VIA COURIER:

June 14, 2018

City of Kelowna
Planning Department
1435 Water Street
Kelowna, BC, V1Y 1J4

Attn: Mr. Adam Cseke, MCIP, RPP Planner, Planning Department

RE: **1940 Underhill Street (PID: 025-799-657)**
OCP Amendment, Rezoning, and Development Application

We are pleased to provide you with our application for an OCP amendment and Rezoning for the above noted lands. Specifically, our application contemplates:

- An OCP Amendment of the entire site from the current Education/Institution (EDINST) and Multiple Unit Residential (High Density) (MRH), to Multiple Unit Residential (High Density) (MRH).
- A rezoning of the entire site, from the current Agricultural 1 (A1)/Education and Minor Institutions (P2)/Regional Commercial (C6), to Urban Centre Commercial (C4).
- A Development Permit on a portion of the site for the development of 3 6-storey rental residential buildings, with one building containing a minor amount of ground floor commercial.
- We are applying for a Development Variance Permit for the purpose of relaxation of parking requirements for the Initial Phase of development.

Enclosed are the following items:

- Completed Application Form and Checklist
- Development Permit Fee
- Current State of Title
- Letter of Authorization & Owner Authorization Form
- Zoning Analysis Table
- Completed Site Profile
- Rezoning and Development Permit Drawing Package
- Planning Rationale

We have also provided completed technical reports in support of our application which includes:

- Traffic Impact Assessment; and

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Vancouver BC V6P 3T1
districtgroup.ca

- Servicing Study

We note that further to our recent discussions that we are including our application for Development Permit at this time despite our application not being complete. We will be providing the following additional information to complete our Development Permit Application shortly:

- Waste & Recycling, Signs, Lighting;
- Floor Plans for each floor;
- Elevation Drawings of buildings, fences, and retaining walls;
- Landscaping Plan;
- Colour and Materials Board; and
- Design Rationale.

If you have any questions or would like more information about this project please do not hesitate to contact the undersigned.

DISTRICT DEVELOPMENTS CORP.

per: Michael Nygren

Enclosure

DISTRICT
T 604.377.3382 200-8809 Heather Street
Vancouver BC V6P 3T1
districtgroup.ca

1940 UNDERHILL STREET

REZONING & DEVELOPMENT PERMIT 06.2018

DIALOG DISTRICT

LEGAL DESCRIPTION

PLAN KAP74477 LOT A DISTRICT LOT 127 & DL 4646

ADDRESS

1940 UNDERHILL STREET, KELOWNA

OWNER

1940 UNDERHILL DEVELOPMENTS CORP.
C/O DISTRICT DEVELOPMENTS CORP.
200-8809 Heather Street, Vancouver, BC
(604) 683-2404

ARCHITECT

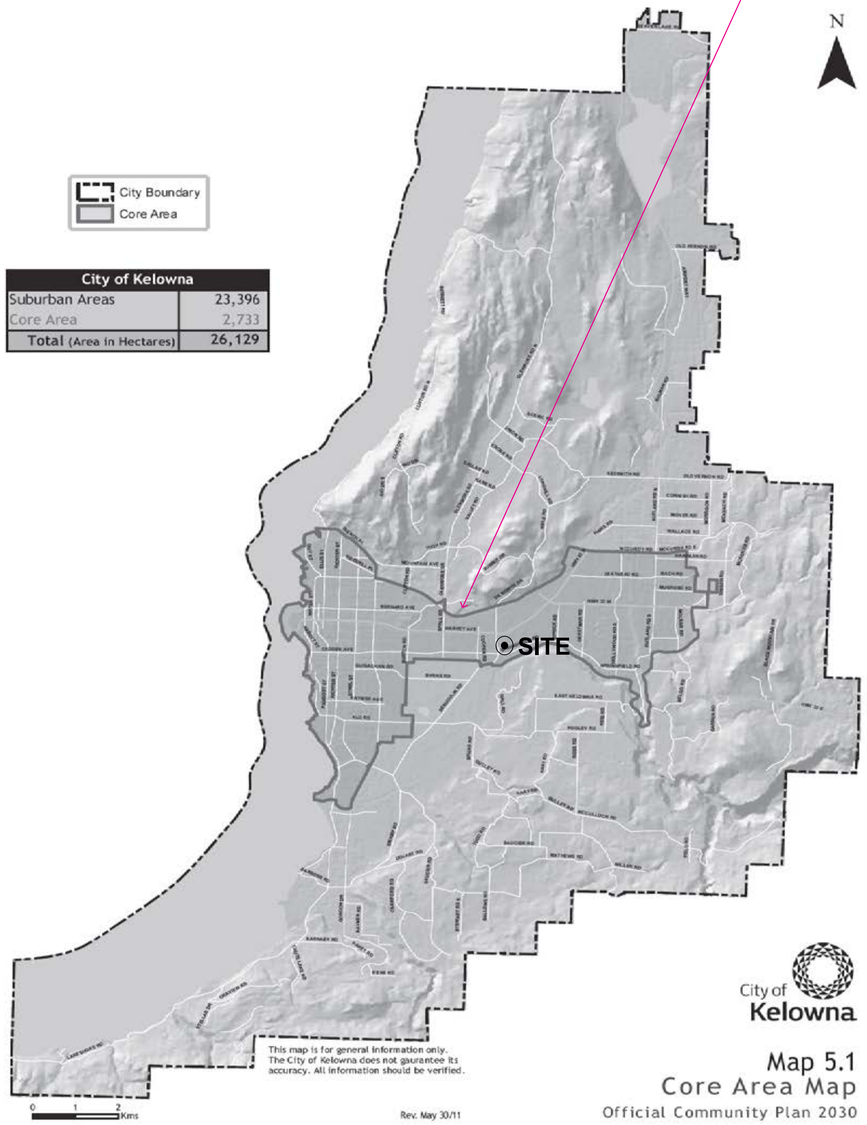
DIALOG
611 Alexander St, Vancouver, BC
(604) 255-1169

CONTENTS

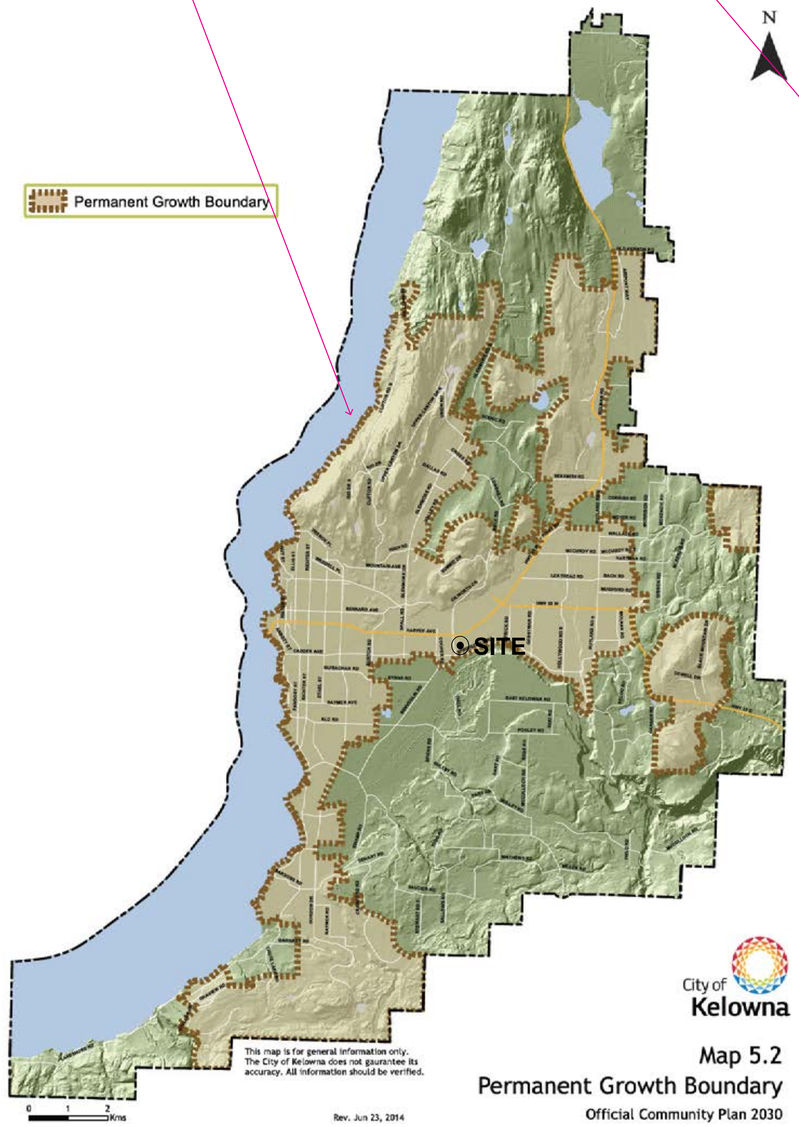
01

CITY CONTEXT

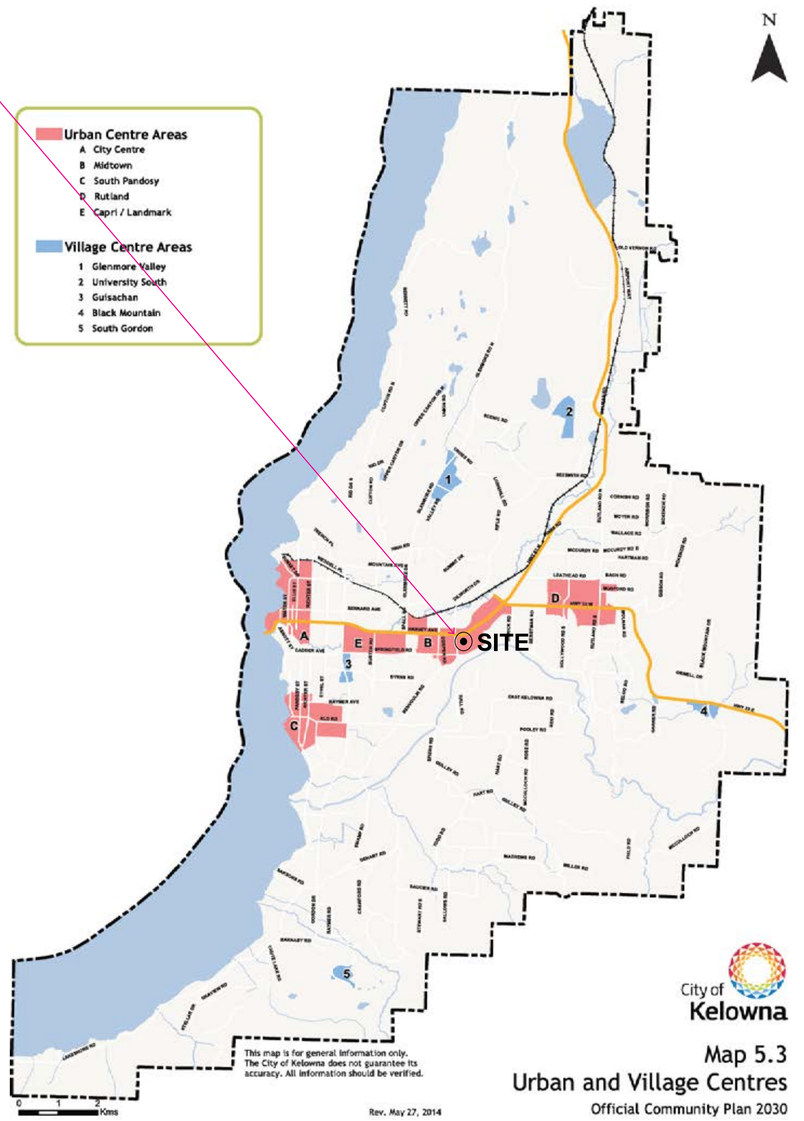
The maps above are from Kelowna's Official Community Plan ("Kelowna 2030") and indicate the City's urban structure strategies on a citywide basis. These maps illustrate that our site is located within the "Core Area," within the "Permanent Growth Boundary," within one of the only five designated "Urban Centre Areas," and within the "Central City" sector.



Map 5.1
Core Area Map
Official Community Plan 2030



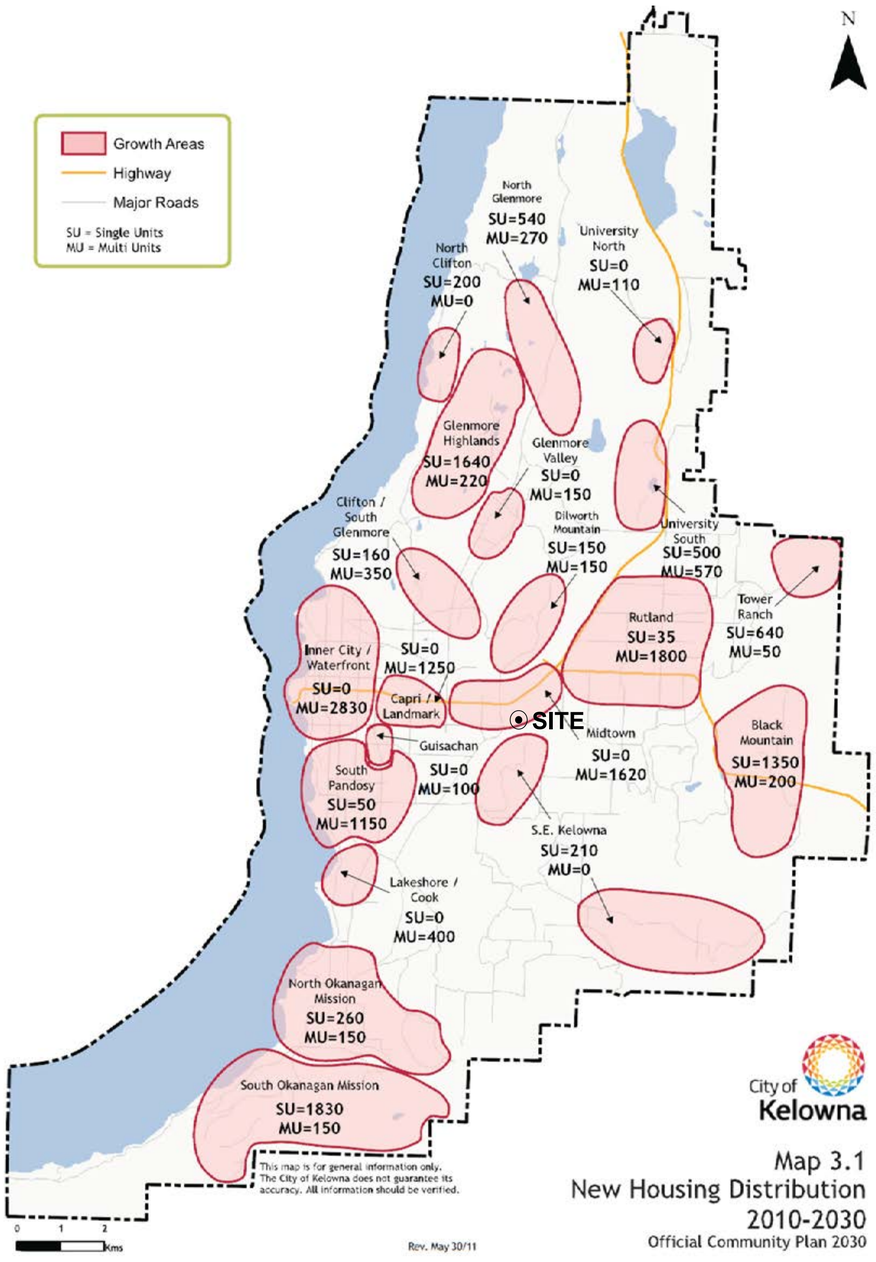
Map 5.2
Permanent Growth Boundary
Official Community Plan 2030

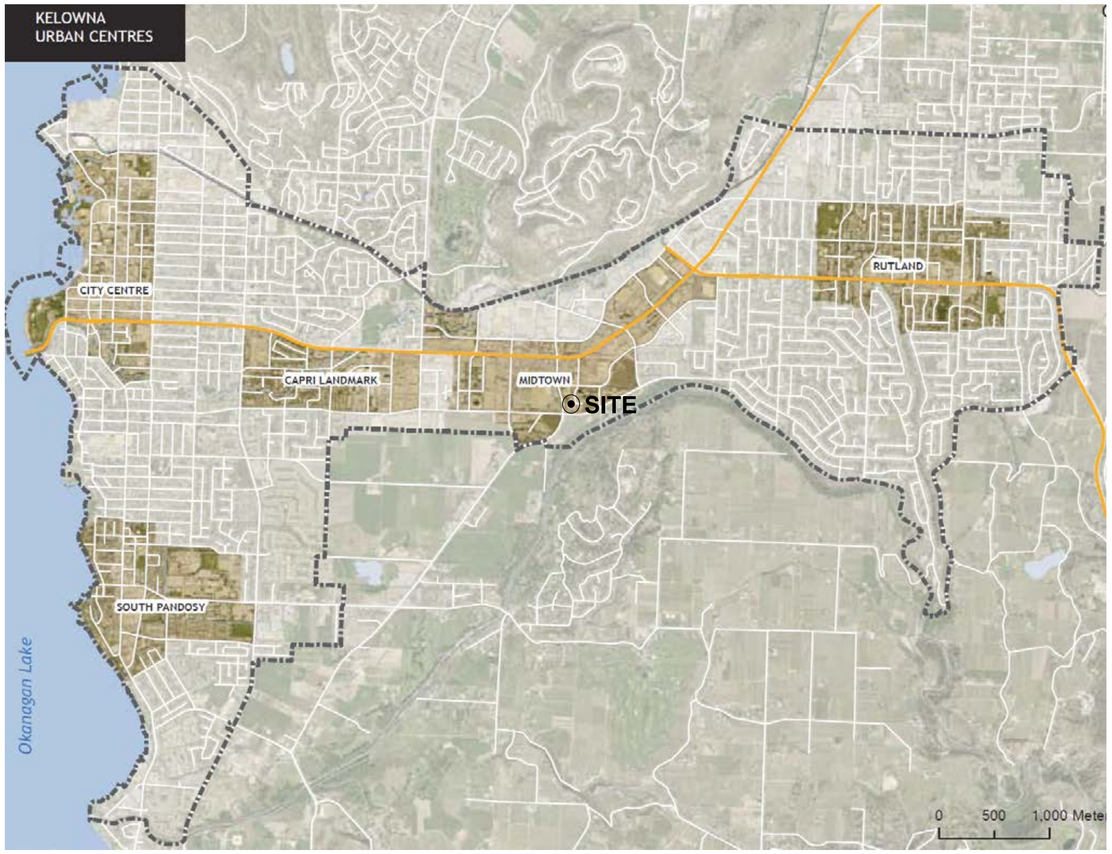


Map 5.3
Urban and Village Centres
Official Community Plan 2030

OCP 2030 Vision for Urban Centres. A vibrant, amenity-rich area wherein different land uses frequently occur within the same building and almost always occur within a one-block area.

Urban centres contain a variety of housing types, the presence of which contributes to social diversity. Urban centres are highly urbanized, pedestrian friendly environments that draw people for work, shopping, and recreation from a broad community of approximately 25,000 residents living within approximately 2 kilometres.





Principles for Urban Centre Development

Principle 1: Mix it Up
Principle 2: Places for People
Principle 3: Healthy Housing Mix
Principle 4: Social Spaces
Principle 5: Placemaking
Principle 6: Going Green
Principle 7: People First Transportation
Principle 8: Make it Walkable

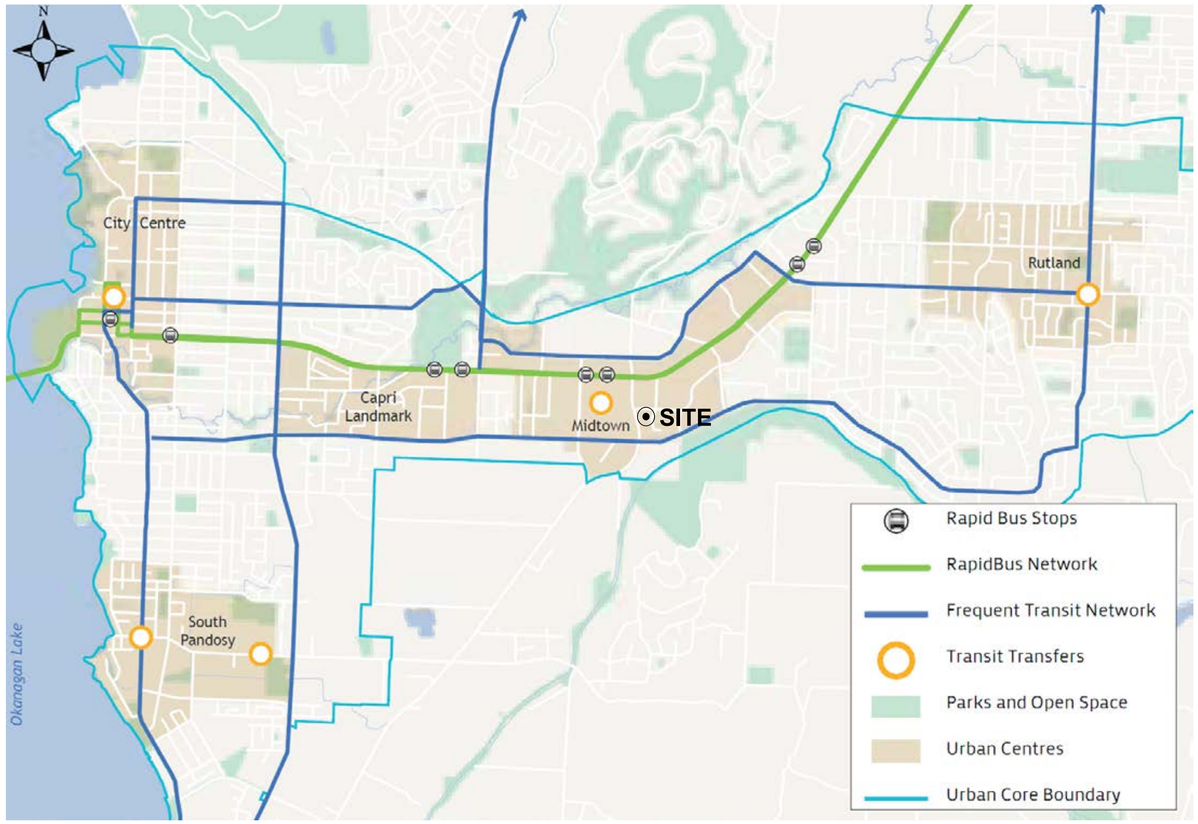
Data in this page is from Urban Centers Roadmap (July 2016) by the City of Kelowna

Urban Centre Metrics	City Centre	South Pandosy	Capri-Landmark	Rutland	Midtown
Population	3,791	4,184	2,249	5,607	1,846
Population Density (people per hectare)	22.8	30	23	33	9.8
Employment	10,142	3,895	8,523	1,400	6,733
Employment Density (jobs per hectare)	61	25	87	14.2	35.9
Major Parks and Public Spaces	City Park, Waterfront Park, Stuart Park, Rowcliffe Park	Boyce-Gyro Park, Kinsmen Park, Osprey Park, Raymer School, Fascieux Park	Pacific Court Park, Parkinson is just outside boundary of Capri-Landmark	Ben Lee Park, Rutland Centennial Park, Rutland Lions Park, Roxby Plaza	Mill Creek Linear Park, Barlee Park Mission Creek Park is just outside boundary of Midtown
Existing Active Transportation Corridors (ATCs)	Cawston Ave Waterfront / Abbott Art Walk	Lakeshore / Abbott KLO	Sutherland	Houghton Hollywood	No ATC exists (Dilworth Planned)
Frequent and Rapid Transit Stops	Queensway, Harvey, Pandosy	Pandosy, KLO, Gordon	Harvey, Springfield	Rutland, Exchange, Highway 33, Rutland	Orchard Park, Exchange, Harvey, Springfield
Housing Split % (Multi / Single Family)	88 / 12	80 / 20	80 / 20	76 / 24	94 / 6

" We need to build on the potential that is there, make sure each centre has a heart or focus area."

- Stakeholder workshop participant

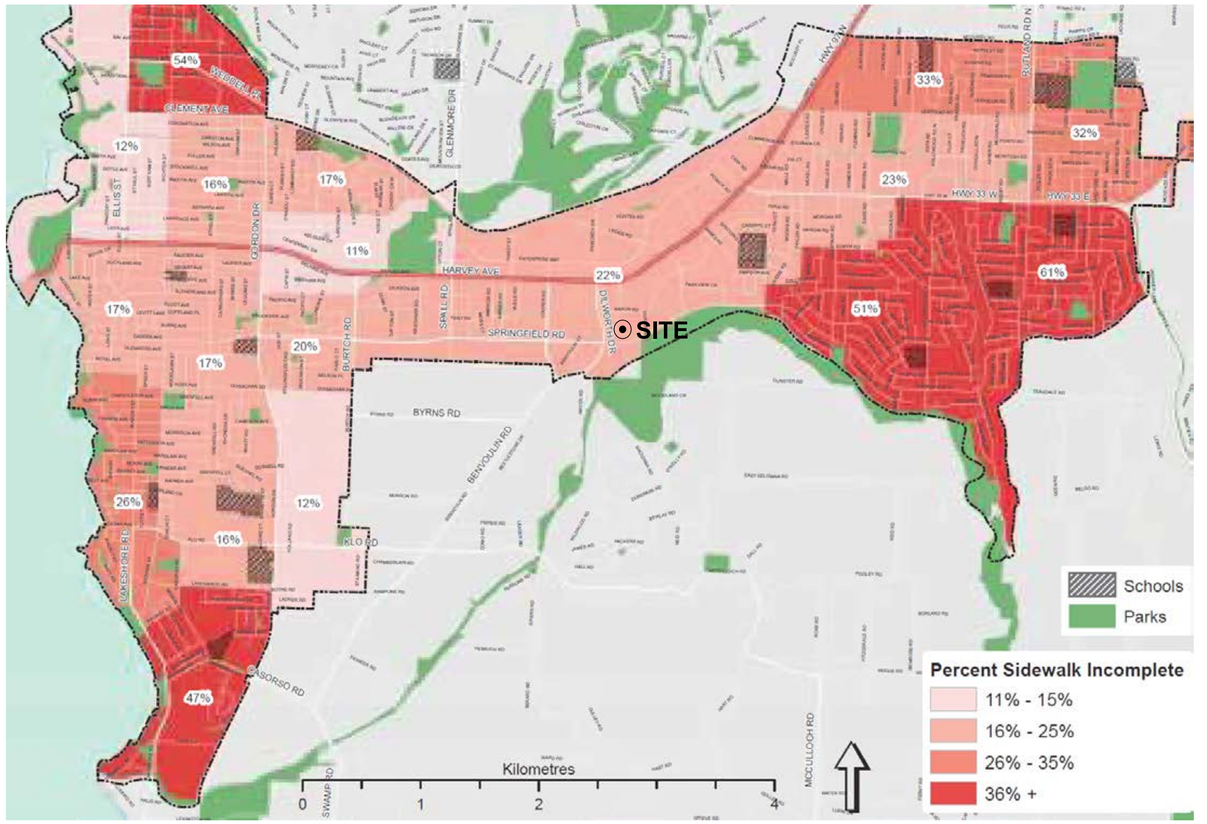
FREQUENT TRANSIT LINKING FIVE URBAN CENTRES



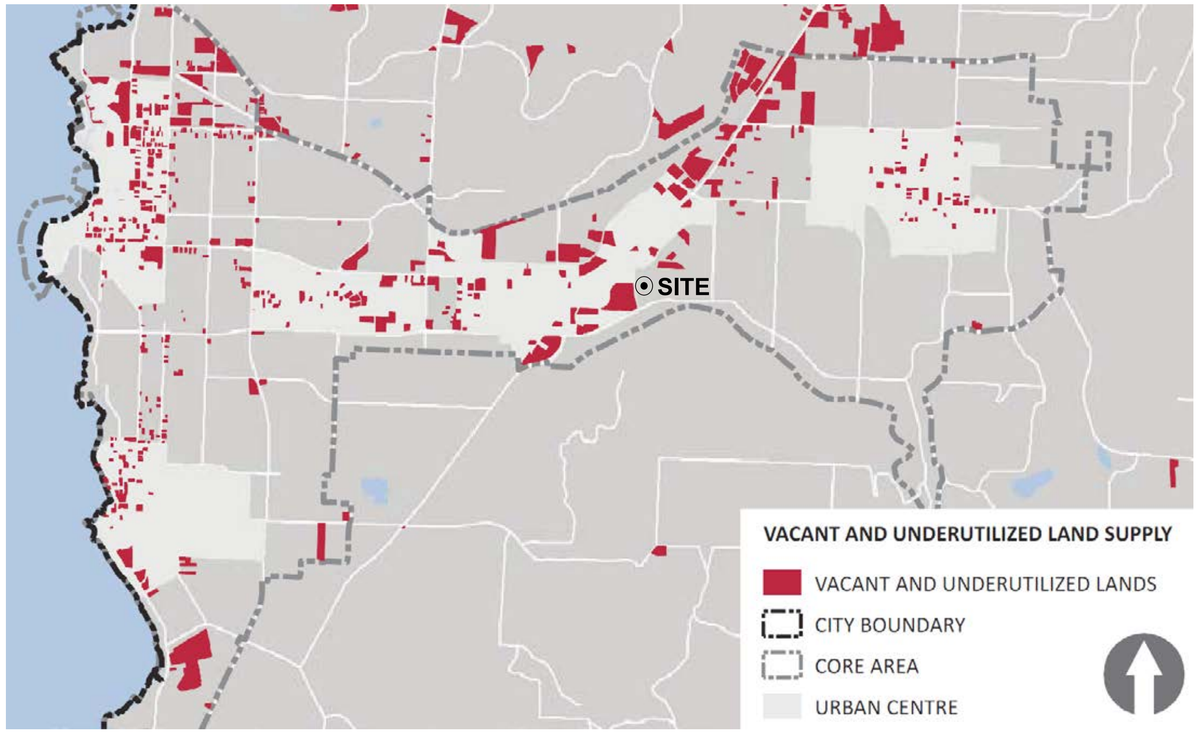
The urban centres are also well-positioned from a transit perspective with Rapid-bus and frequent transit corridors linking all five urban centres. The urban centres will also be linked by existing or planned ATCs that will form the primary pedestrian and bicycle network as identified by the Pedestrian and Cycling Master Plan.

Data in this page is from Urban Centers Roadmap (July 2016) by the City of Kelowna

WALKABILITY GAPS



The mapping reinforces the need for significant improvements in sidewalk construction in all of the urban centres to create walkable and transit oriented urban centres.



Based on a technical analysis of vacant and underutilized parcels, there is capacity to support 11,000 units and 6,500 jobs in the Urban Core. This information reinforces there is ample development potential in the urban centres to support growth in the short-term and long-term.

Data in this page is from Urban Centers Roadmap (July 2016) by the City of Kelowna

URBAN CENTRE PLANNING PRIORITIZATION MATRIX

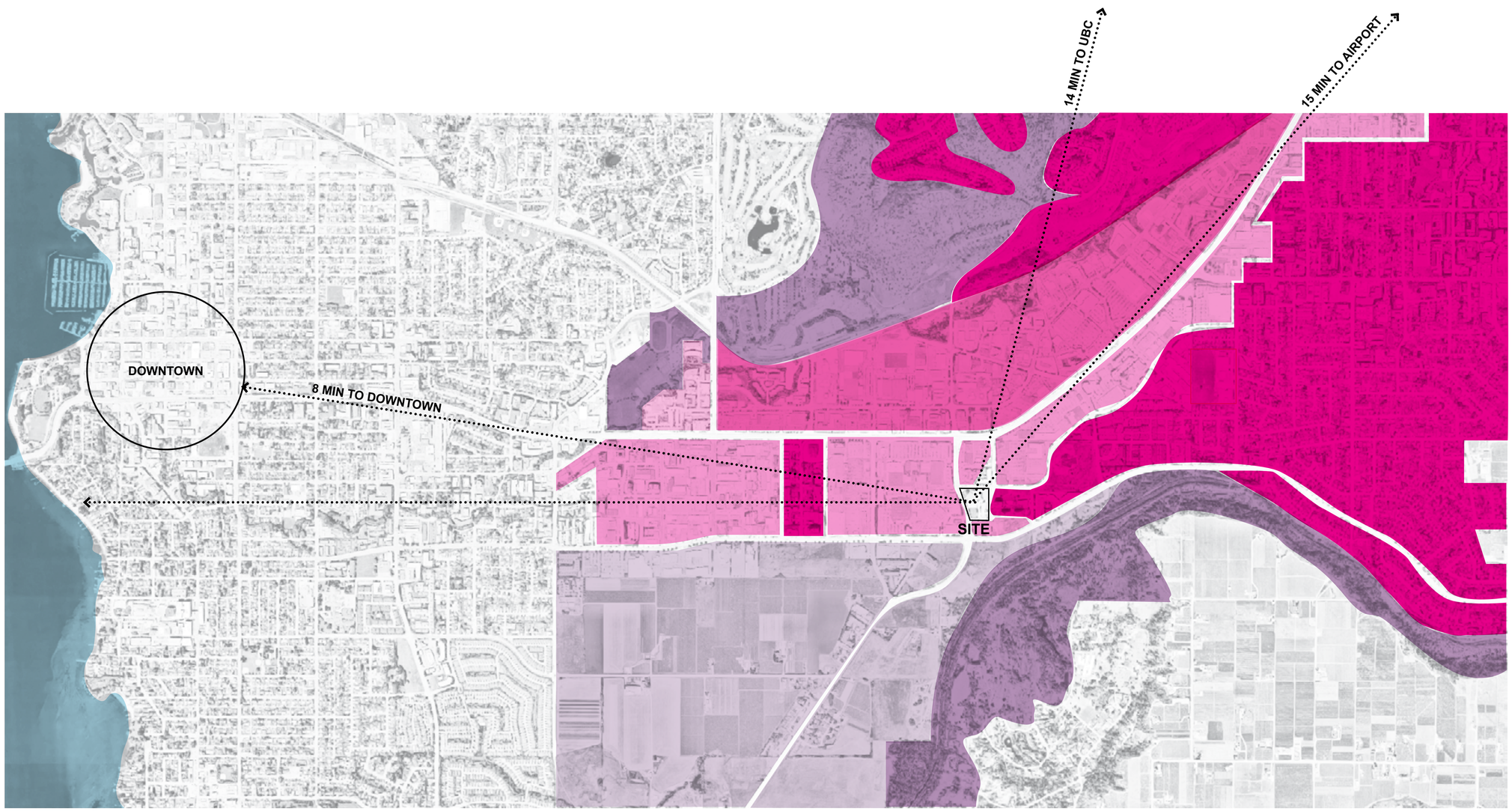
Urban Centre	Degree of Change and Development Pressure Expected (land use and transportation)	Need for Community Amenities (parks, public space, streetscaping)	Need to Define Civic Investment Priorities (parks, transit, streetscaping)	Age of Existing Plan
City Centre	High	Low	Low	2012, 2016
Capri-Landmark	High	High	High	No Plan
Midtown	High	High	High	1998
South Pandosy	Medium	Low	Low	1997, 2013
Rutland	Medium	Medium	Medium	2005, 2009

CURRENT CHARACTER

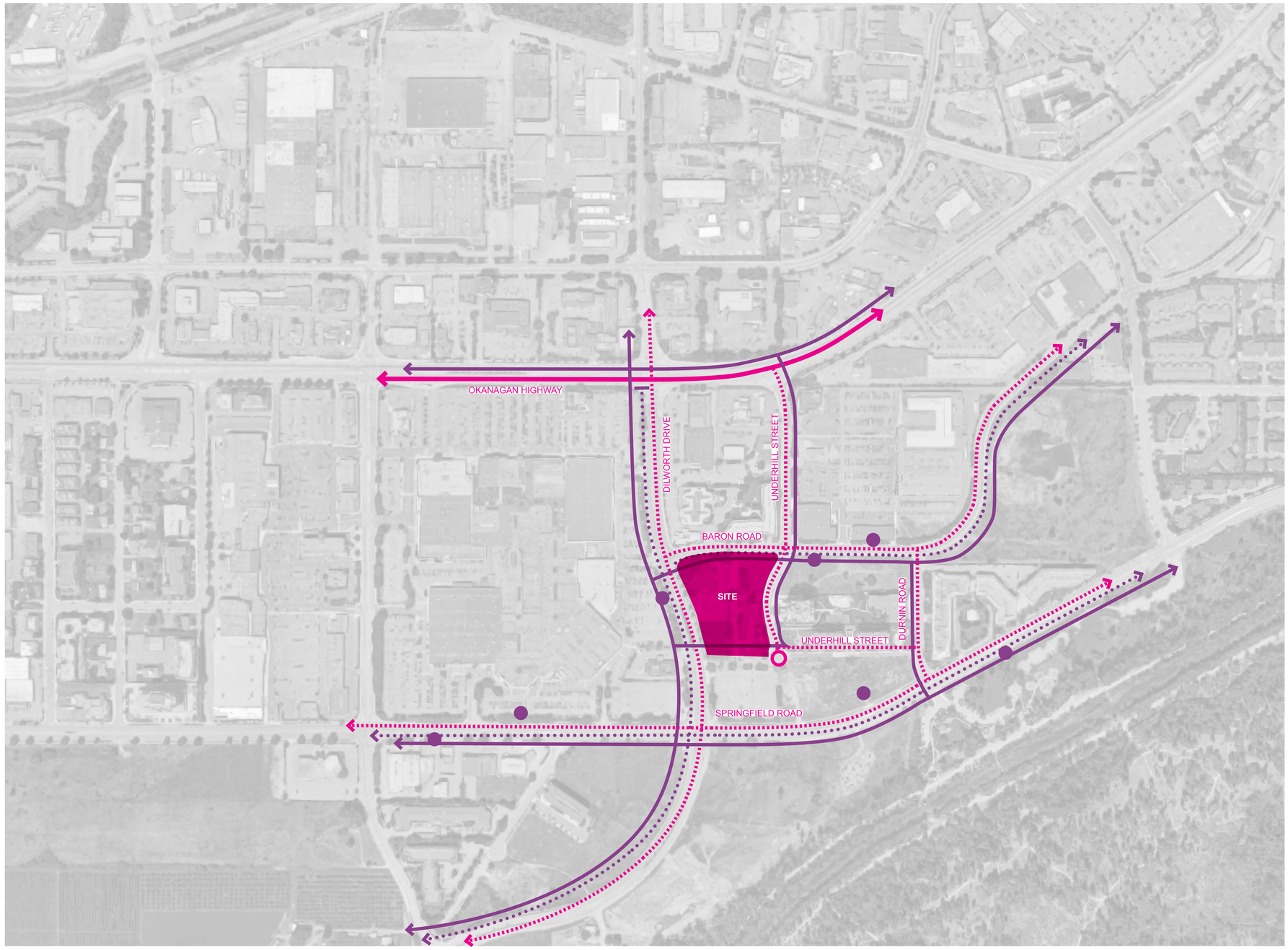
Urban Centre	Strengths	Challenges
City Centre	▸ Proximity to transit exchange ▸ Access to public and open space ▸ Active transportation routes and walkability ▸ Distinct identity ▸ High employment density ▸ Cultural and civic heart ▸ Access to waterfront	▸ Below residential population objectives for downtown ▸ Gaps in sidewalk infrastructure ▸ Highway serves as a barrier ▸ Homelessness ▸ Small lot sizes (Leon Ave and Lawrence Ave)
South Pandosy	▸ Vacant parcels at south boundary ▸ Streetscape on Pandosy St ▸ Concentration of distinctive retail ▸ Range of public spaces along lake ▸ Surrounding residential areas ▸ Parking management plan in place	▸ Connections to waterfront from Pandosy St ▸ Low residential density ▸ Lack of east-west cycling connections ▸ Lack of community facilities ▸ East-west transportation connectivity east of Richter St
Capri-Landmark	▸ Proximity to frequent transit ▸ Proximity to Parkinson Recreation Centre ▸ Sutherland ATC expansion ▸ High employment density ▸ Capri redevelopment ▸ Commercial nodes along Sutherland	▸ Limited public and open space ▸ Discontinuous street network ▸ Lack of sidewalks and street trees ▸ Large block sizes ▸ Lack of permeable surfaces in Landmark ▸ Lack of pedestrian crossings on arterials
Rutland	▸ Access to park space ▸ Recent investments in Roxby Plaza and Rutland Centennial Park ▸ Transit exchange improvements ▸ Community market	▸ Highway 33 bisects the area ▸ Lack of defined core for the area ▸ Walkability of Highway 33 ▸ Pedestrian and cycling connections are limited ▸ Discontinuous street network
Midtown	▸ Access to Rapid bus ▸ Major employment centre ▸ Farmers' market ▸ Major opportunity sites for development	▸ Lack of public space and green space ▸ Very poor pedestrian environment ▸ Poor street connectivity ▸ Lack of sense of place

