

MMM Group Limited



Westerra Traffic Impact Assessment

Westerra Development Corporation

Final Report

COMMUNITIES
TRANSPORTATION
BUILDINGS
INFRASTRUCTURE



January 2014 | 5412023-000

STANDARD LIMITATIONS

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January 13, 2014

Blair Forster
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Dear Mr. Forster,

RE: Final Report for *Westerra Traffic Impact Assessment*

Please find attached one (1) copy of the final report for the above-noted study.

An electronic copy of the report will also be provided for your use. Please do not hesitate to contact me at (306) 522-7158 ext. 226 should you have any questions regarding this study.

Sincerely,
MMM Group Limited



Bruce Belmore, P.Eng., PTOE
Regional Manager, Transportation
Partner

BB/rld



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REVISION LOG

Revision #	Revised By	Date	Issue/ Revision Description
1	RLD	December 18, 2013	Draft Report
2	RLD	January 13, 2014	Final Report

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Association of Professional Engineers & Geoscientists of Saskatchewan		
CERTIFICATE OF AUTHORIZATION		
MMM Group Limited Number C0860		
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Discipline	Sk. Reg. No.	Signature
TRANSPORTATION	9064	



TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	EXISTING TRAFFIC VOLUMES.....	3
3.0	TRIP GENERATION.....	4
4.0	LEVEL OF SERVICE FINDINGS	13
5.0	CONCLUSION.....	19

LIST OF FIGURES

Figure 1. Study Area	2
Figure 2. Existing Traffic Volumes (2012)	3
Figure 3. New Trips - Phase I Only (2020) - Afternoon Peak Hour.....	6
Figure 4. New Trips - Full Build Out (2040)- Afternoon Peak Hour.....	7
Figure 5. Background Forecast Traffic Volumes (2020) - Afternoon Peak Hour	9
Figure 6. Background Forecast Traffic Volumes (2040) - Afternoon Peak Hour	10
Figure 7. Total Forecast Traffic Volumes (2020) - Afternoon Peak Hour.....	11
Figure 8. Total Forecast Traffic Volumes (2040) - Afternoon Peak Hour.....	12

LIST OF TABLES

Table 1. Development Related Trips (includes new trips and pass-by trips).....	4
Table 2. Trip Distribution.....	5
Table 3. Revised Level of Service Analysis - Afternoon Peak Hour	14
Table 4. Lane Configurations.....	18

APPENDICES

Appendix A	Trip Generation
Appendix B	Level of Service Definitions
Appendix C	Level of Service Analysis
Appendix D	Signal Timing Plans

1.0 INTRODUCTION

MMM Group Ltd. (MMM) was retained by Westerra Development Corp. to complete a Traffic Impact Assessment (TIA) for the proposed Westerra development located in west Regina. The intent of the study is to identify the roadway infrastructure necessary to safely and effectively accommodate anticipated traffic generated by the development.

Key tasks undertaken as part of the TIA include:

- ▶ Identification of traffic volumes generated by the proposed development.
- ▶ Review of anticipated operational deficiencies on the surrounding road network and measures to mitigate these issues. Key intersections include:
 - Dewdney Avenue and Pinkie Road
 - Dewdney Avenue and Courtney Street
 - Dewdney Avenue and development accesses (3)
 - Pinkie Road and development accesses (2)
 - Courtney Street and development accesses (2)
 - Northeast roundabout within the Westerra development plan (Phase I)

The study area, including the proposed development and access points, is illustrated in Figure 1. Proposed development accesses will be along Dewdney Avenue, Pinkie Road, and Courtney Street. In total, seven access points will be created for the development.

The proposed Westerra development will consist of a mix of low-, medium-, and high-density residential lots, retail lots, and prestige industrial lots to be implemented over two phases. The assumed timeline for full development is 10 to 20 years with the first phase being completed within four to eight years.



Figure 1. Study Area

2.0 EXISTING TRAFFIC VOLUMES

Available existing (2012) turning movement volumes for the afternoon peak hour were obtained from the City of Regina. As the Westerra development is proposed to be located in a currently undeveloped area, traffic information was available only for the Dewdney Avenue and Courtney Street intersection, and the Dewdney Avenue and Pinkie Road intersection. A summary of afternoon peak hour traffic volumes, rounded to the nearest five vehicles per hour, is presented Figure 2.

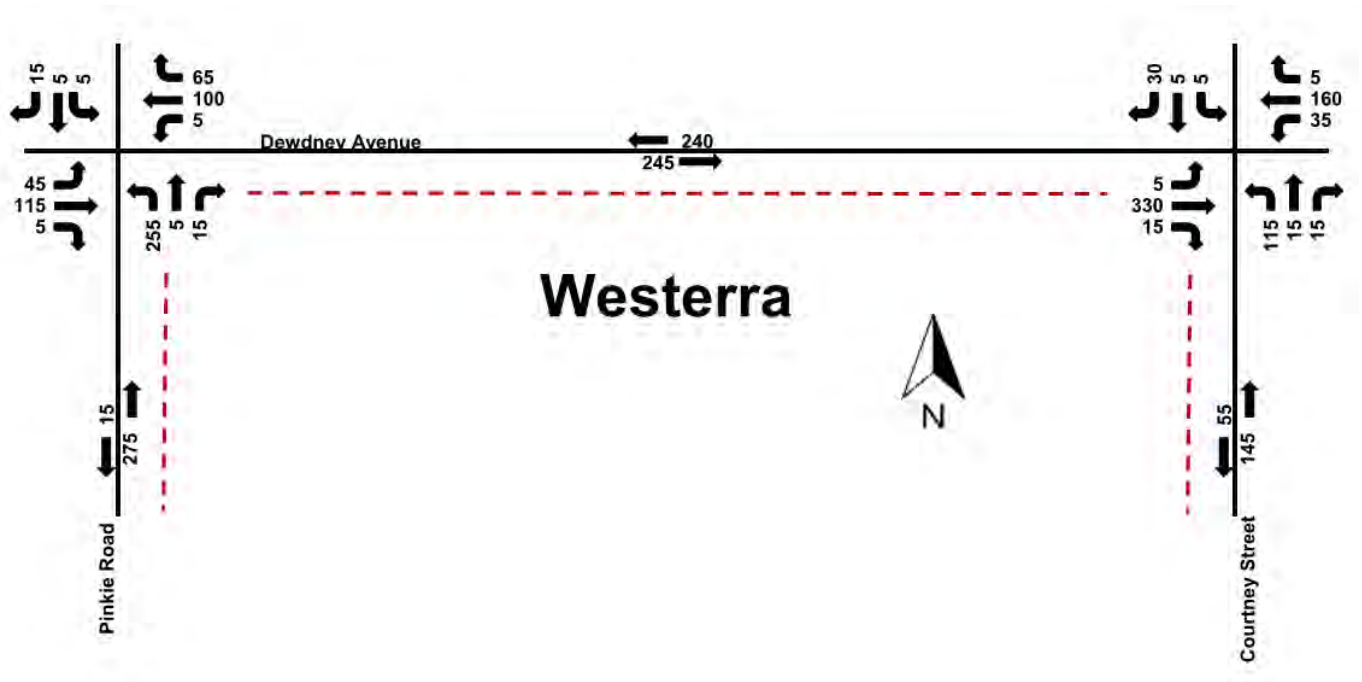


Figure 2. Existing Traffic Volumes – Afternoon Peak Hour (2012)

3.0 TRIP GENERATION

The proposed Westerra development will consist of a mix of residential, retail, prestige industrial, and institutional lots to be developed over two phases:

- ▶ **Phase I:** A total of 96.71 hectares (ha) of residential, retail, and prestige industrial land uses.
- ▶ **Phase II:** A total of 101.76 ha of residential and institutional land uses.

Separate high and low target population densities were provided by the developer. The following trip generation analysis and subsequent capacity analysis was completed using the high density population targets defined by the developer to provide a worst-case scenario estimate.

New trips created by the proposed Westerra development have been estimated per the two-phase development timeline. Phase I trip generation was completed for the afternoon peak hours of operation using trip rates outlined in the Institute of Transportation Engineers (ITE) 9th Edition Trip Generation Manual.

As the Phase II land uses are subject to change, Phase II trip generation for the afternoon peak hour was estimated using a desired residential density of 50 people per hectare.

A summary of the total development-related trips (i.e. new trips and pass-by trips), rounded to the nearest five vehicles per hour (vph), anticipated per development phase is provided in Table 1. Trip generation details are provided in Appendix A.

