
ct Effat Green (s) 13.4 13.4 13.1 13.1 40.9 40.9 40.9 40.6 totated of Ratio 0.22 0.22 0.22 0.68 0.68 0.68 0.68 0.72 0.22 0.12 0.68 0.68 0.68 0.68 0.68 0.68 0.68 0.68	ct Effd Green (s) 13.4 13.4 13.1 13.1 13.1 40.9 40.9 cualed g/C Ratio 0.22 0.22 0.22 0.22 0.22 0.23 0.4 0.49 cualed g/C Ratio 0.68 0.68 0.68 0.68 0.68 0.68 control Delay 33.0 3.5 2.23 6.9 7.2 8.9 7.8 control Delay 3.0 0.0 0.0 0.0 0.5 0.0 0.0 oral Delay 3.1 17.7 7.7 7.7 7.9 7.9 oral Delay 3.1 17.7 7.7 7.7 7.9 oral Delay 3.1 17.7 7.7 7.7 7.9 oral Delay 3.1 17.7 7.7 7.9 7.9 oral Delay 3.1 17.7 7.7 7.9 7.9 oral Delay 3.1 17.7 7.7 7.7 7.9 oral Delay 3.1 17.7 7.7 7.9 7.9 oral Delay 3.1 17.7 7.7 7.9 7.9 oral Delay 3.1 17.7 7.7 7.7 7.9 oral Delay 3.1 17.7	Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	
Cluated gC Ratio 0.22 0.22 0.22 0.23 0.66 0.68 0.68 0.68 0.68 0.68 0.68 0.68 0.68 0.68 0.68 0.68 0.68 0.68 0.68 0.68 0.68 0.68 0.68 0.69 0.55 0.21 0.35 0.78	ctualed gC Ratio 0.22 0.22 0.22 0.22 0.66	vct Effct Green (s)		13.4	13.4		13.1	13.1	40.9	40.9	40.9	
Ic Ratio 0.65 0.04 0.33 0.16 0.56 0.24 0.42 outrol Delay 3.0 3.5 2.2.3 6.9 7.2 8.9 7.8 Dentrol Delay 3.0 3.5 2.2.3 6.9 7.7 8.9 7.8 Dentrol Delay 3.0 3.5 2.2.3 6.9 7.7 8.9 7.8 Octal Delay 3.1 1.7 1.7 7.7 7.9 7.9 Oproach LOS 3.1 1.1 1.7 7.7 7.9 7.4 Dente Length 50th (m) 16.2 0.0 10.8 0.0 26.2 3.6 20.0 Dente Length 50th (m) 16.2 0.0 10.8 0 26.4 48.6 44.4 Dente Length 50th (m) 36.5 391 410 42.4 48.6 44.4 Dente Length 50th (m) 336 391 410 42.4 48.6 44.4 Dente Length 50th (m) 336 30 0	Ic Ratio 0.65 0.04 0.39 0.16 0.56 0.24 0.42 Orind Delay 330 3.5 22.3 6.9 7.2 8.9 7.8 Orind Delay 330 3.5 22.4 6.9 7.7 8.9 7.8 Orind Delay 330 3.5 22.4 6.9 7.7 8.9 7.8 Orial Delay 3.1 1.7 7.7 7.7 7.9 7.9 Oproach LOS C A A A A A A Discue Length 561(m) 16.2 0.0 10.8 0.24 4.86 4.4 Discue Length 561(m) 16.2 0.0 10.8 0.35 3.6 3.1 110 Discue Length 561(m) 16.2 0.0 10.9 3.6 3.1 100 6.44.4 4.66 4.44 4.66 4.44 4.66 4.44 4.66 4.66 4.66 6.44.4 4.66 6.64.4 4.66 6.64.4<	<pre>ctuated g/C Ratio</pre>		0.22	0.22		0.22	0.22	0.68	0.68	0.68	
Control Delay 330 35 223 6.9 72 8.9 7.8 Developelay 0.0	Control Delay 33.0 3.5 2.2.3 6.9 7.8 7.8 Developelay 0.0 0.0 0.0 0.0 0.0 0.0 Developelay 0.1 1.7 1.7 8.9 7.8 OIA C A A A A OIA 0.5 0.0 0.0 0.0 0.0 OIA 1.1 1.7 1.7 7.9 7.9 Oproach LOS 1.1 1.7 1.7 7.1 7.9 Oproach LOS 1.1 1.7 1.7 7.1 4.8 Devel Langth 50h (m) 16.2 0.0 10.8 0.6 3.6 2.0 Devel Langth 50h (m) 30.2 1.6 2.08 6.2 4.10 7.4 4.86 Devel Langth 50h (m) 31.6 1.0 4.0 6.41.4 4.4 4.4 Devel Link Dist (m) 33.6 3.91 4.10 1.2.4 4.86 4.4 4.4 4.4	/c Ratio		0.65	0.04		0.39	0.16	0.56	0.24	0.42	
Useue Delay 0.0 <th< td=""><td>Usere Delay 0.0 0.0 0.0 0.0 Cial Delay 3.1 1.7 7 7 7.9 Cial Delay 3.1 1.7 7.7 7.7 7.9 Oproach Delay 3.1 1.7.7 7.7 7.9 7.9 oproach Delay 3.1 1.7.7 7.7 7.4 8 7.9 oproach Delay 3.1 1.1.7 1.7.7 7.7 7.4 8 8 2.00 0.00</td><td>Control Delay</td><td></td><td>33.0</td><td>3.5</td><td></td><td>22.3</td><td>6.9</td><td>7.2</td><td>8.9</td><td>7.8</td><td></td></th<>	Usere Delay 0.0 0.0 0.0 0.0 Cial Delay 3.1 1.7 7 7 7.9 Cial Delay 3.1 1.7 7.7 7.7 7.9 Oproach Delay 3.1 1.7.7 7.7 7.9 7.9 oproach Delay 3.1 1.7.7 7.7 7.4 8 7.9 oproach Delay 3.1 1.1.7 1.7.7 7.7 7.4 8 8 2.00 0.00	Control Delay		33.0	3.5		22.3	6.9	7.2	8.9	7.8	
Oild Delay 330 35 224 6.9 7.7 89 7.8 Order Delay 31.1 17.7 7.7 7.7 7.9 7.9 oproach Delay 31.1 17.7 7.7 7.7 7.9 7.9 oproach Delay 31.1 17.7 7.7 7.9 7.9 7.9 oproach Delay 50.1 0.0 8.0 26.2 3.6 2.4 8.5 7.9 oproach LOS 0.1 16.2 0.0 18.8 2.4 10.2 4.86 7.44 uema Link Dist (m) 16.2 0.0 10.9 6.4 4.86 6.44.4 nemal Link Dist (m) 3.6 3.1 10.0 6.44.4 10.0	ofal Delay 33,0 3,5 22,4 6,9 7,7 8,9 7,8 or A A A A A A A A A A A A A A A A A A	Queue Delay		0.0	0.0		0.0	0.0	0.5	0.0	0.0	
OS C A	OS C A C C A A A A A C C A	otal Delay		33.0	3.5		22.4	6.9	7.7	8.9	7.8	
opproach Delay 31.1 17.7 7.7 7.9 opproach Delay 31.1 17.7 7.7 7.9 opproach Delay 501 16.2 0.0 10.8 A A Queue Length 50th (m) 16.2 0.0 10.8 0.0 26.2 3.6 2.0 Queue Length 50th (m) 30.2 1.6 20.8 6.2 41.0 2.4 48.6 Queue Length 50th (m) 30.2 1.6 20.8 6.2 41.0 24.4 48.6 Queue Length 70th (wh) 3.6 3.1 41.0 4.4	opproach Dely 31.1 17.7 7.3 7.9 opproach Dely 31.1 17.7 7.9 7.9 opproach Dely 50.1 16.2 0.0 18 0.0 25 3.6 2.0 Use Length 50th (m) 16.2 0.0 109.6 41.0 12.4 48.6 Use Length 50th (m) 30.2 1.6 20.8 6.2 41.0 12.4 48.6 Use Length (m) 316 9.0 10.9 6.4.4 10.0 6.4.4 use Specify (ph) 336 39.1 410 404 139 3.42 1110 isarvation Cap Reductin 0 0 13 0 0 19 0 itarvation Cap Reductin 0 0 0 0 0 0 19 0	SO		C	A		C	A	A	A	A	
C D A A Deuel length S6h (m) 16.2 0.0 18 A 48.6 Deuel length S6h (m) 16.2 0.0 18 0.0 26.2 36 2.4 Deuel length S6h (m) 30.2 1.6 20.8 0.0 26.2 36 2.0 Deuel length S6h (m) 30.2 1.6 109.6 48.0 64.4 2.00 10.0 64.4 nema Link D14 (m) 30.2 1.0 10.0 64.4 100.0 64.4 2.2 110 64.4 2.2 110 12.4 48.6 2.41.0 12.0 64.4 2.2 110 64.4 2.2 110 2.4 110 2.4 110 2.4 110 2.4 110 2.4 110 2.4 110 2.4 110 2.4 110 2.4 110 2.4 110 2.4 110 2.4 110 2.4 110 2.4 110 2.4 12 2.6<	optioachLOS C B A A Joueu Length S0h (m) 16.2 0.0 10.8 0.2 3.6 2.0 Joueu Length S6h (m) 30.2 1.0 10.8 5.2 3.6 2.0 Joueu Length S6h (m) 30.2 1.0 10.8 6.4 4.8 6.4 nemal Link Dist (m) 31.6 1 10.9 6.4 4.8 6.4 nemal Link Dist (m) 31.6 1 0 17.4 4.8 6.4 nemal Link Dist (m) 31.6 1 0 17.4 4.8 6.4 nemal Link Dist (m) 33.6 3.91 4.10 4.04 13.9 3.2 1110 asse Gapecity (vph) 3 1 3 0 0 19 9.7 9.7 9.1 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7 9.7	vpproach Delay		31.1			17.7		7.7		7.9	
Journel Length Sthr (m) 16.2 0.0 10.8 0.1 2.6 2.0 Journel Length Sthr (m) 16.2 1.0 10.8 6.2 4.10 2.4 4.86 Themal Link Dist (m) 416.4 109.6 6.2 4.10 2.4 4.86 Themal Link Dist (m) 416.4 109.6 4.81 100.0 4.4 Themal Link Dist (m) 3.6 3.91 4.10 4.04 133 3.42 1110 Taise Capacity (wpl) 3.6 3.1 1.10 4.04 133 3.42 1110 Starvation Cap Reductin 0 1.3 0	Joueu Length Sthr (m) 16.2 0.0 10.8 0.0 2.5.2 3.5 2.2.0 Joueu Length Sthr (m) 416.4 10.9.6 6.2 41.0 2.4 48.6 Termal Link, Dist (m) 416.4 10.9.6 6.2 41.0 2.4 48.6 Termal Link, Dist (m) 36 3.0 1.0.0 6.4.4 6.4.4 Termal Link, Dist (m) 3.6 3.91 4.10 4.0 10.00 Tase Genetity (prih) 3.6 3.91 4.10 4.0 176 0 0 Jarveitor Cap Reductin 0 1.3 0 0 19 0	vpproach LOS		0	•		е е		A S		A	