02

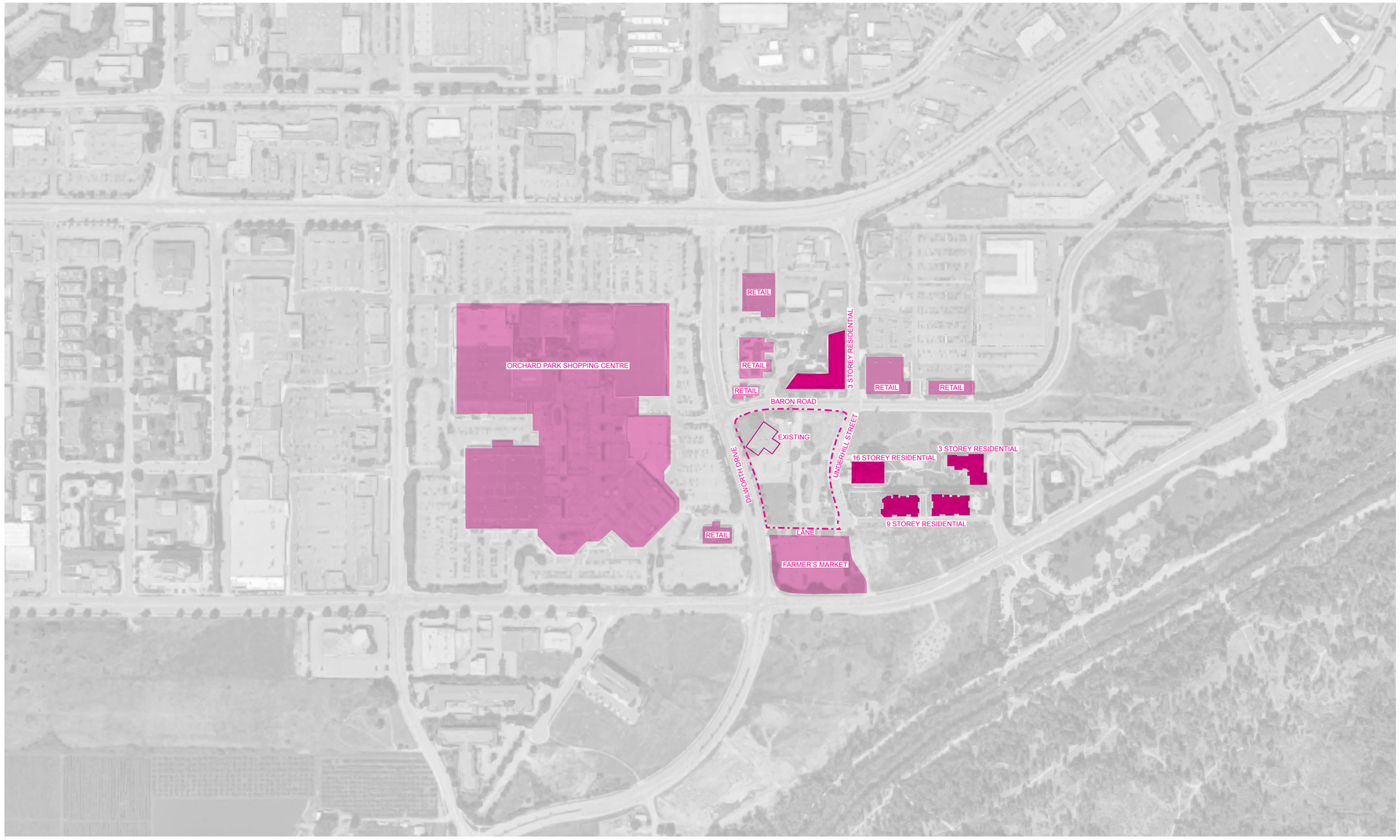
SITE CONTEXT



- SITE
- MIXED USE - COMMERCIAL / SERVICES
- RESIDENTIAL
- PARKS
- RURAL



HIGHWAYS
ROADS
PEDESTRIAN
BIKE ROUTES
BUS STOPS


ORCHARD PARK SHOPPING CENTRE
RETAIL
RETAIL
RETAIL
3 STOREY RESIDENTIAL
RETAIL
RETAIL
BARON ROAD
EXISTING
NORTH LANE
UNDERHILL STREET
16 STOREY RESIDENTIAL
3 STOREY RESIDENTIAL
9 STOREY RESIDENTIAL
RETAIL
LANE
FARMER'S MARKET


01
02
03
03


RETAIL
RETAIL/3 STOREY RESIDENTIAL
3 STOREY RESIDENTIAL
EXISTING BUILDING

01


16 STOREY RESIDENTIAL
9 STOREY RESIDENTIAL

02


FARMER'S MARKET LOCATION
PARKING LOT

03


ORCHARD PARK SHOPPING CENTRE
home
BEST BUY

04

01

02

03

04

03

ZONING DATA

SITE DATA

LEGAL DESCRIPTION

PLAN KAP74477 LOT A DISTRICT LOT 127 & DL 4646
PID 025-799-657
KID 606118

CIVIC ADDRESS

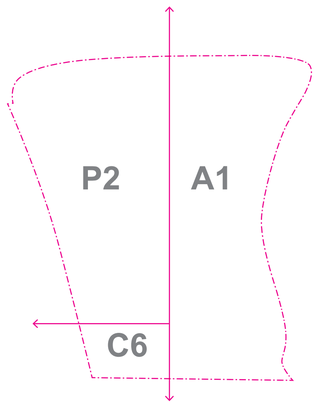
1940 UNDERHILL STREET, KELOWNA

CURRENT ZONING

A1 (AGRICULTURAL 1);
P2 (EDUCATIONAL AND MINOR INSTITUTIONAL)
C6 (REGIONAL COMMERCIAL)

SITE AREA

16244.80m² (174857.57SF)



PROPOSED ZONING

C4

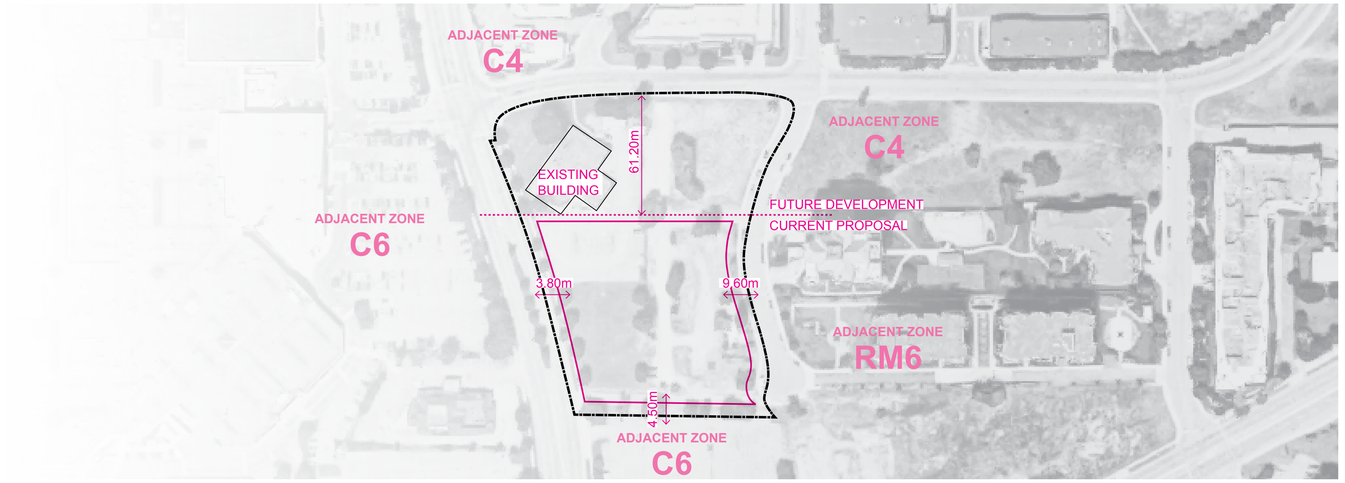
C4 ZONING DATA

MAX FAR 1.3 + bonuses = max 2.35		2.35
SITE COVERAGE		max 75%
BUILDING HEIGHT		15m
SETBACKS	FRONT YARD	0.0m
	SIDE YARD	0.0m
	SIDE YARD FROM RM6	2.0m
	REAR YARD	0.0m

PROPOSED

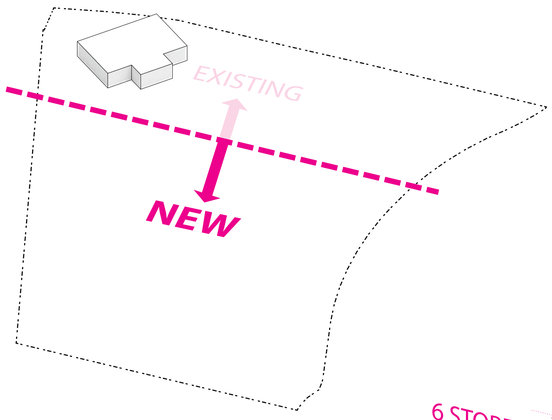
FAR PROPOSED DEVELOP.		1.20
SITE COVERAGE CURRENT + PROPOSED DEVELOP.		28.87%
BUILDING HEIGHT		19.35m
SETBACKS	FRONT YARD	61.20m
	SIDE YARD	9.60m /3.80m
	REAR YARD	4.50m

NOTE: CURRENT DATA REFLECTS PROPOSED DEVELOPMENT FOR THE SOUTH PORTION OF THE LOT. FUTURE DEVELOPMENT TO INCLUDE PROPOSAL FOR THE NORTH PORTION OF THE LOT.

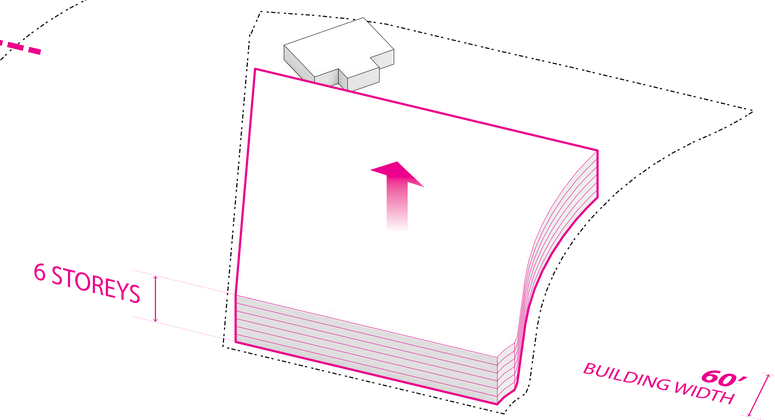


04

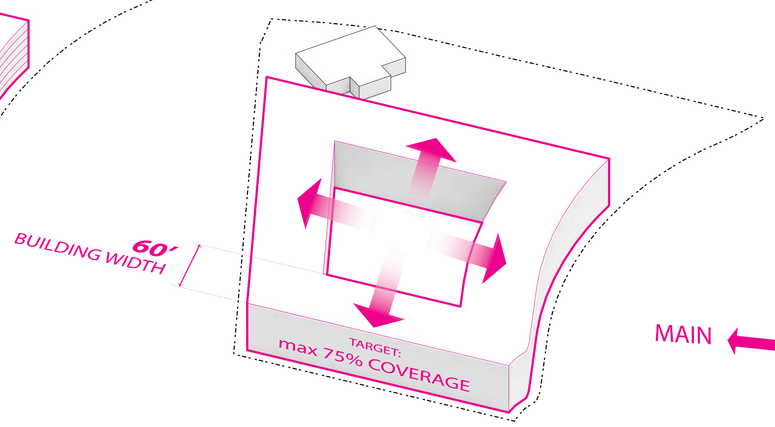
DESIGN RATIONALE



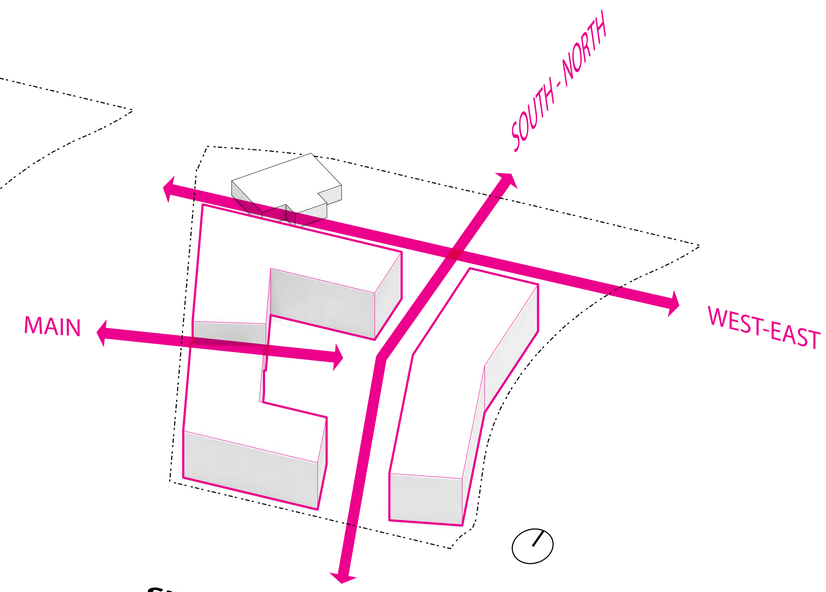
SITE



BUILDING HEIGHT



COURTYARD



SITE CONNECTIONS

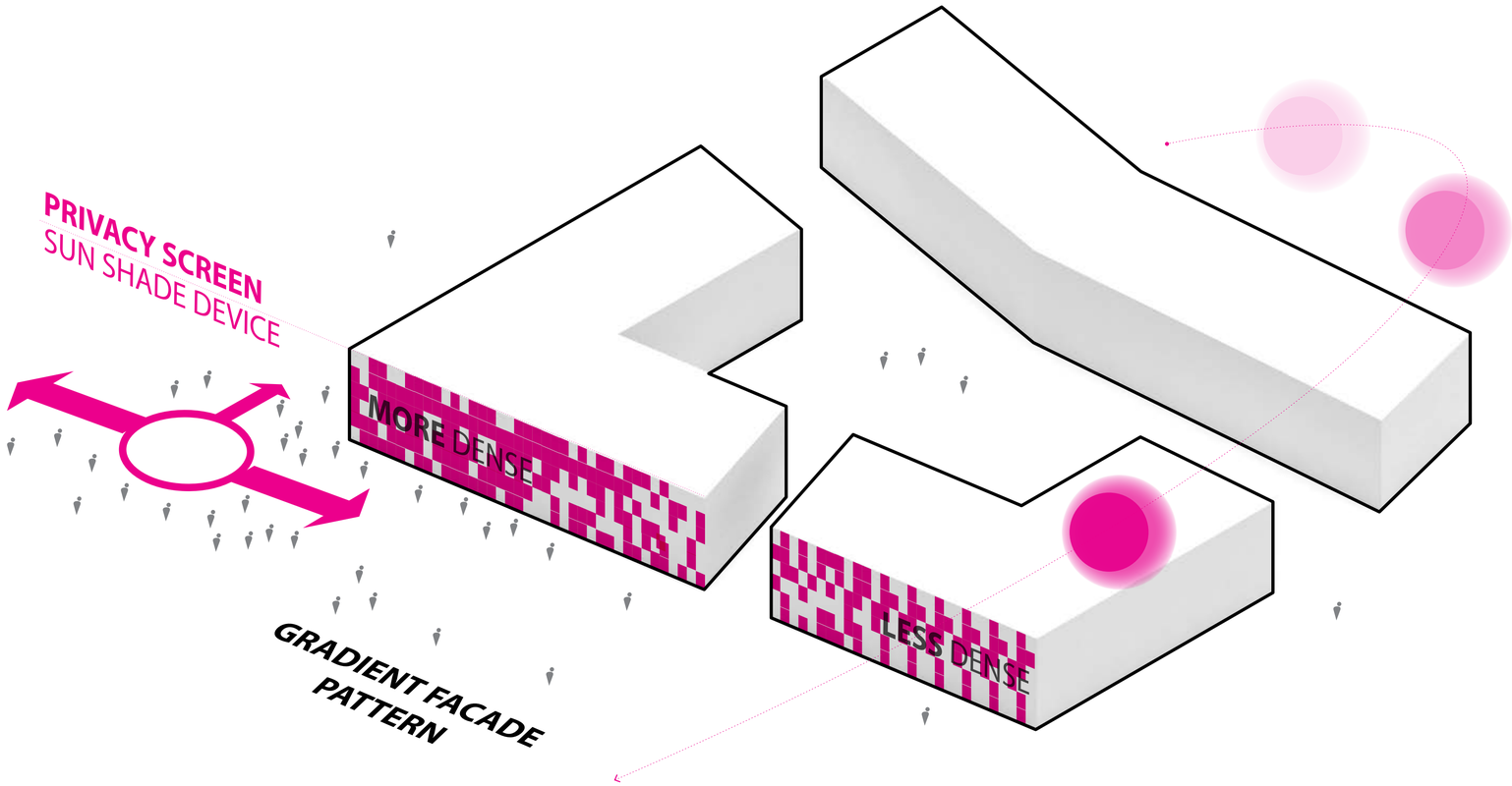
UNDERHILL STREET

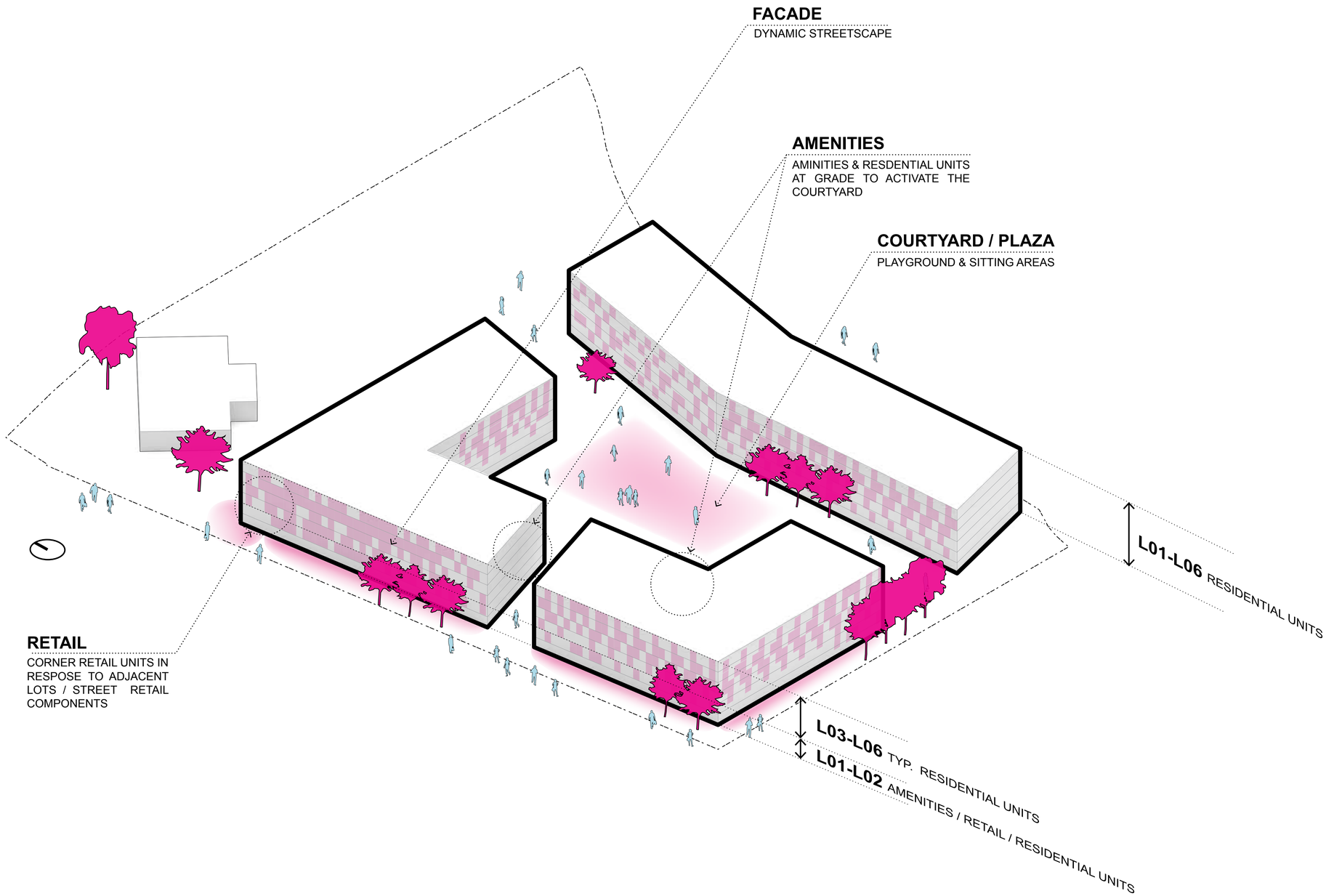
BARON ROAD

DILWORTH DRIVE

BUSY INTERSECTION

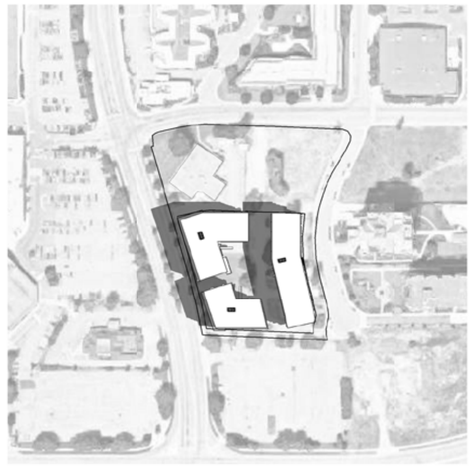
ORCHARD PARK SHOPPING CENTRE

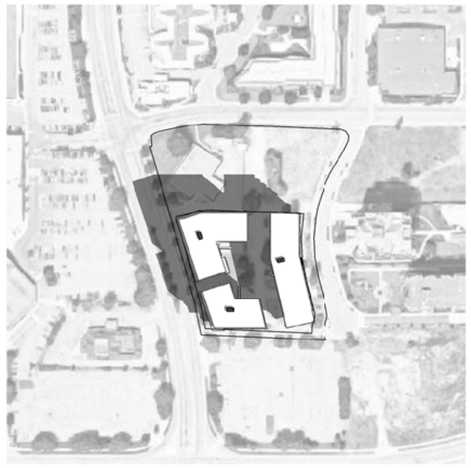


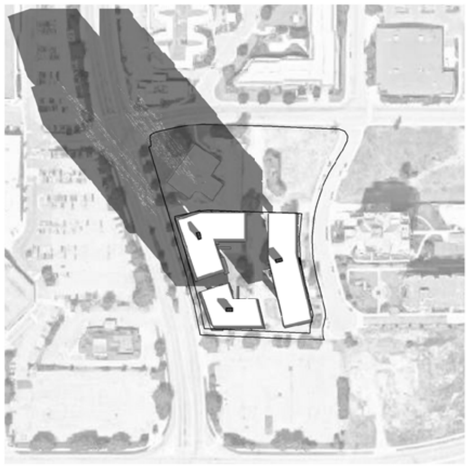

FACADE
DYNAMIC STREETSCAPE
AMENITIES
AMINITIES & RESDENTIAL UNITS AT GRADE TO ACTIVATE THE COURTYARD
COURTYARD / PLAZA
PLAYGROUND & SITTING AREAS
RETAIL
CORNER RETAIL UNITS IN RESPOSE TO ADJACENT LOTS / STREET RETAIL COMPONENTS
L01-L06 RESIDENTIAL UNITS
L03-L06 TYP. RESIDENTIAL UNITS
L01-L02 AMENITIES / RETAIL / RESIDENTIAL UNITS


1940 UNDERHILL ST
coffee shop

9AM







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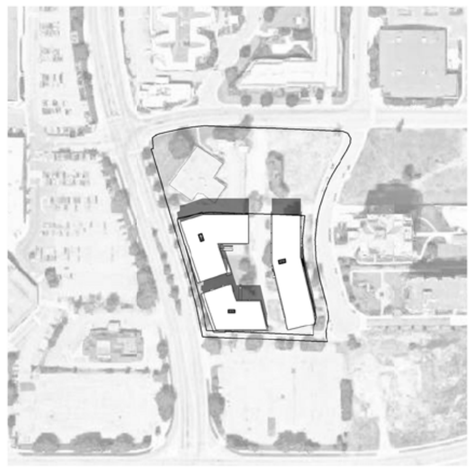

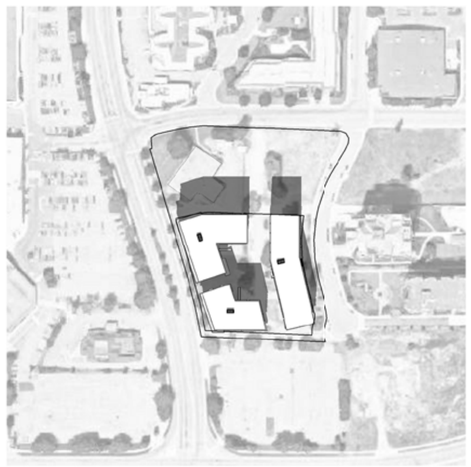

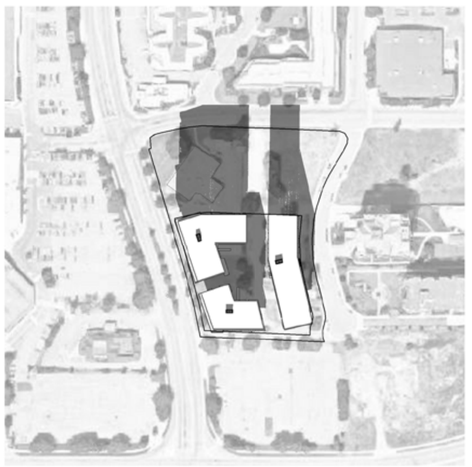

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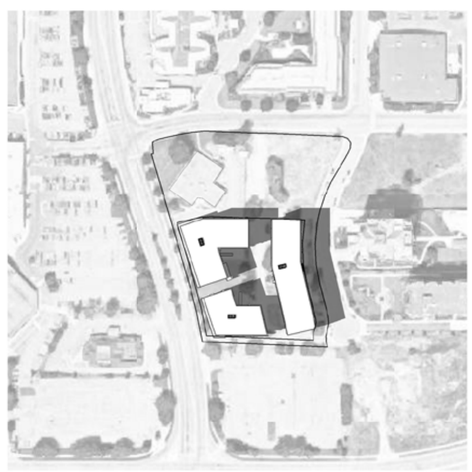
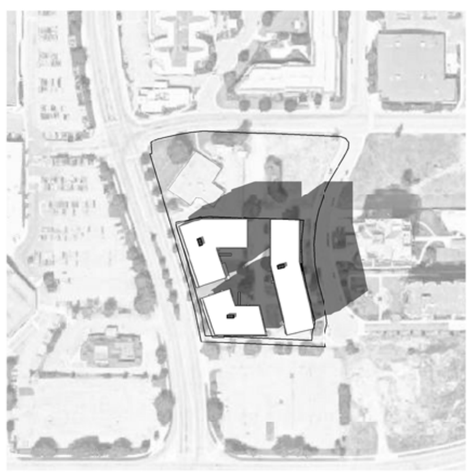
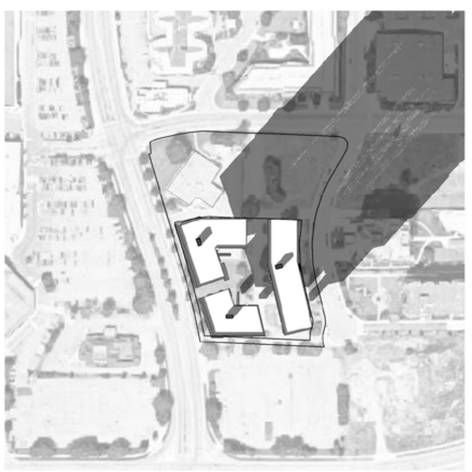






JUNE 21

EQUINOX

DECEMBER 21

Milanofiori Residential Complex, Milano, Italy

Ceil, Sydney, Australia

Edificio Rua Simpatia, Sao Paulo, Brazil

Ceil, Sydney, Australia

05

PROJECT STATISTICS

AREA DATA:

BUILDING 01

GROSS AREA	NET RESIDENTIAL	NET RETAIL	OFFICE	CIRCULATION	EFFICIENCY %
95,298SF	83,214SF	-	247SF	11,838SF	87.58%

BUILDING 02

GROSS AREA	NET RESIDENTIAL	NET RETAIL	AMENITY	CIRCULATION	EFFICIENCY %
83,660SF	70,477SF	2,263SF	1054SF	9,866SF	88.21%

BUILDING 03

GROSS AREA	NET RESIDENTIAL	NET RETAIL	AMENITY	CIRCULATION	EFFICIENCY %
58,026SF	52,854SF	-	840SF	7,610SF	86.28%

TOTAL

GROSS AREA	NET AREA	EFFICIENCY
236,985SF	209,054SF	87.6%

LOT AREA	FAR
174,857.57SF	1.20

UNIT COUNT:

BUILDING 01

STUDIO	1 BED	1BED +DEN	2 BED	3 BED
0	72	1	40	5

118 UNITS

BUILDING 02

STUDIO	1 BED	1BED +DEN	2 BED	3 BED
6	60	27	15	0

108 UNITS

BUILDING 03

STUDIO	1 BED	1BED +DEN	2 BED	3 BED
12	32	10	12	05

71 UNITS

TOTAL

STUDIO	1 BED	1BED +DEN	2 BED	3 BED
18	164	38	67	10
6.1%	55.2%	12.8%	22.6%	3.4%

297 UNITS

PARKING COUNT:

VEHICLE

C4 DWELLING UNITS:

RESIDENT - 1.0 STALL PER DWELLING UNIT
VISITIOR - 1.0 STALL PER 7 UNITS

C4 COMMERCIAL:

1.75 PER 100m²

REQUIRED

297 RESIDENTS 43 VISITORS 4 RETAIL

344 STALLS

PROVIDED

319 STALLS

L01 34 STALLS P01 285 STALLS

9% COMPACT SIZE 40% MEDIUM SIZE 51% FULL SIZE

BICYCLE

APARTMENT HOUSING:

CLASS I - 0.5 STALLS PER UNIT
CLASS II - 0.1 STALL PER UNITS

RETAIL, GENERAL:

CLASS I - 0.2 STALLS PER 100m²
CLASS II - 0.6 STALL PER 100m²

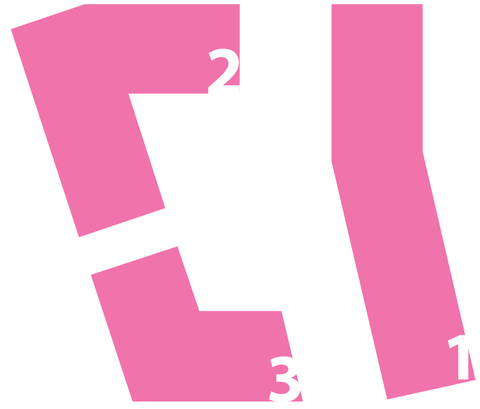
REQUIRED

RESIDENTIAL
149 CLASS I 30 CLASS II
COMMERCIAL
1 CLASS I 2 CLASS II

182 STALLS

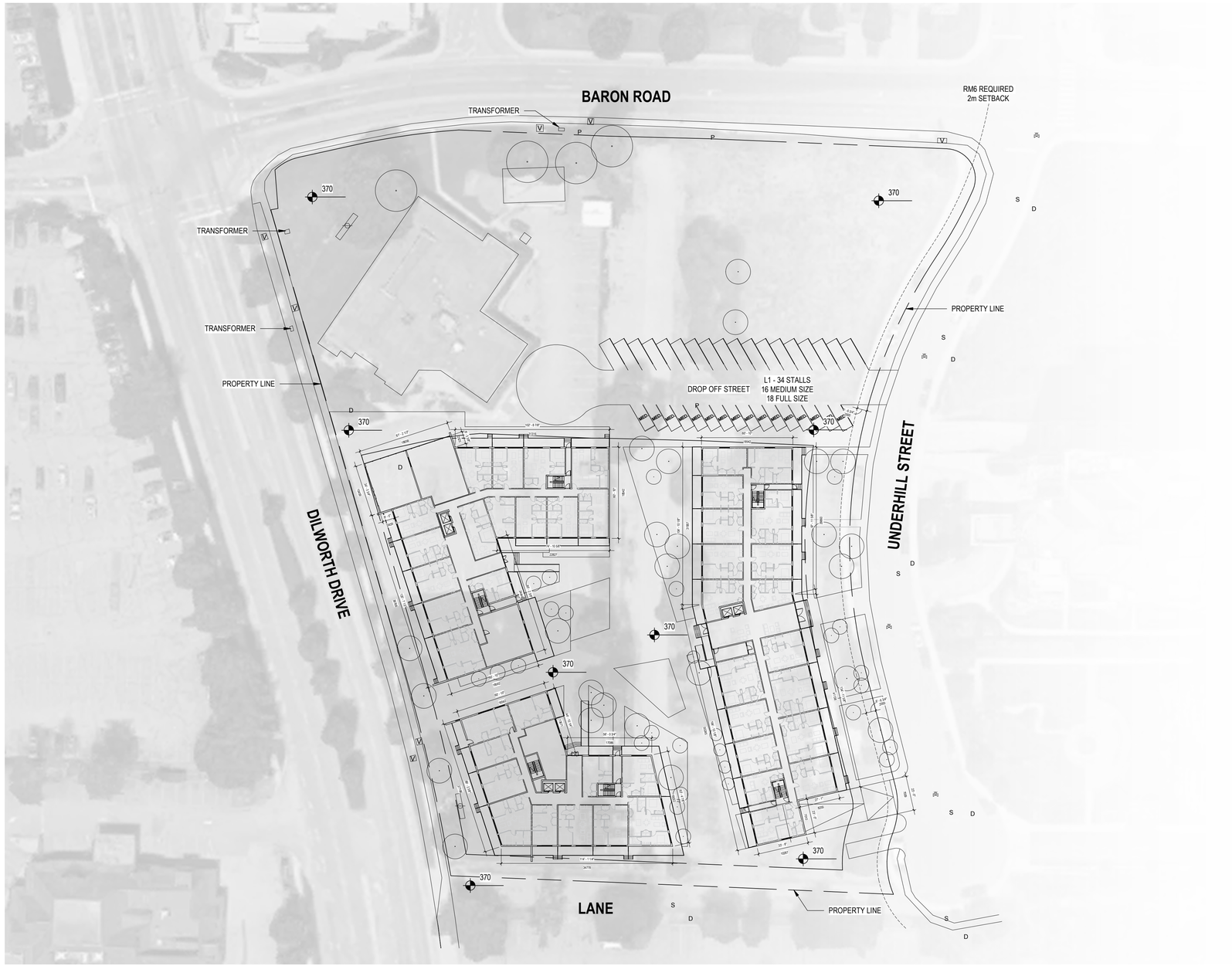
PROVIDED

185 STALLS



06

DRAWING PACKAGE



AREA DATA

SITE:
174,857.57SF

BUILDING 01:
95,298SF

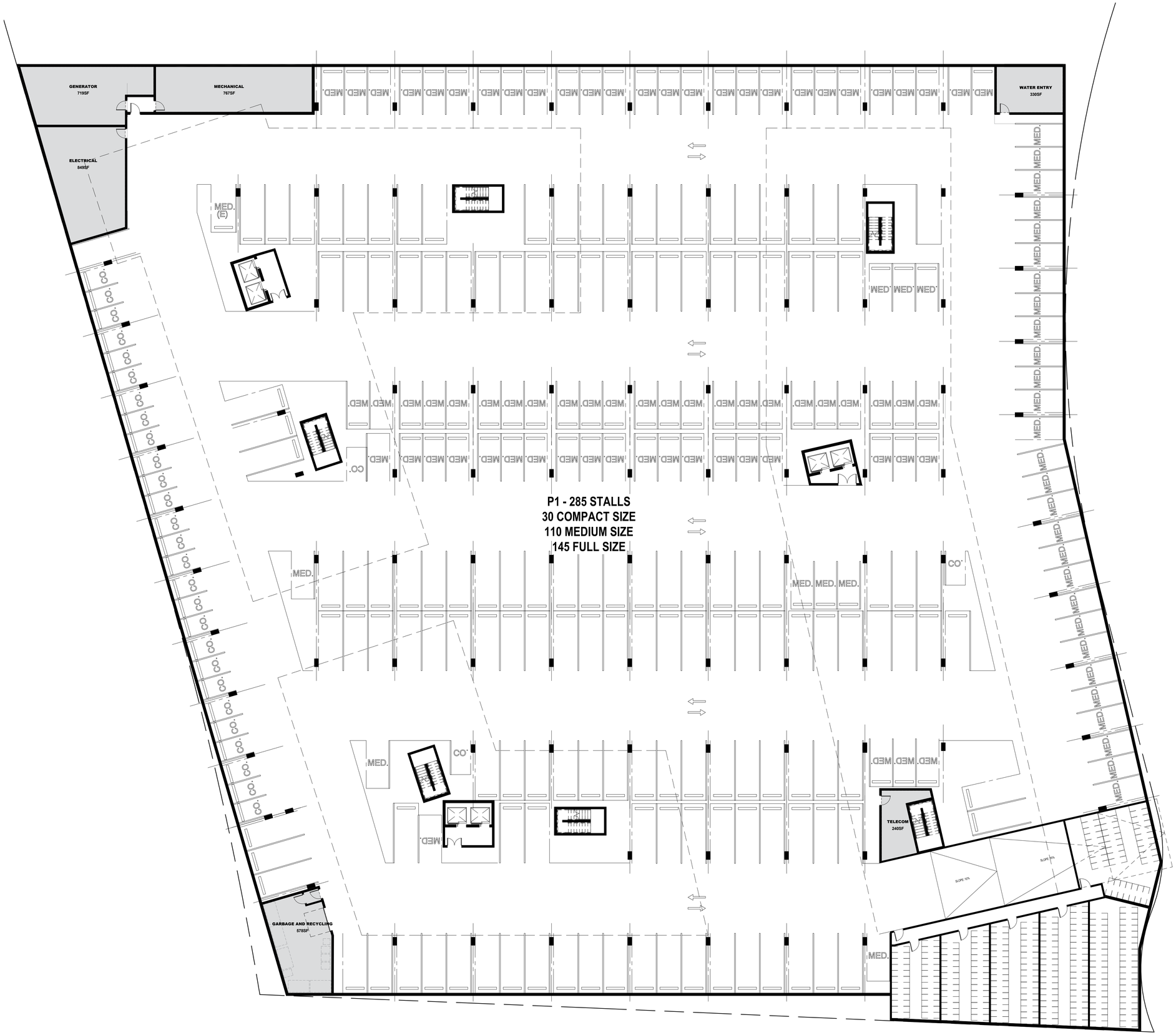
BUILDING 02:
83,660SF

BUILDING 03:
58,026SF

(GROSS AREAS FOR BUILDINGS)

1940 UNDERHILL STREET
1"=40'-0"
SITE PLAN

DIALOG DISTRICT
PROJECT NUMBER 04738V
JUNE 13, 2018 10:38 AM



1940 UNDERHILL STREET

1/16"=1'-0"