Table 1. Development Related Trips (includes new trips and pass-by trips)

Land Use	Total (vph)	Entering (vph)	Exiting (vph)
Phase 1			
Residential	1545	1005	535
Retail	2600	1250	1355
Prestige Office	560	80	485
TOTAL	4705	2335	2370
Phase 2			
Residential	1880	1220	660
TOTAL	1880	1220	660
Full Build Out			
WESTERRA TOTAL	6585	3555	3030

As illustrated in the Appendix A, Westerra traffic volumes were reduced by eight percent to account for internal synergy between retail, prestige industrial and residential uses. An estimate of pass-by trips for the Westerra retail development uses (traffic volumes that will enter the site but are already traveling on the network prior to site development) are also presented in Appendix A.

After developing an estimate of the number of vehicles entering and exiting the development for each scenario, a trip distribution estimate was developed to determine the likely origins and destinations of these trips.

To facilitate the trip distribution process, the City of Regina was divided into four zones with respect to the location of the proposed Westerra development site. Since the site includes a mix of residential, retail, and prestige industrial land uses, new trips to / from the site will be to / from a mix of major residential and employment centres. The trip distribution estimate for the Westerra retail and prestige industrial uses was based on city-wide Regina population information, while trip distribution estimate for the Westerra residential units was based on the city-wide Regina employment data. Population statistics from the City's 2011 neighborhood profiles were used to generate a distribution split for each of the four zones noted above. The trip distribution estimates are presented in Table 2.

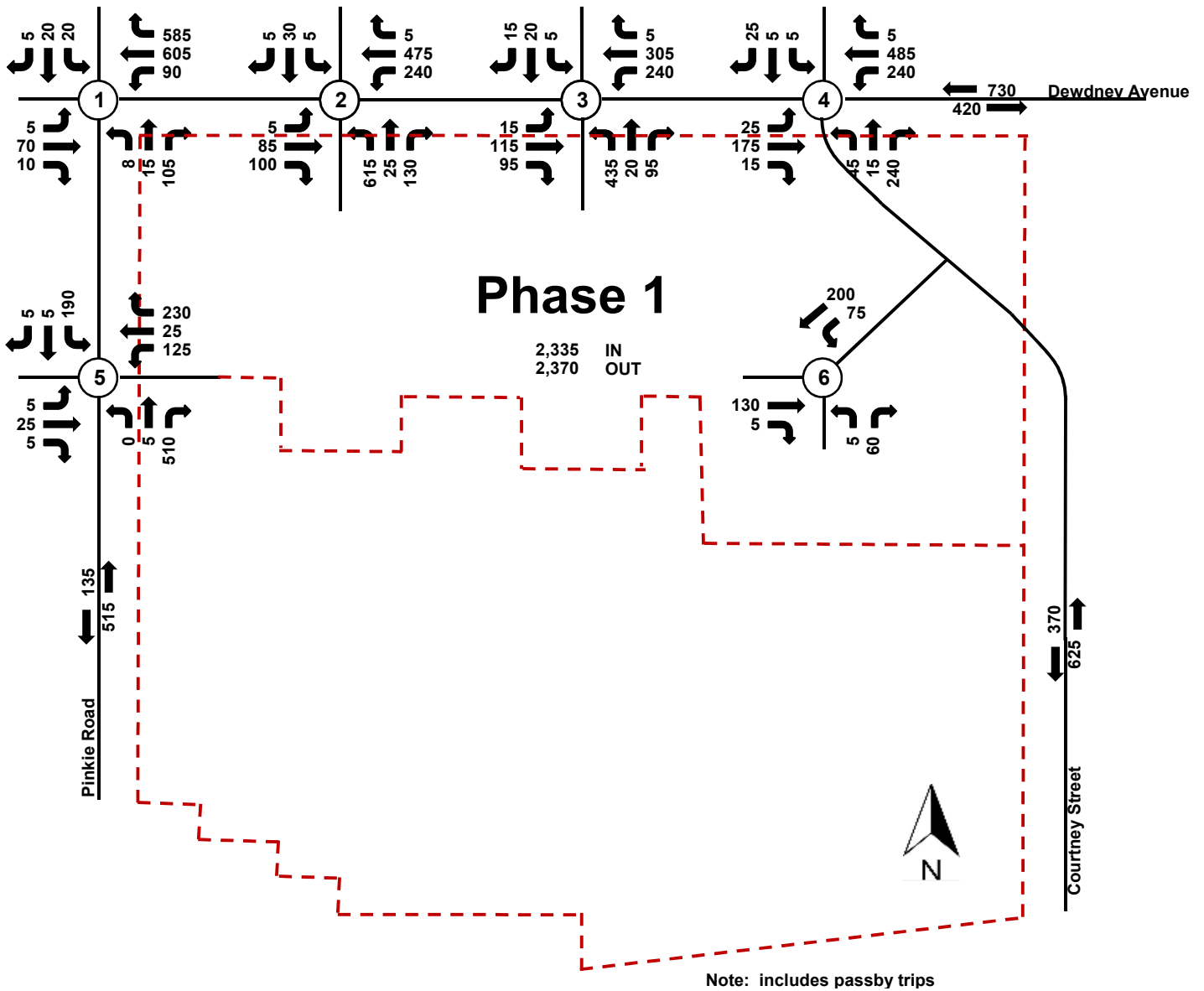
Table 2. Trip Distribution

Zone	Population Distribution	Employment Distribution
North	30 %	10 %
East	55 %	80 %
South	10 %	5 %
West	5 %	5 %

The new vehicle trips were then assigned to the road network based on the distribution estimates as well as based on the distribution shown in the background traffic volumes provided by the City of Regina. The vehicle assignment tries to account for the routes that drivers will use to reach the site, and the access points that they will use.

All trips were assumed to be able to circulate freely once on the site and could, therefore, choose the entrance / exit that is most convenient. Additional assignment assumptions include the desire for the shortest travel distance, right turns will be preferred over left turns, and left turns will be made at signalized intersections where possible.

Traffic volumes generated by the Westerra development, including pass-by trips, for the afternoon peak hour, rounded to the nearest five vehicles per hour, are illustrated in Figure 3 and Figure 4, for the Year 2020 and Year 2040 forecast horizons, respectively.



LEGEND	
1.	Dewdney Avenue and Pinkie Road
2.	Dewdney Avenue and Large / Community Retail Roadway
3.	Dewdney Avenue and Main Street Retail Roadway
4.	Dewdney Avenue and Courtney Street
5.	Pinkie Road and Residential / Large Retail Roadway
6.	Phase 1 Northeast Roundabout