Joure Length Shift (m) 3U2 1.6 2U3 6.2 4.10 1.24 4.85 Internal Link Dist (m) 416.4 100.6 48.0 64.4 Internal Link Dist (m) 416.4 100.6 48.0 64.4 Internal Link Dist (m) 416.4 100.0 44.0 100.0 Internation Cap Reductin 0 0 13 13 0 0 19 Dillack Cap Reductin 0 13 13 0 0 0 19 Dillack Cap Reductin 0 13 13 0 0 0 19 Storage Cap Reductin 0 13 0 </td <td>Joure Length Shr) (m) 30.2 1.6 20.8 6.2 4.10 7.4 4.86 Immal Link Dist (m) 416.4 109.6 48.0 64.4 64.4 Immal Link Dist (m) 416.4 109.6 48.0 64.4 64.4 Immal Link Dist (m) 335 391 410 40.4 1139 342 1110 Inservation Case Capecity (wh) 336 391 410 40.4 1139 342 1110 Inservation Case Reductin 0<td>Queue Length 50th (m)</td><td></td><td>16.2</td><td>0.0</td><td></td><td>10.8</td><td>0.0</td><td>26.2</td><td>3.6</td><td>22.0</td><td></td></td>	Joure Length Shr) (m) 30.2 1.6 20.8 6.2 4.10 7.4 4.86 Immal Link Dist (m) 416.4 109.6 48.0 64.4 64.4 Immal Link Dist (m) 416.4 109.6 48.0 64.4 64.4 Immal Link Dist (m) 335 391 410 40.4 1139 342 1110 Inservation Case Capecity (wh) 336 391 410 40.4 1139 342 1110 Inservation Case Reductin 0 <td>Queue Length 50th (m)</td> <td></td> <td>16.2</td> <td>0.0</td> <td></td> <td>10.8</td> <td>0.0</td> <td>26.2</td> <td>3.6</td> <td>22.0</td> <td></td>	Queue Length 50th (m)		16.2	0.0		10.8	0.0	26.2	3.6	22.0	
Terma Link (bst (m) 416.4 105.0 044.4 108.1 000 044.4 106.0 108.0 044.4 100.0 108.4 100.0 108.0 108.0 109.0	Terma Link Ust (m) 416.4 103.0 644.4 10.0 0 mBML est (m) 416.4 100.0 10.0 10.0 10.0 10.0 10.0 10.0 1	Jueue Length 95th (m)		30.2	1.6		20.8	6.2	41.0	12.4	48.6	
um any range (m) 0.00 tarvation Cap Reductin 0 0 13 1139 342 110 tarvation Cap Reductin 0 0 13 13 0 0 176 0 0 piniback Cap Reductin 0 13 13 0 0 0 19 piniback Cap Reductin 0 13 0.03 0.29 0.12 0.66 0.24 0.43 terrasetion Summary 0.49 0.40 0.40 0.40 0.40 0.40 0.40 0.40	um lasy transform (m) 60 11 110 110 110 110 110 110 110 110 1	nternal Link Dist (m)		416.4			109.6		48.0	0.001	644.4	
ase capacity (vpr) 3.30 3.91 4.10 4.04 11.39 3.42 11.10 intraviation Cap Reductin 0 1 0 0 1 76 0 0 0 philback Cap Reductin 0 1 1 1 0 0 0 1 9 isorage Cap Reductin 0 1 0 1 0 0 0 0 0 0 itorage Cap Reductin 0 1 0 0 0 0 0 0 0 0 itorage Cap Reductin 0 0 1 0 0 0 0 0 0 0 itorage Cap Reductin 0 0 1 0 0 0 0 0 0 0 itorage Cap Reductin 0 0 1 0 0 0 0 0 0 0 itorage Cap Reductin 0 0 1 0 0 0 0 0 0 0 0 itorage Cap Reductin 0 0 1 0 0 0 0 0 0 0 0 0 itorage Cap Reductin 0 0 1 0 0 0 0 0 0 0 0 0 itorage Cap Reductin 0 0 1 0 0 0 0 0 0 0 0 0 0 0 itorage Cap Reductin 0 0 1 0 0 0 0 0 0 0 0 0 0 0 itorage Cap Reductin 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	arse capacity (pn) 3.46 3.91 4.10 4.04 1.139 3.42 1.110 arxies capacity (pn) 3.46 3.91 4.10 4.04 1.139 3.42 1.110 arxies cap Reductin 0 13 0 0 19 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	um Bay Length (m)		000	8.0 8		011	101	0011	0.001	0111	
ararenton Cap Reductin 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 0 0 0 0	araration cap reaucin 0 13 13 0 10 19 philack Cap Reductin 0 13 13 0 0 0 19 isorage Cap Reductin 0 0 13 0 12 0.66 0.24 0.43 isorage Cap Reduction 0.49 0.03 0.29 0.12 0.66 0.24 0.43 thereaction Summary vide Length: 60 cutated Cycle: Ength: 60 Cutated Cycle: Ength: 60 Cutated Cycle: 60 Triset: 271 (45%), Referenced to phase 2:NBT and 6:SBTL, Start of Green 12-15-2023 CGH Transportati	sase Capacity (vpn)		336 0	391 0		410	40 4	9511	745	OLLL	
pindex Cap reductin 0 13 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	primeer Cap reauch 0 13 13 0 0 19 19 forage Cap Reducth 0 0 0 0 0 0 0 feduced v R R R 10 feduced v R R 10 vote Length: 60 filter: 27 (45%). Referenced to phase 2:NBT and 6:SBTL, Start of Green Italiarial Cycle: 60 faurual Cycle: 60 CGH Transportati 2-15-2023 CGH Transportati	etarvation Cap Reductn		-	⊃ç		- ç		9/L	-	- ç	
arcrage cap requent 0.49 0.03 0.29 0.12 0.66 0.24 0.43 detected of Reference 0.49 0.03 0.29 0.12 0.66 0.24 0.43 detected of Reference 0.24 0.49 0.03 0.29 0.12 0.66 0.24 0.43 detected of Reference 0.24 0.49 0.03 0.29 0.12 0.66 0.24 0.43 detected of Reference 0.24 0.49 0.03 0.29 0.12 0.66 0.24 0.43 detected of Reference 0.24 0.43 0.03 0.29 0.12 0.66 0.24 0.43 detected of Reference 0.24 0.43 0.03 0.29 0.12 0.66 0.24 0.43 detected of Reference 0.24 0.43 0.03 0.29 0.12 0.66 0.24 0.43 detected of Reference 0.24 0.43 detected of Reference 0.24 0.65 detected of Reference 0.25 detected of Reference	areage cap reacum 0.49 0.03 0.29 0.12 0.66 0.24 0.43 technologic capter of the contract of the	spillback Cap Keductn		э «	<u>5</u> 0		<u>5</u> 0	- C	-	-	<u>6</u>	
eeuced writerio 0.44 0.45 tersection Summary yde Length: 60 ricuted Cycle Length: 60 Thesi: 27 (45%), Referenced to phase 2NBT and 6:SBTL, Start of Green tetural Cycle: 60	eauced verkalo 0.24 0.45 0.05 0.22 0.06 0.24 0.45 each distribution of the comparison of the compariso											
hersection Summary 3vde Lenghr. 60 Troueted Chydhr. 60 Trifeet 27 (45%), Referenced to phase 2:NBT and 6:SBTL, Start of Green Matural Cycle: 60	hersection Summary yole Lenghr. 60 cutated Cycle Lenghr. 60 Diffset: 27 (45%), Referenced to phase 2:NBT and 6:SBTL, Start of Green tatural Cycle: 60 (2-15-2023 CGH Transportati	Keduced V/C Ratio		0.43	0.03		R7.0	0. IZ	00.U	U.24	0.43	
yde Lenghr: 60 ceuaed Cycle Lenghr: 60 Brifest: 27 (45%), Referenced to phase 2:NBT and 6:SBTL, Start of Green Vatural Cycle: 60	Yote Length: 60 cutated Cycle Length: 60 Diffset: 27 (45%), Referenced to phase 2:NBT and 6:SBTL, Start of Green tatural Cycle: 60 12-15-2023 CGH Transportati	ntersection Summary										
rouces by the carrient of the contract of the contract of Green These 2.145%, Referenced to phase 2.NBT and 6.SBTL, Start of Green tatural Cycle: 60	workers: 27 (45%), Referenced to phase 2:NBT and 6:SBTL, Start of Green Matural Cycles: 60 12-15-2023 CGH Transportati	Cycle Length: 60										
tatural Cycle: 60	latural Cycle: 60 CGH Transportati 12-15-2023 CGH Transportati	Offset: 27 (45%), Reference	d to phase	2:NBT ar	nd 6:SBTI	., Start of	Green					
	2-15-2023 CGH Transportati	Vatural Cycle: 60										
0.01 T	12-13-201att	15 0000										The second s
	JK	JK										