P1 PLAN

DIALOG DISTRICT GROUP

PROJECT NUMBER 04738V
JUNE 13, 2018 10:38 AM

Schema 1 Legend

- AMENITY
- NON-RENTABLE
- RENTABLE
- RETAIL
- SERVICE

DROP OFF STREET - 34 STALLS

18 FULL SIZE
16 MEDIUM SIZE

EXISTING BUILDING

PARKING EDGE BELOW

BUILDING 1

BUILDING 2

BUILDING 3

COURTYARD

DILWORTH ROAD

UNDERHILL STREET

LANE

PARKING ACCESS

RESIDENTIAL LOADING

1940 UNDERHILL STREET
1/16"=1'-0"
L1 PLAN

DIALOG DISTRICT

PROJECT NUMBER 04738V
JUNE 13, 2018 10:38 AM

1940 UNDERHILL STREET
1/16"=1'-0"
L2 PLAN

DIALOG DISTRICT GROUP

PROJECT NUMBER 04738V
JUNE 13, 2018 10:38 AM

Schema 1 Legend

NON-RENTABLE

RENTABLE

1940 UNDERHILL STREET

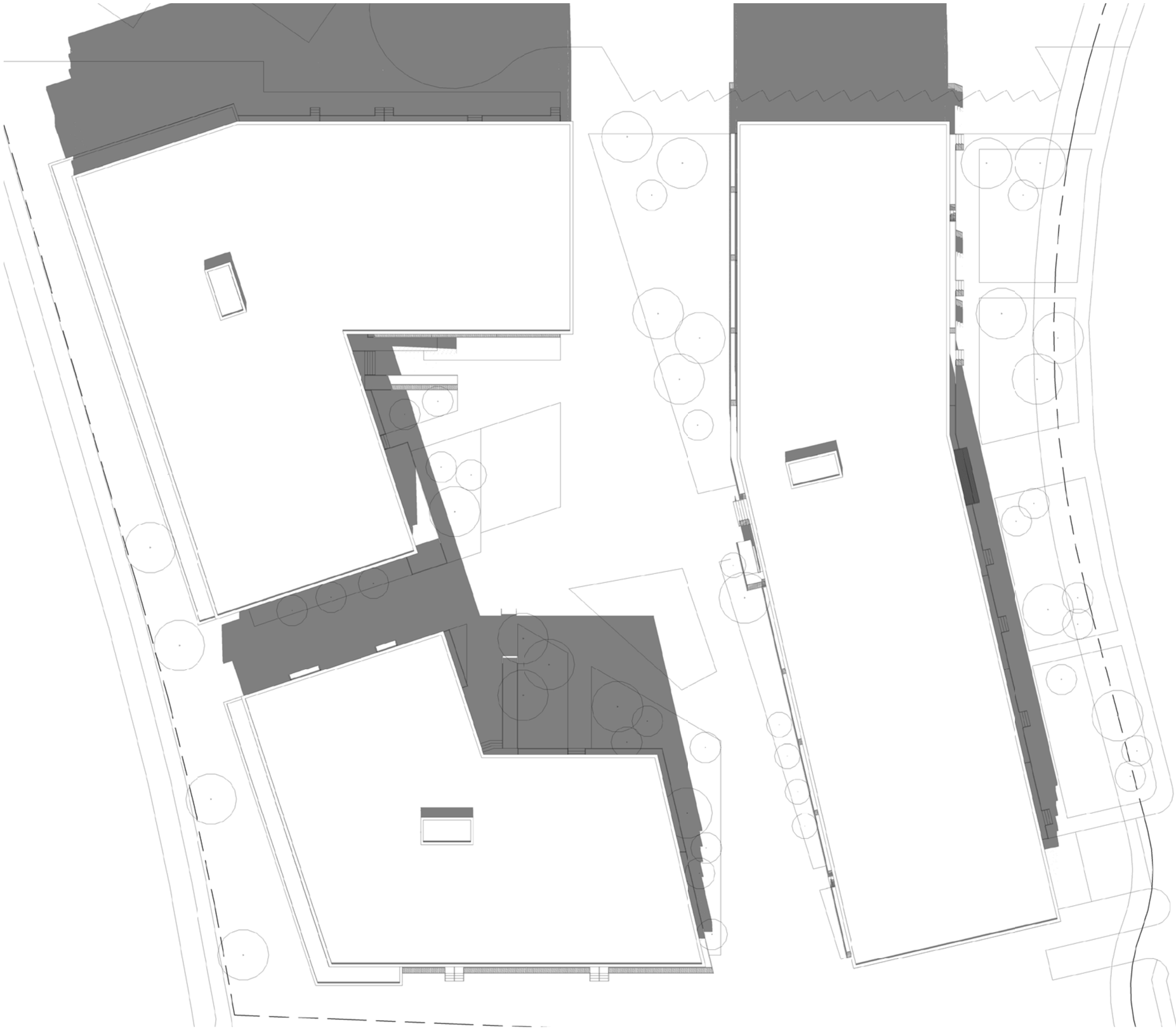
1/16"=1'-0"

L3-L6 TYP. FLOOR PLAN

DIALOG DISTRICT GROUP

PROJECT NUMBER 04738V

JUNE 13, 2018 10:38 AM



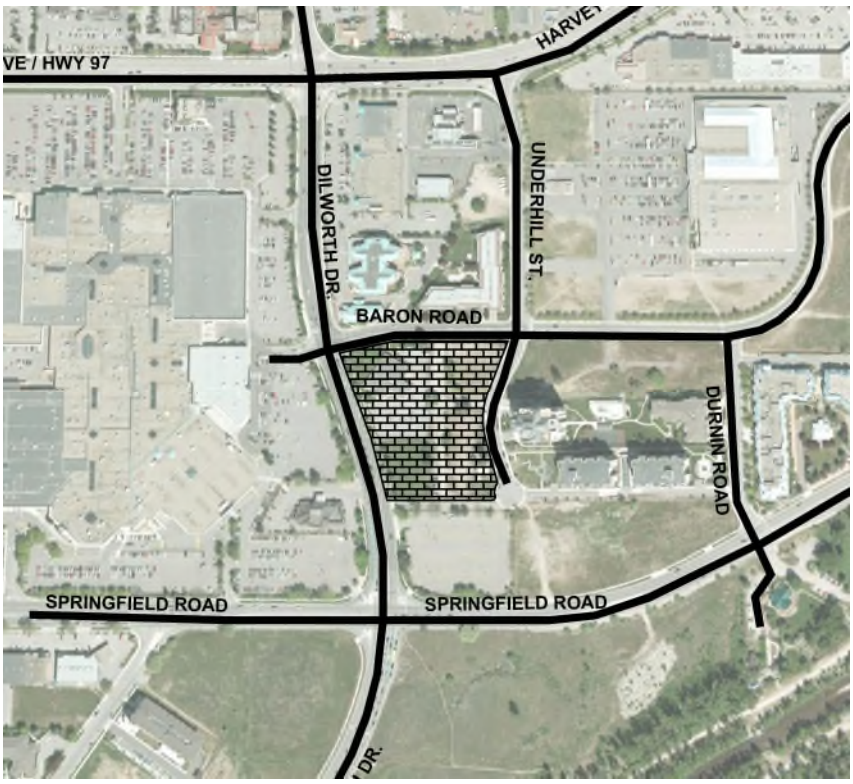
1940 UNDERHILL STREET
1/16"=1'-0"
ROOF PLAN

DIALOG DISTRICT

PROJECT NUMBER 04738V
JUNE 13, 2018 10:38 AM

TRAFFIC IMPACT ASSESSMENT REPORT
On
DISTRICT GROUP'S
Proposed

High Rise Residential Development
- 1940 Underhill Street, Kelowna



By
T.J.Ward Consulting Group Inc.
June 2018

ward consulting group

ward consulting group

- *Traffic Impact*
- *Parking*
- *Transportation Planning*
- *Corridor Studies*
- *Traffic Operations*
- *Transit*
- *Trucking*
- *Network Modelling*
- *Bicycles/Pedestrians*

June 7, 2018

Email: Michael Nygren <nygren@districtgroup.ca>

DISTRICT Properties Group Inc.
Suite 200 – 8809 Heather Street
Vancouver, BC
V6P 3T1

Attention: Mr. Michael Nygren

Dear Mike,

Subject: Traffic Impact Assessment for Proposed Residential Development – 1930 Underhill Street, Kelowna

As requested, we have now undertaken a study to identify the potential traffic impacts of your proposed residential development to be located on a parcel of land with the address of 1940 Underhill Street in the City of Kelowna. This property is also bounded by Dilworth Drive on the west side and Barren Road on the south side.

The study was undertaken following the methodology outlined in the Scope dated January 29, 2018 and approved by both the City of Kelowna and Ministry of Transportation. The results of this analysis are summarized in this report, which examines existing conditions on the study area's road network, identifies the amount of traffic that will be generated by the development plan, determines the performance of the various intersections in the study area, and identifies the improvements that are required to mitigate the impacts of the additional traffic on the adjacent roads.

I trust this provides the information required by the City as this development goes through the approval process. Please do not hesitate to call if you have any questions or need clarification.

Yours truly,

T. J. WARD CONSULTING GROUP INC.

Trevor J. Ward, P.Eng., M.Eng., F.I.T.E.

1.0 INTRODUCTION

The DISTRICT Properties Group is proposing to develop a parcel of land located at 1940 Underhill Street on the west side of this road in the City of Kelowna and to construct a variety of multi family building types that will provide up to 845 residential units in total, together with a small amount of commercial floor space. This property is also bounded by Dilworth Drive on the west side and Baron Road on the north side.

As part of the approval process, the City of Kelowna requires a Traffic Impact Assessment study (TIA) to be undertaken to assess the impact that the traffic generated by the proposed development will have on the surrounding roads and identify what improvements to the road network are required as a result. The developer requested Ward Consulting Group to undertake the study.

The study was undertaken following the methodology outlined in the Scope dated January 29, 2018 and approved by both the City and Ministry of Transportation. The results of this analysis are summarized in this report, which reviews existing conditions on the surrounding roads, identifies the amount of traffic that will be generated by the development plan, reviews the performance of the various intersections in the study area, and identifies the improvements that are required to mitigate the impacts of the site traffic on the adjacent road network. Consideration of pedestrian, bicycle and transit facilities is also included.

The general location of the site is given in Drawing 1.1 and an aerial photo of the study area is shown in Drawing 1.2.

2.0 BACKGROUND TRAFFIC CONDITIONS

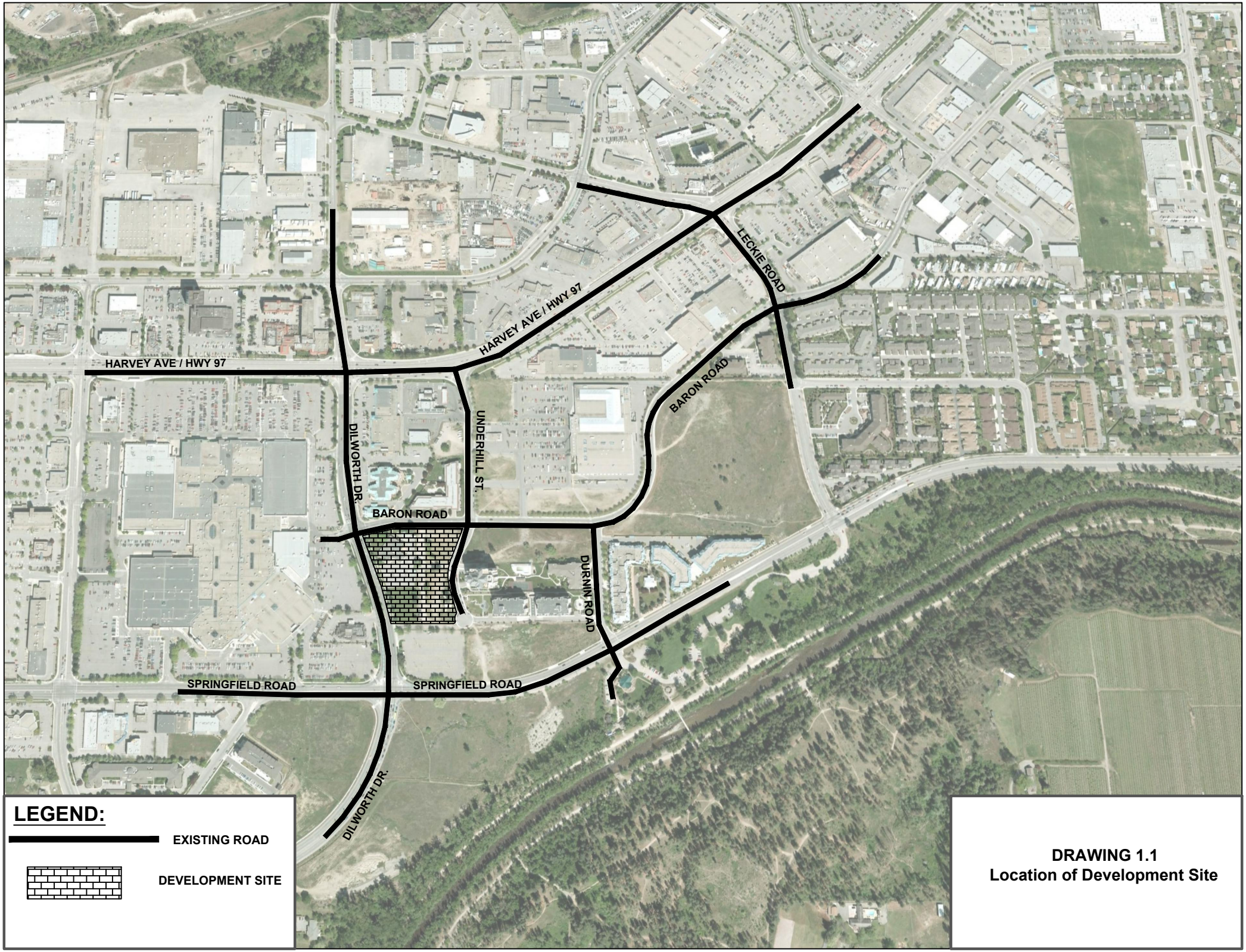
The existing traffic conditions in the vicinity of the proposed development site are summarized in this section. The key roads pertinent to this study are shown in Drawing 2.1.

2.1 Road Network

The following is a brief description of the key roads in the general area.

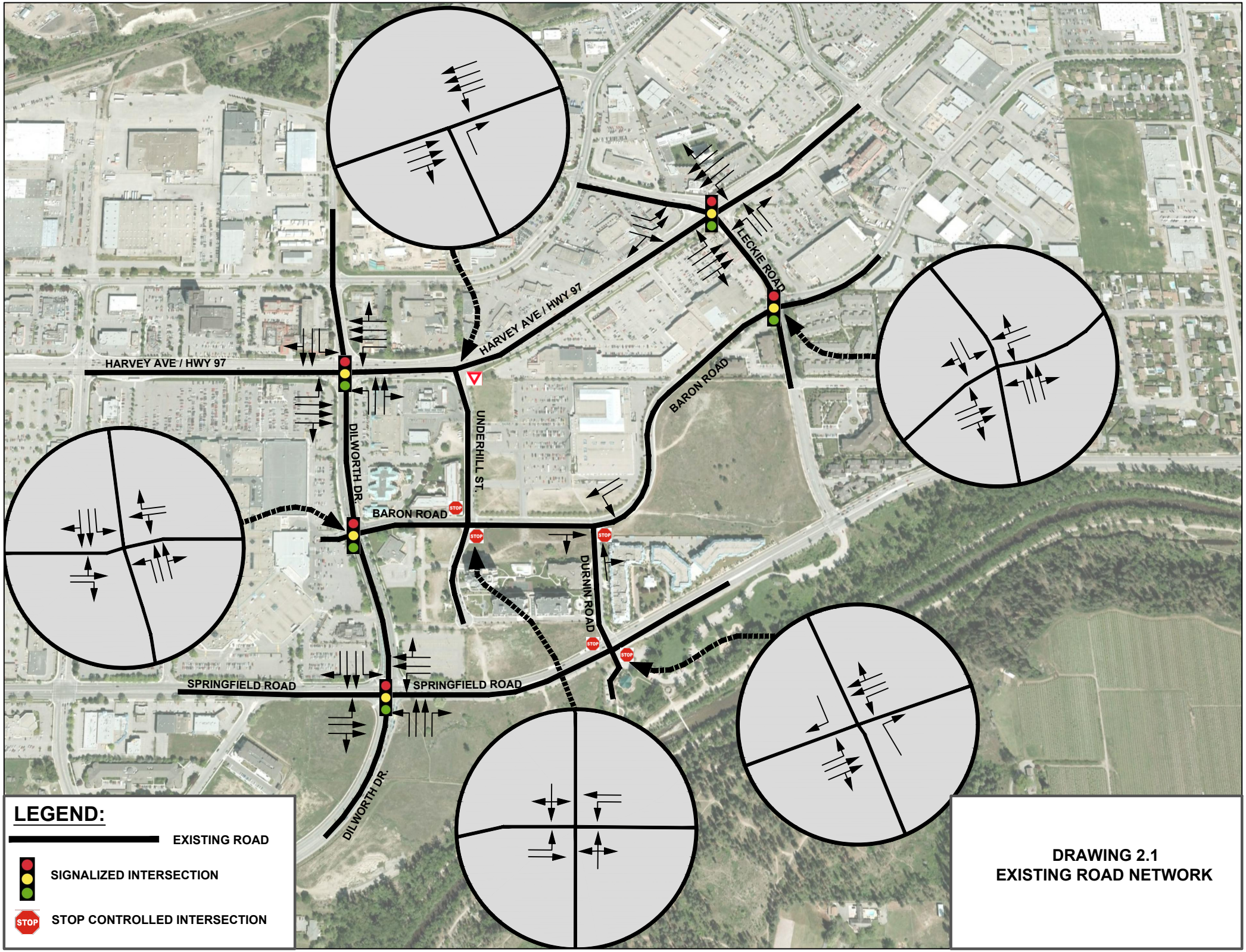
(a) Underhill Street: This is a two-lane local road that runs from Highway 97 south across Baron Road and terminates at the southeast corner of the proposed development site. It has an urban cross section with curb, gutter, and sidewalk on both sides. It is one of one two streets discussed in this section that has on-street parking permitted along both sides.

(b) Baron Road: Based on the City of Kelowna's *Official Community Plan*, this road is classified as a Major Collector. It begins at Springfield Road and extends in an easterly direction as far as Ziprick Road. Although it follows a very meandering alignment, it runs approximately parallel to Highway 97. It has one lane in each direction together with a centre lane that is used for left turns where required. It has an urban cross section with curb, gutter, and sidewalk on both sides



DRAWING 1.1
Location of Development Site

DRAWING 1.2
Aerial Photo of Study Area


HARVEY AVE / HWY 97
HARVEY AVE / HWY 97
LECKIE ROAD
BARON ROAD
BARON ROAD
DILWORTH DR.
UNDERHILL ST.
DURNIN ROAD
SPRINGFIELD ROAD
SPRINGFIELD ROAD
DILWORTH DR.
STOP
LEGEND:
EXISTING ROAD
SIGNALIZED INTERSECTION
STOP CONTROLLED INTERSECTION
DRAWING 2.1
EXISTING ROAD NETWORK

(c) Dilworth Drive: This road is classified as an Arterial Road, with two lanes in each direction plus left turn lanes where required. It commences at Springfield Road in the south and runs north across Highway 97 and well beyond. South of Springfield Road it becomes Benvoulin Road which also has two lanes in each direction. Dilworth Road has extensive commercial developments along both sides between Springfield Road and Leckie Road with curb, gutter, and sidewalks.

(d) Springfield Road: Springfield Road is also classified as an Arterial Road and runs east-west, parallel and south of Highway 97, connecting Pandosy Street in the west to Highway 33 in the east. This is a four-lane road with an urban cross section for most of its length through the area of interest in this study with curb, gutter, and sidewalk on both sides west of Dilworth Drive and on the north side only to the east of here. Left turn lanes and traffic signals are provided at major intersections, including Dilworth Drive.

(e) Highway 97/Harvey Avenue: This road is the major traffic carrying facility through the City of Kelowna extending north through the District of Lake Country and on further through the City of Vernon and extending west and south through West Kelowna and on to Penticton and beyond. Within the study area it is three lanes in each direction plus left turn lanes where required, with the outside lanes being designated as high occupancy vehicle lanes. It too has an urban cross section through the area of interest in this study with curb, gutter, and sidewalk on both sides.

(f) Leckie Road: This road, which is a Major Collector, commences at Springfield Road and runs north to Highway 97/Harvey Avenue where it then turns northwest crossing Enterprise Way and continuing in the same direction until it intersects Dilworth Drive. It has a four-lane cross-section southeast and south of Enterprise Way and two lanes to the northwest of here

(g) Durnin Road: This is a short two-lane road that connects Baron Road to Springfield Road passing through a multifamily residential enclave. It also has an urban cross-section with on-street parking being permitted on both sides

2.2 Intersection Channelization and Traffic Controls

The key intersections relevant to this study, along with the intersection laning and traffic controls, are summarized in Table 2.1 and illustrated in Exhibit 2.1.

The key intersections of Springfield Road/Dilworth Drive, Baron Road/Dilworth Drive, Dilworth Drive/Highway 97, Baron Road/Leckie Road and Highway 97/Leckie Road are signalized. Separate left-turn lanes are provided on most legs of these signalized intersections with Baron Road at Dilworth Drive being the exception. There two intersections at which left turn and through movements are not permitted out of the minor road, these being Underhill Street at Highway 97 and Durnin Road at Springfield Road.

Table 2.1: Existing Intersection Laning Configuration

E-W Street	N-S Street	Eastbound			Westbound			Northbound			Southbound			Signal	Priority
		L	T	R	L	T	R	L	T	R	L	T	R		
Springfield	Dilworth	1	2	<	1	2	<	1	2	1	1	2	1	Y	--
Springfield	Durnin	1	2	<	1	2	<	-	-	1	-	-	1	N	E/W
Baron	Dilworth	>	1	1	>	1	1	1	2	<	1	2	<	Y	--
Baron	Underhill	1	1	<	1	1	<	>	1	<	>	1	<	N	E/W
Baron	Durnin	x	1	<	1	1	x	1	x	<	x	x	x	N	E/W
Baron	Leckie	1	1	<	1	1	<	>	2	<	>	2	<	Y	--
Highwy 97	Dilworth	1	3	<	1	3	<	1	2	<	1	2	<	Y	--
Highwy 97	Underhill	x	3	<	>	3	x	x	x	1	x	x	x	N	E/W
Highwy 97	Leckie	1	3	<	1	3	1	1	1	1	2	1	<	Y	--

Note: > or < - means no dedicated left or right turn lane but shared with the adjacent through lane; x - means movement not appropriate; (1)- Highway 97 for the purpose of the analysis extends in the east-west direction.

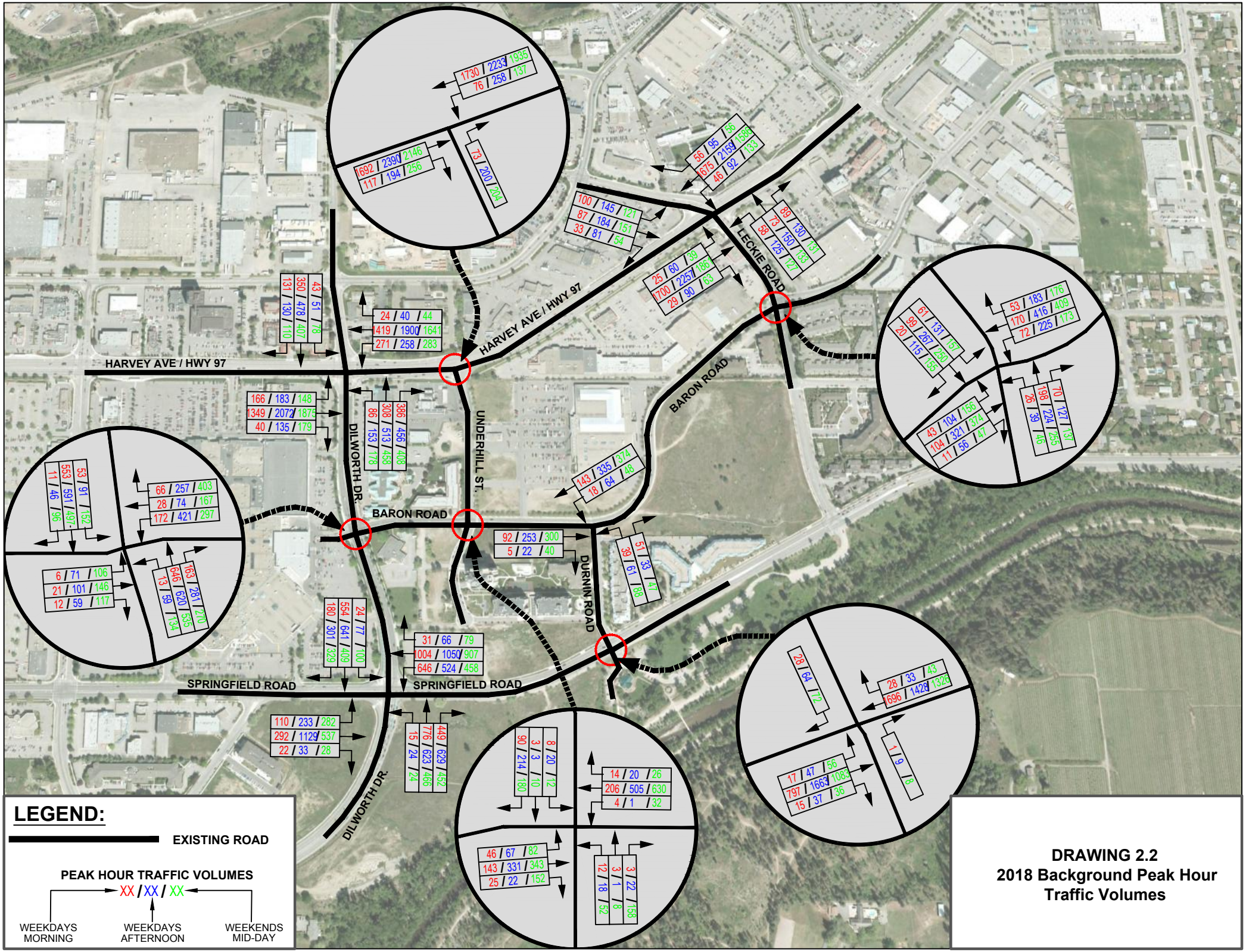
2.3 Existing Traffic Volumes

The traffic data used in this analysis was provided both by the City of Kelowna and from new counts undertaken by the consulting team in conjunction with this study. All counts covered the weekday morning period of 7:00 to 9:00 a.m., the weekday afternoon period of 3:30 to 5:30 p.m. and the Saturday mid-day period of 10:00 a.m. to 2:00 p.m. The morning peak period was found to typically occur between 7:45 and 8:45 a.m. while the afternoon peak occurred between 3:30 and 4:30 p.m. As the base year was taken to be 2018, any counts recorded on City of Kelowna roads in previous years, including 2017, were factored up by 0.9% per annum to establish 2018 volumes. All count data for the Highway 97 intersections was recorded by the consultant team.

Traffic volumes at the selected intersections for both peak hours are given in Drawing 2.2 while a summary of volumes on selected links for the weekday peak hours is given in Table 2.2. In general, traffic volumes for the p.m. peak hour are higher than those in the a.m. peak hour, as is typically the case in any urban environment.

It is not surprising to find that the intersection of Dilworth Drive/Highway 97 has the highest traffic volumes of the intersections used in this study and that these occur in the weekday p.m. peak hour. The two-way volumes on Highway 97 are almost equal on both the east and west sides of Dilworth Drive at this intersection, with the highest being 4,780 two-way on the east side of Dilworth Drive in the pm peak hour, split 2,580 eastbound and 2,200 westbound. Of the 2,200 westbound, 260 make a left turn southbound. This two-way volume is only 160 vehicles or 3.5% higher than the volume of 4,620 vehicles recorded in a similar traffic impact assessment prepared in 2008. In the am peak hour, it is significantly lower at 3,495 vehicles two-way, again very close to the 2008 volume of 3,405 vehicles. The volumes on the highway at Leckie Road are very similar.

The location with the second highest traffic volumes in the vicinity of the site in the weekday p.m. peak hour are on Springfield Road east of Dilworth Drive at 1,835 vehicles/h eastbound


HARVEY AVE / HWY 97
HARVEY AVE / HWY 97
LECKIE ROAD
BARON ROAD
BARON ROAD
DILWORTH DR.
UNDERHILL ST.
DURNIN ROAD
SPRINGFIELD ROAD
SPRINGFIELD ROAD
DILWORTH DR.
LEGEND:
EXISTING ROAD
PEAK HOUR TRAFFIC VOLUMES
XX / XX / XX
WEEKDAYS MORNING
WEEKDAYS AFTERNOON
WEEKENDS MID-DAY
DRAWING 2.2
2018 Background Peak Hour Traffic Volumes

and 1,640 vehicles/h westbound or 3,475 vehicles/h two-way, almost the same as on Highway 97 in the am peak hour. Of the 1,640 westbound, 525 make the left turn into Benvoulin Road. To the west of Dilworth Drive, the volume reduces to 2,770 two-way in this same pm peak hour.

The next highest two-way volume is on Dilworth Drive north of Springfield Road, this being 1,940 in the pm peak hour, split 920 northbound and 1,020 southbound. Volumes on Baron Road east of Dilworth drive are 1,225 two-way in the pm peak hour split 750 westbound and 475 eastbound. Of the 750 eastbound, 475 make the left turn. Further to the east on the west side of Leckie Road, the volume of 1,050 two-way split 570 westbound and 480 eastbound.

Table 2.2: Existing 2018 Traffic Volumes on Major Road Links

Road Link		---------- 2018 AM ---------			--------- 2018 PM ----------		
		EB/NB	**WB/SB**	**2 - Way**	**EB/NB**	**WB/SB**	**2 – Way**
Springfield Road	west of Dilworth	425	1200	1625	1395	1375	2770
	east of Dilworth	765	1680	2445	1835	1640	3475
Baron Road	east of Springfield	235	265	500	475	750	1225
	east of Underhill	155	225	380	375	525	900
	west of Leckie Road	160	215	375	480	570	1050
Underhill Street	south of Highway 97	75	195	270	200	450	650
	south of Baron	20	30	50	40	25	65
Dilworth Drive	south of Springfield	1240	1220	2460	1275	1200	2475
	north of Springfield	915	760	1675	920	1020	1940
	south of Highway 97	780	660	1440	1120	870	1990
	north of Highway 97	500	525	1025	735	660	1396
Highway 97	west of Dilworth Drive	1555	1635	3190	2390	2185	4575
	east of Dilworth Drive	1780	1715	3495	2580	2200	4780
	west of Leckie Road	1755	1795	3550	2390	2375	4765
Leckie Road	south of Highway 97	220	160	380	395	370	765
	south of Baron	295	180	475	390	550	940

Note: (1)- for the purpose of the study Highway 97 operates in the east-west direction

2.4 Future Network Changes

No scheduled improvements to the road network in the study area were noted by the City and therefore the road network, including intersection laning and traffic controls, were assumed to remain the same as at present for analysis purposes.

2.5 Future Background Traffic Volumes

For the purpose of this study, three future horizon years were established for the analysis;

- Opening year 2020 279 rental units in 6 storey buildings and commercial
- Buildout year 2024 279 rental units in 6 storey buildings + 566 non-rental units in high rise buildings

- Buildout + 10 years 2034 279 rental units in low rise + 566 non-rental units in high rise buildings

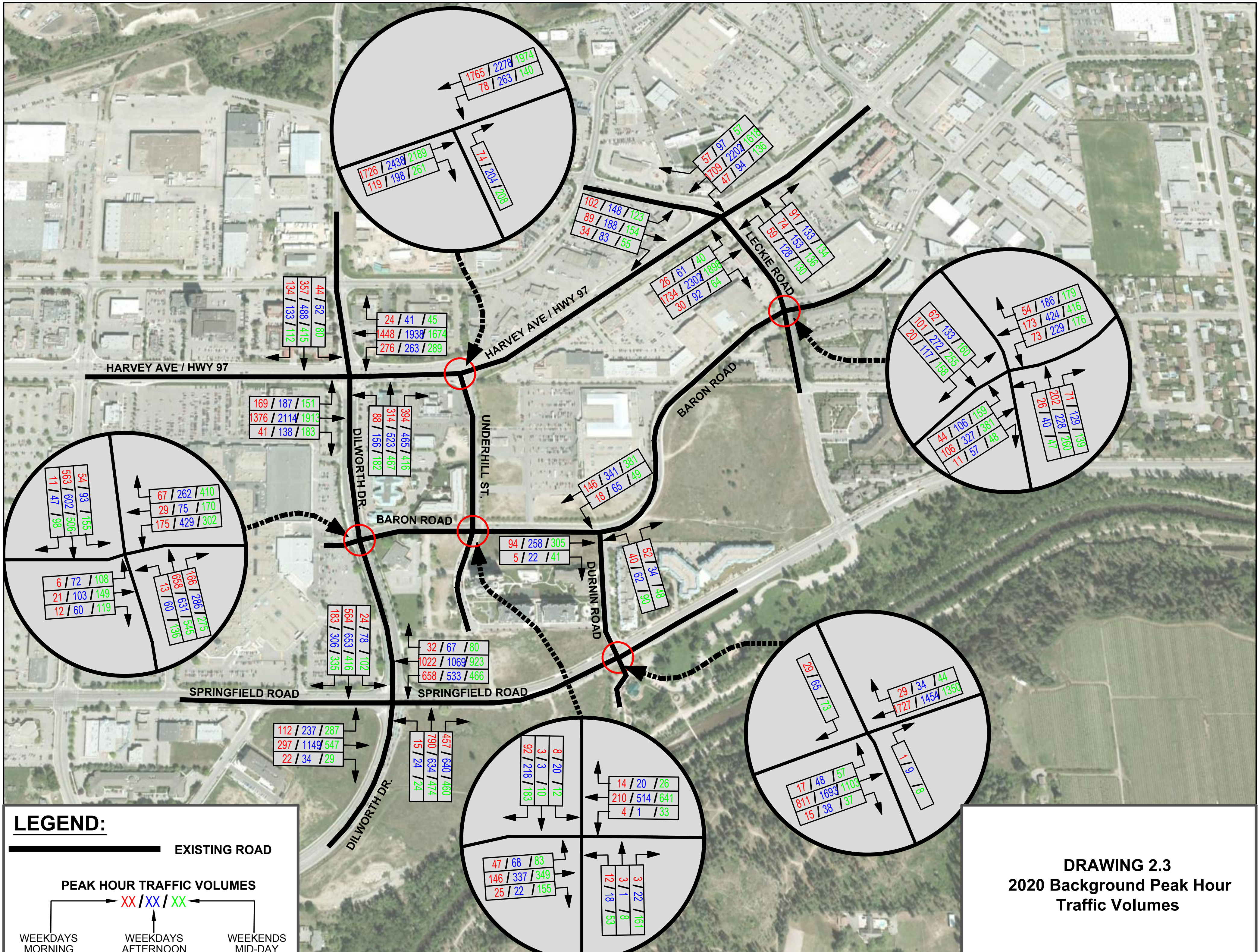
Future volumes at the selected intersections under the City of Kelowna's jurisdiction were established by growthing up 2018 volumes to these horizon years at a rate of 0.9% per annum compounded. A review of traffic data from the Ministry of Transportation and Infrastructure web site shows that traffic volumes on Highway 97 between Leckie Road and Underhill Street have seen a reduction in the number of vehicles over the period 2012 to 2016, based on the Average Daily Traffic Volumes, equating to a decrease of 5.2% per annum over these four years. The Ministry however requested that the traffic volumes at the intersections under their jurisdiction be growthed up by 1.0% per annum to the same three horizon years. This growth rate when compounded over 16 years to 2034 equates to a growth of 17% in the peak hour volumes on this highway. Given that this section of Highway 97 is already severely congested for eastbound traffic, especially at the Dilworth Drive intersection, and is far worse further northeast at the Glenmore Road /Beaver Lake Road intersection in Lake Country where queues can extend for up to 2.0 kms in peak periods, any growth in traffic volumes assumed on this road will be difficult to accommodate.

The resultant 'background' traffic volumes at the selected intersections for the three horizon years of 2020, 2024 and 2034 are presented in Drawings 2.3, 2.4 and 2.5 respectively.