Figure 3. Westerra Trips - Phase I Only (2020) - Afternoon Peak Hour

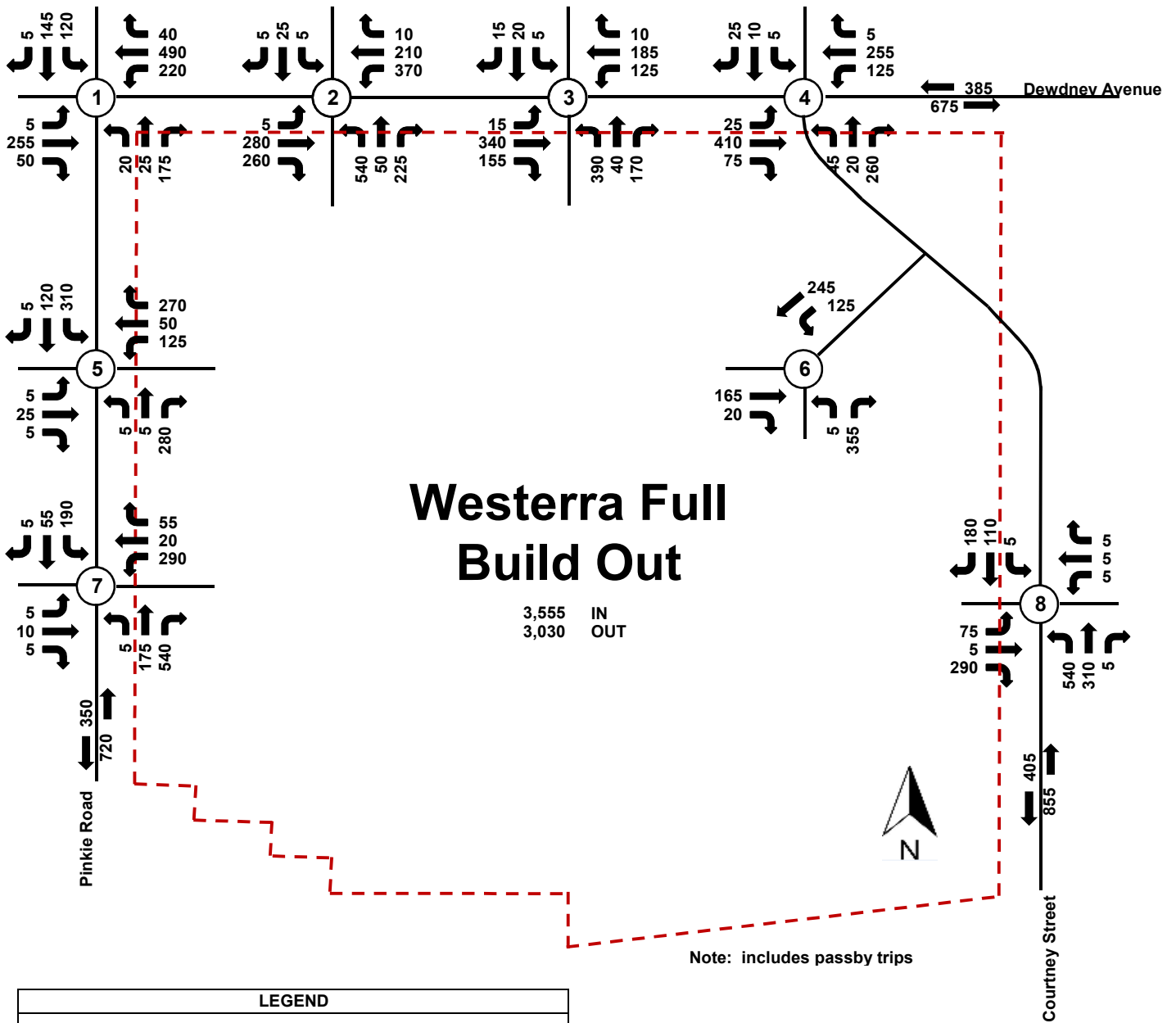


Figure 4. Westerra Trips - Full Build Out (2040) - Afternoon Peak Hour

Total forecast trips associated with the proposed development were then obtained by combining background traffic growth along the study corridors with the new trips associated with the development. In order to determine the background growth volumes for the two phases of development, two forecast scenarios from the City of Regina EMME model were obtained for the study area. The 235,000 population forecast (year 2020) was used to approximate the Phase 1 background traffic volumes; The 300,000 population forecast (year 2040) was used to approximate the Phase 2 background traffic volumes.

A summary of the Year 2020 and Year 2040 background forecast traffic volumes, rounded to the nearest five vehicles per hour, for the afternoon peak hours are presented in Figure 5 and Figure 6, respectively.

The total forecast Year 2020 and Year 2040 traffic volumes, rounded to the nearest five vehicles per hour, for the afternoon peak hour are presented in Figure 7 and Figure 8, respectively. Link volumes shown, multiplied by a factor of 10, will provide an estimate of average daily traffic link volumes.

An adjustment was made to the Phase 1 total traffic volume analysis by reducing the northbound left-turn at the Dewdney Avenue and Courtney Street intersection by 300 vph and transferring this traffic to, instead, use the Dewdney Avenue and Pinkie Road intersection (30% northbound left-turn / 70% northbound through). This adjustment to background traffic volumes was made to account for those motorists who will choose to utilize Pinkie Road over Courtney Street for other city-based traffic as the number of intersections and traffic volumes from Phase 1 development will make Courtney Street and Dewdney Avenue less efficient and more time consuming to travel essentially the same distance.

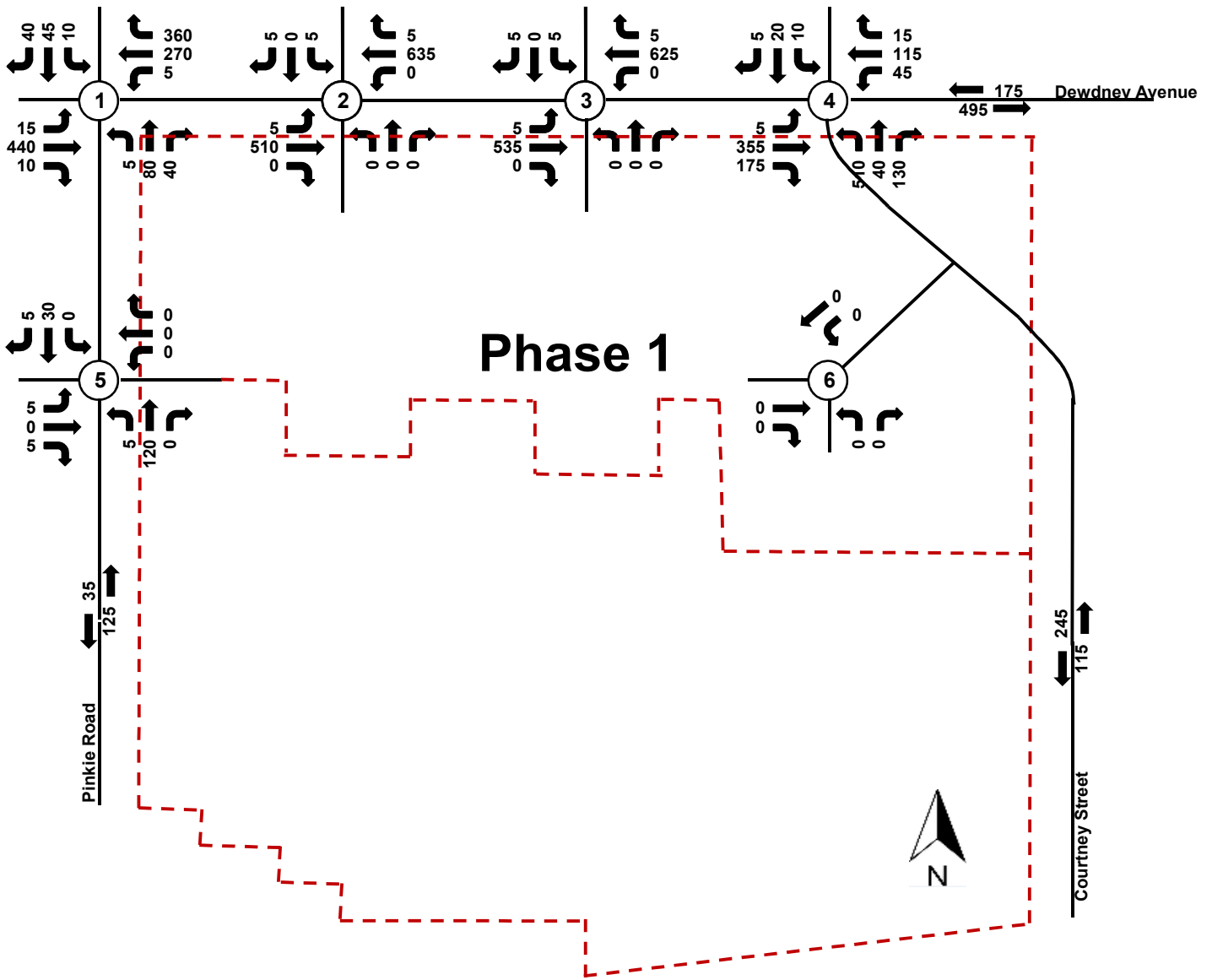
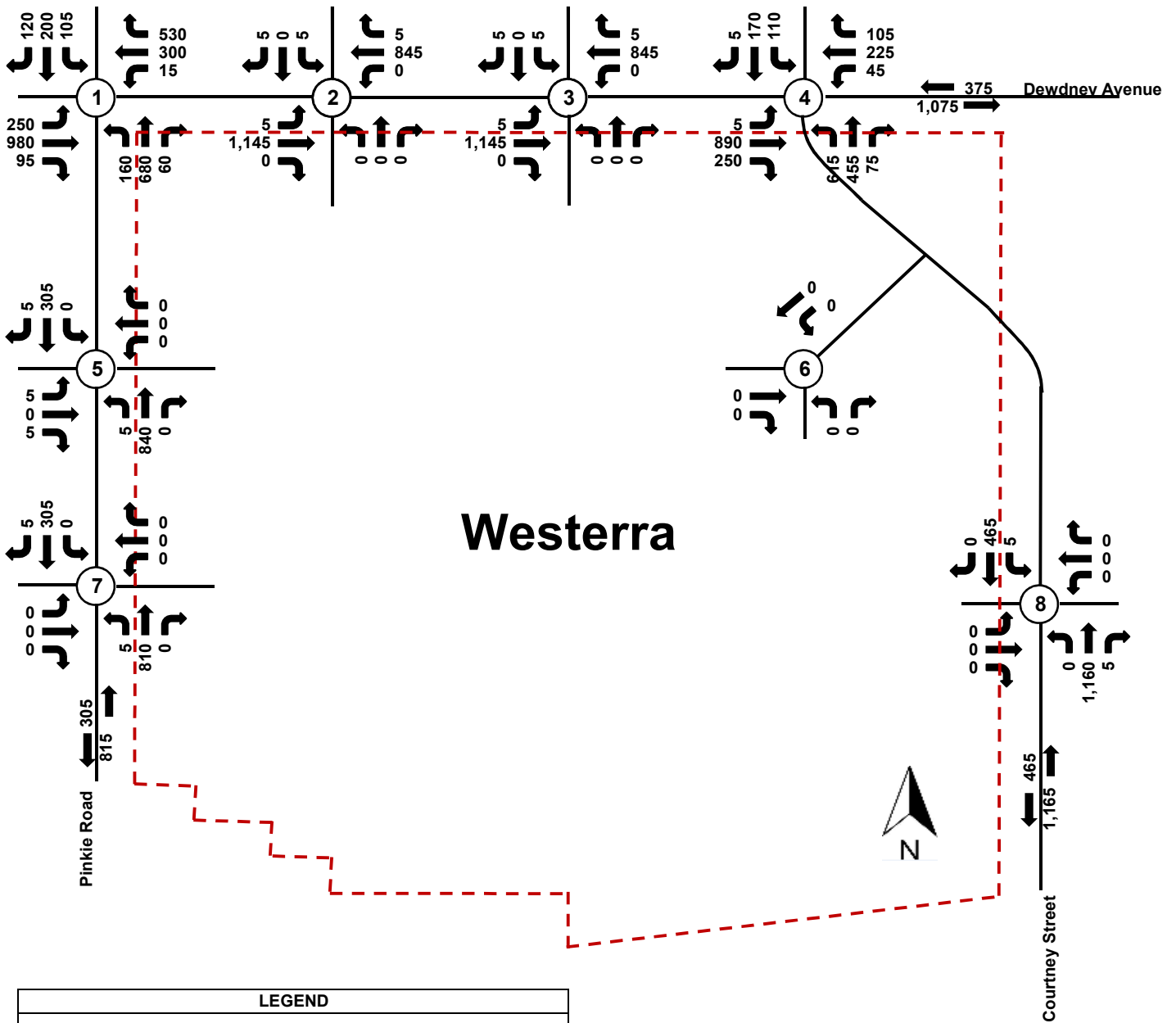