Lanes, Volumes, Timings 3: Wilson St W & North St	Future Total 2041 AM Peak Hour Perth Colf Course Lands
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 11.5	tion LOS: B
Intersection Capacity Utilization 67.7%	el of Service C
Analysis Period (min) 15	
Splits and Phases: 3: Wilson St W & North St	
•	~

Splits and Phases:	3: Wilson St W & North St	
▲ Ø2 (R)		
37.5 s		22.5 s
D6 (R)		₹ 28
37.5 s		22.5 s

02-15-2023 JK

Lanes, Volumes, T 4: Wilson St E/Wils	imings son St V	V & Pe	ter St/I	-oster	St		μ	ture To	otal 204	11 AM Peak Hour Perth Golf Course Lands
	1	Ť	1	Ŧ	~	*	+	۶	-	
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Configurations		¢		ن ه	¥		÷	٢	\$	
Traffic Volume (vph)	8	206		46	343	ι Ω	8	28 4	57	
Lature Volume (vpn)	ç, c	213		₽ C	040 242		00 H	407 V80	10	
Tum Type	Perm	R A	Perm	8 A	NO+md	Perm	P A	pm+pt	<u>e</u> N	
Protected Phases		4		∞	-		2	-	9	
Permitted Phases	4		œ		œ	2		9		
Detector Phase	4	4	œ	œ	-	2	2	-	9	
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	24.0	24.0	24.0	24.0	12.0	23.1	23.1	12.0	23.1	
I otal Split (s)	24.0	24.0	24.0	24.0	12.9	23.1	23.1	12.9	36.0	
l Uldi Spill (70) Maximum Green (c)	40.0%	40.0%	40.0%	40.0%	0.01	0/.0.00	7 71	0.01	30.6	
Yellow Time (s)	33	3.3	333	3.3	000	33	33	000		
All-Red Time (s)	2.0	2.0	2.0	2.0	0.0	2.1	2.1	0.0	2.1	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0	0.0	
Total Lost Time (s)		5.3		5.3	2.0		5.4	2.0	5.4	
Lead/Lag					Lead	Lag	Lag	Lead		
Lead-Lag Optimize?										
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	C-Max	UIN 0	Min	C-Max	C-Min	
Valk Time (s)	0.21	12.0	12.0	12.0		12.0 7	0.21		12.0	
Flash Lont walk (s)	- · ·	- · ·	1.0	1.0		1.0	1.0).C	
Pedestnan Calls (#/hr)	G	C 2F	<u>0</u>	0L 10	100	4	14	0 30	21 C	
Actuated o/C Ratio		0.08		0.08	0.65		010	0.00	0.54	
v/c Ratio		0.77		0.12	0.32		0.15	0.32	0.17	
Control Delay		33.6		12.0	10		16.7	13.6	101	
Queue Delav		0.0		0.0	0.0		0.0	6.0	0.0	
Total Delav		33.6		12.0	1.0		16.7	14.5	10.1	
, SOT		C		B	A		В	в	ß	
Approach Delay		33.6		2.5			16.7		13.0	
Approach LOS		C		۷			8		В	
Queue Length 50th (m)		30.0		3.0	0.0		3.3	13.7	3.7	
Queue Length 95th (m)		#60.9		6.0	0.0		80.0	49.7	25.2	
Themai Link Dist (m)		478.5		9.ULL	15.0		1771.L		48.0	
r urri bay Leriguri (m) Base Canacity (\mh)		462		503	1062		468	870	863	
Starvation Can Daducto				070	2001		6	247	8	
Snillhack Can Reductin				0 0	0			ξ C		
Storade Can Reductin										
Reduced v/c Ratio		0.68		0.10	0.32		0.10	0.53	0.17	
Interection Cummany										
Cycle Length: 60										
Actuated Cycle Length: 60										
Offset: 0 (0%), Referenced Natural Cycle: 60	to phase 1:	SBL and	6:SBTL, (start of G	reen, Mat	ster Inters	ection			
02-15-2023										CGH Transnortation
uz- 13-2420 JK										Page 3

Lanes, Volumes, Timings	Future Total 2041 AM Peak Hour
4: Wilson St E/Wilson St W & Peter St/Foster St	Perth Golf Course Lands
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 15.0 Intersection LOS: B	
Intersection Capacity Utilization 64.8% ICU Level of Service C	
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

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Splits and Phases: 4: Wilson St EWilson St W & Peter St/Foster St

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HCM 6th AWSC 5: Gore St W & North St

Future Total 2041 AM Peak Hour Perth Golf Course Lands

Intersection Delay, siveh9.2Intersection LOSAMovementEBLEBIEBIBBIWBIWBINBINBINBINBILare Configurations \clubsuit \clubsuit 3 5 2 3 <	Intersection												
Indersection LOS A Faltic Vol, verh Resonance EBL EBT VBL VBT VBR NBL NBT NBR Taffic Vol, verh Faltic Vol, verh Faltic Vol, verh Resonance Faltic Falt	Intersection Delay, s/veh	9.2											
According the first only durations EBL EBI EBL EBI EBI WBI WBI NBI NBI area Configurations \bullet	Intersection LOS	A											
and Configurations and Co	Movement	ä	FRT	C C C C C C C C C C C C C C C C C C C	WBI	WRT	ARD	Ian	NRT	aan	a	CRT	gao
Tartic Voluguationus Territ Voluguationus Faith Conviguationus Faith Conviguationus Faith Conviguationus Faith Conviguationus Mint Flow 3 55 29 33 38 8 118 85 25 Faith Flow 2 100 100 100 100 100 100 Mint Flow 3 55 29 33 38 8 118 85 25 Wint Flow 3 55 29 33 38 8 118 85 25 Wint Flow 3 55 29 33 38 8 118 85 25 Wint Flow 3 55 29 33 38 8 118 85 25 Mint Flow 3 55 29 33 38 8 118 85 25 Mint Flow 9 10 0 1 0 0 1 0 0 1 0 0 Approach EB NIB EB NIB EB NIB EB NIB EB Confiding Approach Left 1 1 1 1 Confiding Approach Left 1 1 1 1 Control Delay 8 3 73 48 73 98 73 Control Delay 8 79 94 Truogh Vel 228 8 77 9 94 Convergence, VIN Yes	ane Configuratione	L L	÷			•			÷		201	•	
Turke Vol, verture Turke Turke Vol, verture Turke Turke Vol, verture <	Laffic Vol veh/h	e	5 73	20	33	8	œ	118	5 5	25	5 5	2	~
Beak Houriston Constraint Con	Titure Vol veh/h		5	g	8	8	• «	118	85	25	ę	73	0.00
Harvivelicity 2 2 2 2 2 2 2 3 3 8 118 85 25 3 3 8 118 85 25 3 3 8 118 85 25 3 3 8 118 85 25 3 8 118 85 25 3 8 118 85 25 3 8 118 85 3 8 118 85 3 8 118 85 3 8 118 85 3 8 118 85 3 8 118 85 3 8 118 85 3 8 118 85 3 85 102	Peak Hour Factor	1 00	100	100	100	100	100	1 00	100	100	1 00	1 00	1.00
Antifiew 3 55 29 33 36 18 55 25 Wurber of Lanes 0 1 0 0	Heavy Vehicles. %	2	20	00	4	16	~	28		~	~	g	2
under of Lanes 0 1 1 <th1< th=""> 1 1</th1<>	Avmt Flow	ı ო	22	53	8	8	0	118	85	25	10	73	00
Opconcil EB WB NB NB Diposing Approach WB EB S8 S8 Diposing Approach Left 1 1 1 Diposing Approach Left S8 NB S8 Diposing Approach Left S8 NB F Domiding Approach Left S8 NB F Domiding Approach Right NB S8 NB MB Domiding Approach Right NB S8 NB MB MB MB Conficting Lanes Right NB 3 8.5 3 4.7 MB	Jumber of Lanes	0	-	0	0	-	0	0	-	0	0	-	0
Dposing Apprach WB EB SB Dposing Apprach 1 1 1 1 Dposing Apprach 1 1 1 1 1 Dposing Apprach 1 1 1 1 1 1 Domiding Lanes Right 1 2 1 1 1 1 1 Confiding Lanes Right 1 3 8.5 0 WB 2 10.2 WB Confiding Lanes Right 1 3 8.5 3 4.2% 10.2 MB Cold Controllealy 3 3 4.2% 14% 10.2 MB Cold Controllealy 3 3.3% 10% 9% 9% 10.2 <td< td=""><td>Approach</td><td>8</td><td></td><td></td><td>WB</td><td></td><td></td><td>NB</td><td></td><td></td><td>SB</td><td></td><td></td></td<>	Approach	8			WB			NB			SB		
pposing Lares 1 <	Opposing Approach	WB			B			SB			BB		
Onfiding Approach Left SB NB EB Confiding Approach Left 1 1 1 Confiding Approach Left 8 5 102 Concollolay 8.3 8.5 102 Concollolay 8.3 42% 14% Concollolay 8.3 42% 78% Concollolay 8.3 42% 78% Concollolay 8.3 42% 78% Concollolay 8.3 42% 78% Concollolay 8.3 73 9% Concollolay 8 8 73 Concollolay 8 8 73 Concollolay 8 73 94 Trud 1 1 1 1 Concollay 2.8 73 94 <td< td=""><td>Dpposing Lanes</td><td>-</td><td></td><td></td><td>~</td><td></td><td></td><td>~</td><td></td><td></td><td>-</td><td></td><td></td></td<>	Dpposing Lanes	-			~			~			-		
Confiding Lanes Left 1 1 1 1 Confiding Lanes Left NB SB WB Confiding Lanes Right NB SB WB Confiding Lanes Right NB SB WB CM Control Delay B.3 BLri 10.2 CM Control Delay B.3 SS 3% 2% CM Control Delay B.3 SS 3% 47% BLri CM Control Delay B.3 3% 47% 8% 10.2 CM Control Delay B.3 3% 10% 9% 8% 10.2 CM Control Delay B.3 3% 10% 9% 8% 10.2 CM Control Stop Stop Stop Stop 8% 11.1 <	Conflicting Approach Left	SB			NB			EB			WB		
Confiding Approach Right SB WB Confiding Lenes Right 1 1 1 Confiding Lenes Right 3 5 10.2 Confiding Lenes Right 3 5 10.2 Confiding Lenes Right 3 5 10.2 Confiding Lenes Right 3 42% 14% Control Delay 3 33 42% 14% Intru, % 37% 63% 42% 14% Intru, % 37% 10% 9% 94 Fift(volby Lane 228 87 73 73 Fift(solby Lane 228 87 73 73 Intrughtvol 25 29 94 73 Fift(solby Lane 228 87 73 73 Introf Not 25 <td>Conflicting Lanes Left</td> <td>-</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td>-</td> <td></td> <td></td>	Conflicting Lanes Left	-			-			-			-		
Confiding Lanes Right 1 1 1 CMI Control Delay 8.3 8.5 10.2 CM Control Delay 8.3 8.5 10.2 Ame NBLrit BLrit A 8.5 10.2 CM Control Delay 8.3 8.5 14% 12 Control Delay 8.3 35% 42% 14% Coll Left, % 52% 3% 42% 78% Coll Eft, % 52% 3% 10% 9% Coll Eft, % 55% 3% 10% 11 Coll Eft 25% 8% 75	Conflicting Approach Right	NB			SB			WB			B		
ICM Control Delay 8.3 8.5 10.2 are NBLrif EBLrif VBLrif BBLrif BBLrif are NBLrif EBLrif VBLrif BBLrif BBLrif BBLrif ol Left, % 52% 3% 42% 14% BBLrif BBLrif <td>Conflicting Lanes Right</td> <td>-</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td>-</td> <td></td> <td></td>	Conflicting Lanes Right	-			-			-			-		
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are NBLrit EBLrit VBLrit SBLrit ol Left, % 52% 3% 42% 14% ol Thu, % 37% 3% 42% 14% ol Thu, % 37% 3% 42% 14% Sign Control 33% 10% 9% 9% Sign Control 20% 3% 10% 9% Fife Vol by Lane 228 87 79 94 Trough Vol 28 55 38 73 33 13 Incurgh Vol 18 5 55 38 73 44 Fife Vol by Lane 228 87 79 94 17 Introph Vol 25 29 8 8 8 8 Fife For Mate 228 17 94 46 46 Bagree of Unit (X) 0.312 0.112 0.107 0.12 2655 Sonvergence, (N 733 732 2331 2655 2655	ICM LOS	A			4			B			۷		
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ol Thu, % 37% 63% 48% 78% ol Right, % 11% 33% 10% 9% ol Right, % 11% 33% 10% 9% raffe Control Stop Stop Stop Stop hough Val 228 St 3 3 13 hough Val 25 Stop 3 3 14 orgered Utal(X) 25 Stop 94 1 1 esemetry Grp 1	'ol Left, %		52%	3%	42%	14%							
ol Right, % 11% 33% 10% 9% ign Control Stop Stop Stop Stop Stop ign Control 25% Stop Stop Stop Stop Stop T Vol 118 3 33 13 T T T InoughVol 258 55 38 73 T T T It Vol 255 29 8 7 9 4 It Vol 255 29 8 7 9 4 isometry Grp 1 1 1 1 1 1 bigree dubit (X) 0.312 0.112 0.112 0.112 1 1 bigree dubit (X) 0.312 0.112 0.112 0.112 1	'ol Thru, %		37%	63%	48%	78%							
ign Control Stop Stop Stop Stop Taffic Volby Lane 228 87 79 94 73 74 74 74 75 75 75 75 75 75 75 75 75 75 75 75 75	'ol Right, %		11%	33%	10%	6%							
raffic Vol by Lane 228 87 79 94 T Vol Munuph Vol 3 3 13 T Vol 85 55 38 73 an Flow Rate 258 87 79 94 an Flow Rate 228 87 79 94 an Flow Rate 228 87 79 94 an error Rate 228 87 79 94 an error 87 73 10 112 0.112 error 87 78 78 78 error 87 78 78 78 error 87 78 78 78 error 87 78 78 error 87 78 78 error 97 72 732 780 error 78 78 78 error 78 78 78 error 78 78 e	ign Control		Stop	Stop	Stop	Stop							
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Convergence, YIN Yes Yes Yes Sap 730 772 732 730 envice Time 2.95 2.673 2.931 2.625 envice Time 2.95 2.613 0.103 0.113 0.108 0.121 Control Delay 10.2 8.3 8.5 8.3 Control Delay 10.2 8.3 Control Delay Control Delay 10.4 0.4	eparture Headway (Hd)	7	1.919	4.637	4.893	4.589							
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CM Lane V/C Ratio 0.312 0.113 0.108 0.121 CM Contro Delay 10.2 8.3 8.5 8.3 CM Cane LOS B A A A CM Stervier O 13 0.4 0.4 0.4	Service Time		2.95	2.673	2.931	2.625							
ICM Control Delay 10.2 8.3 8.5 8.3 ICM EaneLOS B A A A CM Strive In 0 1.3 0.4 0.4	ICM Lane V/C Ratio	<u> </u>	0.312	0.113	0.108	0.121							
ICM Lane LOS B A A A A A A A A A A A A A A A A A A	ICM Control Delay		10.2	8.3	8.5	8.3							
4CM 95th-tile O 1.3 0.4 0.4 0.4	HCM Lane LOS		ш	4	4	4							
	HCM 95th-tile Q		1.3	0.4	0.4	0.4							