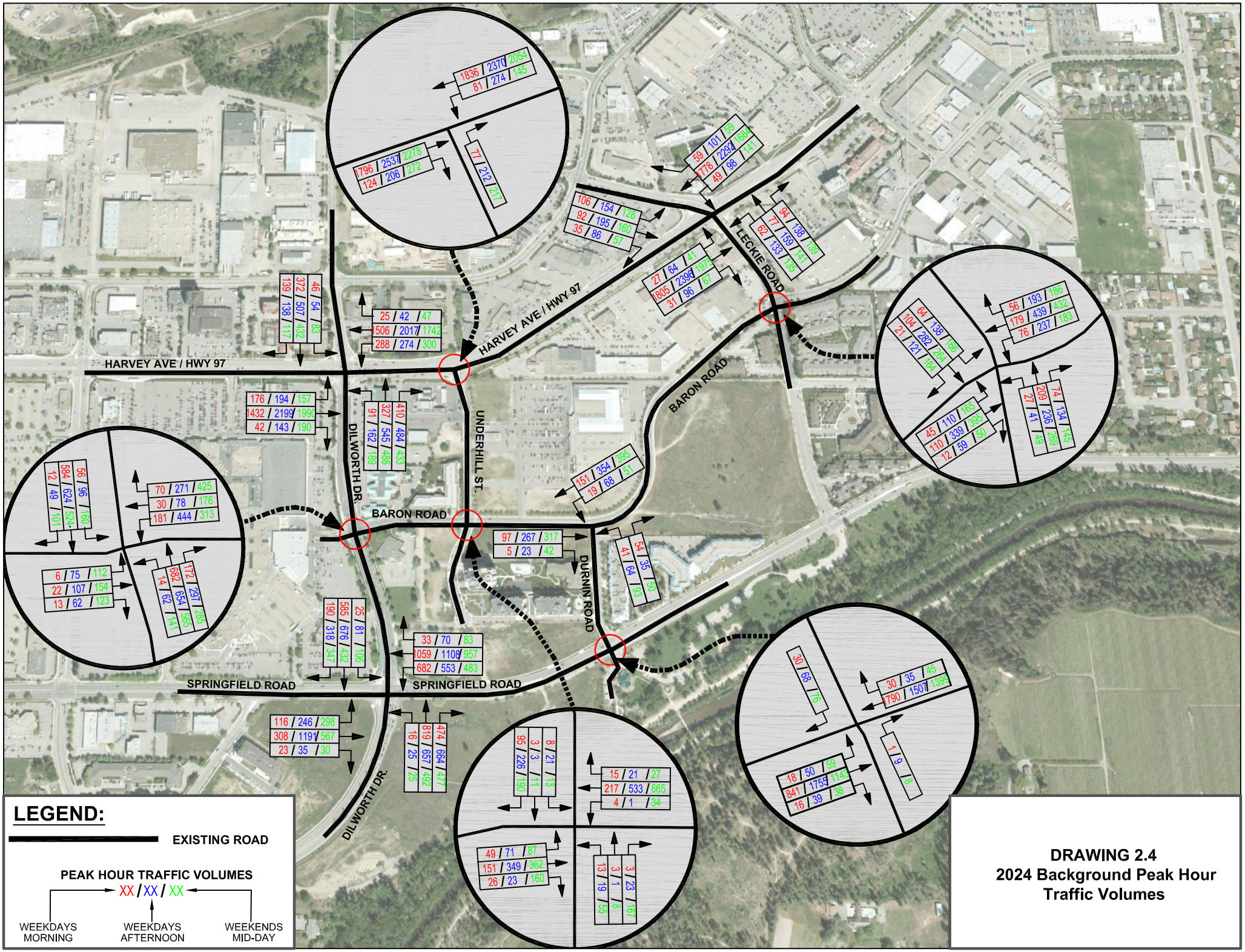
2.6 Intersection Analysis – Existing Conditions

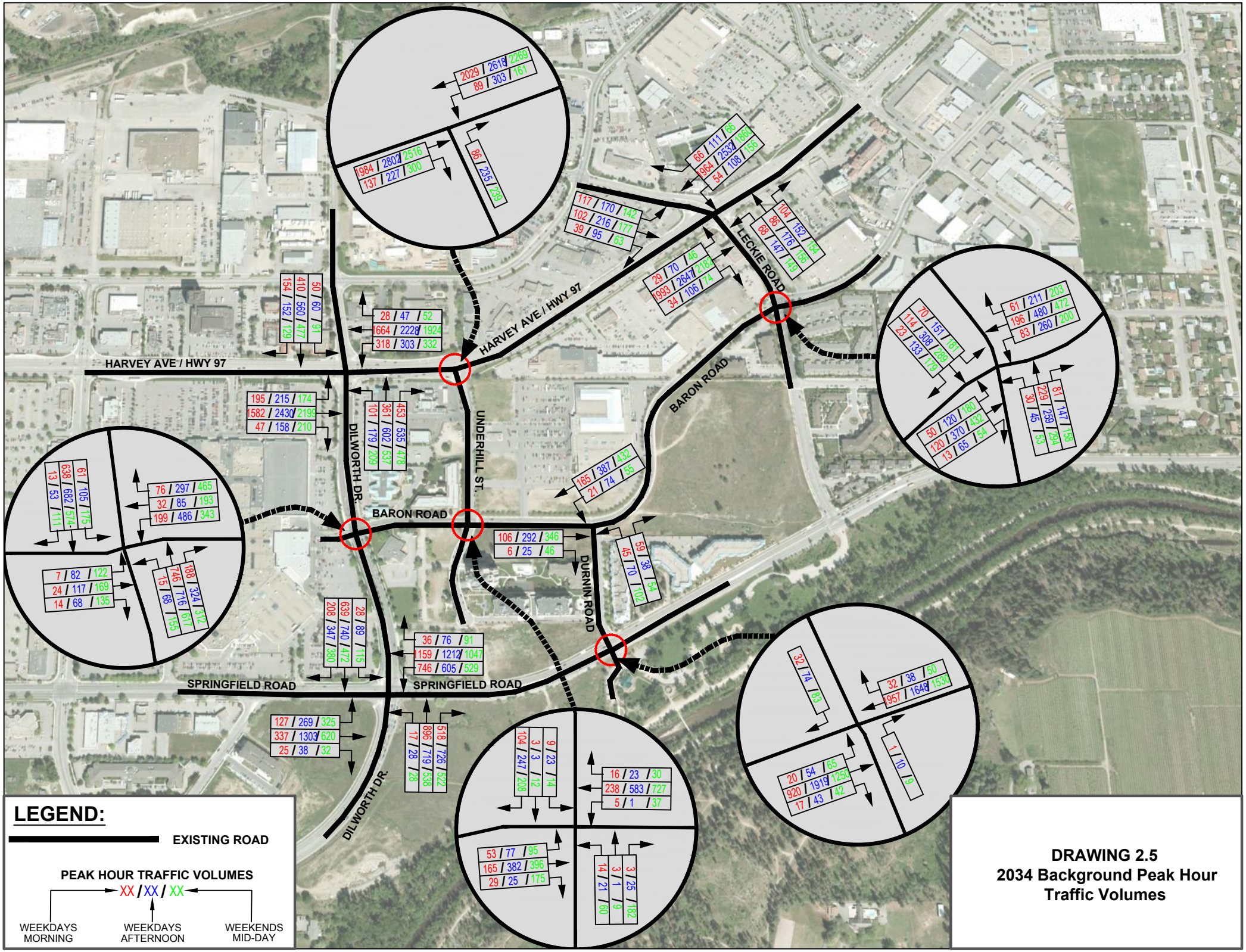
Each of the intersections included in the study were analysed at the selected time periods and horizon years under both background and combined conditions using Synchro/SimTraffic and applying the City of Kelowna's recommended parameter values. For signalized intersections, the operational analysis methodology gives three indicators for the overall performance of the intersection and for the individual turning movements. The first is the volume to capacity ratio (v/c) where the volume is the number of vehicles wishing to make a certain movement, and capacity is the maximum number of vehicles that can be accommodated in an hour. This takes into account the number of lanes available for the movement, whether the movement is protected or permitted, conflicting traffic, the cycle length, and the amount of green time the movement receives. The higher the v/c ratio, the more congested intersection becomes. When the v/c ratio is greater than 1.00, this indicates that more vehicles wish to make a given movement than are able to, due to the limited capacity. The second measure, the average delay per vehicle, is based on the cycle length, the green time for each movement and the v/c ratio. The third measure is the level of service which is established from the average delay. The larger the average delay and the higher the v/c ratio the worse is the level of service.

The operational performance of the transportation network was assessed with and without the development to determine the likely impact at all horizon years. Appropriate impact mitigation measures necessary to ensure traffic conditions remain acceptable after the development **or** the development does not further worsen background conditions were identified. It was requested that the capacity analysis results for the base or first horizon year were reviewed based on the following:



DRAWING 2.3
2020 Background Peak Hour Traffic Volumes


HARVEY AVE / HWY 97
HARVEY AVE / HWY 97
LECKIE ROAD
BARON ROAD
BARON ROAD
DILWORTH DR.
UNDERHILL ST.
DURNIN ROAD
SPRINGFIELD ROAD
SPRINGFIELD ROAD
DILWORTH DR.
LEGEND:
EXISTING ROAD
PEAK HOUR TRAFFIC VOLUMES
XX / XX / XX
WEEKDAYS MORNING
WEEKDAYS AFTERNOON
WEEKENDS MID-DAY
DRAWING 2.4
2024 Background Peak Hour Traffic Volumes


HARVEY AVE / HWY 97
HARVEY AVE / HWY 97
LECKIE ROAD
BARON ROAD
BARON ROAD
UNDERHILL ST.
DILWORTH DR.
DURNIN ROAD
SPRINGFIELD ROAD
SPRINGFIELD ROAD
DILWORTH DR.
LEGEND:
EXISTING ROAD
PEAK HOUR TRAFFIC VOLUMES
XX / XX / XX
WEEKDAYS MORNING
WEEKDAYS AFTERNOON
WEEKENDS MID-DAY
DRAWING 2.5
2034 Background Peak Hour Traffic Volumes

Signalized Intersections:

- Overall intersection Level of Service (LOS) is not to exceed LOS D;
- Overall intersection Volume to Capacity (v/c) ratios not to exceed 0.85 – unfortunately the newer versions of Synchro do not provide this information and therefore this criteria could not be used in examining the analysis results;
- Individual movement LOS is not to exceed LOS E;
- Individual movement v/c ratios not to exceed 0.90;
- 95th Percentile queue lengths do not exceed the available storage length.

Un-signalized Intersections:

- Individual movement LOS is not to exceed LOS D, unless movement volume is very low compared to the other movements
- Individual movement v/c ratios not to exceed 0.90
- 95th Percentile queue lengths do not exceed the available storage length.

When traffic generated by a development is added to an intersection and the v/c ratio of a specific movement that was less than 0.90 under background conditions is now greater than 0.90, then improvements must be identified to allow the intersection to operate at 0.90 or less. If the intersection was above 0.90 under background conditions, then the original v/c ratios must not be exceeded, i.e., the operation of the intersection should be no worse as a result of the development.

The City's 2030 OCP states in Policy 7.7.3 that users must accept "that a greater level of congestion will result from an increase in suburban growth and a reduced road construction program." This will be particularly true in the City's Urban Centres – including the Midtown Centre. This policy will therefore be taken into account when reviewing the analysis results at future horizon years and the threshold values for the overall intersection v/c ratio increased to 0.87 and the individual movement v/c increased to 0.92 at the 2024 horizon year, and to 0.90 and 0.95 respectively at the 2034 horizon year. It should be noted that this methodology was requested by the City to be used in a study for a major development in the same general area in 2011, so it is not a new consideration. At that time, the reduction was even more aggressive increasing from 0.90 in 2011 to 1.02 in 2023, just 12 years later.

The analysis was done using the above methodologies for the 2020, 2024 and 2034 future background conditions for each of the three peak hours. A summary of the results are given in Table 2.3 at the end of the descriptive results whilst the detailed results are given in Tables A1 to A3 in the Appendix. The key findings of the analysis are as follows:

(a) Springfield Road/Dilworth Drive: The analysis of this four-leg signalized intersection indicates that this intersection will be exceeding its capacity at the 2020 horizon year without any traffic from the proposed development superimposed on the road network. In the pm peak hour, the intersection's overall level of service is F which exceeds the maximum target of D, with a maximum individual movement v/c ratio of 1.57, well above the target for individual movements of 0.90. This is because of the high eastbound through movement on Springfield Road (1150 vehicles) coupled with a high opposing westbound left turn movement (530 vehicles). In the am peak hour, the intersection's overall level of

service is acceptable at D although the maximum individual movement v/c ratio is 1.23, this being because of the high volume of westbound vehicles turning left into Benvoulin Road. This movement is 645 vehicles at this time of the day in 2018 and all in just a single turn lane. When a left turn movement exceeds 300 vehicles, as a rule of thumb, it is typically in need of a second turn lane being provided, so this location is long overdue for such an improvement. In the Saturday peak hour there are comparatively no real problems although three of the movements have v/c ratios of 0.91 and 0.93. To enable this intersection to meet the City's performance criteria at this 2020 horizon year in all three time periods, it will be necessary to introduce a northbound right turn arrow to the signals, add second left turn lanes on both legs of Springfield Road, as well as add a third eastbound through lane on Springfield Road. By 2034, it will be necessary to add a third northbound through lane, convert the right turn lane into a free right turn lane with its own receiving lane and no yield sign, as well as the additional lanes previously identified for 2020 in order to meet all performance criteria. Without this additional northbound through lane at this 2034 horizon year, the intersection has an overall Level of Service E in the pm peak hour and six movements have v/c ratios higher than the 2034 target of 0.95 maximum, all this under projected background conditions.

The other issue at this intersection is the queue length for the eastbound and westbound left-turn movements. The existing laning configuration provides a storage lane of 160 metres for the westbound left-turn movement on Springfield Road. The calculated queue length in the 2020 pm peak hour is the same 160 metres, but in the am peak hour the queue length it is calculated to be 195 metres, and this exceeds the available storage length! This length can be increased so this is not a problem. The calculated length reduces to just 80 metres with the second left turn lane added. The available storage length for the eastbound left turn lane is 100 metres and this lane is provided as back-to-back with the westbound left-turn lane at the Springfield Road/Benvoulin Court intersection. The analysis indicated that at the 2020 horizon, a maximum eastbound queue length of 100 metres will occur in the Saturday peak hour and this can be accommodated. With the improvements in place, this requirement reduces to 70 metres. For the southbound left turn, the length provided is 35 metres and the maximum calculated length without any improvements is 30 metres.

(b) Springfield Road/Durnin Road: This intersection is, in theory, three legs. However, there is a fourth leg on the south side serving the Mission Creek Regional Park. The intersection is unsignalized and left turn and through movements out of the north and south legs onto and across Springfield Road are prohibited. There is a pedestrian crosswalk that is signal controlled. The analysis shows that at the 2020 horizon year, this intersection meets all performance criteria with overall Level of Service A in all three time periods. By 2034, the overall levels of service deteriorate to B and C, but all performance criteria are still met.

(c) Baron Road/Dilworth Drive: The analysis results showed that this signalized intersection will exceed the desired thresholds in 2020 under background conditions with Level of Service F and v/c ratio 1.10 for the lane sharing westbound through and left turn movements out of Baron Road in the pm peak hour, and with very similar results in the

Saturday peak hour. This no doubt means that this intersection is currently, in 2018, over capacity as well, and based on observations, this is no doubt correct. By changing the allocation of the movements but retaining the two approach lanes on both the east and west legs to have separate opposing left turn lanes and combined through and right turn lanes, together with an advance green for the westbound left turn movement out of Baron Road to southbound on Dilworth Drive, all movements except one operate with v/c ratios of 0.90 or less under 2020 background conditions. The only exception is the westbound left turn at 0.92. With a separate right turn lane added for vehicles arriving from the south on Dilworth Drive and turning into Baron Road, the performance problem at this intersection will be addressed entirely in both peak hours with the maximum v/c being 0.89. Since the right turn movement is over 280 vehicles per hour during the 2020 p.m. peak hour, the separate right turn lane increases the time available for the other movements. This configuration will then be adequate for background traffic to beyond 2034 when there will be a maximum v/c ratio of 0.93 in the pm peak hour for the eastbound left turn out of the Orchard Park Mall and the same 0.93 in the Saturday peak hour for the northbound left from Dilworth Drive into the Mall – at this horizon year, individual movements are permitted to have a maximum v/c ratio of 0.95.

The current lengths of the left turn lanes on the roads at this intersection are 50 metres on the south leg, 110 metres on the east leg and 55 metres on the north leg. The calculated maximum queue lengths under 2020 background conditions with no changes to the laning configuration are 50, 190, and 40 metres respectively. With the lane changes and right turn lane added, these lengths become 60, 110 and 40 metres respectively. By 2034 under background conditions they become 75, 100 and 55 metres. In both horizon years, it is the northbound left turn movement that exceeds the available storage length.

(d) Baron Road/Underhill Street: This is an unsignalized intersection with traffic on Baron Road having the through priority. Because of the number of vehicles travelling in both directions on Baron Road, vehicles making a left turn out of either leg of Underhill Street have difficulty and as a result the level of service for these movements is F in both 2020 and 2034 under background conditions. It is particularly bad on a Saturday with v/c ratios of 2.12 in 2020 and 4.72 in 2034. The number of vehicles making the two left turns are not high enough to meet the standard warrants for traffic signals being installed in either horizon year under background conditions, and drivers who get impatient with waiting for a suitable gap in the two traffic streams along Baron Road have an alternative route using Highway 97 and Leckie Road. No improvements are required at this intersection under these conditions.

(e) Baron Road/Durnin Road: This is an un-signalized three-legged intersection with priority to traffic on Baron Road. It operates at an overall Level of Service A in all three time periods in both 2020 and 2034 under background traffic conditions and this is very acceptable.

(f) Baron Road/Leckie Road: This four-legged intersection is signalized, and all movements, operate at acceptable levels of service in all three time periods in both 2020 and 2034.

(g) Highway 97/Dilworth Drive: This intersection is coordinated with the other signalized intersections along Highway 97. Due to high traffic volumes along Highway 97, the Ministry's signal timing favours through traffic on the highway. During the 2020 a.m. peak period, this intersection operates at a satisfactory overall level of service, but two individual movements exceed the recommended desired threshold of 0.90, these being the northbound left turn at LoS F and v/c 0.95, and the southbound left at LoS F and v/c 1.06. However, the intersection operates at an unacceptable overall LoS E in the pm peak hour with the northbound, southbound and westbound left turns as well as the eastbound through movement all exceeding the desirable 0.90 in this time period, with the highest being a very poor 1.38, this being the northbound left turn. In the Saturday peak hour, the overall v/c ratio is D, but these same three left turn movements again fail at Level of Service F and a maximum individual v/c ratio of 1.45. With the addition of second left turn lanes on both legs of the highway, separate right turn lanes approaching the intersection for both the eastbound and northbound right turns similar to that eastbound right turn lane at Spall Road, and separate left turn phases for the northbound and southbound left turn movements, the operation of this intersection is significantly improved to the point where there is only the northbound left turn from Dilworth Drive to westbound on the highway that exceeds the performance threshold of 0.90, and now has a maximum v/c ratio of 0.95 instead of 1.38. In 2034, the performance is similar but worse, with 12 movement/time periods at Level of Service F instead of eight in 2020, and a maximum v/c ratio now 2.23 for the northbound left turn. This intersection will now need second left turn lanes on both the north and south legs of Dilworth Drive as well as a free northbound right turn lane to achieve a significant improvement, and with these improvements most movements will operate in an adequate manner with only one with a v/c ratio greater than 1.00.

The existing available storage length for the westbound left turn movements is 120 metres. The analysis indicates that the theoretical westbound queue length in 2020 under background conditions in the three peak hours is 110, 140 and 120 metres respectively, and this is considered acceptable. The available storage length for the eastbound that turn movement is 60 metres, and here the theoretical queue lengths are 50, 80, and 55 metres respectively – so this is not a problem either. It will be difficult to increase the lengths of either of these left turn lanes because both extend back to un-signalized left turns, one into Underhill Street and the other into an Orchard Park Mall access. Eliminating either of these left turns in order to increase the length of the left turn lane would result in these vehicles making the equivalent turn at the Dilworth Drive intersection and this in turn would negatively impact the performance of this intersection.

The existing northbound left-turn lane on Dilworth Drive has 60 metres storage, and similar to those on Highway 97, an extension of this length would result in the elimination of an access into the Orchard Place Mall. Based on the analysis, the queue length of this movement exceeds the existing storage capacity in the p.m. and Saturday peak hours, requiring 115 and 110 metres respectively in the 2020 horizon year under background conditions. Field observations confirm that this storage lane restriction is currently a problem.

(h) Highway 97/Underhill Street: Traffic movements at this three-legged intersection are restricted to right in and left in from the highway to Underhill Street as well as right out onto the highway. Under 2020 background conditions, the overall intersection as well as all movements operate at very acceptable levels with the maximum being a v/c ratio of 0.68 for the westbound left turn from Highway 97 into Underhill Street. In 2034, this movement will operate at Level of Service F and a v/c ratio of 1.44. This is the only movement that experiences any delays and there are no possible improvements that can be made short of prohibiting the movement or signalization – and neither are really possibilities. Drivers waiting to make this turn must simply wait for the eastbound traffic on the highway to be stopped at the signals at the Dilworth Drive intersection which is just 160 metres to the west. Once that occurs, all vehicles waiting in the left turn lane will typically clear without any further delay. If this movement was to be prohibited, the vehicles making this movement would make the same movement at Leckie Road or Dilworth Drive. The westbound left turn movement at both of these intersections are already over capacity and eliminating this movement at this intersection would only add to the problems at these other two intersections.

Table 2.3: Summary of Intersection Analysis Results Background PM peak Hour

Intersection	Horizon Year	Overall LoS	Max V/C	Improvements	Max V/C w/Improv
Springfield/Dilworth	2020	F	1.57	2 EBL, 3 EBT, 2 WBL, NBR arrow	0.86
	2034	F	1.77	Same as for 2020 + 3 NBT, free NBR	0.93
Springfield/Durnin	2020	A	0.71	none	
	2034	C	0.80	none	
Baron/Dilworth	2020	D	1.10	1 EBL, 1 EBTR, 1 WBL, 1 WBTR, NBR	0.89
	2034	E	1.40	Same as for 2020	0.93
Baron/Underhill	2020	B	0.80	none	
	2034	B	1.32	none	
Baron/Durnin	2020	A	0.26	none	
	2034	A	0.33	none	
Baron/Leckie	2020	C	0.90	none	
	2034	D	0.95	none	
Highway/Dilworth	2020	E	1.38	2 EBL, EBR, 2 WBL, NBR, SBL & NBL phases	0.95
	2034	F	2.23	2020 + free NBR, 2 SBL, 2 NBL	1.01
Highway/Underhill	2020	A	0.68	none	
	2034	F	1.44	none	
Highway/Leckie	2020	D	1.94	2 NBL, SBR, EBL & WBL phases	0.86
	2034	D	2.22	2020 + EBR	0.94

(a) Highway 97/Leckie Road: Under 2020 traffic background conditions, this intersection operates at an acceptable overall level of service in all three peak periods. However, in the am peak period, one movement, the northbound left turn out of Leckie Road, operates at a Level of Service F, albeit with a v/c ratio of 0.86. In the p.m. peak hour, the individual problems are worse with the two left turns off the highway operating at LoS F and v/c ratios of 1.27 and 1.94. The introduction of separate left turn phases for the two left turns off of the highway together with a second northbound left turn lane on Leckie Road and a separate southbound right turn lane would eliminate all these problems and enable the

intersection to operate in an acceptable manner. In 2034 it will be necessary to upgrade the existing free eastbound right turn feature to a full separate right turn lane.

The existing westbound left-turn lane on the highway is 140 metres of storage which is more than adequate. The eastbound left turn lane length is just 35 metres of storage and this too is adequate.

A summary of the analysis results for the pm peak hour under background conditions for each of the intersections analysed is presented in Table 2.3.

2.7 Transit Service

There is an existing transit exchange located on the west side of the Orchard Park Shopping Centre which is on the west side of Dilworth Drive. This exchange is accessed from the subject property via pedestrian crossings across Dilworth Drive at the Springfield Road and Baron Road intersections and then a walk through the Centre property. The exchange is approximately 580 metres from the Dilworth Drive/Baron Road intersection if walking around the outside of the buildings in the mall but 460 if walking through the mall. Typically, a walking distance of 400 metres (five to 10 minutes walk) is considered reasonable for access to a transit stop. Therefore, the exchange is slightly beyond a reasonable walking distance of the site. However, this is a transit exchange with a shopping centre adjacent and does have more services offered than just a regular on-street transit stop, in terms of both transit services and attractions to fill in time while waiting.

Three bus routes servicing this exchange exit the exchange and travel past the proposed development site. These are:

- *Route #8* – University/OK College with an approximately 40 minutes service in both the a.m. and p.m. peak hours running between the OK College and UBCO via the Orchard park exchange traveling along Baron Road between the Mall and Highway 33 then north on Rutland Road.
- *Route #97* – Okanagan running along Highway 97 between Westbank, the edge of Downtown Kelowna, and UBCO, passing along Highway 97 just 260 metres north of Baron Road, with a 30 minute service in the peak hours; and
- *Route #11* –Rutland serving the south and east Rutland area again with a 40 minute service in the peak hours, this time via Springfield Road between Cooper Road and McCurdy Road East at Craig Road.

2.8 Pedestrian & Bicycle facilities

Pedestrian sidewalks are provided along each side of each of the roads in the study area and there are pedestrian crossings incorporated into each of the signalized intersections being considered in the study. At the un-signalized intersection of Baron Road/Underhill Street, there is a pedestrian crosswalk across Baron Road on the east side of the intersection but no crosswalks across either leg of Underhill Street. At the un-signalized intersection of Highway 97/Underhill Street, there are pedestrian crosswalks for those wishing to cross Underhill Street when walking along Highway 97.

There are existing designated bike lanes on both sides of Dilworth Drive south of Highway 97 and north of Enterprise Way, Baron Road and Springfield Road. There are no bike lanes on Highway 97 and consequently Springfield Road has been designated as the 'Highway 97 Alternate Cycling Route.' The City's published bicycle route map is included in this report as Drawing 2.6.

3.0 DEVELOPMENT TRAFFIC

3.1 Development Plan

The proposed development is located on the parcel of land that fronts onto Underwood Street and is bounded on the north side by Baron Road and the west side by Dilworth Drive. The size of the development is to be a total of 801,123 ft^2, with all but 2,500 ft^2 being residential. The 845 residential units provided within this floor area are expected to consist of:

- 279 rental units in two 6 storey buildings with 112 units in one and 167 units in the other, with an average floor area of 760 ft^2/unit,
- 496 non-rental units evenly split between two high rise buildings, and
- A further 70 non-rental units in the podium connecting the two high rise buildings.

The 2,500 ft^2 of commercial floor area is to be all on the ground level accessible to both residents living within the development as well as non-residents, who may be pedestrians walking past the development on either Dilworth Drive or Baron Street, or possibly arriving in the vehicle with the specific purpose of visiting one of the businesses.

Access to the development is to be taken off of Underhill Street. It is noted that the proposed development is located almost at the centre of the City's designated Midtown Urban Centre which extends along Highway 97/Harvey Road from Highway 33 to Ambrosi Road.

As was noted earlier, the development is expected to be phased as follows:

- Year 2020 279 rental units in 6 storey buildings and commercial
- Year 2022 283 units in a 35 storey high rise non-rental building
- Year 2024 283 units in a second 35 storey high rise non-rental building

Drawing 3.1 presents the proposed development concept plan that was provided for use in the study. It is recognized that this phasing may change but is considered to be a reasonable basis for determining the overall impacts of the development.

3.2 Trip Generation

(a) Base Trip Generation: For the commercial component, the ITE's Shopping Centre fitted curve rate (Category 820) will be used. In establishing the trip generation rates considered to be appropriate to the two types of residential units, the ITE rates were reviewed and rates considered appropriate were identified as documented earlier. However, the City required that Category 220 be used for the rental units and Category 230 be used for the non-residential units. The base trip generation rates for the rental units, based on the City's directive to use ITE average rates, are therefore:


a Memorial
Cemetery
LECKIE RD
BANKS RD
ENTERPRISE WAY
HARVEY AVE
BARON RD
ZIPRICK RD
Orchard Park
Shopping Centre
SPRINGFIELD RD
Mission Creek
Regional Park
MAYER RD
DRAWING 2.6
Existing Bicycle Routes

DRAWING 3.1

DEVELOPMENT PLAN

- 0.51 trips/unit in the am peak hour,
- 0.62 trips/unit in the pm peak hour and
- 0.52 trips/unit in the Saturday noon hour.

The ITE Trip Generation gives the Saturday peak hour rates for some categories but does not specify the time of the peak hour. The rates where given have however been assumed to apply to the Saturday noon hour.

For the non-rental units in the two high rise towers, the base trip generation rates, based on the ITE average rates will be:

- 0.44 trips/unit in the am peak hour,
- 0.52 trips/unit in the pm peak hour and
- 0.47 trips per unit in the Saturday noon hour.

The resultant vehicle trips generated by the development as the base numbers by applying these selected standard rates against the number of units completed and assumed occupied at each of the phases are therefore as given in Table 3.1 below.

Table 3.1: Base Trip Generation Calculations

		Phase 1	**Phase 2**	**Phase 3**
		2020	**2022**	**2024 & 2034**
Low rise rental	No. of Units	279	279	279
	Am peak hour	142	142	142
	Pm peak hour	173	173	173
	Saturday noon hour	145	145	145
High rise non-rental	No. of Units		283	566
	Am peak hour		125	249
	Pm peak hour		147	294
	Saturday noon hour		133	266
Total	No. of Units	279	562	845
	Am peak hour	142	267	391
	Pm peak hour	173	320	467
	Saturday noon hour	145	278	411

The directional splits between inbound and outbound were as provided by ITE for Categories 220 and 230. For the rental apartments, it was 20% inbound in the am peak, 65% inbound in the pm peak, and an assumed 50% inbound on a Saturday, whilst for the non-rental units the inbound splits were 17%, 67% and 50% respectively.

For the small commercial component of 2,500 ft^2, the ITE's shopping centre Category 820 fitted curve rate will be used. The trips generated by this use, after allowing for any internal trips within the site, will be added onto the residential trips.

(b) Adjusted Trip Generation/Mode Split: The above trips were considered to be the base or starting point trip generation numbers. It is noted as follows:

- City has requested that the developer "take steps to meet the City's Mode Split objectives".

- The City's current 2030 OCP under 7.7.1 reads: *Motorized Trips. Provide infrastructure to the Urban Centres based on the expectation that not more than 45% of total trips in the City Centre and other Town Centres will be by motor vehicle.* The year 2030 is within the study horizon years.
- The proposed development site is in the centre of the City's Midtown Urban Centre which means there will presumably be a significant number of jobs nearby and a high quality of transit service.
- The percentage of trips in the City taken by transit in a 24 hour period have increased from 1.7% in the 2007 survey to 4.8% in the 2013 survey. That is an increase in terms of percentage of more than 150% in just 6 years, or 25% per annum. That is considered a significant shift away from the auto to transit. The percentages in the two weekday peak hours will likely be even higher than these 24 hour numbers.
- The City's 2013 HHTS data showed that 6.9% of trips made by Midtown residents were by transit, compared to 4.8% City-wide. At the same time, 12.5% of trips were by walk and bicycle.
- The same survey indicated that 80.2% of trips by Midtown residents were by automobile – it is considered very likely that this percentage is significantly lower than the percentage of automobile trips taken by the residents of the buildings at which surveys were made for use in establishing the ITE trip generation rates. Using the ITE rates to establish the base rates is therefore considered to be a worst case scenario.
- The City has also directed this TIA to some of their other policy objectives such as the Pedestrian Bicycle Master Plan that seeks to: "Increase year-round walking and cycling so that within the next 20 years, 25 per cent of all trips less than five kilometers in length are made by walking or cycling". The 2034 horizon year is 17 years away and so if the City's objective is to be met, this percentage should be of the order of 20%.

Based on the above evidence that clearly indicates not only a desire by the City to reduce the use of the automobile but also indications that this is indeed happening, it was originally proposed that the trip generation rates selected for use in Item (h) above be reduced by 1.5% per annum, or 25% over the 17 years to the 2034 horizon year. The Ministry however expressed a concern and stipulated that this reduction be kept to not more than 1.15% per annum or a maximum of 20% by 2034. To keep the trip generation rates in future years at the same as is used for current conditions is to ignore the reality of the City's adopted objectives.

Along with the reduced automobile trip generation rates will come higher numbers of residents walking, biking and taking transit. This study will therefore endeavour to ensure that the pedestrian sidewalk, bike lanes and trails, and transit services are adequate to accommodate the increased trips by these modes.

The trips generated by the retail component will also be reduced with time by the same factors as for the residential trips, viz., 0.94, 0.915 and 0.80, and then added to the residential trips.

The modified vehicle trip generation numbers are therefore as given in Table 3.2 – note that the percentage reductions are included in this table.

Table 3.2: Modified Trip Generation Calculations

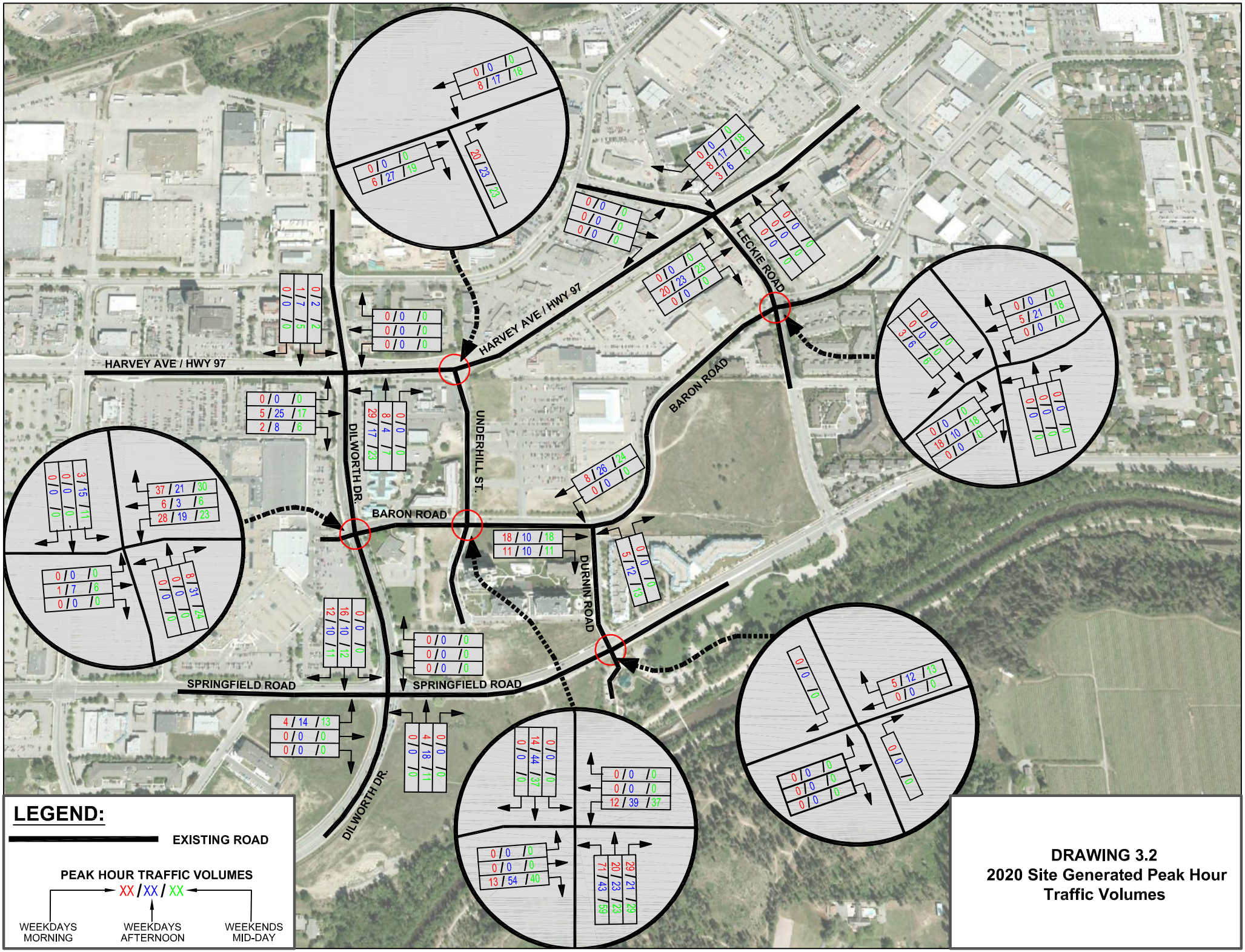
		Phase 1 (*100%)	**Phase 2 (*94.0%)**	**Phase 3 (*91.5%)**	**Phase 3 (*80%)**
		2020	**2022**	**2024**	**2034**
Low rise rental	No. of Units	279	279	279	270
	Am peak hour	142	133	130	114
	Pm peak hour	173	163	158	138
	Saturday noon hour	145	136	133	116
High rise non-rental	No. of Units		283	566	566
	Am peak hour		118	228	199
	Pm peak hour		138	269	236
	Saturday noon hour		125	243	213
Commercial	Size ft^2	5,000	5,000	5,000	5,000
	Am peak hour	16	16	16	16
	Pm peak hour	51	51	51	51
	Saturday noon hour	79	79	79	79
Total	No. of Units	279	562	845	845
	Am peak hour	158	267	374	329
	Pm peak hour	224	352	476	425
	Saturday noon hour	224	340	455	408

(c) Trips Between Uses: The ITE also have a methodology for establishing the number of trips between different uses within the same development – referred to as "Internal Capture". Consideration was given to applying this methodology to this development to establish the potential reduction in trips internal to the site resulting from the fact that some of the trips generated by the commercial component on the site will originate in the residential units on the same site and visa versa. After some initial calculations, it was decided that the number of such trips would be very small and any reduction from the above trip numbers was ignored.

3.3 Trip Distribution

The starting point for the assumed distribution of the generated vehicular trips was based on the distribution of turning movement information at the closest three intersections to the site provided by the City. This was then modified slightly taking into account a previous study in the area, personal knowledge of the area, and professional judgement. The results of this process served as the distribution for the pm peak hour; these numbers were reversed in direction for the am peak hour, and the Saturday was taken to be similar to the pm peak hour. The distributed trips will then be superimposed on the background volumes.