Figure 5. Background Forecast Traffic Volumes (2020) - Afternoon Peak Hour



LEGEND	
1.	Dewdney Avenue and Pinkie Road
2.	Dewdney Avenue and Large / Community Retail Roadway
3.	Dewdney Avenue and Main Street Retail Roadway
4.	Dewdney Avenue and Courtney Street
5.	Pinkie Road and Residential / Large Retail Roadway
6.	Phase 1 Northeast Roundabout
7.	Pinkie Road and Residential Greenway
8.	Courtney Street and Residential Roadway

Figure 6. Background Forecast Traffic Volumes (2040) - Afternoon Peak Hour

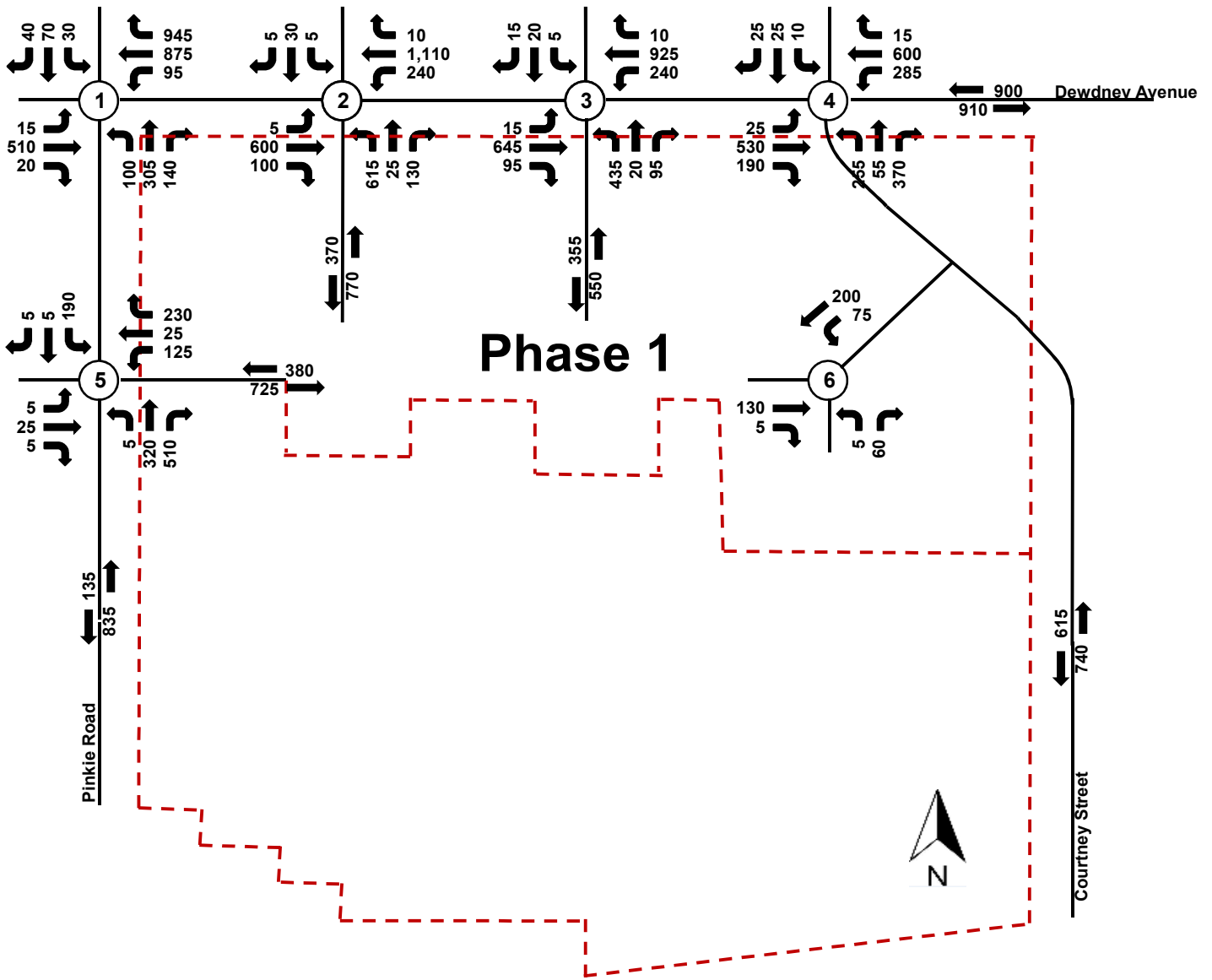


Figure 7. Total Forecast Traffic Volumes (2020) - Afternoon Peak Hour

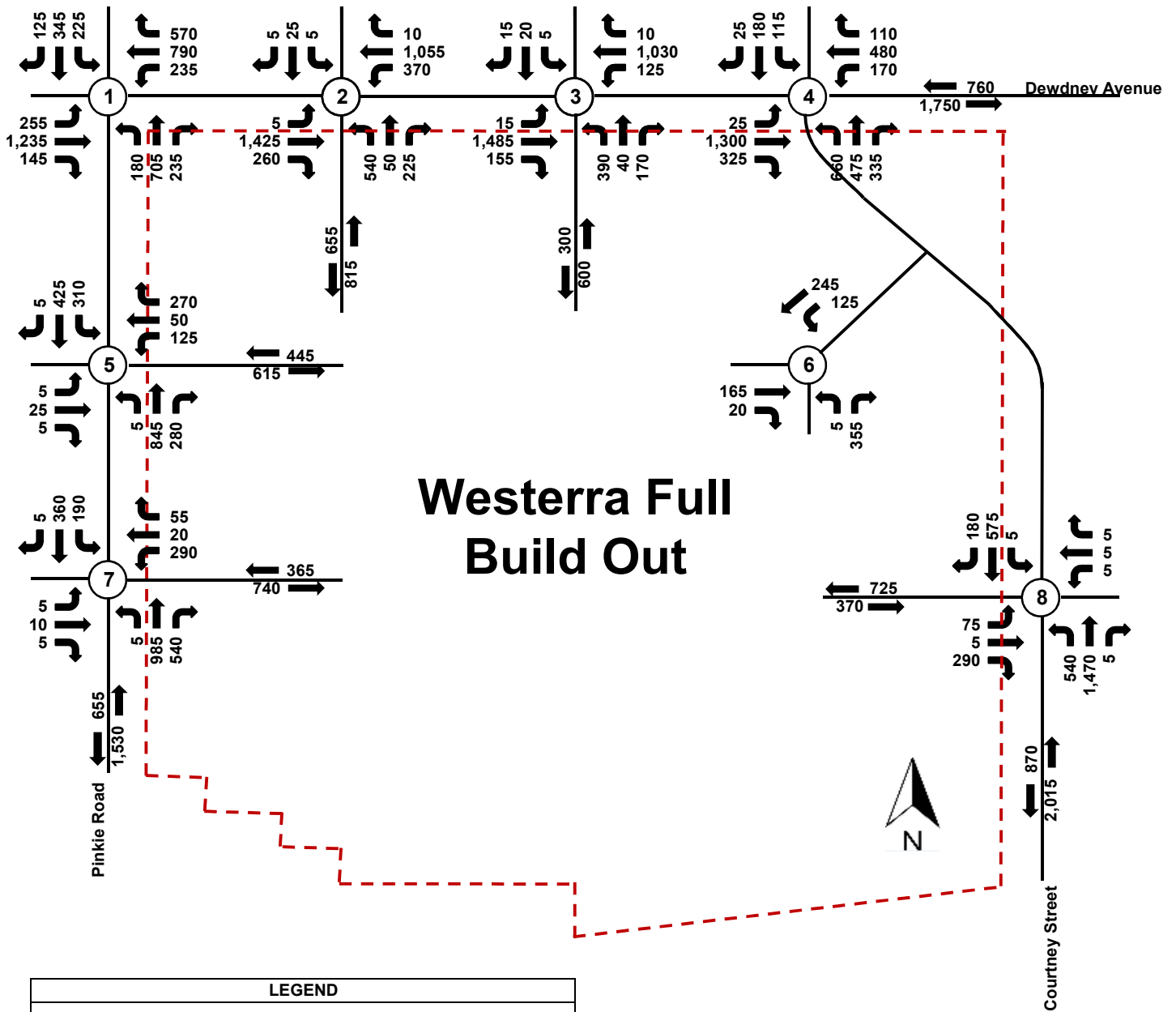


Figure 8. Total Forecast Traffic Volumes (2040) - Afternoon Peak Hour

4.0 LEVEL OF SERVICE FINDINGS

Existing, background and total forecast traffic operations have been assessed using Synchro 8.0 (industry-standard traffic micro simulation software).

Level of service (LOS) analysis assesses the effectiveness of a transportation system alphabetically from A to F, with LOS A equating to the best operating conditions and LOS F representing failure of a movement or intersection. LOS D is typically considered the limit of acceptable operation in urban conditions because excessive delays tend to occur beyond this threshold. However, LOS E may be acceptable for left-turn movements in order to provide better service to opposing through movements. Details regarding level of service definitions are provided in Appendix B.

Other measures, such as average vehicle delay and Volume-to-Capacity (V/C) ratio assist with the assessment. The V/C ratio represents the amount of congestion and available capacity at an intersection and for each individual movement at an intersection and is generally indicative of an intersection's flexibility and ability to accommodate fluctuations in traffic flow. V/C values of 0.80 or greater are typically indicative of a system that has reached its limit of operational effectiveness. In Synchro, roundabout capacity is measured by V/C and Intersection Capacity Utilization (ICU) LOS only.

In order to conduct the analysis, the following assumptions were made regarding future infrastructure:

- ▶ It was assumed that the future Dewdney Avenue, Pinkie Road, and Courtney Street cross-sections would be constructed as presented in AECOM's *Dewdney Avenue Functional Design from Courtney Street to the GTH Access Road* report, prepared for the Saskatchewan Ministry of Highways (MHI) in 2010. Dewdney Avenue, Pinkie Road and Courtney Street would be initially analyzed with a two-lane cross-section and analyzed with a widened cross-section to four-lanes in the future when required.
- ▶ All internal roadways would operate with a posted speed limit of 50 km/h.