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Lanes, Volumes, Tirr 6: Gore St E/Gore St	ings W &	Foster	St				Fui	ture To	otal 204	41 AM Perth G	Peak Hou olf Course Land	<u> </u>
	٠	1	1	1	Ŧ	~	*	-	۶	-	*	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations		÷	*-		ţ	*-	۶	\$		ţ	×	1 1
Traffic Volume (vph)	13	115	349	16	28	10	349	243	e	127	13	
Future Volume (vph)	<u>1</u> 3	115	349	16	28	9	349	243	m c	127	13 5	
Turn Type	Perm	<u>N</u>	NO+Wd	Perm	₽₹	Pem 5	pm+pt	S AN	Perm	N N	Perm	
Protected Phases		4	2		∞		2	2		9		
Permitted Phases	4		4	8		∞	2		9		9	
Detector Phase	4	4	5	œ	œ	œ	5	2	9	9	9	
Switch Phase	10.0	10.0		O V		01		10.0	10.0	10.0	10.0	
Minimum Shirt (s)	0.00	0.00	0. 0	20.0	0.4	0.4	0.4	15.0	10.0	10.0	19.0	
Total Split (s)	20.0	20.0	21.0	20.0	20.0	20.0	21.0	40.0	19.0	19.0	19.0	
Total Split (%)	33.3%	33.3%	35.0%	33.3%	33.3%	33.3%	35.0%	66.7%	31.7%	31.7%	31.7%	
Maximum Green (s)	14.0	14.0	18.0	14.0	14.0	14.0	18.0	35.0	14.0	14.0	14.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	0.0	3.0	3.0	3.0	0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	11
Total Lost Time (s)		6.0	3.0		6.0	6.0	3.0	5.0		5.0	5.0	
Lead/Lag			Lead				Lead		Lag	Lag	Lag	
Lead-Lag Optimize?	0	6	0	0	0	0	0	0	0	0	0	
Venicie Extension (s) Dacali Moda	0.0	0.0	0.0 VeM-0	0.0	0.0	0.0	0.0 May	0.0	0.0 Min	0.0 Min	0.0 Min	
Malk Time (c)	110	110	CIVIAN	11.0	110	110	2-IVIAN			- -	110	
Flash Dont Walk (s)	30	3.0		3.0	30	30		30	30	30	30	
Pedestrian Calls (#/hr)	4	25		28	28	28		14	15	15	15	
Act Effct Green (s)	:	11.1	38.3		10.2	10.2	43.1	42.1		11.3	11.3	
Actuated g/C Ratio		0.18	0.64		0.17	0.17	0.72	0.70		0.19	0.19	
v/c Ratio		0.42	0.33		0.18	0.03	0.35	0.23		0.45	0.04	
Control Delay		20.3	2.2		21.8	0.2	5.4	5.4		26.5	0.2	1
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		20.3	2.2		21.8	0.2	5.4	5.4		26.5	0.2	11
LOS		C	A		C	A	A	A		C	A	
Approach Delay		7.0			17.8			5.4		24.1		
Approach LOS		A 1	0		<u>م</u>	0	101	₹ 3		0	0	
Queue Length 50th (m)		1.2.1	0.0		4.2	0.0	1.2.1	9.4		13.1	0.0	
Queue Lengtn 95tn (m) Internal Link Dict (m)		110.6 110.6	m12.0		110.1	0.0	Q.12	22.1		0.62	0.0	
Turn Bay Length (m)		202	25.0			80		200		2	10.0	
Base Canacity (voh)		386	1050		329	373	987	1126		361	411	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.33	0.33		0.13	0.03	0.35	0.23		0.36	0.03	
Intersection Summany												
Cycle Length: 60												
Actuated Cycle Length: 60												
Offset: 26 (43%), Referenced i	to phase	2:NBTL	and 5:NBI	-, Start of	Green							
Natural Cycle: 50												
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Future Total 2041 AM Peak Hour Perth Goff Course Lands																																				
			BL WBT NBL NBR		08 U U 159 18 D D 159	4 0 4 0	se Free Stop Stop	- None - None	0 - 0		00 100 100 100	4 2 9 12	08 0 0 159	Minor1	- 245	•	- 000	- 0.32		3 408	0 770	- 0	0		- 768		•	•	NB	10.9	я	3T EBR	•	•		•
^o eter St		3.8	EBT EBR W	: ح	181 120 1 181 120 1	0 44	ree Free Fr	- None	. c	, , , ,	100 100 1	2 30	181 120 1	or1	0	•	•		•				•	•		•	•	•	EB	0		NBLn1 Et	768	0.207	10.9 B	0.8
HCM 6th TWSC 0: Rogers Rd & F	ttersection	nt Delay, s/veh	Aovement E	ane Configurations	Traffic Vol, ven/n	Conflicting Peds, #/hr	Sign Control FI	RT Channelized	Storage Length	/en in ivieurari oruraye, # \rada %	Peak Hour Factor 1	leavy Vehicles, %	Avmt Flow	/lajor/Minor Maj	Conflicting Flow All	Stage 1	Stage 2	intical Hdwy	Vritical Howy Stg 1		onow-up numy	Stane 1	Stage 2	Platoon blocked, %	Aov Cap-1 Maneuver	Aov Cap-2 Maneuver	Stage 1	Stage 2	Approach	HCM Control Delay, s	HCM LOS	Ainor Lane/Major Mvmt	Capacity (veh/h)	HCM Lane V/C Ratio	ICM Lane LOS	ICM 95th %tile O(veh)
Future Total 2041 AM Peak Hour Peth Golf Course Lands	n 105: A	l of Service B				♣04	20 s	€ a	20 s																											
	Intersectio	ICU Leve	eam signal.	0																																

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ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	
ane Configurations		÷	*-		÷Ŧ	¥	\$	۴	\$	
raffic Volume (vph)	100	ო ი	50	ι Ω	326	83	584	171	574	
uture Volume (vph)	001	(28	<u>م</u>	326		282	5	5/4	
ane Group Flow (vph)	0	103 N V	D2. 02	Dorm O	331 N N	Born 93	209 V V	1/1 Dorm	46/ MA	
uni Type rotected Phases		4			¢ «			D	<u>ç</u> 6	
ermitted Phases	4		4	~	•	~	ı	9	•	
etector Phase	4	4	4	œ	œ	œ	2	9	9	
witch Phase										
linimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
linimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	23.1	23.1	23.1	
otal Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	46.0	46.0	46.0	
otal Split (%)	34.3%	34.3%	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	
laximum Green (s)	18.7	18.7	18.7	18.7	18.7	18.7	40.6	40.6	40.6	
ellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	
II-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	
ost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
otal Lost Time (s)		5.3	5.3		5.3	5.3	5.4	5.4	5.4	
ead/Lag										
eau-Lag Optimize?	00	00	0	000	00	00	00	000	00	
eriicie Exterision (s) erall Mode	None Anne	o.c	None None	o.c	o.c	None Anna	0.0 C-Max	0.0 C-Max	0.0 C-Max	
(alk Time (s)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
ash Dont Walk (s)	6.7	6.7	6.7	6.7	6.7	6.7	5.7	5.7	5.7	
edestrian Calls (#/hr)	m	m	ę	0	0	0	12	15	15	
ct Effct Green (s)		16.8	16.8		16.8	16.8	42.5	42.5	42.5	
ctuated g/C Ratio		0.24	0.24		0.24	0.24	0.61	0.61	0.61	
c Ratio		0.79	0.05		0.79	0.24	0.59	0.53	0.76	
ontrol Delay		64.3	4.0		39.7	6.8	12.3	16.7	16.6	
ueue Delay		0.0	0.0		0.0	0.0	1.8	0.0	0.0	
otal Delay		64.3	4.0		39.7	6.8	14.1	16.7	16.6	
US		ш ч Т	A			A	2	B	20 v	
pproach Delay		0.45 0.45			32.5 C.25		14.1		0.0T	
pproach LUS					с с	ć	2	1	а с	
tueue Length 50th (m)		12.2	0.0		2.65	0.0	0.42	9.7L	04.9	
tueue Lerigiri 30iri (m)		1.00#	7.0		100.6	9.0	0.40	0.26	644.4	
Iterital Litik Dist (III)		410.4	0 a		0.601		0.04	100.0	+: ++0	
ann uay cengur (m) ase Canacity (wh)		146	417		464	425	1024	320	998	
tarvation Can Reducto		-	-		5	071	257	070	0	
nillhack Can Reductin					• •		0			
torage Cap Reductin		0			0	0	0	0	0	
educed v/c Ratio		0.71	0.05		0.71	0.22	0.78	0.53	0.76	
tersection Summary										
vde Length: 70										
ctuated Cycle Length: 70										
)ffset: 65 (93%), Keterence latural Cycle: 60	d to phase	Z:NBI ar	II 92:39 DI	-, Start of	Green					