The distribution pattern assumed, as approved for use in the study, is therefore as given in Table 3.3. These percentages were then applied to the trips generated by the development and used in the analysis. This approach was used for the am, pm and Saturday peak hours. The resulting site volumes at the three horizon years are shown in Drawings 3.2 through 3.4. A more detailed analysis of the volumes at each intersection is covered in Section 4.3 of the report.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HARVEY AVE / HWY 97
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BARON ROAD
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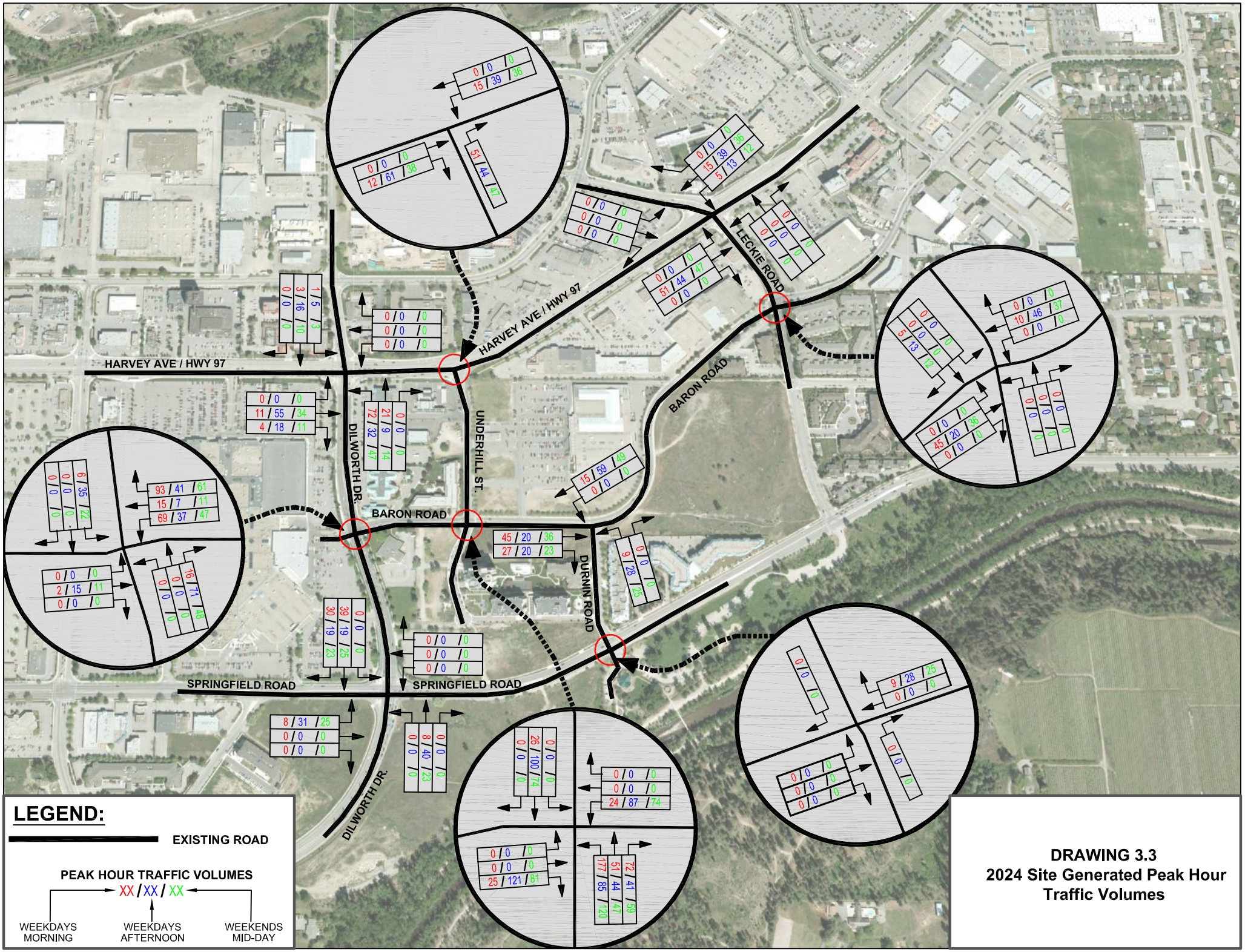
DILWORTH DR.
UNDERHILL ST.
DURNIN ROAD
LECKIE ROAD
SPRINGFIELD ROAD
SPRINGFIELD ROAD
LEGEND:
EXISTING ROAD
PEAK HOUR TRAFFIC VOLUMES
XX / XX / XX
WEEKDAYS MORNING
WEEKDAYS AFTERNOON
WEEKENDS MID-DAY
DRAWING 3.2
2020 Site Generated Peak Hour Traffic Volumes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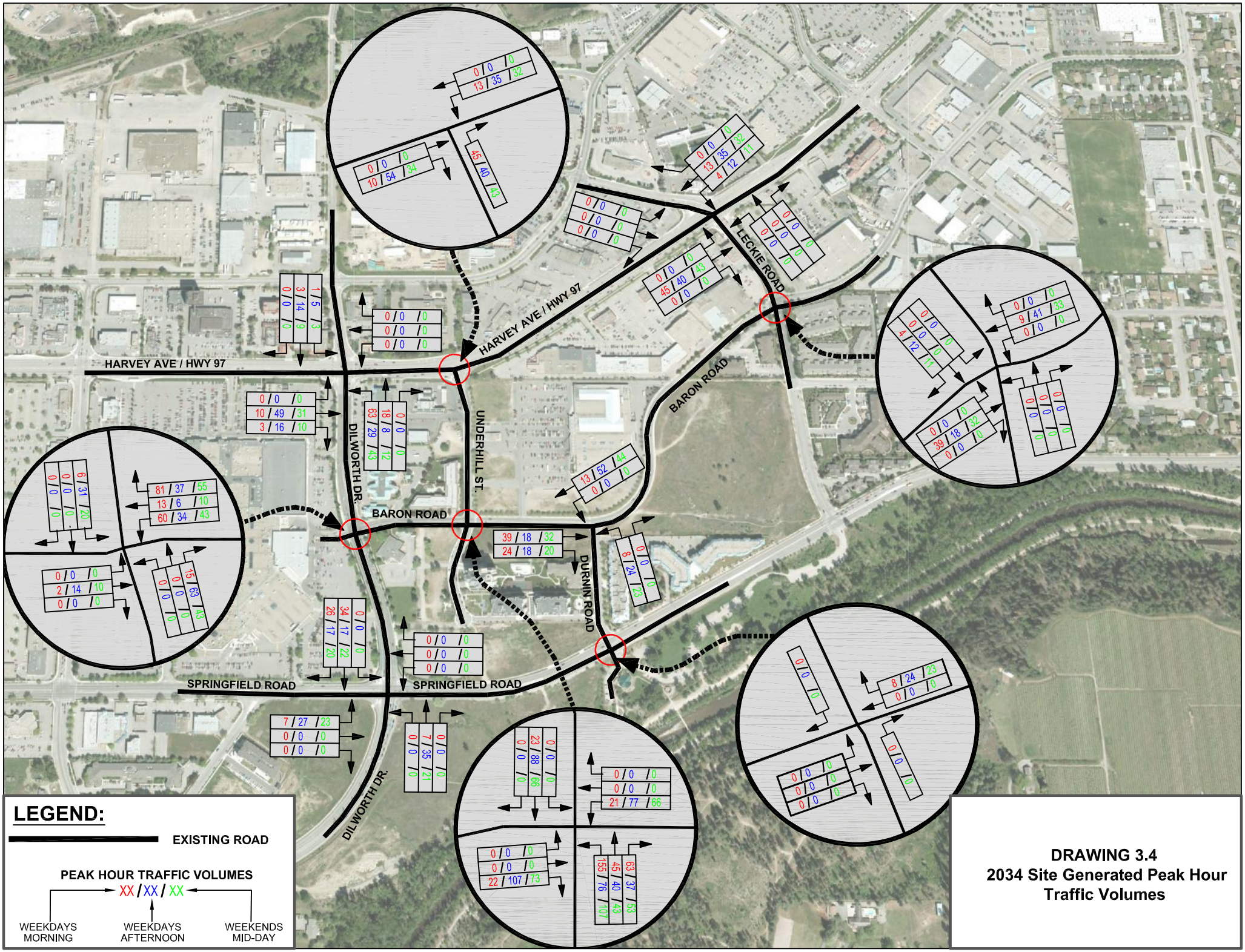
DURNIN ROAD
SPRINGFIELD ROAD
SPRINGFIELD ROAD
DILWORTH DR.
LEGEND:
EXISTING ROAD
PEAK HOUR TRAFFIC VOLUMES
XX / XX / XX
WEEKDAYS MORNING
WEEKDAYS AFTERNOON
WEEKENDS MID-DAY
DRAWING 3.3
2024 Site Generated Peak Hour Traffic Volumes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HARVEY AVE / HWY 97
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DILWORTH DR.
UNDERHILL ST.
DURNIN ROAD
SPRINGFIELD ROAD
SPRINGFIELD ROAD
DILWORTH DR.
LEGEND:
EXISTING ROAD
PEAK HOUR TRAFFIC VOLUMES
XX / XX / XX
WEEKDAYS MORNING
WEEKDAYS AFTERNOON
WEEKENDS MID-DAY
DRAWING 3.4
2034 Site Generated Peak Hour Traffic Volumes

Table 3.3: Distribution of Development Generated Trips

	AM peak hour		PM peak hour		SAT noon hour	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
West to Mall	3%	5%	5%	4%	5%	5%
West on Harvey	19%	24%	24%	19%	20%	21%
North on Dilworth	5%	7%	7%	5%	6%	6%
East on Harvey	26%	17%	17%	26%	21%	21%
West on Springfield	11%	10%	10%	11%	11%	10%
South on Benvoulin	11%	13%	13%	11%	10%	11%
East on Springfield	12%	9%	9%	12%	11%	10%
East on Baron	13%	15%	15%	12%	16%	16%

4.0 TRAFFIC IMPACT

4.1 Combined Traffic Conditions

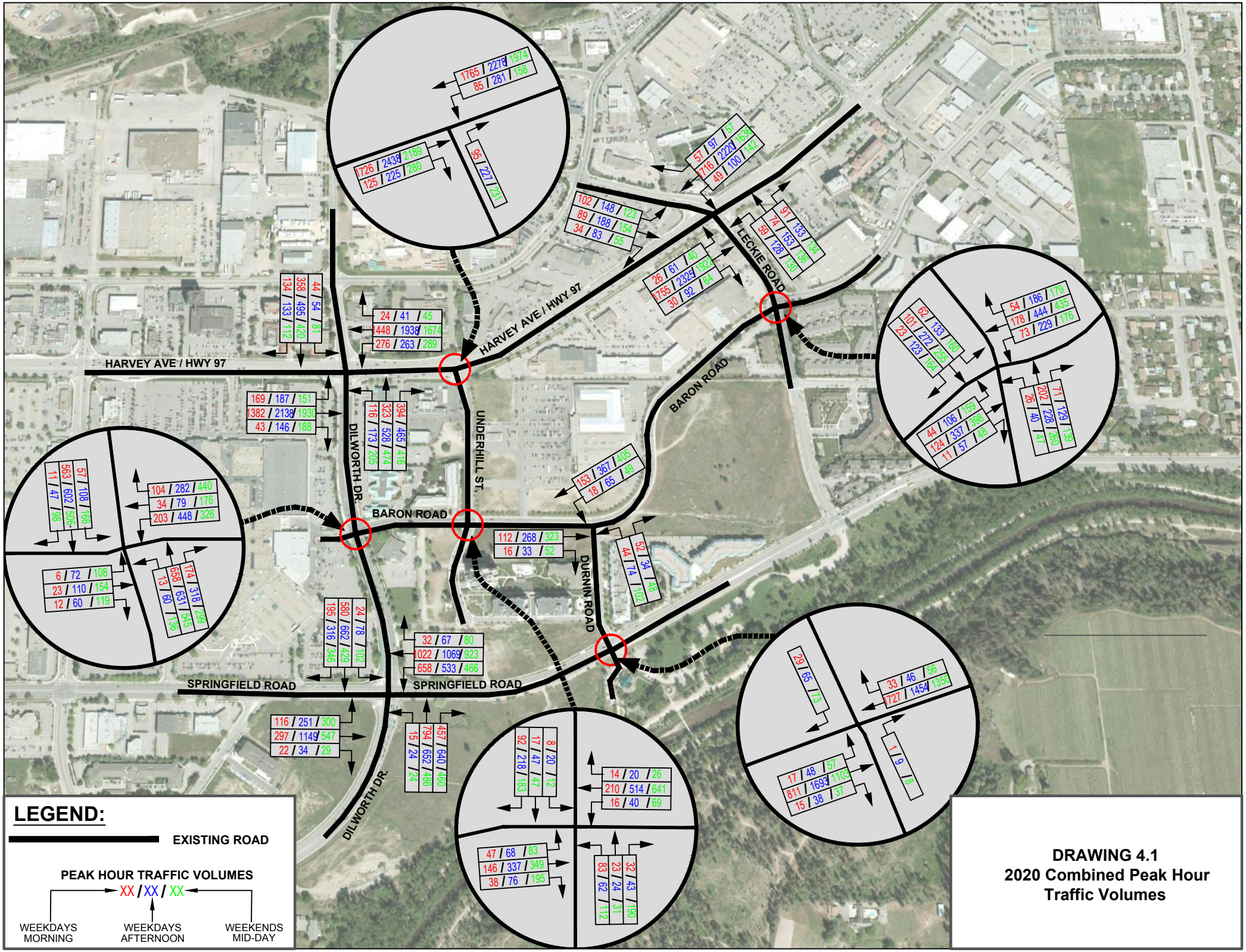
The site generated traffic based on the development phasing was superimposed onto the 2020, 2024 and 2034 background traffic volumes to produce the combined or post-development traffic volumes. The resulting combined traffic volumes for each horizon year shown in Drawings 4.1, 4.2, and 4.3.

The development traffic through each of the intersections at full build-out was compared to the background traffic at the 2034 horizon year, in terms of both the total traffic through the intersection and the movement with the highest volume of development traffic and the results of this comparison are given in Table 4.1.

Table 4.1 - Comparison of Background & Development Traffic for 2034 PM Peak Hour

Intersection	Total Traffic Entering Intersection			Highest Development Movement in Intersection			
	Background	Developmt.	% Inc.	Movement	Background	Developmt	% Inc.
Springfield/Dilworth	6152	96	1.6%	NBT	719	35	4.9%
Springfield/Durnin	3790	43	1.1%	WBR	38	24	63.2%
Baron/Dilworth	3083	184	6.0%	NBR	324	63	19.4%
Baron/Underhill	1413	425	30.1%	EBR	25	107	428%
Baron/Durnin	886	113	12.7%	WBT	387	52	13.4%
Baron/Leckie	2548	71	2.8%	WBT	480	41	8.5%
Highway 97/Dilworth	7468	121	1.6%	EBT	2430	49	2.0%
Highway 97/Underhill	6185	128	2.1%	EBR	227	54	23.8%
Highway 97/Leckie	6529	86	1.3%	EBT	2647	40	1.5%

This reveals that, in terms of total traffic through the intersection, the proposed development will add a maximum of 1.6% additional traffic at the three key signalized intersections of Springfield Road/Dilworth Drive, Highway 97/Dilworth Drive and Highway 97/Leckie Road, all of which are presently operating well over their practical capacity. It will also add 6.0% additional traffic at the Baron Road/Dilworth Drive intersection where it was known before the study was undertaken that the developer would need to make some improvements as this intersection, which is adjacent to the development site, as it will be a key access point for site generated traffic.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HARVEY AVE / HWY 97
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BARON ROAD
DILWORTH DR.
UNDERHILL ST.
DURNIN ROAD
SPRINGFIELD ROAD
SPRINGFIELD ROAD
DILWORTH DR.
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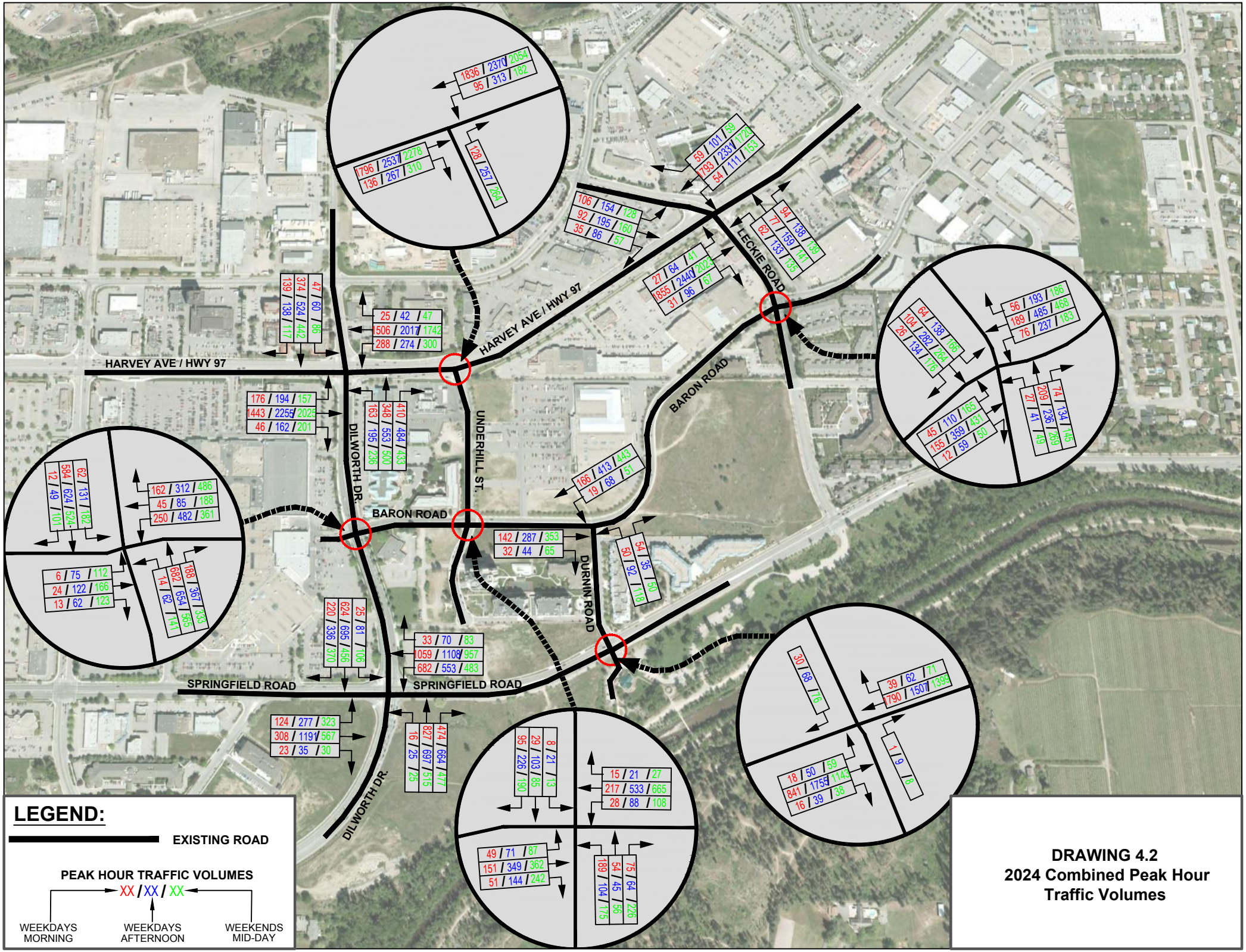
134 / 133 / 112
358 / 495 / 420
44 / 54 / 81
24 / 41 / 45
1448 / 1938 / 1674
276 / 263 / 289
169 / 187 / 151
1382 / 2138 / 1930
43 / 146 / 188
116 / 173 / 205
323 / 528 / 474
394 / 465 / 416
153 / 367 / 405
18 / 65 / 49
563 / 602 / 506
11 / 47 / 98
57 / 108 / 166
104 / 282 / 440
34 / 79 / 176
203 / 448 / 326
6 / 72 / 108
23 / 110 / 154
12 / 60 / 119
658 / 631 / 545
13 / 60 / 136
174 / 318 / 289
112 / 268 / 323
16 / 33 / 52
52 / 34 / 48
44 / 74 / 102
195 / 316 / 346
580 / 662 / 429
24 / 78 / 102
32 / 67 / 80
1022 / 1069 / 923
658 / 533 / 466
116 / 251 / 300
297 / 1149 / 547
22 / 34 / 29
15 / 24 / 24
794 / 652 / 486
457 / 640 / 460
92 / 218 / 163
17 / 47 / 47
8 / 20 / 12
14 / 20 / 26
210 / 514 / 641
16 / 40 / 69
47 / 68 / 83
146 / 337 / 349
38 / 76 / 195
83 / 62 / 112
23 / 24 / 31
32 / 43 / 190
62 / 101 / 23
133 / 272 / 123
150 / 235 / 184
54 / 186 / 179
178 / 444 / 435
73 / 229 / 176
44 / 106 / 124
159 / 337 / 111
398 / 57 / 48
26 / 40 / 41
202 / 228 / 260
71 / 129 / 139
29 / 65 / 13
33 / 46 / 56
727 / 1454 / 1350
17 / 48 / 811
57 / 1693 / 1103
15 / 38 / 37
1 / 9 / 18
LEGEND:
EXISTING ROAD
PEAK HOUR TRAFFIC VOLUMES
XX / XX / XX
WEEKDAYS MORNING
WEEKDAYS AFTERNOON
WEEKENDS MID-DAY
DRAWING 4.1
2020 Combined Peak Hour Traffic Volumes


HARVEY AVE / HWY 97
HARVEY AVE / HWY 97
LECKIE ROAD
BARON ROAD
BARON ROAD
DILWORTH DR.
UNDERHILL ST.
DURNIN ROAD
SPRINGFIELD ROAD
SPRINGFIELD ROAD
DILWORTH DR.
1836 / 2370 / 2054
95 / 313 / 182
1796 / 2537 / 2218
136 / 267 / 310
128 / 257 / 264
59 / 101 / 59
1793 / 2331 / 1726
54 / 111 / 153
106 / 154 / 128
92 / 195 / 160
35 / 86 / 57
94 / 138 / 139
77 / 159 / 141
62 / 133 / 135
27 / 64 / 41
1855 / 2440 / 2023
31 / 96 / 67
139 / 374 / 47
138 / 524 / 60
117 / 442 / 86
25 / 42 / 47
1506 / 2017 / 1742
288 / 274 / 300
176 / 194 / 157
1443 / 2255 / 2025
46 / 162 / 201
163 / 348 / 410
195 / 553 / 484
236 / 500 / 433
584 / 62 / 131
12 / 624 / 182
49 / 524 / 101
162 / 312 / 486
45 / 85 / 188
250 / 482 / 361
6 / 75 / 112
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13 / 62 / 123
14 / 682 / 188
62 / 654 / 367
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166 / 413 / 1443
19 / 68 / 57
142 / 287 / 353
32 / 44 / 65
50 / 92 / 54
118 / 35 / 50
220 / 624 / 25
336 / 695 / 81
370 / 456 / 106
33 / 70 / 83
1059 / 1108 / 957
682 / 553 / 483
124 / 277 / 323
308 / 1191 / 567
23 / 35 / 30
16 / 827 / 474
25 / 697 / 664
25 / 515 / 477
95 / 29 / 8
226 / 103 / 21
190 / 85 / 13
15 / 21 / 27
217 / 533 / 665
28 / 88 / 108
49 / 71 / 87
151 / 349 / 362
51 / 144 / 242
189 / 54 / 75
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64 / 139 / 139
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56 / 193 / 186
189 / 485 / 468
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45 / 110 / 165
155 / 359 / 431
12 / 59 / 50
209 / 74
236 / 134
41 / 145
49 / 269
30 / 68 / 75
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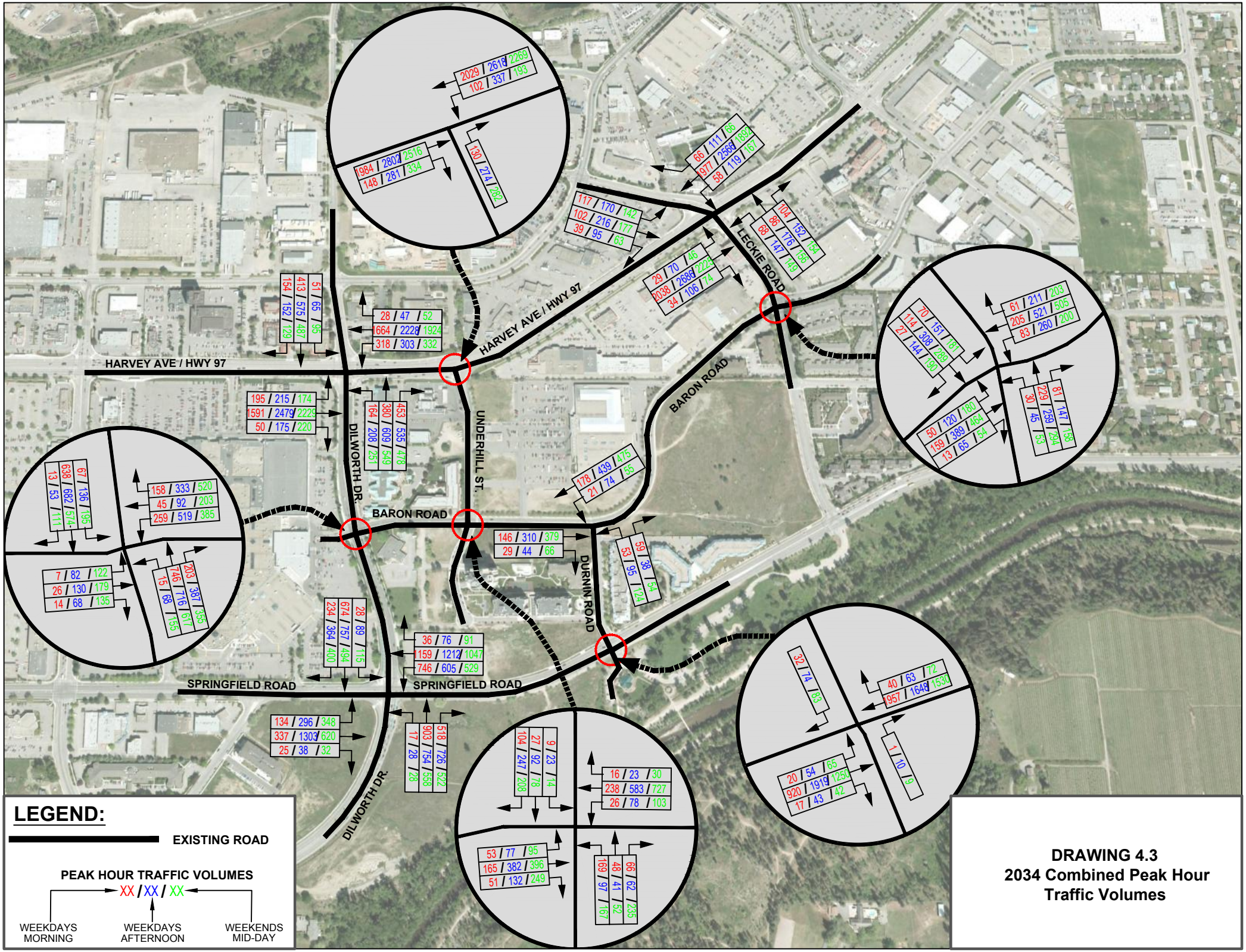
841 / 1759 / 1143
16 / 39 / 38
39 / 62 / 71
790 / 1507 / 1399
1 / 9 / 18
LEGEND:
EXISTING ROAD
PEAK HOUR TRAFFIC VOLUMES
XX / XX / XX
WEEKDAYS MORNING
WEEKDAYS AFTERNOON
WEEKENDS MID-DAY
DRAWING 4.2
2024 Combined Peak Hour Traffic Volumes


HARVEY AVE / HWY 97
HARVEY AVE / HWY 97
LECKIE ROAD
BARON ROAD
BARON ROAD
UNDERHILL ST.
DILWORTH DR.
DILWORTH DR.
DURNIN ROAD
SPRINGFIELD ROAD
SPRINGFIELD ROAD
LEGEND:
EXISTING ROAD
PEAK HOUR TRAFFIC VOLUMES
XX / XX / XX
WEEKDAYS MORNING
WEEKDAYS AFTERNOON
WEEKENDS MID-DAY
DRAWING 4.3
2034 Combined Peak Hour Traffic Volumes

4.2 Intersection Analysis

The same nine intersections were again analyzed, this time under combined conditions, and the key findings are provided below. The results are summarized in Table 4.2 whilst the details are included in the tables in the Appendix.

(a) Springfield Road/Dilworth Drive: The analysis of this intersection under 2020 combined conditions produced results very similar to those under background conditions with the overall intersection failing (Level of Service F) in the pm peak hour as before but with an acceptable overall D in the other two peak periods. Even the individual v/c ratios are very similar generally with only minor increases. The largest increase is for the eastbound left turn which goes from 0.93 to 0.99 on a Saturday peak hour, albeit still being Level of Service E. With a northbound right turn arrow added for this movement which has its own separate lane, and the southbound advance green removed, the performance of each movement is equal to or better than under background conditions with no improvements. The addition of the second left turn lanes to both the east and west legs as was identified under background conditions, and has been previously recommended in earlier traffic studies, eliminates almost all over-capacity movements, with the key over-capacity movement being the eastbound through - the proposed development does not add any traffic to this movement. In 2034 with the development fully constructed, if the same northbound right turn arrow added, then the intersection operates no worse than under background conditions. If all the improvements identified under background conditions for this horizon year are included, then this intersection meets all performance criteria in all three time periods and no further improvements are required. This is not surprising given that the development only increases the 2034 total background traffic volume passing through this intersection by 1.6%, and its highest contribution to an individual movement is 4.9%, this being the northbound through movement.

(b) Springfield Road/Durnin Road: This unsignalized intersection with restricted movements in and out of the north and south legs continues to operate in a very acceptable manner both in 2020 and 2034 with the development traffic superimposed.

(c) Dilworth Drive/Baron Road: With the development traffic superimposed, the overall performance of this intersection in 2020 is identical to that on the background conditions for all three time periods, with Level of Service B, D and D respectively. Once again it is only the westbound through and left turn movements in the shared lane on Baron Road that has Level of Service F with the v/c ratios increasing from 1.10 under background to 1.24 under combined in the p.m. peak hour, and from 1.12 to 1.22 in the Saturday peak hour. By applying the same laning change as was identified earlier under background conditions, this being to have separate opposing left turn lanes and combined through and right turn lanes, as well as add a new separate right turn lane for vehicles arriving from the south on Dilworth Drive and turning into Baron Road as was identified under background conditions, the performance problem at this intersection will be addressed in both peak hours. In 2034 it will be necessary to add a separate westbound right turn lane to the Baron Road approach to the intersection. This will push the westbound left and

through lanes further south and this will improve the alignment of these lanes on Baron Road with the equivalent lanes in the mall access opposite.

Clearly the length of the left turn queue on Baron Road currently exceeds the available storage by almost 100%. Even with all of the laning improvements in place, the queue length is still 130 metres in the pm peak hour. Unfortunately, there is no ability to easily increase this because it is back-to-back with the left turn lane for eastbound traffic on Baron Road turning into the north leg of Underhill Street. One option is to create side-by-side left turn lanes.

(d) Baron Road/Underhill Street: This unsignalized intersection again fails in the same manner as under background conditions because of the difficulty vehicles have making a left turn or through movement out of both legs of Underhill Street onto or across Baron Road because of the constant two-way flow of vehicles along this road. The signalization of this intersection keeping the same laning as at present, i.e., a single approach lane on both legs of Underhill Street, solves this problem for 2020. The standard warrants for traffic signals are met at this horizon year. There are already suitable left turn lanes on Baron Street but not on Underhill Street. The curb to curb with of both legs of Underhill Street are approximately 12.6 m. It is recommended that left turn lanes be provided on these two legs by moving the existing centre line and providing two approach lanes at Baron Road. This will require prohibiting on-street parking on both sides for the first 30 metres north and south of Baron Road. This then provides adequate capacity at this intersection for the 2034 horizon year with the development fully constructed and occupied.

(e) Baron Road/Durnin Road: This unsignalized intersection will continue to operate in a very acceptable manner both in 2020 and 2034 with the development traffic superimposed.

(f) Baron Road/Leckie Road: This signalized intersection continues to operate at an acceptable overall level of service in 2020 with the development traffic superimposed. The maximum v/c ratios for individual movements are only slightly different from those under background conditions with an adjustment to the signal timings. The same is true in the 2034 horizon year.

(g) Dilworth Drive/Highway 97: Under 2020 combined conditions, the operation of this intersection is almost identical to that under background conditions. The overall levels of service are identical, the movements in each of the time periods operating at Level of Service F are identical, and the v/c ratios for these movements are also very similar. The only movement changing significantly is the northbound left turn from Dilworth Drive onto Harvey Avenue in the pm peak hour, increasing from 1.38 under background to 1.56 under combined. The addition of northbound and southbound left turn phases for Dilworth Drive traffic improves the performance of the intersection so that all movements are equal to or better than under background conditions. The addition of separate right turn lanes on the north and south legs would result in most movements performing significantly better than under background conditions with no improvements. The only

movements with Level of Service F would then be the westbound left off the highway, to which the proposed development adds no traffic, and the southbound through to which the development adds just 14 vehicles.

In 2034, the overall level of service is the same in all three time periods as under background conditions at the same horizon year. Furthermore, the movements operating at a failing level are all the same as under background conditions, with just slight increases in the v/c ratios. Just as under 2020 conditions, the addition of northbound and southbound left turn phases for Dilworth Drive traffic improves the performance of the intersection so that all movements are equal to or better than under background conditions. The introduction of full right turn lanes on the west, north and south legs when the opportunity arises would make a significant improvement to the failing movements.

Under combined condition in 2020 peak hours, the 95th percentile queue lengths for the westbound and eastbound left turn lanes do not change. The northbound left-turn queue length increases in all three peak hours as would be expected with additional traffic generated by any new development in the Dilworth Drive/Benvoulin Road corridor. However, with northbound and southbound advance green phases introduced, the queue length reduces in all three time periods.

(h) Highway 97/Underhill Street: This intersection, at which movements are restricted to right-in/right-out/left-in, continues to operate in an acceptable manner under 2020 combined conditions – this includes the westbound right turn movement which must wait for suitable gaps in the eastbound traffic on the highway. By 2034, the westbound left-in movement into Underhill Street faces a level of service of E in the pm peak hour and D in the Saturday peak hour. This means that the vehicles making this turn will either wait patiently for a suitable gap in the eastbound traffic when the signals at Dilworth Drive turn to green for the north-south traffic flow, or they will find an alternative route via either Leckie Road or Dilworth Drive. The length of this left turn lane on Highway 97 is 95 metres which is adequate storage for the vehicles making this movement until beyond 2026 based on current traffic projections.

(i) Highway 97/Leckie Road: At the 2020 horizon under combined conditions, the Synchro analysis indicates that this intersection will also operate at similar performance levels as under background conditions, with the same overall intersection level of service in all three time periods and the same movements exceeding the desired Level of Service E and maximum v/c ratio of 0.90. Furthermore, there is virtually no change in the v/c ratios, no doubt because the development only contributes a 1.3% increase to the background traffic at this intersection at full build-out.

The addition of eastbound and westbound left turn phases for Highway 97 traffic improves the performance of the intersection so that all movements are equal to or better than under background conditions. This conclusion applies to both the 2020 and 2034 horizon years. There is no change in the lengths of the left turn queues at this intersection.

A summary of the results for each of the intersections under 2020 and 2034 combined conditions is given in Table 4.2. This shows that the improvements required in order to mitigate the impact of the additional traffic on the road network are the addition of a right turn arrow for northbound traffic on Benvoulin Road turning right onto Springfield Road and the addition of a right turn lane for northbound traffic on Dilworth Drive turning right into Baron Road.

Table 4.2: Summary of Intersection Analysis Results Combined PM peak Hour

Intersection	Horizon Year	Overall LoS	Max V/C	Additional Improvements	Max V/C w/Improv
Springfield/Dilworth	2020	F	1.57	NBR arrow	1.27
	2034	F	1.77	As for 2020	1.55
Springfield/Durnin	2020	A	0.71	none	
	2034	C	0.80	none	
Baron/Dilworth	2020	D	1.24	1 EBL, 1 EBTR, 1 WBL, 1 WBTR, NBR	0.75
	2034	F	1.56	As for 2020 + WBR	0.91
Baron/Underhill	2020	F	3.62	signalize	0.70
	2034	E	2.83	signalize	0.45
Baron/Durnin	2020	A	0.23	None	
	2034	A	0.48	None	
Baron/Leckie	2020	C	0.90	none	
	2034	D	0.95	none	
Highway/Dilworth	2020	E	1.56	NBL & SBL phases	1.11
	2034	F	2.74	NBL & SBL phases	1.31
Highway/Underhill	2020	A	0.73	none	
	2034	F	1.59	none	
Highway/Leckie	2020	D	2.06	EBL & WBL phases	0.96
	2034	D	2.47	EBL & WBL phases	1.11

4.3 Site Access

Access to the site is proposed to be by a single access on Underwood Street. An analysis was undertaken of this access at full build-out and this revealed that one entrance and one exit lane would be sufficient. Furthermore, there is no need for a centre left turn lane on Underwood Street since all traffic to and from this development will be oriented to the north, i.e. to Baron Road in either direction or further north on Underwood Street.

4.4 Pedestrian Access

(a) Sidewalks: As was noted earlier, there are already sidewalks along both sides of most of the roads included in the study, with the only exception being the south side of Springfield Road adjacent to the undeveloped parcels of land east and west of Benvoulin Road. It is not very likely that residents of the proposed development will have a need or desire to walk along the south side of Springfield Road. All of the existing sidewalks appear to be in good condition and no improvements and/or additions to the existing sidewalk network is required.

(b) Pedestrian Crosswalks: All of the signalized intersections included in the study have full provision for pedestrians, not necessarily across all four legs because of traffic capacity considerations. There are signalized pedestrian crosswalks across Springfield Road at

Durnin Road and across Baron Road at Durnin Road. There is also an un-signalized pedestrian crosswalk on Baron Road at Underhill Street. As this intersection is to be signalized in conjunction with the proposed development, it is recommended that pedestrian crosswalks be provided on all four legs of this intersection as well.

(c) Key Pedestrian Routes: The key pedestrian routes like a to be taken by residents of the proposed development will be across Dilworth Drive to the Orchard Park Mall and on to the transit exchange on the west side of the mall, north on either Dilworth Drive or Underhill Street to the transit stops on Highway 97, and south on Dilworth Drive or Durnin Road to transit stops on Springfield Road. It is noted that there is a transit stop on Springfield Road just east of Durnin Road and this is less than 400 metres from the proposed development and therefore considered within an acceptable walking distance.

(d) Pedestrian Access to the Development Site: It is assumed that the primary pedestrian access to the development site will be adjacent to the vehicular access on Underhill Street and that a pedestrian path will be provided from this entrance to each of the buildings. Given the large attraction for residents to the west of the site, this being the Orchard Park Mall and transit services, it is recommended that a gate be provided from the site out to Dilworth Drive, ideally approximately midway between Baron Road and Springfield Road, thus providing easy access to the signalized intersections across Dilworth Drive at both of these roads. In addition, pedestrian paths should be provided connecting each of the buildings to this gate.

(e) Haynes Road: During the preparation of the scope for the study, the City requested that Haynes Road, which runs along the south side of the subject property connecting Dilworth Drive and Underhill Street, be constructed as a pedestrian walkway. It appears to be already constructed as such and available for use by pedestrians, so it is assumed that this request means some minor upgrades to this pedestrian facility will be required. With a pedestrian gate from the new development site directly out to Dilworth Drive as is recommended above, it is doubtful that residents of the development will see a need to use this walkway and that it primarily benefits the residents of the existing residential towers on the east side of Underhill Street.

4.5 Transit

Based on the location of the existing transit exchange at the Orchard Park Shopping Centre and the transit services running along Springfield Road, Baron Road and Highway 97, and the fact that the transit stops on these three routes are all less than 400 metres from the development, the site is considered to be well served by transit. The following are the main characteristics of the available transit service:

- Direct and convenient access to buses: As noted, although the transit exchange is located close to the proposed residential development, most transit passengers generated by the development will likely access their particular route on one of the three east-west roads within a short walk of the site.

- Frequent bus service with and a choice of bus routes: With multiple routes passing close to the site and running out of the exchange, residents will have access to a full range of destinations around the Kelowna region. Furthermore, residents will be familiar with the routes and will therefore minimize the amount of time waiting for services. This close proximity to choice of transit routes makes this development ideally suited to justify using lower vehicular trip generation rates, as has been done in this study.

From the above, it is concluded that the development has good accessibility to transit services. Measures that could be taken to encourage transit usage are as follows:

- Provide monthly transit passes to new residents of the development for the first year of residency – this will encourage residents to try using the transit services and after use for a while, they may become convinced that this is the preferred travel mode, especially to work and college.
- Request BC Transit to consider relocating the existing transit stop for Route 11: Rutland on Springfield Road at Durnin Road closer to the Dilworth Drive intersection in order to enable this route to better serve the proposed development.
- Encourage the owners of Orchard Park Shopping Centre to provide a more pedestrian-friendly route for pedestrian walking from the Dilworth Drive access opposite Baron Road to the mall building instead of having pedestrians have to walk through the mall's parking lot and potentially conflict with manoeuvring vehicles.

4.6 Bicycle Facilities

As was noted earlier, there are bicycle lanes on Springfield Road, Dilworth Drive and Baron Road. There is no need to have bicycle lanes on Underhill Street south of Baron Road since this is a low-volume local road in a residential neighbourhood. North of Baron Road, Underhill Street would be used by cyclists primarily to travel to and from Highway 97 and cyclists are not supposed to be riding along this highway.

Bicycle lockers should be provided in each of the buildings of the development for the residents. It assumed that this is a standard requirement of the City of Kelowna when approving residential developments. The pedestrian gate from the development out to Dilworth Drive should be of sufficient width to allow cyclists to use this as well – to walk their bikes out to access the bike lanes on this road or to cross Dilworth Drive at either of the signals.

4.7 Safety Considerations

All of the intersections considered in this study appear to have been constructed to current or at least recent standards. Based on a site inspection:

- all but one of the curb radii at the intersections appear to be adequate to accommodate standard vehicles, with the only one that is unusual being at the southeast corner of Dilworth Drive/Baron Road;
- none of the intersections have real visibility concerns, although the presence of numerous trees at the intersection of Baron Road/Leckie Road gives a very distinct feeling of being closed in with reduced visibility – however, this intersection is signal controlled and visibility is not normally an issue at such intersections;

- there is good provision for pedestrians crossing at each of the intersections, both signalized and unsignalized, with the one exception of Springfield Road/Dilworth Drive where there is a well-worn trail leading from the southeast corner of the intersection towards the greenway and no pedestrian crossing of the east or south legs of this intersection to enable pedestrians to safely cross the intersection to access this trail;
- there is a lack of right turn lanes in the eastbound direction along Highway 97 between Cooper Road and Leckie Road that both reduce the capacity of Highway 97 in this direction AND are the potential cause of rear-end accidents as through vehicles suddenly have to stop for the vehicle in front making a right turn - these are ideally needed at
    - the access to the Orchard Park Shopping Centre,
    - Dilworth Drive – the current right turn is particularly bad because right turning vehicles must stop for pedestrians and this causes a back-up into the so-called HOV lane,
    - the two accesses into the Staples/Safeway shopping centre, and
    - Leckie Road –

  the lack of such right turn lanes severely reduces the effectiveness of the high-occupancy lane along here because of the high volume of vehicles slowing down to make the right turn at these various locations.

5.0 CONCLUSIONS & RECOMMENDATIONS

5.1 Background Traffic Conditions

(a) The proposed development is located on Underhill Street on the south side of Baron Road and the east side of Dilworth Drive. It is to provide 845 residential units and a small 2,500 sq.ft. of commercial floor area. The study area was bounded by Springfield Road, Dilworth Drive, Highway 97 and Leckie Road.

(b) The intersection of Dilworth Drive/Highway 97 has the highest traffic volumes of the intersections considered in the study, with this peak occurring in the weekday p.m. peak hour at 6,390 vehicles. The two-way volumes on the east and west legs of Highway 97 at this intersection are 4,680 veh/h, and these volumes are almost the same two-way volumes as were recorded for this intersection in another traffic study undertaken in 2008. It is apparent that traffic volumes on this section of Highway 97 have not increased over the intervening 10 years.

(c) After the Highway 97/Leckie Road intersection, the third highest traffic volumes in the vicinity of the site are recorded at the Springfield Road/Dilworth Drive intersection at 5,330 vehicles, with 3,475 vehicles two-way on Springfield Road east of Dilworth Drive.

(d) The analysis found that under projected background conditions, i.e., with no additional development traffic, the intersection of Springfield Road/Dilworth Drive will operate over well over capacity in the 2020 horizon year with the maximum v/c ratio being 1.57. Dual left turn lanes for both the westbound and eastbound approach legs of Springfield

Road together with a third eastbound through lane will be required, regardless of whether or not the development of the subject lands proceeds. In the longer term, a third westbound lane is also required. The dual left turn lanes were previously recommended as a need in a 2008 study so this is not a new revelation.