- ▶ Although not included in the analysis, other intersections internal to Westerra or near the prestige industrial along Courtney Street may require traffic signals. The analysis of these specific intersections will be undertaken as part of Traffic Impact Studies for the adjacent study areas when more defined information on site layout and access locations are available.

A summary of the afternoon peak hour analyses for the Year 2020 and Year 2040 forecast horizons are summarized in Table 3. Intersection numbering listed in the table corresponds to numbering illustrated in Figure 2 through Figure 8.

Level of service illustrations for all forecast scenarios are provided in Appendix C. Detailed traffic signal timing plans, including queue lengths, for each of the forecast scenarios are available in Appendix D.

Table 3. Revised Level of Service Analysis - Afternoon Peak Hour

FORECAST SCENARIO		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND			OVERALL	
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
1. Dewdney Avenue and Pinkie Road															
Year 2020	Total	LOS	B	B	A	B	C	C	D	D	D	B	B	B	C
		Delay (s)	12.2	12.2	3.7	13.0	21.0	21.0	50.2	50.2	50.2	14.4	14.4	14.4	24.3
		V/C	0.39	0.39	0.03	0.27	0.89	0.89	0.95	0.95	0.95	0.27	0.27	0.27	
Year 2040	Backgrd	LOS	B	B	A	C	C	D	C	D	A	C	C	C	C
		Delay (s)	15.3	16.3	2.9	24.9	23.6	11.4	23.7	54.6	0.6	23.7	23.9	23.9	24.2
		V/C	0.48	0.58	0.12	0.10	0.28	0.70	0.47	0.93	0.14	0.42	0.51	0.51	
	Total	LOS	C	E	B	E	C	C	D	E	B	E	D	D	D
		Delay (s)	32.7	55.9	12.7	76.4	33.4	21.6	41.8	73.4	18.5	72.7	50.7	50.7	47.5
		V/C	0.77	0.95	0.23	0.92	0.58	0.73	0.64	0.95	0.51	0.72	0.65	0.65	
2. Dewdney Avenue and Large / Community Retail Roadway															
Year 2020	Total	LOS	B	C	C	D	B	B	B	A	A	C	C	C	C
		Delay (s)	12.2	28.0	28.0	37.8	19.7	19.7	40.1	4.8	4.8	28.8	28.8	28.8	27.7
		V/C	0.01	0.66	0.66	0.54	0.52	0.52	0.80	0.14	0.14	0.07	0.07	0.07	
Year 2040	Backgrd	LOS	A	A	A	C	A	A	B	B	B	B	B	B	A
		Delay (s)	2.8	5.2	0.0	22.2	4.3	4.3	15.8	12.8	12.8	13.4	13.4	13.4	4.9
		V/C	0.01	0.40	0.00	0.01	0.29	0.29	0.00	0.01	0.01	0.02	0.02	0.02	
	Total	LOS	B	E	B	E	C	C	E	A	A	D	D	D	D
		Delay (s)	14.8	73.3	14.8	68.9	20.4	20.4	64.6	9.2	9.2	51.4	51.4	51.4	49.2
		V/C	0.02	1.04	0.38	0.81	0.56	0.56	0.86	0.25	0.25	0.13	0.13	0.13	
3. Dewdney Avenue and Main Street Retail Roadway															
Year 2020	Total	LOS	C	C	C	C	B	B	C	C	C	B	B	B	C
		Delay (s)	29.6	29.6	29.6	30.4	10.4	10.4	22.7	22.7	22.7	11.8	11.8	11.8	22.2
		V/C	0.82	0.82	0.82	0.50	0.38	0.38	0.95	0.95	0.95	0.04	0.04	0.04	
Year 2040	Backgrd	LOS	B	C	A	C	B	B	B	B	B	B	B	B	B
		Delay (s)	12.0	20.8	0.0	28.4	13.0	13.0	13.0	13.0	13.0	12.6	12.6	12.6	17.4
		V/C	0.02	0.79	0.01	0.01	0.55	0.55	0.01	0.01	0.01	0.01	0.01	0.01	
	Total	LOS	B	D	A	D	B	B	D	D	D	B	B	B	C
		Delay (s)	17.9	45.2	7.9	51.8	14.0	14.0	36.7	36.7	36.7	19.5	19.5	19.5	32.5
		V/C	0.08	0.97	0.21	0.45	0.54	0.54	0.91	0.91	0.91	0.05	0.05	0.05	