Lanes, Volumes, Timings 3: Wilson St W & North St	Future Total 2041 PM Peak Hour Perth Golf Course Lands
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 21.4 Intersection LOS: C	
Intersection Capacity Utilization 88.9% ICU Level of Service E	
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
Splits and Phases: 3: Wilson St W & North St	
■ ■	_04

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Lane Group Eane Group Lane Configurations Tarfits Volume (vph) Tarfits Volume (vph) 110 Future Volume (vph) 110 Future Volume (vph) 110 Future Volume (vph) 110 Protector Phases 4 Pontertor Phases 4 Pontertor Phases 4 Pontertor Phases 4 Minimum Initial (s) 100 Minimum Split (s) 23,0 Marinum Green (s) 19,7 Marinum Green (s) 33,3 Marinum (free (s) 30,3 Marinum (free (s) 30,3 Marinum (free (s) 30,3 Marinum (free (s) 30,3 Marinum (free (s) 11,1 Marinum (free (s) 30,3 Lead Lag Optimize? 10,0 Veloc Flato 11 Act Eff Green (s) 11 Act Eff Green (s) 12 Marca Delay 4 Aproach Delay 4 A	EBT 137 137 137 137 261 0.0 24.0 35.7% 25.0 35.7%	MBL 🖌	₩BT	MBR 🖌	¥	←	۶	-	
Lane Group EBL E Lane Group Flow (vph) 110 11 Traffer Volume (vph) 10 10 11 Lane Group Flow (vph) 10 10 10 11 Lane Group Flow (vph) 0 2 <th>EBT 44 44 44 44 44 44 44 44 19.7 25.0 25.0 25.0 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7</th> <th>WBL</th> <th>WBT</th> <th>WBR</th> <th>IDN</th> <th>TON</th> <th></th> <th></th> <th></th>	EBT 44 44 44 44 44 44 44 44 19.7 25.0 25.0 25.0 19.7 19.7 19.7 19.7 19.7 19.7 19.7 19.7	WBL	WBT	WBR	IDN	TON			
Lane Configurations Traffic Volume (vph) 110 1 Lane Group Flow (vph) 10 2 Lane Group Flow (vph) 10 2 Lane Group Flow (vph) 10 2 Lane Group Flow (vph) 10 2 Protected Phases 4 Switch Phases 4 Switch Phase 10.0 1 Minimum Split (s) 25.0 2 Total Split (s) 35.7% 35. Minimum field (s) 10.1 1 Minimum Floit (s) 10.1 1 Actual Split (s) 35.7% 35. Aut Read Mode 10.2 1 Lead-Lag Optimize? 30.0 1 Velloch Time (s) 12.0 11 Lead-Lag Optimize? 30.0 1 Actualed g/C Ratio 0 0 Walk Time (s) 12.0 11 Actualed g/C Ratio 0 0 Walk Time (s) 12.0 11 Actualed g/C Ratio 0 0 1 Actualed g/C Ratio 0 0 1 Actualed Boby 0 (r) 1 Actualed Boby 0 (r) 1 Actualed Boby 0 (r) 1 Actualed Boby 0 (r) 1 Actualed Split (m) 3 Approach Delay 4 4 Approach Delay 4 4 Approach Delay 0 (r) 1 Truin Bay-Lendth Split (m) 3 Sarvation Cap Reductin Splitback Cap Red	4 137 137 137 261 261 261 2610 24.0 24.0 24.0 24.0 24.0 21.0 21.0 21.0 21.0 21.0 21.0 21.0 21			•	NDL	NBI	SBL	SBT	
Traffic Volume (wph) 110 110 Turn Type Future Volume (wph) 100 Future Volume (wph) 100 100 Lane Group Flow (wph) 100 100 Protected Phases 4 Protected Phases 4 Minimum Split (s) 25.0 2 Switch Phase 4 2 Minimum Split (s) 25.0 2 Total Split (s) 35.7% 33.3 3 All Fed Time (s) 3.7 3.3 3 Minimum Time (s) 10.0 1 1 Velkor Time (s) 3.7 3.3 3 Lead-Lag Lead-Lag 12.0 1 Lead-Lag Dome Mose Nome Mose 1 Lead-Lag Total Lost Time (s) 3.0 3 Lead-Lag Control Delay 6.7 1 Lead-Lag Control Delay 6.7 1 Actualed g/C Ratio 0 0 1 Actaled g/C Ratio Xolue Length S0th (m) 3 Approach Delay Approach Delay 4 Approach Delay Control Delay 3 Soliback Cap Reductin Soliback Cap Reductin 3 Sondae Cap Reductin	137 137 261 261 4 4 4 2610 2240 2240 2240 2250 197 197		÷	د		÷	*	æ	
Future Volume (vph) 110 110 Turn Type 110 110 Protected Phases 4 Protected Phases 4 Protected Phases 4 Switch Phase 4 Switch Phases 4 Switch Phases 4 Switch Phase 100 Minimum Ititial (s) 100 Maximum Split (s) 250 Total Split (%) 35.7% Al-Red Time (s) 33.7 Lost Time Adjust (s) 33.7 Lost Time (s) 33.7 Lost Time (s) 33.7 LeadLag LeadLag LeadLag LeadLag LeadLag LeadLag LeadLag Control Delay Valker Time (s) 6.7 Total Delay 11 Aptroach Delay 0 Valker Time (s) 6.7 LeadLag 0 LeadLag 0 LeadLag 0 LeadLag 0 Last Time (s) 6.7 Total Delay 11 Aptroach LoS 0 Queue Length Sch (m) 30 Daueue Length Sch (m) 31 Daueue Length Sch (m) 32	137 261 84 4 4 28.0 28.0 28.0 28.0 28.7% 28.0 28.7% 29.7 29.7 29.7 29.7 29.7 29.7%	24	32	417	7	26	407	82	
Turn Type Earle Group Flow Vpm) Protected Phases 4 Protected Phases 4 Protected Phases 4 Switch Phases 4 Minimum Initial (s) 100 11 Minimum Split (s) 25.0 2 Maximum Green (s) 19.7 11 Maximum Green (s) 19.7 11 Maximum Green (s) 35.7% 35. Maximum Green (s) 19.7 11 Total Split (s) 25.0 2 LeadLag Optimize? 3.0 3 Vehicle Extension (s) 3.0 3 Vehicle Extension (s) 3.0 10 Vehicle Extension (s) 3.0 11 LeadLag Optimize? 3.0 11 Flash Dort Walk (s) 6.7 11 Act Efft Green (s) 12.0 11 Flash Dort Walk (s) 6.7 11 Act Efft Green (s) 12.0 11 Control Delay 0.0 10 Vehicle Extension (s) 3.0 3 Curlet Delay 0.0 10 Valk Time (s) 12.0 11 Act Efft Green (s) 12.0 11 Curlet Delay 0.0 10 Valk Time (s) 12.0 11 Act Efft Green (s) 12.0 11 Curlet Delay 0.0 10 Valk Time (s) 12.0 11 Act Efft Green (s) 13.0 11 Act Efft Green (s)	251 NA 4 10.0 224.0 25.0 35.7% (54	22	417	÷	276	407	82	
Unit 1ype 1000 1000 Protector Phases 4 Protector Phases 4 Switch Phase 4 Switch Phase 4 Minimur Split (s) 210 Total Split (%) 35.7% Table Split (%) 33.7% All-Red Time (s) 33.3 All-Red Time (s) 33.3 All-Red Time (s) 33.3 Table Split (%) 33.7% Table Split (%) 33.7% Maximum Green (s) 33.3 Value Lag Optimize? 30 Value Extension (s) 30 Actualed GC Ratio 00 Verail Moot 11 Actualed GC Ratio 00 Verail Moot 11 Actualed GC Ratio 00 Verail Moot 20 Tabeostion Sign (m	4 4 4 10.0 24.0 25.0 35.7% (00 ¥	41/		011	40/	2002	
Permitted Phases 4 Detector Phases 4 Detector Phases 4 Switch Phases 4 Minimum Initial (s) 10.0 1 Minimum Initial (s) 24.0 2 Total Split (s) 35.7% 35.7% All-Red Time (s) 37.7% 33.3 All-Red Time (s) 3.3 3.3 All-Red Time (s) 3.0 3.3 Lead/Lag Total Split (s) 3.0 Lead/Lag Total Split (s) 3.0 Lead/Lag Total Nation (s) 3.0 Lead/Lag Total Nation (s) 3.0 Lead/Lag Total Nation (s) 12.0 Lead/Lag Total Nation (s) 12.0 Lead/Lag Control Palay 3.0 Ver Ratio 0 0 Ver Ratio 0 12.0 Actuated gC Ratio 0 1 Actuated gC Ratio 0 1 Actuated gC Ratio 0 3 Queue Delay 4 4 Approach Delay 4 Approach Delay 1 1 Total Delay 1 1 Actuated GC Ratio 3 3 Queue Lengl	4 4 10.0 224.0 25.0 19.7 19.7	Шал	Υ Δ	NO+ILId	Цен	EN C	nd+mq	<u>م</u>	
Detector Phase 4 Switch Phase 10.0 1 Switch Phase 10.0 1 Switch Phase 10.0 1 Switch Phase 10.0 1 Switch Phase 20.0 2 Total Split (%) 35.7% 35.7% Table Dat Time (s) 21.0 2 All-Red Time (s) 21.0 2 All-Red Time (s) 33.7 33.7 All-Red Time (s) 33.3 33.7 LeadLag LeadLag 10.0 LeadLag LeadLag 10.0 LeadLag More Mole None Mo Valk Time (s) 11 11 Activated g/C Ratio 0.0 0 Walk Time (s) 6.7 12.0 11 Actuated g/C Ratio None Mo 30 30 Actuated g/C Ratio 0.0 0 0 30 Actuated g/C Ratio 0.0 1 1 1 Actated G/L Green (s) 12.0	4 10.0 24.0 25.0 35.7% (19.7	~	>		2	1	- 9	>	
Switch Phase Minimum Initial (s) 10.0 1 Minimum Spit (s) 25.0 2 Total Spit (s) 25.0 2 Total Spit (s) 25.0 2 All-Red Time (s) 3.3 3 All-Red Time (s) 3.3 2 Lead Lag Optimize? 3.0 2 Lead Lag Optimize? 3.0 2 Lead Lag Optimize? 3.0 1 Feats Dort (s) 11 1 Act Eff Green (s) 12.0 1 Feats Dort (s) 6.7 1 Feats Dort (s) 6.7 1 Act Eff Green (s) 3.0 3 Oue ue Length Soft (m) 4 Approach Delay 0 Oue ue Length Soft (m) 3 Que ue Length Soft (m) 3 Que ue Length Soft (m) 4 Approach Delay 0 Approach Delay 0 Approach Length Soft (m) 4 Approach Delay 0 Due ue Length Soft (m) 4 Approach Delay 0 Due ue Length Soft (m) 4 Approach Length Soft (m) 2 Due ue Length Soft (m) 4 Approach Length Soft (m) 2 Due ue Length Soft (m) 4 Approach Length Soft (m) 3 Saration Cap Reductin Salinback Cap Reductin Salinback Cap Reductin Salinback Cap Reductin Spillback Cap Reductin Spi	10.0 24.0 25.0 35.7% (19.7	œ	œ	~	2	2	~	9	
Minimum Split (s) 10.0 10.0 Minimum Split (s) 24.0 2 Total Split (s) 35.7% 35. Maximum Green (s) 19.7 11 Maximum Green (s) 35.7% 35. Maximum Green (s) 35.7% 35. Maximum Green (s) 35.7% 35. Maximum Green (s) 36.7% 35. Maximum Green (s) 30.3 37.3 Lost Time (s) 3.0 37.3 Lost Time (s) 2.0 3.0 Vehicle Extension (s) 3.0 30 Vehicle Extension (s) 3.0 30 Vehicle Extension (s) 3.0 30 Vehicle Extension (s) 11 12.0 Vericle Extension (s) 12.0 11 Act Eff Green (s) 11 11 Act Eff Green (s) 11 12.0 Act Eff Green (s) 2.0 0 0 Vehicle Extension (s) 3.0 3.0 3.0 Act Eff Green (s) 11	10.0 24.0 25.0 35.7% (19.7								
Minimum Split (s) 24.0 2.1 Total Split (s) 35.7% 35.7% 35.7% 35.7% 35.7% 35.7% 35.7% 35.7% 35.7% 35.7% 35.7% 35.7% 35.7% 35.7% 35.3 35.4 35.3	24.0 25.0 35.7% (19.7	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Total Split (%) 25.0 25 Total Split (%) 35.7% 35. 35. Yellow Time (s) 35.7% 35. 35. All-Red Time (s) 35.7% 35. 35. All-Red Time (s) 35.7% 35. 33. All-Red Time (s) 3.7% 31. 33. Leartum Agiust (s) 3.0% 33. 33. Learduag Optimize? 3.0% 30. 30. Venicle Extension (s) None No No Valuation (s) None No No Valuation (s) Actuated gC Ratio 0.12.0 11 Actuated gC Ratio 0.0 0 0 Actuated gC Ratio 0.0 0 0 Control Delay 6.1 11 17 Actuated gC Ratio 0.0 0 0 Control Delay 0.0 0 0 0 Actuated gC Ratio 0.0 0 0 0 Actuated gC Ratio <t< td=""><td>25.0 35.7% (19.7</td><td>24.0</td><td>24.0</td><td>12.0</td><td>23.1</td><td>23.1</td><td>12.0</td><td>23.1</td><td></td></t<>	25.0 35.7% (19.7	24.0	24.0	12.0	23.1	23.1	12.0	23.1	