(e) The intersection of Dilworth Drive/Baron Road will also operate over capacity under background conditions by the year 2020 – and is no doubt already over capacity. The critical movements are the westbound through and left turns which share a single approach lane. With the reallocation of the two available approach lanes so that the left turn movements on both the west and east legs have their own separate lane, the operation will be significantly improved. In addition, a separate right turn lane is required for northbound traffic turning into Baron Road under background conditions.

(f) The intersection of Highway 97/Dilworth Drive will operate poorly at the 2020 horizon year in the p.m. peak hour without any development traffic – and is already likely the most congested intersection along the highway through the City of Kelowna. The worst movement however is the northbound left turn. With the addition of advance green phases for the northbound and southbound left turns and a separate right turn lane for the eastbound right turning vehicles, the performance of the intersection would improve. In the long term, second left turn lanes are required on both legs of the highway.

(g) All other intersections considered operate at an acceptable level of service.

Table 5.1: Summary of Intersection Improvements Under Background

Intersection	Horizon Year	Overall LoS	Max V/C	Improvements	Max V/C w/Improv
Springfield/Dilworth	2020	F	1.57	2 EBL, 3 EBT, 2 WBL, NBR arrow	0.86
	2034	F	1.77	Same as for 2020 + 3 NBT, free NBR	0.93
Baron/Dilworth	2020	D	1.10	1 EBL, 1 EBTR, 1 WBL, 1 WBTR, NBR	0.89
	2034	E	1.40	Same as for 2020	0.93
Highway/Dilworth	2020	E	1.38	2 EBL, EBR, 2 WBL, NBR, SBL & NBL phases	0.95
	2034	F	2.23	2020 + free NBR, 2 SBL, 2 NBL	1.01
Highway/Leckie	2020	D	1.94	2 NBL, SBR, EBL & WBL phases	0.86
	2034	D	2.22	2020 + EBR	0.94

5.2 Proposed Development

(a) The size of the development is to be a total of 801,123 ft^2, with all but 2,500 ft^2 being residential. The 845 residential units provided within this floor area are expected to consist of 279 rental units in two 6 storey buildings with 112 units in one and 167 units in the other, 496 non-rental units evenly split between two high rise buildings, and a further 70 non-rental units in the podium connecting the two high rise buildings.

(b) The 2,500 ft^2 of commercial floor area is to be all on the ground level accessible to both residents living within the development as well as non-residents, who may be pedestrians

walking past the development on either Dilworth Drive or Baron Street, or possibly arriving in the vehicle with the specific purpose of visiting one of the businesses.

(c) Vehicular access to the development is to be taken off of Underhill Street.

(d) It is noted that the proposed development is located almost at the centre of the City's designated Midtown Urban Centre which extends along Highway 97/Harvey Road from Highway 33 to Ambrosi Road.

(e) The development is expected to be phased as follows:

- Year 2020 279 rental units in 6 storey buildings and commercial
- Year 2022 283 units in a high rise non-rental building
- Year 2024 283 units in a second high rise non-rental building

5.3 Development Impact

(a) The residential component of the development will generate a total of 390 vehicles/hour two-way in the morning peak hour, 467 vehicles/hour two-way in the afternoon peak hour, and 410 vehicles/hour two-way in the Saturday peak hour. This traffic, once out of Underhill Street, has a choice of numerous routes.

(b) The same nine intersections analyzed under background conditions were reanalyzed under combined conditions with the development traffic superimposed. With the addition of a right turn arrow for northbound traffic turning right from Benvoulin Road into Springfield Road, this intersection would perform no worse than under background conditions through to beyond 2034.

(c) At the intersection of Highway 97/Dilworth Drive, separate left turn would be required for the north and south left turn movements from Dilworth Drive on to Highway 97 in order to ensure on impact from the addition of the few vehicles generated by the development that pass through this intersection.

(d) At the intersection of Dilworth Drive/Baron Road, the improvements identified as being required under background conditions will adequately accommodate the additional traffic generated by this development in 2020 and 2024. By the time the development is fully constructed and occupied, a separate right turn lane should be provided on Baron Road for vehicles turning north on Dilworth Drive.

(e) The intersection of Baron Road will need to be signalized in conjunction with the completion of Phase 1 of the development. When the signals are installed, the north and south legs of Underhill Street should be remarked so as to provide separate left turn lanes on both legs. This should be achievable within the existing available curb-to-curb width. This would then require the removal of on-street parking on Underhill Street for 30 metres either side of the intersection.

(f) Access to the site is proposed to be by a single access on Underwood Street. An analysis was undertaken of this access at full build-out and this revealed that one entrance and one exit lane would be sufficient. Furthermore, there is no need for a centre left turn lane on Underwood Street since all traffic to and from this development will be oriented to the north, i.e. to Baron Road in either direction or further north on Underwood Street.

Table 5.2: Summary of Intersection Improvements Under Combined

Intersection	Horizon Year	Overall LoS	Max V/C	Additional Improvements	Max V/C w/Improv
Springfield/Dilworth	2020	F	1.57	NBR arrow	1.27
	2034	F	1.77	As for 2020	1.55
Baron/Dilworth	2020	D	1.24	1 EBL, 1 EBTR, 1 WBL, 1 WBTR, NBR	0.75
	2034	F	1.56	As for 2020 + WBR	0.91
Baron/Underhill	2020	F	3.62	signalize	0.70
	2034	E	2.83	signalize	0.45
Highway/Dilworth	2020	E	1.56	NBL & SBL phases	1.11
	2034	F	2.74	NBL & SBL phases	1.31
Highway/Leckie	2020	D	2.06	EBL & WBL phases	0.96
	2034	D	2.47	EBL & WBL phases	1.11

5.4 Pedestrian Facilities

(a) Pedestrian Access to the Development Site: It is recommended that a pedestrian path be provided adjacent to the vehicular access to the site off of Underhill Street. The development should also have a good pedestrian access gate onto Dilworth Drive approximately mid-way between Springfield Road and Baron Road, to benefit residents oriented to the transit services at the Orchard Park Shopping Centre and along Springfield Road. In addition, pedestrian paths should be provided connecting each of the buildings to the vehicular access on Underhill Street and to the gate on Dilworth Drive.

(b) Key Pedestrian Routes: The key pedestrian routes like a to be taken by residents of the proposed development will be across Dilworth Drive to the Orchard Park Mall and on to the transit exchange on the west side of the mall, north on either Dilworth Drive or Underhill Street to the transit stops on Highway 97, and south on Dilworth Drive or Durnin Road to transit stops on Springfield Road.

(c) Sidewalks: There are already sidewalks along both sides of most of the roads included in the study, with the only exception being the south side of Springfield Road adjacent to the undeveloped parcels of land east and west of Benvoulin Road. No improvements and/or additions to the existing sidewalk network are required.

(d) Pedestrian Crosswalks: All of the signalized intersections included in the study have full provision for pedestrians, not necessarily across all four legs because of traffic capacity considerations. There are signalized pedestrian crosswalks across Springfield Road at Durnin Road and across Baron Road at Durnin Road. As the intersection of Baron Road/Underhill Street is to be signalized in conjunction with the proposed development, it is recommended that pedestrian crosswalks be provided on all four legs of this intersection as well.

5.5 Transit

(a) The site is very well served by transit. It is close to an important transit exchange and has three transit routes that run close to the development site. These services basically service the entire Kelowna Region. This in itself should make this development very attractive to those who prefer to use transit.

(b) It is recommended that the developer provide monthly transit passes to new residents of the development for the first year of residency – this will encourage residents to try using the transit services and after use for a while, they may become convinced that this is the preferred travel mode, especially to work and college.

(c) BC Transit should be requested to move the transit stop for Route 11: Rutland on Springfield Road from its present location at Durnin Road closer to the Dilworth Drive intersection in order to better serve the residents of the proposed development.

(d) The owners of Orchard Park Shopping Centre should be encouraged to provide a more pedestrian-friendly route for pedestrian walking from the Dilworth Drive access opposite Baron Road to the mall building instead of having pedestrians have to walk through the mall's parking lot and potentially conflict with manoeuvring vehicles.

5.6 Bicycle Facilities

(a) There are bicycle lanes on Springfield Road, Dilworth Drive and Baron Road. There is no need to have bicycle lanes on Underhill Street south of Baron Road since this is a low-volume local road in a residential neighbourhood.

(b) Bicycle lockers should be provided in each of the buildings of the development for the residents. It assumed that this is a standard requirement of the City of Kelowna when approving residential developments.

4.7 Safety Considerations

All of the intersections considered in this study appear to have been constructed to current or at least recent standards. Based on a site inspection:

(a) The curb radii at the southeast corner of Dilworth Drive/Baron Road needs to be upgraded to the City's standard radii;

(b) There is a lack of right turn lanes in the eastbound direction along Highway 97 between Cooper Road and Leckie Road that both reduce the capacity of Highway 97 in this direction AND are the potential cause of rear-end accidents as through vehicles suddenly have to stop for the vehicle in front making a right turn - these are ideally needed at
   - the access to the Orchard Park Shopping Centre,
   - Dilworth Drive – the current right turn is particularly bad because right turning vehicles must stop for pedestrians and this causes a back-up into the so-called HOV lane,

- the two accesses into the Staples/Safeway shopping centre, and
- Leckie Road –

The lack of such right turn lanes severely reduces the effectiveness of the high-occupancy lane along here because of the high volume of vehicles slowing down to make the right turn at these various locations.

TABLE A1 - 2020 Background Peak Hour Level of Service, V/C and Queues														
		EB			WB			NB			SB			Overall
		L	T	R	L	T	R	L	T	R	L	T	R	
Dilworth Dr & Harvey Ave														
Existing Conditions														
AM	LOS	D	C		D	D		F	D		F	D		D
	V/C	0.70	0.62	0.00	0.90	0.67	0.00	0.95	0.81	0.00	1.06	0.72	0.00	45.9
	Q Length	50	142	0	108.6	210	0	69.7	117	0	42.7	95	0	
PM	LOS	E	E	0.00	F	D	0.00	F	E	0.00	F	D	0.00	E
	V/C	0.83	1.03	0.00	1.07	0.88	0.00	1.38	0.95	0.00	1.16	0.67	0.00	62.6
	Q Length	78.8	315.6	0	140.4	261	0	115.6	190.3	0	52.3	119	0	
Mid	LOS	D	D	0.00	F	C	0.00	F	D	0.00	F	D	0.00	D
	V/C	0.76	0.98	0.00	1.02	0.72	0.00	1.13	0.84	0.00	1.45	0.54	0.00	50.5
	Q Length	54.0	247.0	0	121.0	176	0	107.8	128	0	66.0	82	0	
Timing / Phasing Changes (NBL, SBL phases)														
AM	LOS	E	D		D	D		E	D		D	E		D
	V/C	0.77	0.74	0.00	0.88	0.73	0.00	0.62	0.86	0.00	0.45	0.88	0.00	50.6
	Q Length	61	172	0	113	212	0	37	120	0	21	99	0	
PM	LOS	F	F		F	C		F	F		D	E		E
	V/C	0.91	1.10	0.00	1.11	0.92	0.00	0.88	1.05	0.00	0.48	0.91	0.00	71.0
	Q Length	92.2	331.2	0	122.4	258.8	0	78.9	216.6	0	24	142.3	0	
Mid	LOS	D	E		F	C		E	F		D	E		E
	V/C	0.76	1.04	0.00	1.02	0.76	0.00	0.90	1.06	0.00	0.58	0.82	0.00	60.1
	Q Length	55.7	260.4	0	123.7	191	0	75.6	166.0	0	29.7	95.5	0	
Improvements (2 EBL, EBR, 2 WBL, NBR, SBL phase)														
AM	LOS	E	C	A	E	D		D	E	D	D	E	B	D
	V/C	0.62	0.58	0.05	0.72	0.65	0.00	0.54	0.49	0.78	0.25	0.79	0.45	43.3
	Q Length	40	145	0	62	211	0	39	66	126	22	77	13	
PM	LOS	F	D	A	F	C		E	D	D	D	E	A	D
	V/C	0.76	0.91	0.19	0.88	0.83	0.00	0.78	0.63	0.95	0.30	0.79	0.36	44.1
	Q Length	49	258	20	71	254	0	59.0	101	175	24	106	19	
Mid	LOS	E	C	A	E	D		F	E	D	D	E	A	D
	V/C	0.57	0.81	0.23	0.70	0.67	0.00	1.06	0.77	0.84	0.52	0.70	0.33	43.8
	Q Length	33	202	23	56	196	0	85.2	82	117	30	74	16	
Improvements (EBR, NBR)														
PM	LOS	F	E	B	F	D		F	D	C	D	D		E
	V/C	0.93	1.04	0.21	1.06	0.91		1.09	0.46	0.76	0.27	0.60		
	Q Length	95	299	27	139	262		106	88	132	27	113		
Mid	LOS	D	D	A	E	D		F	D	C	D	D		D
	V/C	0.77	0.96	0.27	0.97	0.76		0.98	0.42	0.67	0.37	0.50		
	Q Length	56	224	26	121	194		101	70	92	34	79		
Improvements (2EBL, 2WBL)														
PM	LOS	F	E		F	D		F	D		F	D		E

	V/C	0.81	1.04		0.96	0.89		1.05	0.85		1.09	0.59		
	Q Length	52	318		76	260		104	167		51	112		
	LOS	E	D		E	D		F	D		F	C		D
Mid	V/C	0.63	0.99		0.91	0.77		0.91	0.76		1.04	0.48		
	Q Length	33	249		67	194		97	122		60	77		
Improvements (EBR, NBR, 2 NBL)														
	LOS	E	D	A	F	C		F	E	E	F	F		
PM	V/C	0.85	0.97	0.20	1.00	0.86		0.88	0.71	0.98	0.79	0.98		E
	Q Length	83	282	20	134	260		48	105	168	45	153		
	LOS	D	D	A	E	D		F	D	E	F	E		
Mid	V/C	0.77	0.91	0.25	0.95	0.72		0.87	0.70	0.94	0.86	0.86		D
	Q Length	57	205	24	120	193		49	83	131	55	97		
Harvey Ave & Leckie Rd														
Existing Conditions														
	LOS	B	A		D	B	A	F	E	A	E	E		B
AM	V/C	0.26	0.60	0.00	0.61	0.56	0.00	0.86	0.36	0.24	0.48	0.60	0.00	17.9
	Q Length	3.3	54.4	0	38.9	135	0	67.1	40	3	28	56	0	
	LOS	F	C	0.00	F	C	A	E	E	C	D	F	0.00	D
PM	V/C	1.27	0.81	0.00	1.94	0.73	0.10	0.70	0.45	0.38	0.29	0.93	0.00	38.5
	Q Length	19.8	251.4	0	71.5	198	7	51	71	32	27	131.8	0	
	LOS	C	C	0.00	D	B	A	F	D	A	E	E	0.00	C
Mid	V/C	0.36	0.81	0.00	0.71	0.54	0.06	0.88	0.48	0.37	0.49	0.76	0.00	27.2
	Q Length	9.5	204.0	0	54.8	120	0	77.9	57	13	29	80	0	
Timing / Phasing Changes (EBL, WBL phases)														
	LOS	A	B		B	B	A	F	E	B	E	E		C
AM	V/C	0.18	0.66	0.00	0.37	0.60	0.06	0.55	0.35	0.36	0.53	0.54	0.00	20.2
	Q Length	3.4	67	0	13	174	1	37	38	15	29	57	0	
	LOS	C	D		E	C	A	F	E	C	E	F		D
PM	V/C	0.52	0.94	0.00	0.76	0.81	0.11	0.89	0.47	0.39	0.64	0.96	0.00	41.0
	Q Length	6.2	246.8	0	45.5	232	8	83.8	73	33	38	139.6	0	
	LOS	A	C		D	C	A	E	D	B	D	E		C
Mid	V/C	0.22	0.76	0.00	0.70	0.57	0.06	0.74	0.48	0.41	0.28	0.76	0.00	25.6
	Q Length	2.1	191.0	0	51.1	137	0	47	55	23	21	80	0	
Improvements (2 NBL, SBR)														
	LOS	A	B		B	B	A	E	E	B	E	E	A	B
AM	V/C	0.17	0.63	0.00	0.34	0.58	0.06	0.42	0.43	0.42	0.53	0.40	0.13	19.1
	Q Length	3.4	206	0	11	157	2	19	40	19	29	45	0	
	LOS	C	D		D	C	A	E	E	C	E	E	B	D
PM	V/C	0.45	0.86	0.00	0.66	0.75	0.10	0.61	0.65	0.49	0.65	0.79	0.31	37.4
	Q Length	8.7	301	0	40.5	233	8	35	74	34	38	88	12	
Mid	LOS	B	B		D	B	A	E	E	B	E	E	A	C

	V/C	0.31	0.74	0.00	0.72	0.50	0.06	0.68	0.63	0.45	0.55	0.63	0.18	21.0
	Q Length	6.0	204	0	47.3	111	4	31.9	57	17	29	62	0	
Dilworth Dr & Baron Rd														
Existing Conditions														
	LOS		B	A		C	A	B	C		B	B		B
AM	V/C	0.00	0.07	0.03	0.00	0.52	0.14	0.05	0.67	0.00	0.19	0.36	0.00	16.8
	Q Length	0	9	0	0	49	6	6	95	0	11	44	0	
	LOS	0.00	C	A	0.00	F	A	C	D	0.00	C	B	0.00	D
PM	V/C	0.00	0.56	0.10	0.00	1.10	0.33	0.31	0.94	0.00	0.46	0.47	0.00	42.0
	Q Length	0	50	0	0	191.5	15	23	141.0	0	21	63	0	
	LOS	0.00	D	A	0.00	F	C	D	D	0.00	C	B	0.00	D
Mid	V/C	0.00	0.82	0.18	0.00	1.12	0.64	0.68	0.89	0.00	0.67	0.42	0.00	42.9
	Q Length	0	97.6	7	0	186.9	91	52.7	107.0	0	40.6	57	0	
Timing														
	LOS		B	A		C	A	B	C		B	B		B
AM	V/C	0.00	0.07	0.03	0.00	0.52	0.14	0.05	0.67	0.00	0.20	0.36	0.00	16.5
	Q Length	0	9	0	0	51	6	6	91	0	11	44	0	
	LOS		C	A		E	A	C	D		C	C		D
PM	V/C	0.00	0.49	0.09	0.00	1.02	0.32	0.31	0.96	0.00	0.55	0.50	0.00	39.6
	Q Length	0	45	0	0	181.1	17	23	145.4	0	23	69	0	
	LOS		C	A		D	B	E	E		E	C		D
Mid	V/C	0.00	0.61	0.16	0.00	0.95	0.58	0.75	0.97	0.00	0.84	0.48	0.00	39.0
	Q Length	0	68	6	0	167.1	80	59.2	126.7	0	55.1	66	0	
Improvements (1 EBL, 1 EBTR, 1 WBL, 1 WBTR, NBR)														
	LOS	C	B		B	A		C	C	A	B	B		B
AM	V/C	0.03	0.10	0.00	0.47	0.17	0.00	0.04	0.45	0.22	0.15	0.31	0.00	15.5
	Q Length	4	9	0	32	11	0	7	94.4	16	15	59	0	
	LOS	D	C		D	A		C	C	A	C	B		C
PM	V/C	0.46	0.56	0.00	0.89	0.41	0.00	0.34	0.72	0.48	0.42	0.51	0.00	24.7
	Q Length	25	41	0	111.0	27	0	25	94.0	21	26	77	0	
	LOS	E	C		D	C		D	C	A	C	B		C
Mid	V/C	0.74	0.68	0.00	0.81	0.80	0.00	0.72	0.60	0.50	0.58	0.44	0.00	27.4
	Q Length	40	68	0	77.6	124	0	58.3	73	21	38.5	65	0	
Improvements (1 EBL, 1 EBTR, 1 WBL, 1 WBTR)														
	LOS	D	D		D	B		C	D		C	C		C
PM	V/C	0.55	0.67		0.92	0.44		0.28	0.88		0.57	0.45		
	Q Length	31	55		132	48		25	147		29	80		
	LOS	E	C		D	C		D	D		D	B		C
Mid	V/C	0.81	0.65		0.85	0.82		0.65	0.86		0.78	0.43		
	Q Length	51	72		90	140		50	104		53	60		
Dilworth Dr & Springfield Rd														
Existing Conditions														
AM	LOS	C	C		F	D		C	D	B	C	C	A	D

	V/C	0.50	0.42	0.00	1.23	0.87	0.00	0.06	0.79	0.64	0.12	0.45	0.28	46.3
	Q Length	22	42	0	192.9	138.3	0	8	132.1	52	8	58	14	
PM	LOS	E	F	0.00	E	D	0.00	D	E	D	C	C	A	F
	V/C	0.89	1.57	0.00	1.02	0.90	0.00	0.18	1.00	0.98	0.37	0.61	0.45	99.8
	Q Length	76.2	225.1	0	158.4	148.8	0	12	117.2	125.4	22	75	19	
Mid	LOS	E	C	0.00	D	C	0.00	D	E	C	C	C	A	C
	V/C	0.93	0.53	0.00	0.91	0.74	0.00	0.18	0.93	0.88	0.48	0.42	0.52	34.2
	Q Length	97.2	68	0	109.0	109	0	12	83.8	74.1	27	46	28	
Timing / Phasing Changes (NBR arrow)														
AM	LOS	C	E		D	C		C	D	A	C	C	A	C
	V/C	0.47	0.82	0.00	0.97	0.82	0.00	0.07	0.84	0.41	0.13	0.48	0.29	32.9
	Q Length	22	55.7	0	190.4	139.5	0	8	128.2	28	8	57	13	
PM	LOS	D	F		F	D		D	E	D	C	C	A	E
	V/C	0.87	1.23	0.00	1.30	0.91	0.00	0.18	0.99	0.89	0.37	0.60	0.45	76.9
	Q Length	74.4	201.4	0	182.4	152.2	0	12	117.2	183.8	22	74	18	
Mid	LOS	D	C		C	C		D	D	B	C	C	A	C
	V/C	0.89	0.60	0.00	0.85	0.78	0.00	0.17	0.88	0.65	0.50	0.41	0.49	32.0
	Q Length	88.7	74	0	110.8	130.0	0	12	75.8	82	27	45	19	
Improvements (2 EBL, 3 EBT, 2 WBL)														
AM	LOS	D	C		D	C		C	D	A	C	C	A	C
	V/C	0.45	0.26	0.00	0.79	0.71	0.00	0.09	0.83	0.49	0.30	0.56	0.32	28.6
	Q Length	20	29	0	78	117	0	7	96	45	11	63	15	
PM	LOS	D	C		D	C		C	D	C	F	D	A	C
	V/C	0.69	0.73	0.00	0.77	0.75	0.00	0.27	0.78	0.82	0.86	0.76	0.54	32.5
	Q Length	40.3	103.1	0	67	126	0	11	79	133	40.4	79	28	
Mid	LOS	D	C		D	C		C	D	B	E	C	A	C
	V/C	0.67	0.31	0.00	0.72	0.65	0.00	0.16	0.66	0.66	0.83	0.51	0.56	28.7
	Q Length	45.4	45	0	58	113	0	10	56	68	39.7	45	22	
Leckie Rd & Baron Rd														
Existing Conditions														
AM	LOS	A	B		A	B		B	B		B	B		B
	V/C	0.10	0.24	0.00	0.14	0.36	0.00	0.09	0.32	0.00	0.23	0.26	0.00	14.2
	Q Length*	9	26	0	12	43	0	9	23	0	17	25	0	
PM	LOS	B	C	0.00	B	D	0.00	C	B	0.00	C	D	0.00	C
	V/C	0.37	0.69	0.00	0.54	0.85	0.00	0.35	0.40	0.00	0.58	0.80	0.00	27.8
	Q Length*	17	88	0	32	165	0	16	29	0	40	104	0	
Mid	LOS	C	C	0.00	B	D	0.00	D	B	0.00	D	D	0.00	C
	V/C	0.58	0.71	0.00	0.48	0.93	0.00	0.50	0.40	0.00	0.74	0.88	0.00	34.1
	Q Length*	31	103	0	26	164	0	#22	34	0	$56	115	0	
Timing														
AM	LOS	A	B		A	B			B			B		B
	V/C	0.10	0.24	0.00	0.14	0.36	0.00	0.00	0.38	0.00	0.00	0.26	0.00	14.2
	Q Length	9	26	0	12	43	0	0	26	0	0	18	0	

PM	LOS	B	C		B	C			B			C		C
	V/C	0.39	0.65	0.00	0.58	0.84	0.00	0.00	0.53	0.00	0.00	0.78	0.00	26.6
	Q Length	18	86	0	34	159.9	0	0	36	0	0	59	0	
Mid	LOS	C	C		B	D		D	B		D	D		C
	V/C	0.65	0.68	0.00	0.51	0.90	0.00	0.44	0.39	0.00	0.70	0.85	0.00	32.0
	Q Length*	40	104	0	29	167	0	19	34	0	51	106	0	
Springfield Rd & Durnin Rd														
Existing Conditions														
AM	LOS	C			A			B			C			A
	V/C	0.05	0.34	0.18	0.00	0.71	0.37	0.00	0.00	0.00	0.16	0.00	0.00	0.4
	Q Length	1	0	0	0	0	0	0	0	0	5	0	0	
PM	LOS	B			C			B	0.00	0.00	C	0.00	0.00	A
	V/C	0.12	0.71	0.38	0.01	0.60	0.32	0.03	0.00	0.00	0.30	0.00	0.00	0.8
	Q Length	3	0	0	0	0	0	1	0	0	10	0	0	
Mid	LOS	B			B			B	0.00	0.00	C	0.00	0.00	A
	V/C	0.13	0.45	0.25	0.00	0.55	0.30	0.03	0.00	0.00	0.33	0.00	0.00	1.2
	Q Length	4	0	0	0	0	0	1	0	0	11	0	0	
Underhill St & Harvey Ave														
Existing Conditions														
AM	LOS				B			A						A
	V/C	0.41	0.41	0.28	0.17	0.39	0.39	0.09	0.00	0.00	0.00	0.00	0.00	0.5
	Q Length	0	0	0	5	0	0	3	0	0	0	0	0	
PM	LOS				D			B	0.00	0.00	0.00	0.00	0.00	A
	V/C	0.60	0.60	0.42	0.68	0.47	0.47	0.36	0.00	0.00	0.00	0.00	0.00	2.1
	Q Length	0	0	0	40	0	0	13	0	0	0	0	0	
Mid	LOS				B			B	0.00	0.00	0.00	0.00	0.00	A
	V/C	0.54	0.54	0.43	0.28	0.40	0.40	0.41	0.00	0.00	0.00	0.00	0.00	1.2
	Q Length	0	0	0	9	0	0	16	0	0	0	0	0	
Durnin Rd & Baron Rd														
Existing Conditions														
AM	LOS				A			B						A
	V/C	0.06	0.00	0.00	0.01	0.09	0.00	0.12	0.00	0.00	0.00	0.00	0.00	3
	Q Length	0	0	0	0	0	0	3	0	0	0	0	0	
PM	LOS		0.00	0.00	A		0.00	C	0.00	0.00	0.00	0.00	0.00	A
	V/C	0.18	0.00	0.00	0.06	0.22	0.00	0.26	0.00	0.00	0.00	0.00	0.00	2.8
	Q Length	0	0	0	2	0	0	8	0	0	0	0	0	
Mid	LOS		0.00	0.00	A		0.00	C	0.00	0.00	0.00	0.00	0.00	A
	V/C	0.23	0.00	0.00	0.04	0.24	0.00	0.42	0.00	0.00	0.00	0.00	0.00	3.8
	Q Length	0	0	0	1	0	0	16	0	0	0	0	0	
Baron Rd & Underhill St														
Existing Conditions														
AM	LOS	A			A			C			B			A
	V/C	0.04	0.11	0.00	0.00	0.14	0.00	0.06	0.00	0.00	0.20	0.00	0.00	3.7

	Q Length	1	0	0	0	0	0	2	0	0	6	0	0	
PM	LOS	A		0.00	A		0.00	F	0.00	0.00	E	0.00	0.00	B
	V/C	0.07	0.22	0.00	0.00	0.35	0.00	0.56	0.00	0.00	0.80	0.00	0.00	12.9
	Q Length	2	0	0	0	0	0	20	0	0	57	0	0	
Mid	LOS	A		0.00	A		0.00	F	0.00	0.00	F	0.00	0.00	F
	V/C	0.10	0.31	0.00	0.03	0.42	0.00	2.12	0.00	0.00	0.91	0.00	0.00	89.4
	Q Length	3	0	0	1	0	0	165	0	0	64	0	0	
Signal														
AM	LOS	A	A		A	A			A			A		A
	V/C	0.08	0.18		0.01	0.25			0.06			0.28		
	Q Length	7	19		2	26			4			5		
PM	LOS	A	A		A	B			A			A		B
	V/C	0.26	0.45		0.00	0.69			0.13			0.56		
	Q Length	11	38		1	67			7			13		
Mid	LOS	A	A		A	B			B			A		A
	V/C	0.27	0.47		0.07	0.63			0.53			0.42		
	Q Length	13	53		5	91			23			17		

TABLE A2 - 2024 Background Peak Hour Level of Service, V/C and Queues														
		EB			WB			NB			SB			Overall
		L	T	R	L	T	R	L	T	R	L	T	R	
Dilworth Dr & Harvey Ave														
Existing Conditions														
AM	LOS	D	C		E	D		F	D		F	D		D
	V/C	0.73	0.66	0.00	0.94	0.70	0.00	1.08	0.84	0.00	1.16	0.75	0.00	49.2
	Q Length	57	149	0	126.8	218	0	74.6	125	0	45.2	99	0	
PM	LOS	E	F	0.00	F	D	0.00	F	E	0.00	F	D	0.00	E
	V/C	0.85	1.08	0.00	1.11	0.92	0.00	1.55	0.99	0.00	1.22	0.69	0.00	71.5
	Q Length	84.0	337.8	0	143.8	274	0	123.3	205.4	0	54.9	125	0	
Mid	LOS	D	E	0.00	F	C	0.00	F	D	0.00	F	D	0.00	E
	V/C	0.78	1.02	0.00	1.06	0.75	0.00	1.23	0.87	0.00	1.50	0.57	0.00	56.6
	Q Length	58.0	264.7	0	127.5	186	0	114.7	138.3	0	68.2	86	0	
Timing / Phasing Changes (NBL, SBL phases)														
AM	LOS	E	D		E	D		E	D		D	E		D
	V/C	0.82	0.80	0.00	0.91	0.77	0.00	0.63	0.87	0.00	0.47	0.89	0.00	53.2
	Q Length	74.3	182	0	126.0	220	0	37	127.8	0	21	103	0	
PM	LOS	F	D	A	F	C		E	D	E	D	E	A	D
	V/C	0.77	0.96	0.19	0.94	0.88	0.00	0.80	0.64	0.98	0.33	0.83	0.37	47.9
	Q Length	50.5	281.0	12	68.4	267	0	68.9	107	193.3	25	113	19	
Mid	LOS	D	E		F	C		F	F		D	E		E
	V/C	0.78	1.06	0.00	1.11	0.79	0.00	0.99	1.11	0.00	0.62	0.85	0.00	65.1
	Q Length	58.3	272.4	0	132.4	192	0	87.0	178.0	0	33.1	105.7	0	
Improvements (2 EBL, 3 EBT, EBR, 2 SBL, 3 WBT, NBR, SBR)														
AM	LOS	E	C	A	E	D		D	D	C	D	E	A	D
	V/C	0.65	0.63	0.06	0.78	0.71	0.00	0.51	0.46	0.82	0.25	0.74	0.43	43.9
	Q Length	42	164	0	67	221	0	36	63	95	20	74	12	
PM	LOS	F	D	A	F	C		E	D	E	D	E	A	D
	V/C	0.77	0.96	0.19	0.94	0.88	0.00	0.80	0.64	0.98	0.33	0.83	0.37	47.9
	Q Length	50.5	281.0	12	68.4	267	0	68.9	107	193.3	25	113	19	
Mid	LOS	E	D	A	E	C		E	D	E	D	D	A	D
	V/C	0.69	0.89	0.25	0.87	0.75	0.00	0.87	0.65	0.95	0.45	0.64	0.31	41.5
	Q Length	37.0	212	24	67.3	198	0	78.3	83	141.7	30	77	16	
Harvey Ave & Leckie Rd														
Existing Conditions														
AM	LOS	B	A		E	B	A	F	E	B	E	E		B
	V/C	0.30	0.62	0.00	0.72	0.58	0.06	0.64	0.39	0.39	0.49	0.61	0.00	17.1
	Q Length	3.4	56.8	0	43.7	144	1	40.5	42	17	29	58	0	
PM	LOS	F	C	0.00	F	C	A	E	E	C	D	F	0.00	D
	V/C	1.30	0.85	0.00	1.98	0.76	0.11	0.74	0.46	0.39	0.30	0.95	0.00	40.5

	Q Length	20.1	253.1	0	73.3	212	8	54.5	74	34	28	140.3	0	
Mid	LOS	C	C	0.00	D	B	A	F	D	A	E	E	0.00	C
	V/C	0.41	0.85	0.00	0.73	0.56	0.06	0.91	0.49	0.38	0.50	0.77	0.00	28.5
	Q Length	10.0	207.0	0	58.6	128	0	81.2	59	15	29	83	0	
Timing / Phasing Changes (EBL, WBL phases)														
AM	LOS	A	B		C	C	A	F	E	B	E	E		C
	V/C	0.20	0.69	0.00	0.42	0.63	0.06	0.56	0.35	0.36	0.55	0.55	0.00	21.0
	Q Length	3.4	70	0	17	186	1	38	39	17	29	59	0	
PM	LOS	C	D	A	D	C	A	F	E	C	E	F	B	D
	V/C	0.52	0.90	0.11	0.70	0.81	0.11	0.87	0.57	0.45	0.65	0.81	0.32	38.9
	Q Length	8.6	293.1	6.6	50.3	253	9	84.4	75	35	39	91	13	
Mid	LOS	B	C		D	C	A	F	D	B	E	E		C
	V/C	0.27	0.87	0.00	0.72	0.65	0.07	0.86	0.45	0.40	0.57	0.77	0.00	32.5
	Q Length	3.4	197.7	0	63.3	159	0	77.3	56	26	30	83	0	
Improvements (EBR, SBR)														
AM	LOS	A	B	A	C	B	A	F	E	B	E	E	A	C
	V/C	0.20	0.67	0.04	0.40	0.62	0.06	0.57	0.38	0.38	0.54	0.41	0.13	20.2
	Q Length	3.4	158	0.0	16	186	1	38	40	17	29	46	0	
PM	LOS	C	D	A	D	C	A	F	E	C	E	F	B	D
	V/C	0.52	0.90	0.11	0.70	0.81	0.11	0.87	0.57	0.45	0.65	0.81	0.32	38.9
	Q Length	8.6	293.1	6.6	50.3	253	9	84.4	75	35	39	91	13	
Mid	LOS	A	C	A	D	B	A	E	E	B	D	E	A	C
	V/C	0.23	0.73	0.08	0.71	0.57	0.06	0.72	0.57	0.47	0.34	0.66	0.19	24.3
	Q Length	3.0	215	1.3	56.2	144	0	48	57	26	24	64	0	
Dilworth Dr & Baron Rd														
Existing Conditions														
AM	LOS		B	A		C	A	B	C		B	B		B
	V/C	0.00	0.07	0.03	0.00	0.54	0.14	0.05	0.69	0.00	0.21	0.37	0.00	17.4
	Q Length	0	9	0	0	51	6	6	102	0	12	48	0	
PM	LOS	0.00	C	A	0.00	F	A	C	D	0.00	C	B	0.00	D
	V/C	0.00	0.66	0.10	0.00	1.18	0.34	0.32	0.95	0.00	0.48	0.48	0.00	48.2
	Q Length	0	55	0	0	201.9	15	23	149.8	0	22	66	0	
Mid	LOS	0.00	E	A	0.00	F	C	D	D	0.00	C	B	0.00	D
	V/C	0.00	0.93	0.18	0.00	1.19	0.67	0.72	0.91	0.00	0.69	0.43	0.00	50.1
	Q Length	0	108.0	7	0	197.5	97	57.5	119.1	0	44.3	59	0	
Timing														
AM	LOS		B	A		C	A	B	C		B	B		B
	V/C	0.00	0.07	0.03	0.00	0.53	0.14	0.05	0.69	0.00	0.21	0.37	0.00	17.1
	Q Length	0	10	0	0	53	7	6	97	0	12	47	0	
PM	LOS	E	D		D	B		C	D		D	C		D
	V/C	0.59	0.71	0.00	0.92	0.45	0.00	0.30	0.91	0.00	0.63	0.47	0.00	37.0
	Q Length	33	57	0	132.6	45	0	27	179.0	0	37.3	89	0	
Mid	LOS		C	A		E	B	E	E		E	C		D

	V/C	0.00	0.69	0.17	0.00	1.03	0.61	0.77	0.97	0.00	0.87	0.48	0.00	43.0
	Q Length	0	78	6	0	180.4	87	62.3	130.7	0	57.8	67	0	
Existing Conditions (1 EBL, 1 EBTR, 1 WBL, 1 WBTR)														
AM	LOS	C	B		C	A		C	C		B	B		B
	V/C	0.03	0.12	0.00	0.50	0.19	0.00	0.05	0.70	0.00	0.22	0.38	0.00	18.4
	Q Length	4	10	0	36	13	0	7	127.3	0	14	58	0	
PM	LOS	E	D		D	B		C	D		D	C		D
	V/C	0.59	0.71	0.00	0.92	0.45	0.00	0.30	0.91	0.00	0.63	0.47	0.00	37.0
	Q Length	33	57	0	132.6	45	0	27	179.0	0	37.3	89	0	
Mid	LOS	F	C		D	D		D	D		D	B		D
	V/C	0.86	0.61	0.00	0.88	0.89	0.00	0.70	0.89	0.00	0.84	0.45	0.00	38.7
	Q Length	56.7	74	0	96.7	185.1	0	56.5	112.1	0	56.9	63	0	
Dilworth Dr & Springfield Rd														
Existing Conditions														
AM	LOS	C	C		F	D		C	D	B	C	C	A	D
	V/C	0.53	0.44	0.00	1.31	0.91	0.00	0.07	0.81	0.67	0.13	0.46	0.28	52.1
	Q Length	22	43	0	206.2	146.8	0	8	139.3	60.5	9	60	14	
PM	LOS	E	F	0.00	F	D	0.00	D	F	D	C	C	A	F
	V/C	0.92	1.62	0.00	1.06	0.93	0.00	0.19	1.03	1.02	0.39	0.63	0.47	109.9
	Q Length	80.5	235.2	0	168.1	158.1	0	13	122.4	137.6	22	78	22	
Mid	LOS	F	C	0.00	D	C	0.00	D	E	C	C	C	A	D
	V/C	1.03	0.57	0.00	0.95	0.77	0.00	0.18	0.94	0.91	0.49	0.42	0.53	37.9
	Q Length	105.7	71	0	122.8	114	0	13	88.6	84.5	28	48	32	
Timing														
AM	LOS	C	D		F	D		C	D	B	C	C	A	D
	V/C	0.50	0.78	0.00	1.11	0.90	0.00	0.07	0.80	0.66	0.13	0.46	0.28	41.2
	Q Length	23	54.8	0	203.4	145.5	0	8	137.4	57	8	60	14	
PM	LOS	E	D		E	C	A	C	E	D	C	C	A	D
	V/C	0.84	0.90	0.00	0.90	0.84	0.10	0.17	0.95	0.91	0.40	0.60	0.48	40.0
	Q Length	47.8	123.8	0	83.7	145.6	0	11.9	106.8	184.9	21.1	73.1	29	
Mid	LOS	E	C		D	C		D	E	B	C	C	A	C
	V/C	0.91	0.65	0.00	0.89	0.81	0.00	0.18	0.90	0.67	0.52	0.42	0.50	34.0
	Q Length	92.5	77	0	124.4	138.2	0	12	80.5	89	28	47	19	
Improvements (2 EBL, 3 EBT, 2 WBL, free NBR, SBR)														
AM	LOS	D	C		D	D		C	D	A	B	C	A	C
	V/C	0.46	0.32	0.00	0.87	0.85	0.00	0.07	0.87	0.33	0.13	0.49	0.29	31.5
	Q Length	21	31	0	93.1	154.7	0	8	128.8	0	8	57	13	
PM	LOS	E	D		E	C	A	C	E	A	C	C	A	D
	V/C	0.84	0.87	0.00	0.94	0.84	0.10	0.17	0.95	0.46	0.40	0.60	0.48	35.7
	Q Length	47.8	117.9	0	89.0	145.6	0	12	106.8	0	21	73	29	
Mid	LOS	D	C		D	C		C	D	A	C	C	A	C
	V/C	0.77	0.39	0.00	0.76	0.79	0.00	0.16	0.84	0.35	0.52	0.40	0.49	29.4
	Q Length	47.6	48	0	61	133.7	0	12	70.8	0	27	45	21	