FORECAST SCENARIO			EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND			OVERALL
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
4. Dewdney Avenue and Courtney Street															
Year 2020	Total	LOS	B	D	A	D	C	A	B	B	A	B	B	B	C
		Delay (s)	16.7	39.6	7.0	44.1	25.2	0.1	18.1	17.5	3.9	14.8	17.1	17.1	24.5
		V/C	0.09	0.75	0.41	0.65	0.51	0.02	0.43	0.07	0.43	0.02	0.11	0.11	
Year 2040	Backgrd	LOS	B	D	A	D	B	A	E	D	A	B	C	C	D
		Delay (s)	15.2	47.1	8.2	38.5	19.8	3.5	71.0	23.2	1.4	15.4	26.7	26.7	37.7
		V/C	0.01	0.93	0.43	0.16	0.20	0.18	1.00	0.38	0.12	0.29	0.22	0.22	
	Total	LOS	B	D	B	E	C	A	E	D	C	D	E	E	D
		Delay (s)	15.4	50.6	16.3	75.0	22.1	3.1	73.2	50.1	23.3	41.1	64.2	64.2	46.0
		V/C	0.06	0.93	0.45	0.63	0.29	0.13	0.92	0.56	0.63	0.50	0.53	0.53	
5. Pinkie Road and Residential / Large Retail Roadway															
Year 2020	Total	LOS	B	B	B	C	C	C	B	B	B	C	C	C	B
		Delay (s)	13.3	13.3	13.3	25.0	25.0	25.0	17.1	17.1	17.1	21.7	21.7	21.7	19.7
		V/C	0.07	0.07	0.07	0.79	0.79	0.79	0.84	0.84	0.84	0.66	0.66	0.66	
Year 2040	Backgrd	LOS	B	B	B	B	B	B	A	A	A	A	A	A	A
		Delay (s)	15.9	15.9	15.9	16.1	16.1	16.1	4.0	4.0	4.0	1.4	1.4	1.4	3.6
		V/C	0.03	0.03	0.03	0.03	0.03	0.03	0.53	0.53	0.53	0.11	0.11	0.11	
	Total	LOS	B	B	B	C	C	C	A	A	A	B	B	B	B
		Delay (s)	13.1	13.1	13.1	30.5	30.5	30.5	9.7	9.7	9.7	15.6	15.6	15.6	15.6
		V/C	0.08	0.08	0.08	0.85	0.85	0.85	0.64	0.64	0.64	1.94	1.94	1.94	
6. Phase 1 Northeast Roundabout															
2020	Total	V/C		0.11	0.11	0.22	0.22		0.06		0.06				A (36%) ICU LOS
2040	Bkrd	V/C		0.01	0.01	0.01	0.01		0.01		0.01				A (15%) ICU LOS
	Total	V/C		0.16	0.16	0.29	0.29		0.10		0.10				A (46%) ICU LOS
7. Pinkie Road and Residential Greenway															
Year 2040	Backgrd	LOS	B	B	B	B	B	B	A	A	A	A	A	A	A
		Delay (s)	16.6	16.6	16.6	16.6	16.6	16.6	3.6	3.6	3.6	1.8	1.8	1.8	3.4
		V/C	0.03	0.03	0.03	0.03	0.03	0.03	0.51	0.51	0.51	0.20	0.20	0.20	
	Total	LOS	B	B	B	B	A	A	B	B	A	B	B	B	B
		Delay (s)	13.0	13.0	13.0	13.8	8.1	8.1	17.5	17.5	4.1	19.1	19.1	19.1	14.2
		V/C	0.05	0.05	0.05	0.51	0.12	0.12	0.71	0.71	0.57	1.35	1.35	1.35	
8. Courtney Street and Residential Roadway															
Year 2040	Backgrd	LOS	B	B	B	B	B	B	A	A	A	A	A	A	A
		Delay (s)	11.8	11.8	11.8	11.8	11.8	11.8	2.7	2.7	2.7	1.8	1.8	1.8	2.6
		V/C	0.03	0.03	0.03	0.03	0.03	0.03	0.41	0.41	0.41	0.17	0.17	0.17	
	Total	LOS	C	C	A	C	C	C	D	A	A	C	C	C	B
		Delay (s)	31.3	31.3	8.0	21.8	21.8	21.8	38.7	8.4	8.4	25.6	25.6	25.6	18.3
V/C	0.33	0.33	0.56	0.05	0.05	0.05	0.92	0.66	0.66	0.73	0.73	0.73			

Dewdney Avenue, Pinkie Road, and Courtney Street Corridors

- ▶ In the Year 2020 total forecast horizon, it is recommended that Dewdney Avenue be expanded to a four-lane cross-section in order to maintain acceptable levels of service throughout the study area. In the Year 2040 background and total forecast horizons, no additional through lanes are expected to be required along Dewdney Avenue beyond the four-lane cross-section.
- ▶ In the year 2020 total forecast horizon, Pinkie Road with a two-lane cross-section is expected to sufficiently carry expected volumes from background traffic and new trips generated by Phase I of the development. In the Year 2040 background forecast horizon, Pinkie Road will have sufficient traffic volumes for the City to consider widening to a four-lane cross-section. In the Year 2040 total forecast horizon, no additional through lanes are expected to be required along Pinkie Road beyond the four-lane cross-section.
- ▶ In the year 2020 total forecast horizon, Courtney Street with a two-lane cross-section is expected to sufficiently carry expected volumes from background traffic and new trips generated by Phase I of the development. In the Year 2040 background forecast horizon, it is anticipated that Courtney Street will require widening to a four-lane cross-section in order to maintain acceptable levels of service throughout the study area. In the Year 2040 total forecast horizon, no additional through lanes are expected to be required along Courtney Street beyond the four-lane cross-section.

1. Dewdney Avenue and Pinkie Road intersection

- ▶ In the Year 2020 total forecast horizon, an eastbound right-turn bay, as well as a westbound left-turn bay will be required to accommodate expected traffic volumes.
- ▶ In the Year 2040 background forecast horizon, dedicated left-turn bays will be required for all directions of travel. Additionally, northbound, eastbound, and westbound dedicated right-turn bays will also be required.
- ▶ In the Year 2040 total forecast horizon, a southbound double left-turn bay will be required.

2. Dewdney Avenue and Large / Community Retail Roadway

- ▶ In the Year 2020 total forecast horizon, this intersection will require an eastbound single left-turn bay, as well as westbound double-left-turn bays.
- ▶ Additionally, in the Year 2020 total forecast horizon, the north-south Large / Community Retail roadway will require a four-lane cross-section, with northbound double-left turn bays.
- ▶ In the Year 2040 background forecast horizon, an eastbound right-turn bay will be required.

3. Dewdney Avenue and Main Street Retail Roadway

- ▶ In the Year 2020 total forecast horizon, this intersection will require a westbound double left-turn bay. Additionally, the north-south roadway will require a four-lane cross-section.
- ▶ In the Year 2040 background forecast horizon, single eastbound right- and left-turn bays will be required.

4. Dewdney Avenue and Courtney Street

- ▶ In the Year 2020 total forecast horizon, the following intersection treatments are expected to become warranted:
 - Eastbound channelized right-turn bay
 - Westbound double left-turn bay
 - Westbound channelized right-turn bay
 - Northbound left turn bay
 - Northbound channelized right-turn bay
 - Southbound single left-turn bay
- ▶ A northbound double left-turn bay is required for the Year 2040 background horizon.

7. Pinkie Road and Residential Greenway

- ▶ In the Year 2040 total forecast horizon, this intersection will require a northbound right-turn bay, as well as a westbound left-turn bay. No other modifications are recommended in the other forecast horizons.

8. Courtney Street and Residential Roadway

- ▶ In the Year 2040 total forecast horizon, this intersection will require a northbound left-turn bay and an eastbound right-turn bay. No other modifications are recommended in the other forecast horizons.

As summarized in Table 3, all intersections are expected to operate well overall (LOS D or better), with some individual turning movements at LOS E and no turning movements failing (LOS F), with the geometric improvements outlined above. Table 4 presents the anticipated lane configuration and level of traffic control for each study intersection within each forecast timeframe.