Total Split (%) 35.7% 35. Total Split (%) 35.7% 35. All-Red Time (\$) 3.3 1.9 Lest Time Adjust (\$) 3.3 3.3 Lest Time Adjust (\$) 3.3 2.0 Lest Time (\$) 3.3 3.3 LeadLag Definitie? 3.0 Velice Extension (\$) Nome Nome Walk Time (\$) 11 1.2.0 Petastian Call Mode Nome No Walk Time (\$) 12.0 11 Act Efft Green (\$) 0.1 11 Act Efft Green (\$) 0.1 11 Act Efft Green (\$) 0.1 11 Act Efft Green (\$) 3.0 3.0 Queue Length SOH (") 3.1 3.0 Dueue Length SOH (") 3.1 3.1 Total Delay Approach LOS 3.0 Dueue Length SOH (") 3.1 3.1 Dueue Length SOH (") 3.3 3.1 Total Delay Approach LoS 3.1	35.7% (19.7	25.0	25.0	21.9	23.1	23.1	21.9	45.0	
Maximum Green (s) 19.7 17 Maximum Green (s) 19.7 17 Leaf Time (s) 20 Leaf Time (s) 2.0 2 LeadLag Optimize? 2.0 2 LeadLag Optimize? 2.0 2 Vehicle Extension (s) 2.0 10 Vehicle Extension (s) 2.0 11 Pedestian Calls (#hr) 11 Act Efft Green (s) 12.0 11 Fish Dont Walk (s) 6.7 1 Pedestian Calls (#hr) 11 Act Efft Green (s) 12.0 11 Act Efft Green (s) 12.0 11 Act Efft Green (s) 12.0 11 Control Delay 2.0 0 Veft Ratio 2.0 0 Veft Ratio 2.0 12.0 11 Act Efft Green (s) 12.0 11 Act Efft Green (s) 12.0 11 Act Efft Green (s) 11 Act Efft Green (s) 11 Act Efft Green (s) 11 Act Efft Green (s) 12.0 12 Act Efft Green (s) 13 Act Efft Green (19.7	35.7%	35.7%	31.3%	33.0%	33.0%	31.3%	64.3%	
Yellow Time (s) 3.3 ** Al-Red Time (s) 3.3 ** LearLag Optimize? 2.0 ** LearLag Optimize? 2.0 ** LearLag Optimize? 3.0 ** Vehicle Extension (s) ** Near Mode Extension (s) ** Walk Time (s) ** 1.2 ** Pedestrian Calls (#hn) ** Pedestrian Calls (#hn) ** Actuated Green (s) ** 1.2 ** Actuated Actuated (s) ** 1.2 ** Actuated	с с	19.7	19.7	19.9	17.7	17.7	19.9	39.6	
All-Red Time (s) 2.0 Leat Time (s) 2.0 Leat Time (s) 2.0 Leat Leat Time (s) 3.0 Leat Leat Leap Optimize? 3.0 Vende Extension (s) 3.0 Nome Nome Walk Time (s) 12.0 Pedestrian Calls (#hr) 11 Actualed g/C Ratio 0.0 Actualed g/C Ratio 0 Oueue Lenglay 4 Approach Delay 4 Actualed of Reduction 3 Simback Cap Reduction 3 Simback Cap Reduction 3 Sondee Cap Reduction 3	0.0	3.3	3.3	2.0	3.3	3.3	2.0	3.3	
Lost Time Adjust (s) Total Lost Time (s) LeadLag LeadLag Optimize? 3.0 Rvehide Extension (s) 3.0 Rvehide Extension (s) 3.0 Rvehide Extension (s) 3.0 Rvehide Extension (s) 1.1 Flash Dort Walk (s) 6.7 Flash Dort S (#hr) 1.1 Act Laft Green (s) 3.3 Corrito Delay 3.3 Queue Delay 4.4 Approach 4.4 Ap	2.0	2.0	2.0	0.0	2.1	2.1	0.0	2.1	
Total Lost Time (s) Total Lost Time (s) Total Lost Time (s) Tead/Lag Optimize? Vehicle Extension (s) 3.0 % Weak Time (s) 1.20 % Total Recall Mode None Norwalk Time (s) 1.20 % Total Peterstina (s) 1.1 % Total Relay (s) 1.	0.0		0.0	0.0		0.0	0.0	0.0	
LeadLag Optimize? Vehicle Exertion (s) 310 3 Vehicle Exersion (s) 310 3 Recall Mode (s) 1201 1 Walk Time (s) 1201 1 Vehicle Exercision (s) 1201 1 Act Effici Green (s) 23 Queue Delay 11 4 Approach Delay 33 Queue Length Soft (m) 33 Approach Delay 44 Approach 20 Control Delay 44 Approach 20 Activity Control Control 20 Activity Control Control 20 Activity Control Control 20 Activity Cont	5.3		5.3	2.0		5.4	2.0	5.4	
Lead-Lag by mimiler 3.0 Recall Mode 3.0 Walk Time (s) 12.0 Walk Time (s) 12.0 Walk Time (s) 12.0 Walk Time (s) 6.7 Pedestrian Calls (#hr) 11 Act Effet Green (s) 11 Actuated g/C Ratio 0 Actuated g/C Ratio 0 Control Delay 3 Queue Delay 3 Approach Delay 4 Approach Delay 3 Approach Delay 4 Approach Delay 3 Approach Delay 3 Approach Delay 4 Approach Delay 3 Approach Delay 4 Aproach Delay <t< td=""><td></td><td></td><td></td><td>Lead</td><td>Lag</td><td>Lag</td><td>Lead</td><td></td><td></td></t<>				Lead	Lag	Lag	Lead		
Are the starts on (s) while starts on (s) whil	0	0	0	0	0	0	0	0	
Recall mode not the fact that the fact fact sets bont Walk (s) 120 11. Flash bont Walk (s) 6.7 1 4 4 4 4 4 4 fact fact Green (s) 6.7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
wark mires wark wark wark wark wark wark wark wark				C-Max			C-INIAX		
Pedestrian Calls (#m) Pedestrian Calls (#m) 4. Effct Green (s) 4. Actuated g/C Ratio 0. Ratio Control Delay Control Delay Control Delay Control Delay Approach Delay 4. 4. Course Length SOft (m) 2. Joue Length SOft (m) 2. Joue Length SOft (m) 2. Joue Length SOft (m) 2. Joue Length SOft (m) 2. Starset Capacity (yph) 2. Starset Capa Reductin Starset Cap Red	6.7	6.7	6.7		5.7	57		0.21	
Act Effect Green (s) Act transfer Green (s) Act transfer Green (s) Act transfer Green (s) Control Delay Control Delay Control Delay Approach	5 5	5 4	5 4		14	14		5 0	
Actuated of Cartio Actuated of Cartio Actuated of Cartio Actuated of Cartio Actuated Delay Control Delay Control Delay Catal Delay Catal Delay Catal Delay Catal Delay Approach Long Catal Delay Approach Long Suray Catal Catal Delay Approach Long Catal Delay Approach Long Catal Delay Approach Long Startio Catal Delay Approach Long Startio Catal Delay Approach Long Startio Catal Delay Actuated Vic Ratio Cydel Length; 70 Cydel Length; 70	17.1	2	171	48 B	ŧ	± 4	45.6	C C7	
vic Ratio Control Delay Cueue Delay Queue Delay Total Delay Approach Delay Approa	0.24		0.24	0.70		0.17	0.65	0.60	
Control Delay Control Delay Control Delay Queue Delay Queue Delay Los Queue Length Soft (m) Approach Delay 44 Approach Delay Approach Delay 33 Queue Length Soft (m) 33 Queue Length Soft (m) 33 Queue Length Soft (m) 33 Starvation Cap Reduct Soft	0.77		0.16	0.37		0.39	0.43	0.21	
Queue Delay 4 Total Delay 4 Total Delay 4 Approach Los 31 Queue Length Soft (m) 33 Queue Length Soft (m) 42 Tum Bay Length (m) 3 Base Capacingt (m) 3 Starvation Cap Reductin 3 Soliback Cap Reductin 3 Starvation Cap Reductin 3 Starvation Cap Reductin 3 Cycle Length: 70 0	39.7		24.7	13		25.2	2.6	0.6	
Total Delay 4 Total Delay 4 Aproach Dos 3 Queue Length 55th (m) 33 Jinn Bay Length (m) 42 Jasse Capacity (ph) 3 Starvition Cap Reductin 3	0.8		0.0	0.3		0.0	0.5	0.5	
LOS Approach Delay 4 Approach Delay 4 Approach LOS 3 Queue Length 50th (m) 33 Queue Length 50th (m) 421 Linnenal Link Dist (m) 421 Linn Bay Length (m) 421 Lans Bay Length (m) 33 Starvation Cap Reducth Spillback Cap Reducth Spillback Cap Reducth Starvation Cap Reducth Starvation Cap Reducth Starvation Cap Reducth Cyde Length: 70	40.5		24.7	1.6		25.3	3.2	1.1	
Approach Delay 44 Approach LOS (m) 33 Approach LOS (m) 33 Queue Length S6th (m) 45 Queue Length S6th (m) 421 Linn Bay Length (m) 421 Lum Bay Length (m) 33 Starvation Cap Reducth Spillback Cap Reducth Starvation Cap Reducth Starvation Cap Reducth Starvation Cap Reducth Starvation Cap Reducth Starvation Cap Reducth Starvation Cap Reducth Cap Length: 70 Cyde Length: 70	۵		U	A		U	A	A	
Approach LOS Joueue Length S0th (m) 31 Joueue Length S0th (m) #55 Joueue Length S0th (m) #55 Journe Length S0th (m) #22 Inun Bay, Length (m) 421 Base Capacity (vph) 3 Base Capacity (vph) 3 Starvation Cap Reductin Spillback Cap Reductin Spillback Cap Reductin Spillback Cap Reductin Spillback Cap Reductin Correst Cap Reductin Spillback Cap Reductin Correst Cap Reduc	40.5		4.3			25.3		2.5	
Queue Length 50th (m) 31 Queue Length 55th (m) 421 Queue Length 55th (m) 421 Internal Link Dist (m) 421 Turm Base Capacity (vph) 33 Base Capacity (vph) 33 Starvation Cap Reductin 33 Strage Cap Reductin 35 Spilback Cap Reductin 35 Strage Cap Reductin 0 Other Length 70 0			4			C		A	
Queue Length 55th (m) #5 Internal Link Dist (m) 421 Turm Bay Length (m) 421 Base Capacity (vph) 3 Base Capacity (vph) 3 Starvation Cap Reducth Spilback Cap Reducth Spilback Cap Reducth Storage Cap Reducth Storage Cap Reducth Storage Cap Reducth Minessection Summary 0 Cyde Length: 70	30.5		5.3	0.0		11.1	6.3	0.5	
Internal Link Dist (m) 42: Tum Bay Length (m) 42: Tum Bay Length (m) 3 Starvation Cap Reducth Spillback Cap Reducth Storage Cap Reducth Storage Cap Reducth Storage Cap Reducth Storage Cap Reducth Cup Line Storage (m) 0 (net section Summary Cyde Length: 70	#58.7		14.2	2.5		21.5	m3.2	m0.2	
Tum Bay Length (m) Base Capacity (ynh) Base Capacity (ynh) Starvation Cap Reducth Sorage Cap Reducth Storage Cap Reducth Storage Cap Reducth Startuch V Cartio Differention Summary Cydel Langth: 70	428.5		110.6			117.1		48.0	
Base Capacity (vph) 3 Starvation Cap Reductn Stillback Cap Reductn Storage Cap Reductn Reduced vic Ratio Intersection Summary Cyde Length: 70				15.0					
Starvation Cap Reductin Spillback Cap Reductin Storage Cap Reductin Reduced vic Ratio Intersection Summary Cyde Length: 70	396		416	1141		412	8 4	985	
Spillback Cap Reductin Storage Cap Reductin Reduced vic Ratio Intersection Summary Cydel Length: 70	0		0	0		0	220	438	
Storage Cap Reducth Reduced v/c Ratio 0 Intersection Summary Cycle Length: 70	25		0	245		ლ	0	0	
Reduced v/c Ratio 0. Intersection Summary Cycle Length: 70	0		0	0		0	0	0	
Intersection Summary Cycle Length: 70	0.70		0.13	0.47		0.27	0.56	0.38	
Cycle Length: 70									
Actuated Cycle Length: 70	DI and 6.	ro IEao	- Jo tro	oold acc	tor Intoro	a citor			
Vatural Cycle: 60				GG11, 1VIAS					
02-15-2023									CGH Transnortation
JK									Page 3