Leckie Rd & Baron Rd														
Existing Conditions														
AM	LOS	A	B		A	B		B	B		B	B		B
	V/C	0.10	0.25	0.00	0.15	0.37	0.00	0.09	0.33	0.00	0.24	0.26	0.00	14.4
	Q Length*	9	28	0	13	44	0	9	24	0	17	26	0	
PM	LOS	B	C	0.00	B	D	0.00	C	B	0.00	D	D	0.00	C
	V/C	0.41	0.72	0.00	0.58	0.88	0.00	0.38	0.41	0.00	0.61	0.81	0.00	29.5
	Q Length*	17	92	0	33	173.3	0	16	30	0	42	110	0	
Mid	LOS	C	C	0.00	B	D	0.00	D	B	0.00	D	D	0.00	D
	V/C	0.61	0.73	0.00	0.51	0.96	0.00	0.58	0.41	0.00	0.78	0.90	0.00	36.9
	Q Length*	33	108	0	27	174	0	25	35	0	60	122	0	
Timing														
AM	LOS	A	B		A	B			B			B		B
	V/C	0.10	0.26	0.00	0.15	0.38	0.00	0.00	0.39	0.00	0.00	0.27	0.00	14.3
	Q Length	9	27	0	13	44	0	0	27	0	0	19	0	
PM	LOS	B	C		B	D			C			C		C
	V/C	0.43	0.69	0.00	0.61	0.87	0.00	0.00	0.55	0.00	0.00	0.81	0.00	28.3
	Q Length	18	91	0	35	168.7	0	0	38	0	0	62	0	
Mid	LOS	C	C		B	D			C			D		D
	V/C	0.71	0.68	0.00	0.54	0.92	0.00	0.00	0.56	0.00	0.00	0.88	0.00	36.9
	Q Length	53.4	127	0	35	204.0	0	0	56	0	0	89	0	
Improvements														
AM	LOS	A	B		A	B			B			B		B
	V/C	0.10	0.26	0.00	0.15	0.38	0.00	0.00	0.39	0.00	0.00	0.27	0.00	14.3
	Q Length	9	27	0	13	44	0	0	27	0	0	19	0	
PM	LOS	B	C		B	D			C			C		C
	V/C	0.43	0.69	0.00	0.61	0.87	0.00	0.00	0.55	0.00	0.00	0.81	0.00	28.3
	Q Length	18	91	0	35	168.7	0	0	38	0	0	62	0	
Mid	LOS	C	C		B	D		D	B		D	D		D
	V/C	0.71	0.69	0.00	0.55	0.92	0.00	0.51	0.40	0.00	0.75	0.87	0.00	34.2
	Q Length*	47	109	0	30	177	0	21	35	0	58	112	0	
Springfield Rd & Durnin Rd														
Existing Conditions														
AM	LOS	C			A			B			C			A
	V/C	0.06	0.35	0.19	0.00	0.74	0.39	0.00	0.00	0.00	0.18	0.00	0.00	0.5
	Q Length	2	0	0	0	0	0	0	0	0	5	0	0	
PM	LOS	C			C			B	0.00	0.00	C	0.00	0.00	A
	V/C	0.13	0.73	0.39	0.01	0.62	0.33	0.03	0.00	0.00	0.32	0.00	0.00	0.9
	Q Length	4	0	0	0	0	0	1	0	0	11	0	0	
Mid	LOS	B			B			B	0.00	0.00	C	0.00	0.00	A
	V/C	0.14	0.47	0.26	0.00	0.57	0.31	0.03	0.00	0.00	0.36	0.00	0.00	1.3
	Q Length	4	0	0	0	0	0	1	0	0	13	0	0	
Underhill St & Harvey Ave														

Existing Conditions														
AM	LOS				B			A						A
	V/C	0.43	0.43	0.29	0.18	0.41	0.41	0.10	0.00	0.00	0.00	0.00	0.00	0.5
	Q Length	0	0	0	5	0	0	3	0	0	0	0	0	
PM	LOS				F			B	0.00	0.00	0.00	0.00	0.00	A
	V/C	0.62	0.62	0.44	0.83	0.48	0.48	0.38	0.00	0.00	0.00	0.00	0.00	3.1
	Q Length	0	0	0	59	0	0	14	0	0	0	0	0	
Mid	LOS				C			B	0.00	0.00	0.00	0.00	0.00	A
	V/C	0.56	0.56	0.45	0.32	0.42	0.42	0.43	0.00	0.00	0.00	0.00	0.00	1.2
	Q Length	0	0	0	11	0	0	17	0	0	0	0	0	
Durnin Rd & Baron Rd														
Existing Conditions														
AM	LOS				A			B						A
	V/C	0.06	0.00	0.00	0.01	0.10	0.00	0.13	0.00	0.00	0.00	0.00	0.00	3
	Q Length	0	0	0	0	0	0	4	0	0	0	0	0	
PM	LOS		0.00	0.00	A		0.00	C	0.00	0.00	0.00	0.00	0.00	A
	V/C	0.19	0.00	0.00	0.06	0.23	0.00	0.28	0.00	0.00	0.00	0.00	0.00	2.9
	Q Length	0	0	0	2	0	0	9	0	0	0	0	0	
Mid	LOS		0.00	0.00	A		0.00	C	0.00	0.00	0.00	0.00	0.00	A
	V/C	0.23	0.00	0.00	0.05	0.24	0.00	0.45	0.00	0.00	0.00	0.00	0.00	4.1
	Q Length	0	0	0	1	0	0	18	0	0	0	0	0	
Baron Rd & Underhill St														
Existing Conditions														
AM	LOS	A			A			C			B			A
	V/C	0.04	0.11	0.00	0.00	0.15	0.00	0.07	0.00	0.00	0.21	0.00	0.00	3.8
	Q Length	1	0	0	0	0	0	2	0	0	6	0	0	
PM	LOS	A		0.00	A		0.00	F	0.00	0.00	E	0.00	0.00	C
	V/C	0.08	0.23	0.00	0.00	0.36	0.00	0.69	0.00	0.00	0.86	0.00	0.00	16.3
	Q Length	2	0	0	0	0	0	26	0	0	67	0	0	
Mid	LOS	A		0.00	A		0.00	F	0.00	0.00	F	0.00	0.00	F
	V/C	0.11	0.32	0.00	0.04	0.44	0.00	2.62	0.00	0.00	1.06	0.00	0.00	125.3
	Q Length	3	0	0	1	0	0	189	0	0	82	0	0	
AM	LOS	A	A		A	A			A			A		A
	V/C	0.09	0.19		0.01	0.26			0.07			0.28		
	Q Length	8	19		2	27			4			5		
PM	LOS	A	A		A	B			A			A		B
	V/C	0.28	0.46		0.00	0.71			0.14			0.59		
	Q Length	11	40		1	71			8			16		
Mid	LOS	B	A		A	B			B			A		B
	V/C	0.44	0.59		0.10	0.79			0.57			0.46		
	Q Length	17	56		6	98			24			20		

TABLE A3 - 2034 Background Peak Hour Level of Service, V/C and Queues														
		EB			WB			NB			SB			Overall
		L	T	R	L	T	R	L	T	R	L	T	R	
Dilworth Dr & Harvey Ave														
Existing Conditions														
AM	LOS	E	D		F	D		F	E		F	E		E
	V/C	0.81	0.74	0.00	1.07	0.79	0.00	1.57	0.93	0.00	1.26	0.83	0.00	60.5
	Q Length	72	172	0	166.1	241	0	91.3	156.5	0	49.7	112	0	
PM	LOS	E	F	0.00	F	D	0.00	F	F	0.00	F	D	0.00	F
	V/C	0.90	1.19	0.00	1.22	1.03	0.00	2.23	1.09	0.00	1.34	0.76	0.00	105.3
	Q Length	101.1	397.8	0	141.6	325.5	0	145.4	244.5	0	60.1	141	0	
Mid	LOS	E	F	0.00	F	C	0.00	F	E	0.00	F	D	0.00	E
	V/C	0.83	1.13	0.00	1.17	0.84	0.00	1.59	0.97	0.00	1.66	0.63	0.00	79.9
	Q Length	70.0	312.9	0	147.2	m208.4	0	134.7	173.7	0	74.9	96	0	
Timing / Phasing Changes (NBL, SBL)														
AM	LOS	F	E		E	E		E	E		D	E		E
	V/C	0.91	0.92	0.00	0.96	0.87	0.00	0.78	0.94	0.00	0.52	0.93	0.00	61.1
	Q Length	93.3	217.2	0	151.9	242	0	51.6	162.8	0	23	116	0	
PM	LOS	F	F		F	D		F	F		D	F		F
	V/C	1.25	1.28	0.00	1.28	1.02	0.00	0.98	1.18	0.00	0.55	1.03	0.00	116.2
	Q Length	127.9	417.5	0	134.3	320.0	0	95.4	267.0	0	26	177.1	0	
Mid	LOS	E	F		F	C		F	F		E	E		F
	V/C	0.89	1.21	0.00	1.23	0.90	0.00	0.97	1.15	0.00	0.68	0.94	0.00	93.6
	Q Length	76.5	328.7	0	151.3	m210.7	0	94.6	200.7	0	34.8	124.5	0	
Improvements (2 EBL, EBR, 2 WBL, 2 NBL, free NBR, 2 SBL, SBR)														
AM	LOS	E	C	A	E	D		D	E	A	D	E	B	D
	V/C	0.65	0.68	0.06	0.79	0.76	0.00	0.41	0.57	0.32	0.32	0.83	0.46	43.3
	Q Length	45	173	0	67	242	0	21	76	0	24	88	13	
PM	LOS	F	E	A	F	C		F	E	A	F	F	B	D
	V/C	0.87	1.01	0.21	0.97	0.91	0.00	0.93	0.89	0.36	0.85	0.95	0.44	51.6
	Q Length	61.5	330.5	23	78.5	288	0	55.8	132.3	0	50.8	138.8	33	
Mid	LOS	E	D	A	F	C		F	E	A	F	E	B	D
	V/C	0.65	0.96	0.27	0.97	0.83	0.00	0.94	0.81	0.31	0.91	0.76	0.35	43.0
	Q Length	40.1	252.3	26	93.9	209	0	55.8	94	0	61.8	85	19	
Improvements (2 EBL, EBR, 2 WBL, NBR														
PM	LOS	F	F	B	F	D		F	D	E	D	D	A	E
	V/C	0.93	1.07	0.22	1.08	0.98		1.15	0.55	0.95	0.41	0.55	0.29	
	Q Length*	#64	#348	33	m#75	m#308		#120	104	#213	33	105	24	
Harvey Ave & Leckie Rd														
Existing Conditions														
AM	LOS	C	A		F	B	A	F	E	B	E	E		B
	V/C	0.43	0.69	0.00	1.14	0.65	0.07	0.67	0.43	0.42	0.51	0.66	0.00	20.0
	Q Length	3.4	62.6	0	39.6	170	2	45.7	46	22	31	64	0	

PM	LOS	F	C	0.00	F	C	A	F	E	C	E	F	0.00	D
	V/C	1.45	0.95	0.00	2.22	0.86	0.12	1.01	0.54	0.45	0.63	1.04	0.00	50.5
	Q Length	18.8	256.2	0	81.9	255	8	100.0	85	42	41	164.7	0	
Mid	LOS	D	C	0.00	D	B	A	F	D	A	E	E	0.00	C
	V/C	0.64	0.97	0.00	0.77	0.63	0.07	1.01	0.52	0.41	0.53	0.80	0.00	33.4
	Q Length	12.1	214.1	0	68.9	148	1	91.9	65	18	32	92	0	
Timing / Phasing Changes (EBL, WBL)														
AM	LOS	B	B		C	C	A	F	E	B	E	E		C
	V/C	0.26	0.77	0.00	0.47	0.72	0.08	0.64	0.39	0.40	0.58	0.66	0.00	23.5
	Q Length	m3.1	162	0	20	214	3	42	44	21	32	65	0	
PM	LOS	C	E		E	D	A	F	E	C	E	F		E
	V/C	0.58	1.09	0.00	0.87	0.91	0.13	1.01	0.54	0.45	0.67	1.08	0.00	63.9
	Q Length	6.4	252.1	0	55.4	266	10	100.0	83	41	42	168.6	0	
Mid	LOS	B	C		D	C	A	F	D	B	E	E		D
	V/C	0.32	0.99	0.00	0.77	0.73	0.08	0.94	0.48	0.43	0.58	0.81	0.00	36.7
	Q Length	m3.2	198.4	0	74.3	184	1	88.8	62	31	33	93	0	
Improvements (2 NBL, SBR, EBR)														
AM	LOS	B	B	A	C	C	A	E	E	B	E	E	A	B
	V/C	0.24	0.73	0.04	0.45	0.69	0.07	0.47	0.48	0.46	0.58	0.49	0.15	19.6
	Q Length	2.1	250	0.0	19	201	3	21	46	22	32	50	0	
PM	LOS	C	D	A	E	C	A	F	E	C	F	F	B	D
	V/C	0.55	0.94	0.12	0.76	0.81	0.12	0.88	0.75	0.57	0.78	0.85	0.35	41.9
	Q Length	9.5	322.0	8.9	56.5	238	9	47.5	86	43	43	101	16	
Mid	LOS	B	C	A	D	C	A	F	E	C	E	E	A	C
	V/C	0.31	0.86	0.09	0.74	0.66	0.07	0.78	0.68	0.54	0.58	0.66	0.20	30.1
	Q Length	3.8	245.1	2.4	74.5	170	1	40.1	65	33	33	71	1	
Dilworth Dr & Baron Rd														
Existing Conditions														
AM	LOS		B	A		C	A	B	C		B	B		C
	V/C	0.00	0.08	0.03	0.00	0.60	0.15	0.06	0.77	0.00	0.25	0.38	0.00	20.1
	Q Length	0	10	0	0	56	7	7	135.6	0	14	57	0	
PM	LOS	0.00	E	A	0.00	F	A	C	F	0.00	C	B	0.00	E
	V/C	0.00	0.96	0.11	0.00	1.40	0.38	0.38	1.08	0.00	0.52	0.50	0.00	78.8
	Q Length	0	82.4	0	0	230.3	18	26	173.0	0	24	74	0	
Mid	LOS	0.00	F	A	0.00	F	C	E	D	0.00	D	B	0.00	F
	V/C	0.00	1.37	0.21	0.00	1.42	0.75	0.80	0.96	0.00	0.76	0.46	0.00	81.8
	Q Length	0	136.6	10	0	227.0	114	67.9	138.6	0	54.6	66	0	
Timing														
AM	LOS		B	A		C	A	B	C		B	B		B
	V/C	0.00	0.07	0.03	0.00	0.59	0.15	0.06	0.76	0.00	0.26	0.39	0.00	19.6
	Q Length	0	10	0	0	57	7	7	116	0	14	56	0	
PM	LOS		D	A		F	A	D	F		C	C		E
	V/C	0.00	0.79	0.11	0.00	1.30	0.37	0.40	1.12	0.00	0.58	0.54	0.00	75.3

	Q Length	0	70.1	0	0	222.2	22	27	177.2	0	25	79	0	
Mid	LOS		E	A		F	B	F	E		E	C		E
	V/C	0.00	0.95	0.19	0.00	1.22	0.61	0.90	1.06	0.00	0.87	0.52	0.00	63.0
	Q Length	0	115.4	9	0	212.0	66	72.4	150.2	0	62.4	73	0	
Improvements (1 EBL, 1 EBTR, 1 WBL, 1 WBTR, NBR)														
AM	LOS	C	B		C	A		C	C	A	B	B		B
	V/C	0.03	0.12	0.00	0.54	0.20	0.00	0.06	0.61	0.28	0.21	0.42	0.00	16.4
	Q Length	5	11	0	45	15	0	7	100	16	16	66	0	
PM	LOS	D	D		D	B		D	D	A	D	C		C
	V/C	0.60	0.69	0.00	0.93	0.46	0.00	0.44	0.82	0.52	0.61	0.57	0.00	32.3
	Q Length	35	60	0	149.0	51	0	32	121	23	35.8	104	0	
Mid	LOS	F	C		D	C		F	D	A	D	C		D
	V/C	0.92	0.56	0.00	0.92	0.84	0.00	0.93	0.71	0.55	0.82	0.54	0.00	35.5
	Q Length	62.7	75	0	101.8	175.5	0	72.4	83	22	56.9	75	0	
Dilworth Dr & Springfield Rd														
Existing Conditions														
AM	LOS	C	C		F	E		C	D	B	C	C	A	E
	V/C	0.57	0.48	0.00	1.48	1.00	0.00	0.08	0.89	0.73	0.14	0.51	0.30	68.9
	Q Length	24	47	0	242.2	170.3	0	9	158.0	89.9	9	67	14	
PM	LOS	F	F	0.00	F	E	0.00	D	F	F	C	C	A	F
	V/C	1.01	1.77	0.00	1.16	1.02	0.00	0.23	1.13	1.13	0.43	0.69	0.51	140.8
	Q Length	92.0	261.9	0	191.0	183.2	0	14	137.2	168.8	24	86	30	
Mid	LOS	F	C	0.00	F	C	0.00	D	F	E	C	C	B	E
	V/C	1.25	0.67	0.00	1.08	0.84	0.00	0.23	1.11	1.04	0.51	0.44	0.57	58.3
	Q Length	118.0	78	0	153.9	130	0	14	99.7	111.0	30	52	42	
Timing														
AM	LOS	C	D		F	D		C	D	A	C	C	A	E
	V/C	0.57	0.73	0.00	1.30	0.99	0.00	0.08	0.88	0.49	0.14	0.50	0.30	56.5
	Q Length	24	53	0	241.1	168.6	0	9	155.3	52	9	66	14	
PM	LOS	F	F		F	E		D	F	D	C	C	A	F
	V/C	1.09	1.45	0.00	1.48	1.03	0.00	0.21	1.06	0.99	0.42	0.66	0.51	116.3
	Q Length	96.2	242.4	0	215.2	184.4	0	14	133.3	221.5	24	84	33	
Mid	LOS	E	D		E	E		D	E	B	C	C	A	D
	V/C	0.97	0.89	0.00	0.97	0.99	0.00	0.20	0.97	0.70	0.54	0.42	0.50	45.6
	Q Length	102.6	97.6	0	151.4	161.0	0	13	90.9	100	29	51	20	
Improvements (2 EBL, 3 EBT, 2 SBL, 3 NBT, free NBR)														
AM	LOS	D	C		D	C		C	D	A	C	C	A	C
	V/C	0.50	0.30	0.00	0.85	0.80	0.00	0.11	0.85	0.36	0.15	0.66	0.36	30.2
	Q Length	23	34	0	90	160.7	0	9	90.8	0	10	69	15	
PM	LOS	E	D		E	D		D	D	A	C	C	B	D
	V/C	0.86	0.91	0.00	0.93	0.93	0.00	0.25	0.85	0.50	0.45	0.73	0.56	36.7
	Q Length	51.4	132.0	0	93.1	176.5	0	14	74.0	0	24	86	40	
Mid	LOS	E	C		D	D		D	D	A	C	C	A	C

	V/C	0.82	0.45	0.00	0.78	0.87	0.00	0.22	0.74	0.38	0.53	0.44	0.55	30.4
	Q Length	54.7	52	0	65	146.6	0	13	51	0	30	52	35	
Improvements (2 EBL, 3 EBT, 2 WBL)														
PM	LOS	F	E		E	E		C	E	D	C	C	B	E
	V/C	0.99	1.03		1.01	1.02		0.19	0.96	0.97	0.44	0.62	0.51	
	Q Length	55	138		98	184		13	123	217	23	82	40	
Leckie Rd & Baron Rd														
Existing Conditions														
AM	LOS	A	B		A	B		B	B		B	B		B
	V/C	0.11	0.27	0.00	0.16	0.41	0.00	0.10	0.36	0.00	0.27	0.28	0.00	14.8
	Q Length*	9	30	0	14	49	0	9	26	0	19	29	0	
PM	LOS	B	C	0.00	C	E	0.00	D	B	0.00	D	D	0.00	D
	V/C	0.47	0.79	0.00	0.71	0.98	0.00	0.48	0.43	0.00	0.69	0.85	0.00	36.4
	Q Length*	19	103	0	47	198	0	#19	34	0	55	127	0	
Mid	LOS	C	C	0.00	B	E	0.00	E	B	0.00	E	E	0.00	D
	V/C	0.67	0.80	0.00	0.62	1.05	0.00	0.64	0.44	0.00	0.90	0.96	0.00	47.4
	Q Length*	42	134	0	30	198	0	28	39	0	71	140	0	
Timing														
PM	LOS	C	C		C	D		D	B		D	D		B
	V/C	0.56	0.71	0.00	0.67	0.95	0.00	0.52	0.44	0.00	0.72	0.87	0.00	36.0
	Q Length*	#24	110	0	39	#194	0	#21	36	0	#56	#129	0	
Mid	LOS	D	C		C	D		F	C		E	E		D
	V/C	0.79	0.68	0.00	0.59	0.95	0.00	0.74	0.42	0.00	0.87	0.91	0.00	44.9
	Q Length*	#72	147	0	39	#243	0	#37	54	0	#86	#170	0	
Springfield Rd & Durnin Rd														
Existing Conditions														
AM	LOS	C			A			B			D			A
	V/C	0.08	0.38	0.20	0.00	0.81	0.42	0.00			0.22			0.5
	Q Length	2	0	0	0	0	0	0			6			
PM	LOS	C			C			C			D			A
	V/C	0.17	0.80	0.43	0.01	0.68	0.36	0.04			0.40			1
	Q Length	5	0	0	0	0	0	1			15			
Mid	LOS	C			B			B			D			B
	V/C	0.18	0.51	0.28	0.00	0.63	0.34	0.04			0.43			1.5
	Q Length	5	0	0	0	0	0	1			17			
Underhill St & Harvey Ave														
Existing Conditions														
AM	LOS				B			B						A
	V/C	0.48	0.48	0.32	0.22	0.45	0.45	0.12						0.5
	Q Length	0	0	0	7	0	0	3						
PM	LOS				F			C						B
	V/C	0.69	0.69	0.48	1.44	0.53	0.53	0.42						13.4
	Q Length	0	0	0	147	0	0	16						

	LOS				D			C						E
Mid	V/C	0.62	0.62	0.49	0.51	0.46	0.46	0.48						1.6
	Q Length	0	0	0	22	0	0	21						
Durnin Rd & Baron Rd														
Existing Conditions														
	LOS				A			B						A
AM	V/C	0.07			0.02	0.11		0.15						3.1
	Q Length	0			0	0		4						
	LOS				A			C						A
PM	V/C	0.20			0.07	0.25		0.33						3.2
	Q Length	0			2	0		12						
	LOS				A			D						A
Mid	V/C	0.26			0.05	0.27		0.55						5
	Q Length	0			1	0		25						
Baron Rd & Underhill St														
Existing Conditions														
	LOS	A			A			C			B			A
AM	V/C	0.04	0.12		0.00	0.16		0.08			0.24			3.9
	Q Length	1	0		0	0		2			7			
	LOS	A			A			F			F			E
PM	V/C	0.09	0.25		0.00	0.39		1.32			1.04			36
	Q Length	2	0		0	0		44			103			
	LOS	B			A			F			F			F
Mid	V/C	0.13	0.35		0.04	0.48		4.72			1.49			1361.8
	Q Length	3	0		1	0		Err			132			
Improvements (Signal)														
	LOS	A	A		A	A			A			A		A
AM	V/C	0.10	0.21	0.00	0.01	0.29	0.00	0.00	0.07	0.00	0.00	0.30	0.00	7.0
	Q Length	8	21	0	2	29	0	0	4	0	0	5	0	
	LOS	B	A		A	B			A			B		B
PM	V/C	0.37	0.49	0.00	0.00	0.76	0.00	0.00	0.14	0.00	0.00	0.65	0.00	13.3
	Q Length	14	48	0	1	88	0	0	8	0	0	23	0	
	LOS	C	A		A	B			B			B		B
Mid	V/C	0.53	0.61	0.00	0.11	0.82	0.00	0.00	0.63	0.00	0.00	0.55	0.00	14.4
	Q Length	27.2	67	0	6	141.3	0	0	26	0	0	28	0	

TABLE A4 - 2020 Combined Peak Hour Level of Service, V/C and Queues														
		EB			WB			NB			SB			Overall
		L	T	R	L	T	R	L	T	R	L	T	R	
Dilworth Dr & Harvey Ave														
Existing Conditions														
AM	LOS	D	C		D	D		F	D		F	D		D
	V/C	0.70	0.63	0.00	0.90	0.67	0.00	1.26	0.82	0.00	1.10	0.72	0.00	48.9
	Q Length	50	143	0	110.9	210	0	93.4	121	0	43.2	95	0	
PM	LOS	E	E	0.00	F	D	0.00	F	E	0.00	F	D	0.00	E
	V/C	0.83	1.05	0.00	1.07	0.88	0.00	1.56	0.95	0.00	1.22	0.67	0.00	66.9
	Q Length	78.8	323.9	0	138.9	261	0	129.6	192.3	0	54.9	121	0	
Mid	LOS	D	D	0.00	F	C	0.00	F	D	0.00	F	D	0.00	D
	V/C	0.76	0.99	0.00	1.02	0.72	0.00	1.28	0.85	0.00	1.47	0.55	0.00	53.7
	Q Length	54.0	251.7	0	121.7	176	0	123.4	130	0	67.1	83	0	
Timing / Phasing Changes (NBL, SBL phases)														
AM	LOS	E	D		D	D		E	D		D	E		D
	V/C	0.79	0.77	0.00	0.90	0.75	0.00	0.68	0.83	0.00	0.45	0.90	0.00	52.3
	Q Length	66.9	176	0	115.4	212	0	46	122	0	20	101	0	
PM	LOS	F	F		F	C		F	F		D	E		E
	V/C	0.91	1.11	0.00	1.11	0.92	0.00	0.90	1.05	0.00	0.50	0.95	0.00	74.4
	Q Length	92.2	339.5	0	121.1	258.7	0	86.6	218.4	0	25	150.5	0	
Mid	LOS	D	E		F	C		F	F		D	E		E
	V/C	0.76	1.07	0.00	1.02	0.77	0.00	0.96	1.04	0.00	0.59	0.83	0.00	61.9
	Q Length	55.6	268.0	0	122.5	184	0	89.8	165.4	0	31.3	100.4	0	
Improvements (NBR, SBR)														
AM	LOS	D	D		D	D		E	E	B	D	E	B	D
	V/C	0.71	0.69	0.00	0.84	0.69	0.00	0.64	0.48	0.69	0.25	0.81	0.45	43.6
	Q Length	56	169	0	110	212	0	48	68	47	22	79	14	
PM	LOS	E	E		F	C		E	E	D	D	F	B	E
	V/C	0.84	1.05	0.00	1.04	0.87	0.00	0.87	0.67	0.91	0.34	0.91	0.39	57.7
	Q Length	82.1	323.9	0	138.5	255	0	83.7	106	155.9	26	120.6	18	
Mid	LOS	D	E		E	C		E	D	C	D	E	A	D
	V/C	0.72	1.05	0.00	0.93	0.74	0.00	0.87	0.66	0.82	0.44	0.77	0.30	50.8
	Q Length	48	263.9	0	135.1	184	0	73.0	80	89	29	77	3	
Harvey Ave & Leckie Rd														
Existing Conditions														
AM	LOS	B	A		E	B	A	F	E	B	E	E		B
	V/C	0.26	0.60	0.00	0.66	0.56	0.06	0.61	0.38	0.38	0.48	0.54	0.00	16.3
	Q Length	3.5	55.7	0	42.1	136	1	37	40	16	28	56	0	

PM	LOS	F	C	0.00	F	C	A	E	E	C	D	F	0.00	D
	V/C	1.27	0.82	0.00	2.06	0.73	0.10	0.70	0.45	0.38	0.29	0.93	0.00	39.9
	Q Length	19.2	251.4	0	76.1	201	7	51	71	32	27	131.8	0	
Mid	LOS	C	C	0.00	D	B	A	F	D	A	E	E	0.00	C
	V/C	0.37	0.83	0.00	0.72	0.54	0.06	0.88	0.48	0.37	0.49	0.76	0.00	27.6
	Q Length	9.7	204.9	0	58.8	122	0	77.9	57	13	29	80	0	
	Timing / Phasing Changes (EBL, WBL phases)													
AM	LOS	A	B		C	B	A	F	E	B	E	E		C
	V/C	0.18	0.67	0.00	0.40	0.61	0.06	0.55	0.35	0.36	0.53	0.54	0.00	20.2
	Q Length	m3.3	69	0	15	175	1	37	38	15	29	57	0	
PM	LOS	C	D		E	C	A	F	E	C	E	F		D
	V/C	0.52	0.95	0.00	0.79	0.82	0.11	0.89	0.47	0.39	0.64	0.96	0.00	41.7
	Q Length	6.3	247.7	0	48.9	236	8	83.8	73	33	38	139.6	0	
Mid	LOS	B	C		D	C	A	F	D	B	E	E		C
	V/C	0.25	0.84	0.00	0.72	0.63	0.07	0.84	0.44	0.39	0.56	0.76	0.00	31.2
	Q Length	3.1	193.0	0	63.5	153	0	74.0	54	24	29	80	0	
	Improvements (SBR)													
AM	LOS	A	A		B	B	A	E	E	B	E	E	A	B
	V/C	0.17	0.65	0.00	0.37	0.58	0.06	0.42	0.43	0.41	0.53	0.40	0.13	16.4
	Q Length	m2.5	54	0	13	164	1	19	40	16	29	45	0	
PM	LOS	C	C		D	C	A	F	E	C	E	E	B	C
	V/C	0.45	0.86	0.00	0.68	0.74	0.10	0.71	0.70	0.52	0.64	0.79	0.31	34.3
	Q Length	m5.9	269.7	0	41.8	229	8	35.5	76	33	38	88	12	
Mid	LOS	A	B		D	B	A	E	E	B	E	E	A	C
	V/C	0.22	0.75	0.00	0.71	0.57	0.06	0.68	0.63	0.49	0.55	0.63	0.18	25.1
	Q Length	m2.3	200.6	0	53.9	141	0	32.8	57	25	29	62	0	
	Dilworth Dr & Baron Rd													
	Existing Conditions													
AM	LOS		B	A		C	A	B	C		B	B		B
	V/C	0.00	0.07	0.03	0.00	0.59	0.20	0.05	0.72	0.00	0.22	0.35	0.00	19.4
	Q Length	0	9	0	0	57	10	6	105.8	0	13	50	0	
PM	LOS	0.00	D	A	0.00	F	A	C	D	0.00	C	B	0.00	D
	V/C	0.00	0.70	0.10	0.00	1.24	0.36	0.31	0.97	0.00	0.53	0.45	0.00	54.6
	Q Length	0	56	0	0	205.5	16	23	147.1	0	25	63	0	
Mid	LOS	0.00	E	A	0.00	F	C	D	D	0.00	C	B	0.00	D
	V/C	0.00	0.92	0.18	0.00	1.22	0.69	0.68	0.90	0.00	0.71	0.42	0.00	51.7
	Q Length	0	106.9	7	0	204.0	103	52.7	115.5	0	46.9	57	0	
	Timing													
AM	LOS		B	A		C	A	B	C		B	B		B
	V/C	0.00	0.07	0.02	0.00	0.56	0.19	0.05	0.69	0.00	0.22	0.37	0.00	18.0
	Q Length	0	10	0	0	59	11	6	101	0	13	50	0	
PM	LOS		C	A		F	A	C	D		C	B		D

	V/C	0.00	0.62	0.10	0.00	1.18	0.36	0.31	0.96	0.00	0.63	0.46	0.00	49.3
	Q Length	0	52	0	0	200.0	22	22	143.5	0	30.7	66	0	
Mid	LOS		C	A		F	B	D	D		E	C		D
	V/C	0.00	0.69	0.16	0.00	1.05	0.63	0.72	0.96	0.00	0.90	0.47	0.00	43.6
	Q Length	0	77	6	0	186.8	92	57.6	127.2	0	60.8	64	0	
	Improvements (1 EBL, 1 EBTR, 1 WBL, 1 WBTR, NBR)													
	LOS	C	B		C	A		C	C	A	B	B		B
AM	V/C	0.03	0.11	0.00	0.53	0.24	0.00	0.05	0.57	0.28	0.19	0.38	0.00	16.4
	Q Length	4	9	0	37	13	0	7	94.4	16	16	59	0	
	LOS	D	D		D	A		D	D	A	C	C		C
PM	V/C	0.50	0.62	0.00	0.89	0.43	0.00	0.36	0.75	0.52	0.53	0.50	0.00	27.2
	Q Length	28	50	0	127.0	38	0	26	98	23	31	82	0	
	LOS	E	C		D	C		D	C	A	C	B		C
Mid	V/C	0.81	0.65	0.00	0.85	0.83	0.00	0.73	0.61	0.53	0.65	0.45	0.00	29.1
	Q Length	47.9	70	0	89.6	139	0	58.3	73	22	45.4	65	0	
	Dilworth Dr & Springfield Rd													
	Existing Conditions													
	LOS	C	C		F	D		C	D	B	C	C	A	D
AM	V/C	0.52	0.42	0.00	1.24	0.87	0.00	0.06	0.79	0.64	0.12	0.46	0.29	46.3
	Q Length	22	42	0	192.9	138.3	0	8	133.4	52	8	60	14	
	LOS	E	F	0.00	E	D	0.00	D	F	D	C	C	A	F
PM	V/C	0.94	1.57	0.00	1.02	0.90	0.00	0.18	1.02	0.98	0.37	0.61	0.47	100.6
	Q Length	83.4	225.1	0	158.4	148.8	0	12	121.3	125.4	22	76	21	
	LOS	E	C	0.00	D	C	0.00	D	E	C	C	C	A	D
Mid	V/C	0.99	0.54	0.00	0.91	0.74	0.00	0.18	0.93	0.87	0.48	0.42	0.53	35.5
	Q Length	104.7	68	0	109.6	109	0	12	86.9	74.4	27	48	31	
	Timing / Phasing Changes (NBR arrow)													
	LOS	C	E		D	C		C	D	A	C	C	A	C
AM	V/C	0.47	0.82	0.00	0.97	0.83	0.00	0.07	0.84	0.41	0.13	0.49	0.30	33.3
	Q Length	23	55.7	0	190.4	144.5	0	8	129.5	28	8	59	14	
	LOS	F	F		F	C		D	F	D	C	C	A	E
PM	V/C	1.05	1.15	0.00	1.36	0.84	0.00	0.18	1.04	0.92	0.39	0.63	0.49	74.1
	Q Length	89.5	193.1	0	186.3	131	0	12	121.3	187.5	22	77	30	
	LOS	D	C		C	C		D	E	B	C	C	A	C
Mid	V/C	0.89	0.59	0.00	0.86	0.80	0.00	0.17	0.89	0.66	0.50	0.42	0.50	32.7
	Q Length	90.5	73	0	112.1	134.1	0	12	78.9	84	27	47	19	
	Timing/Phasing Changes (NBR arrow, no SBL)													
	LOS	D	F		E	C		C	D	B	F	D	A	
PM	V/C	0.87	1.27	0.00	1.00	0.80	0.00	0.27	0.79	0.74	0.88	0.76	0.55	
	Q Length	33.0	161.3	0	99.9	98.7	0	3.8	62.2	83.1	14.1	60.7	7.7	
	Improvements (2 EBL, 2 WBL)													

AM	LOS	D	C		D	C		C	D	B	B	C	A	C
	V/C	0.43	0.42	0.00	0.86	0.82	0.00	0.07	0.86	0.66	0.13	0.49	0.30	32.3
	Q Length	21	46	0	90.0	150.4	0	8	124.0	46	8	57	13	
PM	LOS	E	F		E	C		D	E	D	C	C	A	E
	V/C	0.84	1.21	0.00	0.90	0.87	0.00	0.17	0.97	0.90	0.37	0.59	0.48	62.0
	Q Length	47.7	200.1	0	81.1	138.9	0	12	117.4	184.5	22	75	30	
Mid	LOS	E	C		D	C		C	D	C	C	C	A	C
	V/C	0.83	0.52	0.00	0.82	0.76	0.00	0.15	0.80	0.88	0.49	0.39	0.50	33.5
	Q Length	52.7	69	0	66.9	118	0	11	68	83.7	25	44	24	
	Leckie Rd & Baron Rd													
	Existing Conditions													
AM	LOS	A	B		A	B		B	B		B	B		B
	V/C	0.10	0.28	0.00	0.14	0.37	0.00	0.09	0.32	0.00	0.23	0.26	0.00	14.4
	Q Length*	9	30	0	12	43	0	9	23	0	17	26	0	
PM	LOS	B	C	0.00	B	D	0.00	C	B	0.00	C	D	0.00	C
	V/C	0.39	0.71	0.00	0.56	0.87	0.00	0.36	0.40	0.00	0.58	0.80	0.00	28.9
	Q Length*	17	91	0	32	173	0	16	29	0	40	106	0	
Mid	LOS	C	C	0.00	B	D	0.00	D	B	0.00	D	D	0.00	D
	V/C	0.59	0.73	0.00	0.49	0.95	0.00	0.53	0.40	0.00	0.74	0.89	0.00	35.6
	Q Length*	31	108	0	26	172	0	#23	34	0	56	118	0	
	Timing													
Mid	LOS	C	C		B	D		D	C		D	D		B
	V/C	0.61	0.69		0.48	0.90		0.47	0.43		0.75	0.86		
	Q Length*	38	128		32	195		24	48		66	129		
	Springfield Rd & Durnin Rd													
	Existing Conditions													
AM	LOS	C			A			B			C			A
	V/C	0.05	0.34	0.18	0.00	0.71	0.38	0.00	0.00	0.00	0.16	0.00	0.00	0.4
	Q Length	1	0	0	0	0	0	0	0	0	5	0	0	
PM	LOS	C			C			B	0.00	0.00	C	0.00	0.00	A
	V/C	0.12	0.71	0.38	0.01	0.60	0.33	0.03	0.00	0.00	0.30	0.00	0.00	0.8
	Q Length	3	0	0	0	0	0	1	0	0	10	0	0	
Mid	LOS	B			B			B	0.00	0.00	C	0.00	0.00	A
	V/C	0.13	0.45	0.25	0.00	0.55	0.31	0.03	0.00	0.00	0.33	0.00	0.00	1.2
	Q Length	4	0	0	0	0	0	1	0	0	12	0	0	
	Underhill St & Harvey Ave													
	Existing Conditions													
AM	LOS				B			A						A
	V/C	0.41	0.41	0.28	0.18	0.39	0.39	0.12	0.00	0.00	0.00	0.00	0.00	0.6
	Q Length	0	0	0	5	0	0	3	0	0	0	0	0	
PM	LOS				D			B	0.00	0.00	0.00	0.00	0.00	A
	V/C	0.60	0.60	0.44	0.73	0.47	0.47	0.40	0.00	0.00	0.00	0.00	0.00	2.4