Table 4. Lane Configurations

FORECAST SCENARIO	EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND			CONTROL TYPE
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
1. Dewdney Avenue and Pinkie Road													
2020 Background	1 LTH/TH		1	1 LT/TH/RT			1 LT/TH/RT			1 LT/TH/RT			Signal
2020 Total	1 LTH/TH & 1 TH		1	1	1 TH & 1 TH/RT		1 LT/TH/RT			1 LT/TH/RT			Signal
2040 Background	1	2	1	1	2	1	1	2	1	1	1 TH & 1 TH/RT		Signal
2040 Total	1	2	1	1	2	1	1	2	1	2	1 TH & 1 TH/RT		Signal
2. Dewdney Avenue and Large / Community Retail Roadway													
2020 Background	1 LT/TH/RT			1 LT/TH/RT			1 LT/TH/RT			1 LT/TH/RT			Signal
2020 Total	1	1 TH & 1 TH/RT		2	1 TH & 1 TH/RT		2	1 TH & 1 TH/RT		1 LT/TH & 1 TH/RT			Signal
2040 Background	1	2	1	2	1 TH & 1 TH/RT		2	1 TH & 1 TH/RT		1 LT/TH & 1 TH/RT			Signal
2040 Total	1	2	1	2	1 TH & 1 TH/RT		2	1 TH & 1 TH/RT		1 LT/TH & 1 TH/RT			Signal
3. Dewdney Avenue and Main Street Retail Roadway													
2020 Background	1 LT/TH/RT			1 LT/TH/RT			1 LT/TH/RT			1 LT/TH/RT			Signal
2020 Total	1 LT/TH & 1 TH/RT			2	1 TH & 1 TH/RT		1 LT/TH & 1 TH/RT			1 LT/TH & 1 TH/RT			Signal
2040 Background	1	2	1	2	1 TH & 1 TH/RT		1 LT/TH & 1 TH/RT			1 LT/TH & 1 TH/RT			Signal
2040 Total	1	2	1	2	1 TH & 1 TH/RT		1 LT/TH & 1 TH/RT			1 LT/TH & 1 TH/RT			Signal
4. Dewdney Avenue and Courtney Street													
2020 Background	1	1 TH & 1 TH/RT		1 LT/TH/RT			1 LT/TH/RT			1 LT/TH/RT			Signal
2020 Total	1	2	1	2	2	1	1	1	1	1	1 TH & 1 TH/RT		Signal
2040 Background	1	2	1	2	2	1	2	2	1	1	1 TH & 1 TH/RT		Signal
2040 Total	1	2	1	2	2	1	2	2	1	1	1 TH & 1 TH/RT		Signal
5. Pinkie Road and Residential / Large Retail Roadway													
2020 Background	1 LT/TH/RT			1 LT/TH/RT			1 LT/TH/RT			1 LT/TH/RT			Signal
2020 Total	1 LT/TH/RT			1 LT/TH/RT			1 LT/TH/RT			1 LT/TH/RT			Signal
2040 Background	1 LT/TH/RT			1 LT/TH/RT			1 LT/TH & 1 TH/RT			1 LT/TH & 1 TH/RT			Signal
2040 Total	1 LT/TH/RT			1 LT/TH/RT			1 LT/TH & 1 TH/RT			1 LT/TH & 1 TH/RT			Signal
6. Phase 1 Northeast Roundabout													
2020 Background		1 TH/RT		1 LT/TH			1 LT/RT						Roundabout
2020 Total		1 TH/RT		1 LT/TH			1 LT/RT						Roundabout
2040 Background		1 TH/RT		1 LT/TH			1 LT/RT						Roundabout
2040 Total		1 TH/RT		1 LT/TH			1 LT/RT						Roundabout
7. Pinkie Road and Residential Greenway													
2020 Background							1			1			
2020 Total							1			1			
2040 Background	1 LT/TH/RT			1 LT/TH/RT			1 LT/TH & 1 TH/RT			1 LT/TH & 1 TH/RT			Signal
2040 Total	1 LT/TH/RT			1	1 TH/RT		1 LTH/TH		1	1 LT/TH & 1 TH/RT			Signal
8. Courtney Street and Residential Roadway													
2020 Background							1			1			
2020 Total							1			1			
2040 Background	1 LT/TH/RT			1 LT/TH/RT			1 LT/TH & 1 TH/RT			1 LT/TH & 1 TH/RT			Signal
2040 Total	1 LTH/TH		1	1 LT/TH/RT			1	1 TH & 1 TH/RT		1 LT/TH & 1 TH/RT			Signal

5.0 CONCLUSION

The completion of the Westerra Traffic Impact Assessment has determined a plan to assist in staging key corridors in order to accommodate expected growth in background traffic, as well as new trips generated by the proposed development, in the Year 2020 and Year 2040 forecast horizons. The analysis of the Year 2020 provides an indication of network requirements as part of Phase 1, while the analysis of the very long-term (Year 2040) verifies that the network will operate acceptably with appropriately staged roadway upgrades. Based on these findings, roadways will be planned and designed with sufficient right-of-way and median width to account for the long-term needs such as four-laning and dual turning bays.

It has been identified that Dewdney Avenue will require a four-lane cross-section as part of the first phase of development. Additionally, several intersection treatments, particularly left-turn bays entering and exiting the development will be required along Dewdney Avenue in order to efficiently service the site.

Pinkie Road and Courtney Street are expected to operate relatively well with a two-lane cross-section at the Phase 1, Year 2020 forecast horizon, however will require an upgrade to a four-lane cross-section by the Year 2040 forecast horizon. The four-laning of these roadways will most likely be required in the Year 2040 model without the inclusion of Westerra development traffic.

As development occurs, the recommendations for the roadway reconfigurations will be critical to address anticipated traffic volumes. The plans outlined herein can be implemented to stage improvements as development occurs. Detailed signal timing along the key corridors should be monitored and reviewed over time to ensure efficient traffic flow throughout the study timeframe.

The four-lane cross-section for Dewdney Avenue, Pinkie Road and Courtney Street is consistent with the road network supporting other neighbourhoods in the City. Although, Dewdney Avenue will require a four-lane cross-section as part of the first phase of development, it is recommended that Pinkie Road and Courtney Street be widened as required based on traffic growth and the need for additional north-south capacity in West Regina.

It is recommended that Pinkie Road be widened prior to Courtney Street. Pinkie Road is the only continuous north-south arterial that will be operated by the City on the west side of Regina and is slated to serve development on both sides of the road. By comparison, Courtney Street will serve development on one side (the RCMP lands are on the other) and will not have the same city-wide utility as Pinkie, even in the long term. It is anticipated Courtney Street will serve a lower function as a collector roadway and should be widened to a four-lane cross-section only after Pinkie Road is developed as a four-lane facility. As such, it is contended that the focus should be on Pinkie Road, providing east-west access to Pinkie Road via Dewdney Avenue and 13th Avenue and the provision of grade separation at the CP Rail crossing on this important facility prior to Courtney Street.

We trust that this review and the recommended measures outlined herein will meet requirements for the development while facilitating efficient and safe future traffic operations adjacent to and within the Westerra development.

Westerra Phase 1 Raw Trip Generation - PM Peak

Land Use	ITE Category	ITE Code	Equation	Target Density (up/h)	Land Area (ha)	Land Area (ac)	Dwelling Units	Total Trips	% IN	% OUT	Total In	Total Out
Residential - Low Density, Single Detached	Single Family Detached	210, p. 298	$\ln(T) = 0.90 \ln(X) + 0.51$	25	6.86	16.96	172	171	63%	37%	108	63
Residential - Medium Density, Semi-detached	Condominium/ Townhouse	230, p.396	$\ln(T) = 0.82 \ln(X) + 0.32$	50	6.81	16.82	341	317	67%	33%	212	104
Residential - Live/Work, Semi-detached	Residential Condominium/ Townhouse	230, p.396	$\ln(T) = 0.82 \ln(X) + 0.32$	50	1.25	3.08	63	69	67%	33%	46	23
Residential - High Density, Multi-residential	Apartments	220, p. 335	$T = 0.55(X) + 17.65$	100	13.80	34.10	1,380	1,115	65%	35%	725	390
					225.00	28.72	1955	1,671			1,091	581