Lanes, Volumes, Timings	Future Total 2041 PM Peak Hour
4: Wilson St E/Wilson St W & Peter St/Foster St	Perth Golf Course Lands
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 11.6 Intersection LC	S: B
Intersection Capacity Utilization 66.7% ICU Level of S	rvice C
Analysis Period (min) 15	

# 95th percentile volume exceeds capacity, queue may be longer.	Queue shown is maximum after two cycles.	m Volume for 95th percentile queue is metered by upstream signal.	

	<u>▲</u> 24	25 s	* ⁸⁰
4: Wilson St E/Wilson St W & Peter St/Foster St	st base and	23.1s	
Splits and Phases:	601 (R)	21.9 s	↓ ₩Ø6 (R)

HCM 6th AWSC 5: Gore St W & North St

Future Total 2041 PM Peak Hour Perth Golf Course Lands

Intersection												
Intersection Delay, s/veh	17.1											
Intersection LOS	O											
1	Ē	Han I			TOW		ģ	E CIA		G	FOO	
Movement	EBL	EB	EBK	WBL	MBI	WBK	NBL	NBI	NBK	SBL	SBI	NBN
Lane Configurations		¢			¢			¢			¢	
Traffic Vol, veh/h	ო	52	154	4	132	19	321	115	27	13	92	20
Future Vol, veh/h	ო	52	154	4	132	19	321	115	27	13	92	20
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	∞	16	œ	12	2	19	5	2	9	2	2
Mvmt Flow	ო	52	154	4	132	19	321	115	27	13	92	20
Number of Lanes	0	.	0	0	.	0	0	~	0	0	÷	0
Approach	8			WB			BB			SB		
Opposing Approach	WB			B			SB			ß		
Opposing Lanes	~			-			~			-		
Conflicting Approach Left	SB			NB			B			WB		
Conflicting Lanes Left	-			-			-			-		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	-			-			-			-		
HCM Control Delay	11.4			12.3			23.4			10.6		
HCMLOS	ш			B			ပ			B		
Lane	-	NBLn1	EBLn1	WBLn1	SBLn1							
Vol Left, %		69%	1%	23%	10%							
Vol Thru, %		25%	25%	68%	74%							
Vol Right, %		%9	74%	10%	16%							
Sign Control		Stop	Stop	Stop	Stop							
Traffic Vol by Lane		463	209	195	125							
LT Vol		321	ო	4	13							
Through Vol		115	52	132	92							
RT Vol		27	154	19	20							
Lane Flow Rate		463	209	195	125							
Geometry Grp		-	-	-	-							
Degree of Util (X)		0.739	0.326	0.333	0.207							
Departure Headway (Hd)		5.747	5.621	6.15	5.966							
Convergence, Y/N		Yes	Yes	Yes	Yes							
Cap		625	635	581	598							
Service Time		3.803	3.699	4.228	4.049							
HCM Lane V/C Ratio		0.741	0.329	0.336	0.209							
HCM Control Delay		23.4	11.4	12.3	10.6							
HCM Lane LOS		ပ	B	8	B							
HCM 95th-tile Q		6.4	1.4	1.5	0.8							

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Lanes, Volumes, Tii 6: Gore St E/Gore S	mings St W &	Foster	St				Ъ	ture To	otal 20	41 PM Perth Go	Peak Hou	r al
	1	Ť	1	5	ŧ	~	*	+	۶	-	\mathbf{F}	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations		ţ	۴.		÷	۴.	۴	æ,		÷	×	I
Traffic Volume (vph)	14	78	467	19	52	14	389	416	e	245	59	
Future Volume (vph)	14	78	467	19	52	14	389	416	ო	245	59	
Lane Group Flow (vph)	0	92	467	0	71	14	389	442	0	248	59	
Turn Type	Perm	¥.	vo+mq	Perm	¥	Perm	pm+pt	AN A	Perm	AN A	Perm	h
Protected Phases	•	4	۰ n	•	×	¢	Ω O	2	•	9	¢	
Permitted Phases	4 4	K	4 u	∞ α	α	∞ α	C1 LC	с	ی ور ا	3	ی در	
Switch Phase	r i	•	>	>	>	þ	>	1	>	>	>	
Minimum Initial (s)	10.0	10.0	4.0	4.0	4.0	4.0	4.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	20.0	20.0	9.0	20.0	20.0	20.0	9.0	15.0	19.0	19.0	19.0	
Total Split (s)	20.0	20.0	26.0	20.0	20.0	20.0	26.0	50.0	24.0	24.0	24.0	
Total Split (%)	28.6%	28.6%	37.1%	28.6%	28.6%	28.6%	37.1%	71.4%	34.3%	34.3%	34.3%	
Maximum Green (s)	14.0	14.0	23.0	14.0	14.0	14.0	23.0	45.0	19.0	19.0	19.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	3.0	3.0	0.0	3.0	3.0	3.0	0.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	3.0		6.0	6.0	3.0	5.0		5.0	5.0	
Lead/Lag			Lead				Lead		Lag	Lag	Lag	h
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	C-Max	None	None	None	C-Max	C-Min	U V	Min	Min	
vvalk lime (s)	0.11	0.11		0.11	0.11	0.11		0.7	0.11	0.11	0.11	
Flash Dont Walk (s)	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0	3.0	
	-	- 0	44 C	97	207	97	000	70	<u>.</u>	31 A	31 4 - 4	h
Act Effet Green (s)		0.11	0.44		10.7	10.7	9.70	0.1.C		1.01	1.01	
Actuated g/U Kato		0.17	0.04		0.10	0.15	G/70	0.14		77.0	77.0	j,
		0.00	0.40		70°0	0.0		0.0		0.09	0.0	
		C.42	0.0		- 27	+ 0	4.0	0.0		0.00	4.0 0	j,
		0.0	0. G		20.0	0.0	2.0	0.0		25.5	0.0	
I OS		2 5 7	0.0		- 0			n ⊲			t. 0	
Approach Delav		88	5		24.4	5	5	5.7		31.8	-	
Approach LOS		4			O			4		O		
Queue Length 50th (m)		9.6	13.5		8.5	0.0	14.0	18.7		29.9	0.0	
Queue Length 95th (m)		m18.7	31.0		18.1	0.0	30.4	39.6		48.7	0.0	
Internal Link Dist (m)		110.6			119.1			270.3		48.4		
Turn Bay Length (m)			25.0			8.0					10.0	
Base Capacity (vph)		318	1010		288	331	951	1201		448	422	1
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	1
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.29	0.46		0.25	0.04	0.41	0.37		0.55	0.07	
Intersection Summary												
Cycle Length: 70												
Actuated Cycle Length: 70				i								
Uffset: 49 (/U%), Keterenced	d to pnase	Z:NBIL	ISIN: C DUB	-, start of	Green							
Natural Oyde: JO												
02-15-2023 IK										CGI	H Transportati	ion 7
20											L ay	Ð