	Q Length	0	0	0	46	0	0	15	0	0	0	0	0	
Mid	LOS				B			C	0.00	0.00	0.00	0.00	0.00	D
	V/C	0.54	0.54	0.44	0.31	0.40	0.40	0.46	0.00	0.00	0.00	0.00	0.00	1.3
	Q Length	0	0	0	10	0	0	19	0	0	0	0	0	
Durnin Rd & Baron Rd														
Existing Conditions														
	LOS				A			B						A
AM	V/C	0.08	0.00	0.00	0.01	0.10	0.00	0.14	0.00	0.00	0.00	0.00	0.00	2.9
	Q Length	0	0	0	0	0	0	4	0	0	0	0	0	
	LOS		0.00	0.00	A		0.00	C	0.00	0.00	0.00	0.00	0.00	A
PM	V/C	0.19	0.00	0.00	0.06	0.23	0.00	0.32	0.00	0.00	0.00	0.00	0.00	3.1
	Q Length	0	0	0	2	0	0	11	0	0	0	0	0	
	LOS		0.00	0.00	A		0.00	D	0.00	0.00	0.00	0.00	0.00	A
Mid	V/C	0.25	0.00	0.00	0.05	0.25	0.00	0.50	0.00	0.00	0.00	0.00	0.00	4.5
	Q Length	0	0	0	1	0	0	21	0	0	0	0	0	
Baron Rd & Underhill St														
Existing Conditions														
	LOS	A			A			D			B			A
AM	V/C	0.04	0.11	0.00	0.01	0.14	0.00	0.49	0.00	0.00	0.26	0.00	0.00	8.1
	Q Length	1	0	0	0	0	0	21	0	0	8	0	0	
	LOS	A		0.00	A		0.00	F	0.00	0.00	F	0.00	0.00	F
PM	V/C	0.07	0.26	0.00	0.04	0.35	0.00	3.62	0.00	0.00	1.31	0.00	0.00	969.4
	Q Length	2	0	0	1	0	0	Err	0	0	155	0	0	
	LOS	A		0.00	A		0.00	F	0.00	0.00	F	0.00	0.00	E
Mid	V/C	0.10	0.33	0.00	0.08	0.42	0.00	9.22	0.00	0.00	1.75	0.00	0.00	1815.3
	Q Length	3	0	0	2	0	0	Err	0	0	156	0	0	
Signal														
	LOS	A	A		A	A			A			A		A
AM	V/C	0.07	0.17		0.02	0.21			0.34			0.26		
	Q Length	7	19		4	26			16			6		
	LOS	B	B		A	B			B			B		B
PM	V/C	0.28	0.53		0.11	0.70			0.45			0.63		
	Q Length	12	49		7	75			20			21		
	LOS	C	B		B	C			C			A		B
Mid	V/C	0.51	0.66		0.26	0.82			0.79			0.43		
	Q Length	22	68		12	114			66			25		

TABLE A5 - 2024 Combined Peak Hour Level of Service, V/C and Queues														
		EB			WB			NB			SB			Overall
		L	T	R	L	T	R	L	T	R	L	T	R	
Dilworth Dr & Harvey Ave														
Existing Conditions														
AM	LOS	D	C		E	D		F	D		F	E		E
	V/C	0.73	0.67	0.00	0.94	0.70	0.00	1.95	0.87	0.00	1.18	0.75	0.00	62.1
	Q Length	57	152	0	129.1	218	0	136.5	133.2	0	46.5	100	0	
PM	LOS	E	F	0.00	F	D	0.00	F	E	0.00	F	D	0.00	F
	V/C	0.85	1.11	0.00	1.11	0.92	0.00	1.99	1.00	0.00	1.34	0.71	0.00	82.6
	Q Length	84.0	356.4	0	135.2	271	0	151.3	208.7	0	60.1	129	0	
Mid	LOS	D	E	0.00	F	C	0.00	F	D	0.00	F	D	0.00	E
	V/C	0.78	1.04	0.00	1.06	0.75	0.00	1.58	0.89	0.00	1.57	0.58	0.00	65.7
	Q Length	58.0	274.7	0	127.6	187	0	147.3	148.5	0	71.6	88	0	
Timing / Phasing Changes (NBL, SBL)														
AM	LOS	E	D		E	E		E	D		D	E		E
	V/C	0.82	0.85	0.00	0.92	0.82	0.00	0.84	0.83	0.00	0.48	0.93	0.00	56.6
	Q Length	73.6	186	0	132.5	221	0	79.2	131	0	21	107	0	
PM	LOS	F	F		F	D		F	F		D	F		F
	V/C	0.94	1.18	0.00	1.15	0.95	0.00	1.00	1.10	0.00	0.55	1.01	0.00	89.2
	Q Length	99.0	371.9	0	121.1	272.5	0	103.1	234.9	0	26	165.4	0	
Mid	LOS	E	F		F	C		F	C		F	C		E
	V/C	0.80	1.14	0.00	1.17	0.84	0.00	1.18	0.76	0.00	1.18	0.49	0.00	71.5
	Q Length	61.9	295.0	0	135.1	192	0	132.7	127	0	66.2	80	0	
Improvements (EBR, NBR, SBR)														
AM	LOS	E	D	A	D	D		E	D	B	D	E	A	D
	V/C	0.82	0.74	0.07	0.89	0.74	0.00	0.78	0.47	0.70	0.26	0.85	0.44	46.5
	Q Length	73.9	173	0	118.8	220	0	67.7	72	58	23	84	7	
PM	LOS	F	F	A	F	C		E	E	D	D	F	B	E
	V/C	0.91	1.11	0.24	0.96	0.92	0.00	0.88	0.65	0.92	0.37	0.95	0.39	63.6
	Q Length	95.1	333.7	18	114.6	269	0	93.8	108	169.5	27	132.5	20	
Mid	LOS	D	E	A	E	C		F	D	D	D	E	A	D
	V/C	0.77	1.06	0.29	0.89	0.79	0.00	0.96	0.65	0.84	0.46	0.78	0.31	51.3
	Q Length	58.0	258.5	23	123.6	192	0	92.4	84	100.6	31	81	5	
Harvey Ave & Leckie Rd														
Existing Conditions														
AM	LOS	B	A		F	B	A	F	E	B	E	E		B
	V/C	0.31	0.64	0.00	0.91	0.59	0.06	0.64	0.39	0.39	0.49	0.61	0.00	18.0
	Q Length	3.6	60.6	0	33.2	149	1	40.5	42	17	29	58	0	
PM	LOS	F	C	0.00	F	C	A	F	E	C	E	F	0.00	D
	V/C	1.33	0.88	0.00	2.29	0.78	0.11	0.92	0.48	0.41	0.60	0.96	0.00	47.1

	Q Length	19.1	250.9	0	83.9	219	8	88.3	76	35	38	140.3	0	
Mid	LOS	C	C	0.00	D	B	A	F	D	A	E	E	0.00	C
	V/C	0.44	0.88	0.00	0.75	0.57	0.06	0.91	0.49	0.38	0.50	0.77	0.00	29.3
	Q Length	10.3	209.2	0	66.0	132	0	81.2	59	15	29	83	0	
Timing / Phasing Changes (EBL, WBL)														
AM	LOS	A	B		C	C	A	F	E	B	E	E		C
	V/C	0.20	0.71	0.00	0.47	0.63	0.06	0.57	0.36	0.37	0.55	0.55	0.00	21.1
	Q Length	3.2	74	0	20	187	1	38	40	17	29	59	0	
PM	LOS	C	D		E	C	A	F	E	C	E	F		D
	V/C	0.54	0.99	0.00	0.84	0.85	0.11	0.96	0.50	0.42	0.65	1.01	0.00	44.3
	Q Length	5.9	246.8	0	55.7	255	9	90.6	76	35	39	148.1	0	
Mid	LOS	B	C		D	C	A	F	D	B	E	E		C
	V/C	0.27	0.89	0.00	0.74	0.66	0.07	0.90	0.46	0.40	0.57	0.77	0.00	31.5
	Q Length	2.7	194.9	0	70.5	162	0	80.5	57	26	30	83	0	
Improvements (SBR)														
AM	LOS	A	B		C	B	A	F	E	B	E	E	A	B
	V/C	0.20	0.70	0.00	0.47	0.63	0.06	0.57	0.38	0.38	0.55	0.41	0.13	19.1
	Q Length	2.7	62	0	20	187	1	38	40	17	29	46	0	
PM	LOS	C	D		E	C	A	F	E	C	E	F	B	D
	V/C	0.51	0.96	0.00	0.74	0.82	0.11	0.92	0.58	0.46	0.64	0.81	0.32	39.9
	Q Length	6.5	277.6	0	60.6	258	9	88.3	76	35	39	91	13	
Mid	LOS	B	C		D	C	A	F	E	B	E	E	A	C
	V/C	0.26	0.86	0.00	0.72	0.63	0.07	0.90	0.52	0.44	0.57	0.66	0.19	29.4
	Q Length	2.7	211.1	0	71.5	162	0	80.5	57	26	30	64	0	
Dilworth Dr & Baron Rd														
Existing Conditions														
AM	LOS		B	A		C	A	C	C		B	B		C
	V/C	0.00	0.06	0.02	0.00	0.65	0.27	0.06	0.78	0.00	0.27	0.38	0.00	22.1
	Q Length	0	9	0	0	73	12	7	133.6	0	15	58	0	
PM	LOS	0.00	E	A	0.00	F	A	C	E	0.00	C	B	0.00	E
	V/C	0.00	0.88	0.10	0.00	1.39	0.40	0.33	1.04	0.00	0.64	0.46	0.00	73.0
	Q Length	0	76.2	0	0	227.5	19	23	163.0	0	33	66	0	
Mid	LOS	0.00	F	A	0.00	F	C	D	D	0.00	D	B	0.00	E
	V/C	0.00	1.25	0.19	0.00	1.40	0.78	0.70	0.94	0.00	0.78	0.43	0.00	76.3
	Q Length	0	127.8	7	0	231.4	124.3	57.5	127.2	0	57.7	59	0	
Timing														
AM	LOS		B	A		C	A	C	C		B	B		C
	V/C	0.00	0.06	0.02	0.00	0.66	0.27	0.06	0.76	0.00	0.27	0.38	0.00	21.2
	Q Length	0	10	0	0	75	12	7	114	0	15	57	0	
PM	LOS		C	A		F	A	C	F		D	C		E
	V/C	0.00	0.68	0.10	0.00	1.25	0.38	0.35	1.12	0.00	0.71	0.50	0.00	71.1
	Q Length	0	57	0	0	216.7	23	24	170.8	0	41.3	72	0	
Mid	LOS		D	A		F	C	E	E		F	C		E

	V/C	0.00	0.89	0.17	0.00	1.23	0.71	0.74	0.98	0.00	0.99	0.47	0.00	59.1
	Q Length	0	107.3	7	0	217.0	111	60.8	135.0	0	70.8	66	0	
Improvements (1 EBL, 1 EBTR, 1 WBL, 1 WBTR, NBR)														
AM	LOS	C	B		C	A		C	C	A	B	B		B
	V/C	0.03	0.11	0.00	0.66	0.34	0.00	0.06	0.59	0.30	0.21	0.40	0.00	16.7
	Q Length	4	10	0	46	17	0	7	100.1	17	17	61	0	
PM	LOS	D	D		D	A		D	D	A	D	C		C
	V/C	0.55	0.69	0.00	0.93	0.47	0.00	0.38	0.79	0.57	0.64	0.52	0.00	31.2
	Q Length	32	61	0	145.6	50	0	29	111	26	43.5	93	0	
Mid	LOS	F	C		D	D		E	D	A	D	C		D
	V/C	0.87	0.54	0.00	0.91	0.92	0.00	0.81	0.67	0.58	0.81	0.50	0.00	37.8
	Q Length	58.1	73	0	108.2	213.2	0	62.7	76	23	58.6	68	0	
Dilworth Dr & Springfield Rd														
Existing Conditions														
AM	LOS	C	C		F	D		C	D	B	C	C	A	D
	V/C	0.56	0.44	0.00	1.31	0.91	0.00	0.07	0.82	0.67	0.13	0.49	0.32	51.6
	Q Length	24	43	0	206.2	146.8	0	8	141.2	62.7	9	65	15	
PM	LOS	F	F	0.00	F	D	0.00	D	F	D	C	C	A	F
	V/C	1.04	1.62	0.00	1.06	0.93	0.00	0.19	1.10	1.02	0.39	0.64	0.50	112.7
	Q Length	96.5	235.2	0	168.1	158.1	0	13	132.1	137.6	22	80	27	
Mid	LOS	F	C	0.00	D	C	0.00	D	E	C	C	C	B	D
	V/C	1.16	0.59	0.00	0.95	0.77	0.00	0.18	0.94	0.90	0.49	0.44	0.56	41.4
	Q Length	117.0	71	0	124.7	114	0	13	94.1	84.8	28	51	38	
Timing														
AM	LOS	C	D		F	D		C	D	B	C	C	A	D
	V/C	0.54	0.78	0.00	1.11	0.90	0.00	0.07	0.81	0.66	0.13	0.49	0.32	41.0
	Q Length	24	54.8	0	203.4	145.5	0	8	139.2	58	8	64	15	
PM	LOS	F	F		F	E		D	E	F	C	C	A	F
	V/C	1.04	1.33	0.00	1.41	1.00	0.00	0.17	0.98	1.16	0.38	0.60	0.47	02.6
	Q Length	96.6	215.6	0	195.8	167.6	0	12	124.3	181.2	22	77	23	
Mid	LOS	F	C		D	C		D	E	C	C	C	B	D
	V/C	1.16	0.59	0.00	0.95	0.77	0.00	0.18	0.94	0.90	0.49	0.44	0.56	41.4
	Q Length	117.0	71	0	124.7	114	0	13	94.1	84.8	28	51	38	
Improvements (2 EBL, 2 SBL, free NBR)														
AM	LOS	D	C		D	D		C	D	A	B	C	A	C
	V/C	0.49	0.47	0.00	0.87	0.86	0.00	0.08	0.87	0.33	0.13	0.52	0.33	31.8
	Q Length	22	48	0	93.1	156.5	0	8	129.1	0	8	61	14	
PM	LOS	E	F		F	D		C	E	A	C	C	A	E
	V/C	0.91	1.14	0.00	1.29	0.96	0.00	0.17	0.95	0.46	0.39	0.59	0.50	64.7
	Q Length	54.3	197.7	0	105.0	162.2	0	12	120.4	0	21	76	36	
Mid	LOS	E	C		D	C		C	D	A	C	C	B	C
	V/C	0.90	0.56	0.00	0.76	0.77	0.00	0.17	0.89	0.35	0.49	0.42	0.57	32.1
	Q Length	65.8	74	0	61	117	0	12	82.1	0	27	48	43	

Leckie Rd & Baron Rd														
Existing Conditions														
AM	LOS	A	B		A	B		B	B		B	B		B
	V/C	0.10	0.34	0.00	0.15	0.39	0.00	0.09	0.33	0.00	0.24	0.27	0.00	14.7
	Q Length*	9	37	0	13	46	0	9	24	0	17	27	0	
PM	LOS	B	C	0.00	B	D	0.00	D	B	0.00	D	D	0.00	C
	V/C	0.43	0.74	0.00	0.60	0.94	0.00	0.42	0.41	0.00	0.61	0.84	0.00	32.5
	Q Length*	17	98	0	33	192	0	17	30	0	43	115	0	
Mid	LOS	C	C	0.00	B	E	0.00	D	B	0.00	D	D	0.00	D
	V/C	0.62	0.78	0.00	0.56	1.00	0.00	0.59	0.41	0.00	0.78	0.92	0.00	40.9
	Q Length*	33	131	0	27	189	0	25	35	0	60	126	0	
Timing														
AM	LOS	A	B		A	B			B			B		B
	V/C	0.10	0.35	0.00	0.15	0.39	0.00	0.00	0.39	0.00	0.00	0.28	0.00	14.6
	Q Length	9	37	0	13	47	0	0	27	0	0	19	0	
PM	LOS	B	C		B	D		D	B		D	D		C
	V/C	0.47	0.69	0.00	0.61	0.89	0.00	0.40	0.40	0.00	0.60	0.82	0.00	30.4
	Q Length*	18	98	0	35	185	0	17	33	0	45	121	0	
Mid	LOS	C	C		B	D		E	C		E	D		D
	V/C	0.68	0.70	0.00	0.53	0.92	0.00	0.58	0.40	0.00	0.76	0.88	0.00	40.0
	Q Length*	53	147	0	35	228	0	30	49	0	73	150	0	
Improvements (WBR)														
AM	LOS	A	B		A	B	A		B			B		B
	V/C	0.10	0.35	0.00	0.15	0.30	0.09	0.00	0.39	0.00	0.00	0.27	0.00	13.7
	Q Length	9	37	0	13	38	0	0	26	0	0	18	0	
PM	LOS	B	D		C	C	A		B			C		C
	V/C	0.34	0.82	0.00	0.69	0.71	0.28	0.00	0.52	0.00	0.00	0.77	0.00	24.8
	Q Length	19	110.5	0	45.6	118.3	14	0	34	0	0	58	0	
Mid	LOS	B	D		C	C	A		B			C		C
	V/C	0.57	0.88	0.00	0.70	0.79	0.30	0.00	0.54	0.00	0.00	0.86	0.00	29.3
	Q Length	27	135.2	0	42.2	117.1	14	0	40	0	0	65	0	
Springfield Rd & Durnin Rd														
Existing Conditions														
AM	LOS	C			A			B			C			A
	V/C	0.06	0.35	0.19	0.00	0.74	0.39	0.00	0.00	0.00	0.18	0.00	0.00	0.5
	Q Length	2	0	0	0	0	0	0	0	0	5	0	0	
PM	LOS	C			C			B	0.00	0.00	C	0.00	0.00	B
	V/C	0.14	0.73	0.39	0.01	0.62	0.35	0.03	0.00	0.00	0.33	0.00	0.00	0.9
	Q Length	4	0	0	0	0	0	1	0	0	11	0	0	
Mid	LOS	B			B			B	0.00	0.00	C	0.00	0.00	B
	V/C	0.14	0.47	0.26	0.00	0.57	0.33	0.03	0.00	0.00	0.37	0.00	0.00	1.3
	Q Length	4	0	0	0	0	0	1	0	0	13	0	0	
Underhill St & Harvey Ave														

Existing Conditions														
AM	LOS				B			B						A
	V/C	0.43	0.43	0.30	0.21	0.41	0.41	0.17	0.00	0.00	0.00	0.00	0.00	0.7
	Q Length	0	0	0	6	0	0	5	0	0	0	0	0	
PM	LOS				F			C	0.00	0.00	0.00	0.00	0.00	F
	V/C	0.62	0.62	0.47	0.95	0.48	0.48	0.45	0.00	0.00	0.00	0.00	0.00	4.7
	Q Length	0	0	0	81	0	0	19	0	0	0	0	0	
Mid	LOS				C			C	0.00	0.00	0.00	0.00	0.00	E
	V/C	0.56	0.56	0.47	0.40	0.42	0.42	0.53	0.00	0.00	0.00	0.00	0.00	1.7
	Q Length	0	0	0	15	0	0	25	0	0	0	0	0	
Durnin Rd & Baron Rd														
Existing Conditions														
AM	LOS				A			B						A
	V/C	0.11	0.00	0.00	0.02	0.11	0.00	0.16	0.00	0.00	0.00	0.00	0.00	2.8
	Q Length	0	0	0	0	0	0	4	0	0	0	0	0	
PM	LOS		0.00	0.00	A		0.00	C	0.00	0.00	0.00	0.00	0.00	A
	V/C	0.21	0.00	0.00	0.06	0.26	0.00	0.43	0.00	0.00	0.00	0.00	0.00	3.9
	Q Length	0	0	0	2	0	0	16	0	0	0	0	0	
Mid	LOS		0.00	0.00	A		0.00	E	0.00	0.00	0.00	0.00	0.00	A
	V/C	0.27	0.00	0.00	0.05	0.27	0.00	0.63	0.00	0.00	0.00	0.00	0.00	6.1
	Q Length	0	0	0	1	0	0	32	0	0	0	0	0	
Baron Rd & Underhill St														
Existing Conditions														
AM	LOS	A			A			F			B			F
	V/C	0.04	0.13	0.00	0.02	0.15	0.00	1.28	0.00	0.00	0.33	0.00	0.00	66.2
	Q Length	1	0	0	1	0	0	146	0	0	11	0	0	
PM	LOS	A		0.00	A		0.00	F	0.00	0.00	F	0.00	0.00	D
	V/C	0.08	0.31	0.00	0.09	0.36	0.00	Err	0.00	0.00	2.60	0.00	0.00	Err
	Q Length	2	0	0	3	0	0	Err	0	0	334	0	0	
Mid	LOS	A		0.00	A		0.00	F	0.00	0.00	F	0.00	0.00	G
	V/C	0.11	0.37	0.00	0.12	0.44	0.00	Err	0.00	0.00	13.65	0.00	0.00	Err
	Q Length	3	0	0	3	0	0	Err	0	0	Err	0	0	
Signal, NBL, SBL														
AM	LOS	A	A		A	A		B	A		A	A		A
	V/C	0.10	0.25	0.00	0.06	0.29	0.00	0.52	0.23	0.00	0.03	0.25	0.00	8.7
	Q Length	8	22	0	6	28	0	25	10	0	2	7	0	
PM	LOS	B	B		B	B		C	A		B	B		B
	V/C	0.35	0.66	0.00	0.34	0.75	0.00	0.62	0.22	0.00	0.07	0.67	0.00	15.7
	Q Length	15	66	0	17	86	0	25	12	0	5	30	0	
Mid	LOS	C	B		B	B		C	A		B	B		B
	V/C	0.53	0.70	0.00	0.45	0.82	0.00	0.68	0.52	0.00	0.06	0.49	0.00	16.5
	Q Length	22	72	0	20	102	0	48	23	0	5	31	0	

2034 Combined Peak Hour Level of Service, V/C and Queues														
		EB			WB			NB			SB			Overall
		L	T	R	L	T	R	L	T	R	L	T	R	
Dilworth Dr & Harvey Ave														
Existing Conditions														
AM	LOS	E	D		F	D		F	E		F	E		E
	V/C	0.81	0.75	0.00	1.08	0.79	0.00	2.58	0.96	0.00	1.28	0.83	0.00	77.3
	Q Length	72	174	0	166.6	241	0	144.2	165.8	0	49.7	113	0	
PM	LOS	E	F	0.00	F	D	0.00	F	F	0.00	F	D	0.00	F
	V/C	0.90	1.22	0.00	1.22	1.03	0.00	2.74	1.10	0.00	1.46	0.78	0.00	118.4
	Q Length	101.1	413.9	0	137.7	325.5	0	146.5	247.0	0	65.3	144	0	
Mid	LOS	E	F	0.00	F	C	0.00	F	E	0.00	F	D	0.00	F
	V/C	0.83	1.15	0.00	1.17	0.84	0.00	1.98	0.98	0.00	1.72	0.64	0.00	91.0
	Q Length	70.0	321.3	0	146.6	208.7	0	163.8	178.5	0	77.7	98	0	
Timing / Phasing Changes (NBL, SBL)														
AM	LOS	F	E		E	E		F	D		D	F		E
	V/C	0.91	0.98	0.00	0.97	0.91	0.00	0.90	0.91	0.00	0.52	0.99	0.00	66.6
	Q Length	92.7	223.6	0	155.1	243	0	87.0	165.2	0	23	125.6	0	
PM	LOS	F	F		F	D		F	F		E	F		F
	V/C	1.17	1.31	0.00	1.28	1.04	0.00	1.16	1.25	0.00	0.60	1.03	0.00	127.1
	Q Length	124.3	433.6	0	118.2	317.3	0	118.5	269.7	0	29.0	180.7	0	
Mid	LOS	E	F		F	C		F	F		E	E		F
	V/C	0.89	1.25	0.00	1.23	0.91	0.00	1.16	1.14	0.00	0.71	0.92	0.00	01.8
	Q Length	76.8	341.3	0	150.8	211.7	0	122.5	201.7	0	37.5	124.8	0	
Improvements (EBR, NBR, SBR)														
AM	LOS	E	D	A	E	E		E	D	C	D	F	B	D
	V/C	0.86	0.85	0.08	0.94	0.84	0.00	0.85	0.51	0.79	0.29	0.90	0.48	52.9
	Q Length	84.7	193	0	148.2	242	0	80.1	79	92	24	92	13	
PM	LOS	F	F	A	F	D		F	E	F	D	F	B	F
	V/C	1.00	1.14	0.24	1.23	1.01	0.00	0.97	0.78	1.10	0.50	1.04	0.43	80.8
	Q Length	112.8	371.6	20	123.4	319.0	0	106.3	122	218.5	30	152.3	24	
Mid	LOS	E	F	A	F	C		E	D	D	D	E	A	E
	V/C	0.86	1.18	0.32	1.12	0.92	0.00	0.95	0.64	0.91	0.50	0.81	0.33	71.4
	Q Length	77.6	300.8	28	152.7	226.2	0	102.4	91	143.5	32	90	8	
Harvey Ave & Leckie Rd														
Existing Conditions														
AM	LOS	C	B		F	B	A	F	E	B	E	E		C
	V/C	0.47	0.71	0.00	1.34	0.66	0.07	0.67	0.43	0.42	0.51	0.66	0.00	21.4
	Q Length	3.6	66.4	0	46.7	176	2	45.7	46	22	31	64	0	
PM	LOS	F	C	0.00	F	C	A	F	E	C	E	F	0.00	D
	V/C	1.45	0.97	0.00	2.47	0.87	0.12	1.01	0.54	0.45	0.63	1.04	0.00	53.8
	Q Length	19.9	254.9	0	91.8	262	8	100.0	85	42	41	164.7	0	
Mid	LOS	D	D	0.00	D	B	A	F	D	A	E	E	0.00	D

	V/C	0.68	1.00	0.00	0.79	0.64	0.07	1.01	0.52	0.41	0.53	0.80	0.00	36.4
	Q Length	12.3	216.0	0	75.2	152	1	91.9	65	18	32	92	0	
Timing / Phasing Changes (EBL, WBL)														
AM	LOS	B		C	C	A		F	E	B	E	E		C
	V/C	0.78	0.00	0.50	0.72	0.07	0.00	0.67	0.40	0.41	0.58	0.66	0.00	23.4
	Q Length	92	0	22	213	3	0	45.7	44	21	32	65	0	
PM	LOS	C	E		F	D	A	F	E	C	E	F		E
	V/C	0.59	1.08	0.00	0.98	0.96	0.13	1.08	0.58	0.47	0.68	1.11	0.00	64.4
	Q Length	5.9	245.7	0	66.6	306.8	11	103.8	84	42	43	172.5	0	
Mid	LOS	B	D		D	C	A	F	D	B	E	E		D
	V/C	0.32	1.01	0.00	0.78	0.74	0.08	0.99	0.49	0.44	0.58	0.81	0.00	39.3
	Q Length	3.0	199.0	0	80.0	187	1	91.1	63	32	33	93	0	
Improvements (SBR)														
AM	LOS	B	B		C	C	A	F	E	B	E	E	A	C
	V/C	0.25	0.77	0.00	0.50	0.71	0.07	0.67	0.43	0.43	0.58	0.51	0.16	21.4
	Q Length	2.6	136	0	22	213	3	45.7	44	21	32	50	0	
PM	LOS	C	E		E	D	A	F	E	C	E	F	B	E
	V/C	0.55	1.08	0.00	0.79	0.94	0.13	1.01	0.63	0.50	0.69	0.85	0.35	59.0
	Q Length	7.4	296.7	0	67.8	327.7	11	100.0	83	41	43	101	16	
Mid	LOS	B	D		D	C	A	F	E	C	E	E	A	D
	V/C	0.32	0.99	0.00	0.72	0.71	0.08	0.93	0.57	0.48	0.55	0.69	0.20	35.9
	Q Length	3.0	219.9	0	80.7	190	1	88.0	63	32	32	71	1	
Dilworth Dr & Baron Rd														
Existing Conditions														
AM	LOS		B	A		C	A	C	C		B	B		C
	V/C	0.00	0.07	0.03	0.00	0.68	0.26	0.06	0.82	0.00	0.30	0.41	0.00	23.7
	Q Length	0	10	0	0	76	12	8	154.3	0	16	64	0	
PM	LOS	0.00	F	A	0.00	F	A	C	F	0.00	C	B	0.00	F
	V/C	0.00	1.22	0.11	0.00	1.56	0.43	0.39	1.13	0.00	0.66	0.50	0.00	104.4
	Q Length	0	97.9	0	0	252.2	25	26	185.0	0	35.5	74	0	
Mid	LOS	0.00	F	A	0.00	F	C	E	E	0.00	D	B	0.00	F
	V/C	0.00	1.87	0.21	0.00	1.61	0.84	0.80	0.99	0.00	0.83	0.46	0.00	118.2
	Q Length	0	121.5	10	0	255.3	151.8	67.9	146.4	0	66.1	66	0	
Timing														
AM	LOS		B	A		C	A	C	C		B	B		C
	V/C	0.00	0.07	0.03	0.00	0.67	0.26	0.06	0.82	0.00	0.32	0.41	0.00	23.0
	Q Length	0	11	0	0	78	12	7	139.2	0	16	63	0	
PM	LOS		E	A		F	A	D	F		D	C		F
	V/C	0.00	0.95	0.11	0.00	1.44	0.42	0.40	1.18	0.00	0.74	0.53	0.00	95.7
	Q Length	0	84.7	0	0	244.1	30	27	189.1	0	44.2	79	0	
Mid	LOS		F	A		F	C	F	F		E	C		F
	V/C	0.00	1.16	0.19	0.00	1.37	0.76	0.90	1.10	0.00	0.97	0.52	0.00	85.8
	Q Length	0	131.1	9	0	240.2	125	72.4	157.9	0	73.9	73	0	

Improvements (1 EBL, 1 EBTR, 1 WBL, 1 WBTR, NBR)														
AM	LOS	B	C		C	A		B	C	A	B	B		B
	V/C	0.03	0.15	0.00	0.60	0.36	0.00	0.04	0.64	0.31	0.24	0.43	0.00	19.5
	Q Length	4	14	0	64	29	0	6	110	17	19	93	0	
PM	LOS	C	D		E	C		C	D	A	D	D		D
	V/C	0.36	0.73	0.00	1.00	0.64	0.00	0.38	0.84	0.58	0.77	0.75	0.00	38.7
	Q Length	20	66	0	177.7	84	0	23	122	26	56.7	124	0	
Mid	LOS	E	D		C	F		F	E	B	E	E		E
	V/C	0.78	0.58	0.00	0.77	1.00	0.00	0.93	0.95	0.67	0.90	0.93	0.00	60.7
	Q Length	51.9	99	0	82	263.0	0	68.7	124.3	31	83.8	133.2	0	
Improvement (1 EBL, 1 EBTR, 1 WBL, 1 WBTR, NBR, WBR)														
Mid	LOS	C	E		D	C	B	D	D	A	D	D		D
	V/C	0.36	0.84		0.91	0.33	0.77	0.69	0.78	0.62	0.76	0.84		
	Q Length	29	108		134	58	98	53	103	28	70	115		
Dilworth Dr & Springfield Rd														
Existing Conditions														
AM	LOS	C	C		F	E		C	D	B	C	C	A	E
	V/C	0.61	0.48	0.00	1.48	1.00	0.00	0.08	0.89	0.73	0.14	0.53	0.33	68.4
	Q Length	26	47	0	242.2	170.3	0	9	159.8	90.8	9	71	15	
PM	LOS	F	F	0.00	F	E	0.00	D	F	F	C	C	A	F
	V/C	1.11	1.77	0.00	1.16	1.02	0.00	0.23	1.19	1.13	0.43	0.70	0.54	143.8
	Q Length	106.0	261.9	0	191.0	183.2	0	14	145.6	168.8	24	89	34	
Mid	LOS	F	C	0.00	F	C	0.00	D	F	E	C	C	B	E
	V/C	1.34	0.67	0.00	1.08	0.84	0.00	0.23	1.15	1.04	0.51	0.46	0.60	63.3
	Q Length	129.2	78	0	153.9	130	0	14	104.8	111.0	30	55	47	
Timing														
AM	LOS	C	D		F	D		C	D	B	C	C	A	E
	V/C	0.61	0.73	0.00	1.30	0.99	0.00	0.08	0.88	0.72	0.14	0.53	0.33	57.2
	Q Length	25.7	53	0	241.1	168.6	0	9	157.1	87.7	9	70	16	
PM	LOS	F	F		F	F		D	F	F	C	C	A	F
	V/C	1.11	1.45	0.00	1.55	1.09	0.00	0.20	1.06	1.28	0.42	0.65	0.51	135.6
	Q Length	106.3	242.4	0	219.2	192.6	0	13	137.8	212.6	23	85	30	
Mid	LOS	F	D		E	E		D	E	C	C	C	A	D
	V/C	1.04	0.84	0.00	1.03	1.00	0.00	0.20	0.99	0.90	0.54	0.43	0.52	49.7
	Q Length	113.5	91.4	0	158.3	162.2	0	13	94.8	81.1	29	53	21	
Improvements (2 EBL, 2 WBL, free NBR)														
AM	LOS	D	D		E	E		C	D	A	B	C	A	D
	V/C	0.55	0.64	0.00	0.94	1.05	0.00	0.07	0.83	0.36	0.14	0.50	0.32	41.5
	Q Length	24	51	0	110.7	176.9	0	9	149.4	0	9	68	15	
PM	LOS	F	F		F	E		D	F	A	C	C	B	F
	V/C	0.99	1.30	0.00	1.22	1.03	0.00	0.20	1.06	0.50	0.42	0.65	0.54	84.5
	Q Length	59.2	229.9	0	109.1	184.4	0	13	137.8	0	23	85	43	
Mid	LOS	E	C		D	D		C	E	A	C	C	A	D

	V/C	0.88	0.68	0.00	0.84	0.95	0.00	0.19	0.93	0.38	0.54	0.42	0.54	36.4
	Q Length	60.0	80	0	73.8	154.8	0	13	90.4	0	29	52	35	
Improvements (2 EBL, 3 EBT, 2 SBL, 3 NBT, free NBR)														
	LOS	D	C		D	C		C	D	A	C	C	A	C
AM	V/C	0.52	0.29		0.88	0.80		0.11	0.85	0.36	0.15	0.69	0.40	
	Q Length	24	33		100	161		9	92	0	10	73	18	
	LOS	E	D		E	D		D	D	A	C	C	B	D
PM	V/C	0.89	0.91		0.95	0.94		0.27	0.89	0.50	0.45	0.75	0.58	
	Q Length	57	130		95	178		14	80	0	24	88	42	
	LOS	E	C		D	D		D	D	A	C	C	A	C
Mid	V/C	0.85	0.45		0.78	0.89		0.22	0.76	0.38	0.53	0.46	0.57	
	Q Length	59	52		65	148		13	53	0	30	54	38	
Leckie Rd & Baron Rd														
Existing Conditions														
	LOS	A	B		A	B		B	B		B	B		B
AM	V/C	0.11	0.35	0.00	0.16	0.42	0.00	0.10	0.36	0.00	0.27	0.29	0.00	15.1
	Q Length*	9	38	0	14	51	0	9	26	0	19	29	0	
	LOS	B	D	0.00	C	E	0.00	D	B	0.00	D	D	0.00	D
PM	V/C	0.47	0.82	0.00	0.74	1.03	0.00	0.51	0.43	0.00	0.68	0.87	0.00	41.6
	Q Length*	19	112	0	54	214	0	22	34	0	55	132	0	
	LOS	C	D	0.00	C	F	0.00	E	B	0.00	E	E	0.00	D
Mid	V/C	0.68	0.85	0.00	0.67	1.10	0.00	0.64	0.44	0.00	0.90	0.98	0.00	53.3
	Q Length*	42	148	0	37	211	0	28	39	0	71	145	0	
Timing														
	LOS	C	C		B	D		C	C		E	C		B
PM	V/C	0.55	0.68	0.00	0.63	0.95	0.00	0.29	0.49	0.00	0.85	0.51	0.00	31.6
	Q Length*	26	113	0	38	206	0	17	37	0	60	45	0	
	LOS	E	D		C	D		F	C		E	E		D
Mid	V/C	0.90	0.74	0.00	0.63	0.95	0.00	0.83	0.42	0.00	0.87	0.93	0.00	47.7
	Q Length*	80	163	0	38	250	0	40	55	0	88	180	0	
Springfield Rd & Durnin Rd														
Existing Conditions														
	LOS	C			A			B			D			A
AM	V/C	0.08	0.38	0.20	0.00	0.81	0.43	0.00			0.22			0.5
	Q Length	2	0	0	0	0	0	0			7			
	LOS	C			C			C			D			A
PM	V/C	0.17	0.80	0.43	0.01	0.68	0.38	0.04			0.40			1
	Q Length	5	0	0	0	0	0	1			15			
	LOS	C			B			B			D			A
Mid	V/C	0.18	0.51	0.28	0.00	0.63	0.36	0.04			0.44			1.5
	Q Length	5	0	0	0	0	0	1			17			
Underhill St & Harvey Ave														
Existing Conditions														

AM	LOS				C			B						A
	V/C	0.48	0.48	0.33	0.25	0.45	0.45	0.18						0.7
	Q Length	0	0	0	8	0	0	5						
PM	LOS				F			C						C
	V/C	0.69	0.69	0.52	1.59	0.53	0.53	0.48						18.2
	Q Length	0	0	0	178	0	0	21						
Mid	LOS				D			C						A
	V/C	0.62	0.62	0.51	0.61	0.46	0.46	0.57						2.1
	Q Length	0	0	0	30	0	0	28						
Durnin Rd & Baron Rd														
Existing Conditions														
AM	LOS				A			B						A
	V/C	0.11			0.02	0.11		0.17						2.9
	Q Length	0			0	0		5						
PM	LOS				A			D						A
	V/C	0.23			0.07	0.28		0.48						4.3
	Q Length	0			2	0		20						
Mid	LOS				A			E						A
	V/C	0.29			0.05	0.29		0.73						7.9
	Q Length	0			1	0		42						
Baron Rd & Underhill St														
Existing Conditions														
AM	LOS	A			A			F			C			F
	V/C	0.04	0.13		0.02	0.16		1.26			0.36			58.4
	Q Length	1	0		1	0		133			13			
PM	LOS	A			A			F			F			F
	V/C	0.09	0.32		0.08	0.39		Err			2.83			Err
	Q Length	2	0		2	0		Err			359			
Mid	LOS	B			A			F			F			F
	V/C	0.13	0.40		0.12	0.48		Err			Err			Err
	Q Length	3	0		3	0		Err			Err			
Improvements (Signals)														
AM	LOS	A	A		A	A		B	A		A	A		A
	V/C	0.11	0.26	0.00	0.05	0.31	0.00	0.49	0.22	0.00	0.03	0.28	0.00	8.6
	Q Length	8	23	0	5	30	0	23	9	0	2	7	0	
PM	LOS	B	B		B	B		D	A		B	B		B
	V/C	0.43	0.65	0.00	0.30	0.79	0.00	0.66	0.21	0.00	0.08	0.72	0.00	17.3
	Q Length	17	68	0	14	95	0	28	12	0	6	35	0	
Mid	LOS	D	B		B	C		D	A		B	B		C
	V/C	0.69	0.72	0.00	0.46	0.86	0.00	0.75	0.53	0.00	0.07	0.54	0.00	19.1
	Q Length	32	81	0	20	141	0	47	23	0	5	37	0	
Improvements (Signals, NBL, SBL)														
AM	LOS	A	A		A	A		B	A		A	A		A

	V/C	0.11	0.26		0.05	0.31		0.49	0.22		0.03	0.28		
	Q Length	8	23		5	30		23	9		2	7		
PM	LOS	B	B		B	B		D	A		B	B		B
	V/C	0.43	0.65		0.30	0.79		0.66	0.21		0.08	0.72		
	Q Length	17	68		14	95		29	12		6	35		
Mid	LOS	D	B		B	C		D	A		B	B		B
	V/C	0.69	0.72		0.46	0.86		0.72	0.53		0.07	0.54		
	Q Length	32	81		20	141		47	23		5	37		