02-15-2023 JK

Concentration Conce	Volumes, Timings St E/Gore St W & Foster St	Future Total 2041 PM Peak Hour Peth Golf Course Lands	HCM 6th TWSC 10: Peter St					Future Total 2041 PM Peak Hour Perth Golf Course Lands
	ctuated-Coordinated atio: 0.69 https://weiling.coordination_1.05	ä	Intereaction					
	proceeding of the second s	vice C	Int Delay, síveh	4.8				
	u (Tillit) 13 • 05th nercentile nueue is metered by unstream signal		Movement	EBT EBR	WBL WE	ST NBL	NBR	
6. Constituent site	המנו להו ההוונה לההתה וא ווהההוהה הלו הלהוומו.		Lane Configurations	¢	۶		×	
	es: 6: Gore St E/Gore St W & Foster St		Traffic Vol, veh/h	110 78	143	0	171	
		~	Future Vol, veh/h	110 78	143	000	171	
		(∎04	Conflicting Peds, #/hr	0		0 4	0	
		20 s	Sign Control	Free Free	Free Fre	e Stop	Stop	
Month Month <th< td=""><td></td><td>4</td><td>RT Channelized</td><td>- None</td><td>- Nor</td><td> </td><td>None</td><td></td></th<>		4	RT Channelized	- None	- Nor	 	None	
Main Medical Streams, 1 0 <th0< th=""> <th0< th=""> 0 <th0< th=""></th0<></th0<></th0<>	4 Ø6	¶ Ø8	Storage Length		c		0	
Match (Match (Mat (Match (Match (Match (Match (Match (Match (Match (Ma	24s	20 s	Veh in Median Storade	- ∪ #	,		, s	
Rest Montonic Base Statistic Stat				-> <				
New Yorking Frank No			Gradue, 70	100	- 001		- 001	
Heavy Variations, Name 2 2 2 2 Mean Hange Name 10 2 2 2 2 Machine Flow M Name Machine Machine Machine Machine Machine Machine Flow M Machine 0 0 11 Machine Machine Machine Flow M Machine 0 0 1 2 <th2< th=""> <th2< th=""> <th2< th=""> <th2<< td=""><td></td><td></td><td>Peak Hour Factor</td><td>100 100</td><td>100 10</td><td>00 100</td><td>100</td><td></td></th2<<></th2<></th2<></th2<>			Peak Hour Factor	100 100	100 10	00 100	100	
Mont Flow 101 76 143 0 171 Macri Micror Magnit Macri Magnit 0 0 171 Macri Micror Magnit 0 0 171 Macri Magnit Macri Magnit Sage 1 0 0 0 0 173 Macri Magnit			Heavy Vehicles, %	2	2	2 2	2	
Material Material Material Conficting flow All 0 0 151 Sage 2 - - - - Sage 2 - - - - - Sage 2 - - - - - - Sage 2 - <td></td> <td></td> <td>Mvmt Flow</td> <td>110 78</td> <td>143</td> <td>0</td> <td>171</td> <td></td>			Mvmt Flow	110 78	143	0	171	
Magnituding Major Major Major Canding Town Mile 0 0 150 Stage 1 0 0 0 Face 1 Howy Sig 2 0 0 0 Face 2 Howerer 1 1 <								
Conflicting Flow MI 0 0 - 150 Sigger1 - - - - - Sigger1 - - - - - - Sigger1 -			Maior/Minor	Maior1		Minor1		
Signal function Signal fun			Conflicting Flow All	0			150	
Step2 - - - Step1 (Hoty) - - - Chilled Hoty) - - - Chilled Hoty) - - - Chilled Hoty) - - - Chilled Hoty - - - Stage - - - - Stage - - - - Stage - - - - Motor Clash Manuser - - - Stage - - - Stage - <			Stane 1	ינ				
Magez Criteral Holdy Sg 1 - <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
Ministrictures in the second s			>114	•		'		
Critical Holwy Sig1						•	0.22	
Followup Howy Si2 - - - - - Followup Howy Si2 - - - - - - Reader How Size - - 0 0 - - - Stage 1 - - - 0 0 - - - - - Stage 1 - - - - 0 - 0 - - Stage 1 - - - - - 0 - - - Patron block - - - - 0 - - - - Reader 1 - - - - - 0 - - - - Reader 1 - - - - - - - - - Reader 1 - - - - - - - - - - Reader 1 - - - - - - - - - Stage 1 - - - - - - - - - Reader 1 -			Critical Hdwy Stg 1	•		•		
Followup Holy			Critical Hdwy Stg 2	T 1		1		
Pol Cap-1 Maneuver			Follow-up Hdwy	•			3.318	
Stage 1 - - - 0 - Stage 2 - - - 0 - Nor Cap-1 Maneuver - - - - 0 - Nor Cap-1 Maneuver -<			Pot Cap-1 Maneuver			0	896	
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Placondect % - - - - Placondect % - - - - Nor Cap-I Maneurer - - - - Nor Cap-I Maneurer - - - - Nor Cap-I Maneurer - - - - Sage 1 - - - - Sage 1 - - - - Kender Maneurer - - - - Sage 1 - - - - Kender Maneurer - - - - Sage 1 - - - - Kender Maneurer - - - - Kender Maneurer - - - - Kender Maneurer - - - - Kender Jane Major Muni MBrint EBT - Kender Jane Major Muni - - - Kender Jane Los - 10 - Kender Jane Los - -								
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Capacity (vertin) 895 - HCM Lane V/C Ratio 0.191 - HCM Lane V/C Ratio 0.191 - HCM Lane LOS B - HCM Behalo (S) 10 - HCM Behalo (S) 10 -			Minor Lane/Major Mvm	nt NBLn1	EBIEB	×		
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HCM 95th %tile O(veh) 0.7			HCM Lane LOS	-	•			
			HCM 95th %tile O(veh)	1 07				

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Traffic Signal Warrants



Gore Street W & North Street Existing

Justification #7

		Minimum R	equirement	Minimum R	equirement		Compliance		
Justification	Description	1 Lane I	Highway	2 or Mo	re Lanes	Sect	ional	Entiro %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	Entire 76	
1. Minimum Vehicular	A. Vehicle volume, all approaches (average hour)	480	720	600	900	231	32%	2.20/	No
Volume	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	92	54%	3276	NO
	A. Vehicle volumes, major street (average hour)	480	720	600	900	139	19%		
2. Delay to Cross Traffic	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	43	58%	19%	No

Notes 1. Refer to OTM 8ook 12, pg 92, Mar 2012 2. Lowest section percentage governs justification 3. Average hourly volumes settimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplification factors 4. T-intersection factor corrected, applies only to 18

Gore Street W & North Street 2041 Future Background

Justification #7

		Minimum R	equirement	Minimum R	equirement		Compliance		
Justification	Description	1 Lane I	Highway	2 or Mo	re Lanes	Sect	ional	Entiro %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	Entire %	
1. Minimum Vehicular	A. Vehicle volume, all approaches (average hour)	480	720	600	900	239	33%	220/	No
Volume	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	94	55%	55%	NO
	A. Vehicle volumes, major street (average hour)	480	720	600	900	145	20%		
2. Delay to Cross Traffic	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	48	63%	20%	No

Notes 1. Refer to OTM Book 12, pg 92, Mar 2012 2. Lowest section percentage governs justification 3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplification factors 4. T-intersection factor corrected, applies only to 18

Gore Street W & North Street 2041 Future Total

Justification #7

Justification		Minimum Requirement		Minimum Requirement		Compliance			
	Description	1 Lane Highway		2 or More Lanes		Sectional		Entiro %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	circine %	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	370	51%	51%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	143	84%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	228	32%	32%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	63	84%		

Notes 1. Refer to OTM 8ook 12, pg 92, Mar 2012 2. Lowest section percentage governs justification 3. Average hourly volumes settimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplification factors 4. T-intersection factor corrected, applies only to 18

Wilson St W & North St Existing

Justification #7

Justification		Minimum Requirement		Minimum Requirement		Compliance			
	Description	1 Lane Highway		2 or More Lanes		Sectional		Entiro %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	Entire 70	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	469	52%	30%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	52	30%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	418	46%	13%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	10	13%		

Notes 1. Refer to TOM Book 12, pg 92, Mar 2012 2. Lowest section percentage governs justification 3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplification factors 4. T-intersection factor corrected, applies only to 18

Wilson St W & North St Future Background 2041

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance			
		1 Lane Highway		2 or More Lanes		Sectional		Entiro %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	Entite %	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	643	71%	31%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	53	31%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	590	66%	10%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	8	10%		

Notes 1. Refer to OTM 8ook 12, pg 92, Mar 2012 2. Lowest section percentage governs justification 3. Average hourly volumes settimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplification factors 4. T-intersection factor corrected, applies only to 18

Wilson St W & North St Future Total 2041

Justification #7

Justification	Description	Minimum Requirement		Minimum Requirement		Compliance			
		1 Lane Highway		2 or More Lanes		Sectional		Entiro %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%	Entire 70	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	862	120%	120%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	222	130%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	640	89%	89%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	177	235%		

Notes 1. Refer to TOM Book 12, pg 92, Mar 2012 2. Lowest section percentage governs justification 3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplification factors 4. T-intersection factor corrected, applies only to 18



Left-turn Lane Warrants

