Land Use	ITE Category	ITE Code	Equation	Land Area (ac)	Floor/Area Ratio	GFA (1000 sq ft)	GIA (1000 sq ft)	Total Trips	% IN	% OUT	Total In	Total Out
Commercial - Large Format Retail	Shopping Centre	820, p. 1563	$\ln(T) = 0.67 \ln(X) + 3.31$	42.61	25%	464	371	1,443	48%	52%	692	750
Commercial - Community Retail	Shopping Centre	820, p. 1563	$\ln(T) = 0.67 \ln(X) + 3.31$	20.39	25%	222	178	880	48%	52%	423	458
Commercial - Main Street Retail	Shopping Centre	820, p. 1563	$\ln(T) = 0.67 \ln(X) + 3.31$	5.71	25%	62	50	375	48%	52%	180	195
				68.71		748	599	2,698			1,295	1,403

Land Use	ITE Category	ITE Code	Equation	Land Area (ac)	Floor/Area Ratio	GFA (1000 sq ft)	Total Trips	% IN	% OUT	Total In	Total Out
Office - Prestige Industrial	Office Park	750, p. 1362	$T = 4.22(X) + 95.83$	36.71	25%	400	584	14%	86%	82	502
				36.71		400	584			82	502

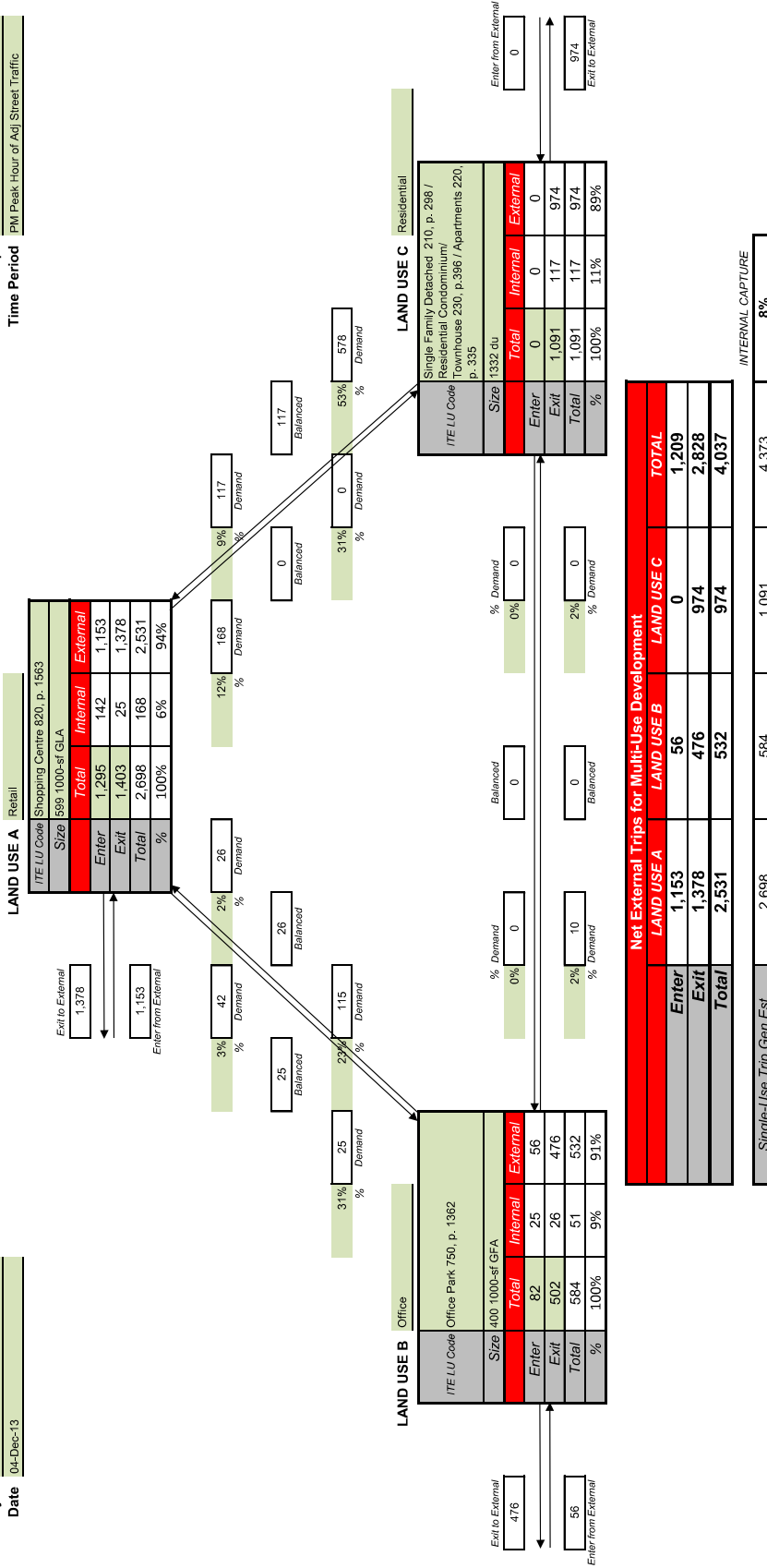
TOTAL IN 2468
TOTAL OUT 2486
TOTAL TRIPS 4953

Assumptions:
 FAR = 25%
 GIA = 80% GFA
 Trip Rates obtained using ITE Trip Generation Manual, 9th Ed.

**MULTI-USE DEVELOPMENT
TRIP GENERATION
AND INTERNAL CAPTURE SUMMARY**

Analyst R. Drašković
Date 04-Dec-13

Name of Dvlpt Westerra, Phase 1
Time Period PM Peak Hour of Adj. Street Traffic



Westerra Phase 1 Reduced Trip Generation - PM Peak

Reduction for Internal Synergy 8%

Land Use	ITE Category	Trips	% In	% Out	Total In	Total Out	Reduced Trips	Reduced In	Reduced Out
Low Density Residential	Single Family Detached	171	63%	37%	108	63	158	99	58
	Residential								
Medium Density Residential	Condominium/Townhouse	317	67%	33%	212	104	292	196	96
	Residential								
Live Work Residential	Condominium/Townhouse	69	67%	33%	46	23	64	43	21
High Density Residential	Apartments	1115	65%	35%	725	390	1030	669	360
Large Format Retail	Shopping Centre	1443	48%	52%	692	750	1391	667	723
Community Retail	Shopping Centre	880	48%	52%	423	458	849	407	441
Main Street Retail	Shopping Centre	375	48%	52%	180	195	362	174	188
Prestige Office	Office Park	584	14%	86%	82	502	562	79	484
TOTALS							4707	2334	2372

Land Use	Total		Phase 1		Phase 2		Total		Phase 1		Phase 2	
	Area (ac)	Area (ac)	Area (ac)	Area (ac)	Area (ac)	Area (ac)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)
Large Format Retail	42.61	42.61	42.61	0.00	0.00	17.25	17.25	17.25	17.25	0.00	0.00	0.00
Community Retail	20.39	20.39	20.39	0.00	0.00	8.25	8.25	8.25	8.25	0.00	0.00	0.00
Main Street Retail	5.71	5.71	5.71	0.00	0.00	2.31	2.31	2.31	2.31	0.00	0.00	0.00
High Density Residential	57.40	34.10	34.10	23.30	23.30	23.23	13.80	9.43	13.80	9.43	9.43	9.43
Medium Density Residential	41.55	16.82	16.82	24.73	24.73	16.81	6.81	10.00	6.81	10.00	10.00	10.00
Low Density Residential	108.12	16.96	16.96	91.16	91.16	43.76	6.86	36.90	6.86	36.90	36.90	36.90
Live Work Residential	3.08	3.08	3.08	0.00	0.00	1.25	1.25	0.00	1.25	0.00	0.00	0.00
Prestige Industrial	36.71	36.71	36.71	0.00	0.00	14.85	14.85	0.00	14.85	0.00	0.00	0.00
Institutional	8.91	0.00	0.00	8.91	8.91	3.60	0.00	3.60	0.00	0.00	0.00	3.60
Future Overpass	2.36	0.00	0.00	2.36	2.36	0.96	0.00	0.96	0.00	0.00	0.00	0.96
Municipal Reserve	46.34	18.23	18.23	28.11	28.11	18.75	7.38	11.37	7.38	11.37	11.37	11.37
Municipal Buffer	12.36	0.00	0.00	12.36	12.36	5.00	0.00	5.00	0.00	0.00	0.00	5.00
Roads	104.88	40.57	40.57	64.31	64.31	42.45	16.42	26.03	16.42	26.03	26.03	26.03
Lanes		3.78	3.78	-3.78	-3.78	1.53	1.53	-1.53	1.53	-1.53	-1.53	-1.53
Total	490.42	238.96	238.96	251.46	251.46	198.47	96.71	101.76	96.71	101.76	101.76	101.76

Peak Hour Scenario	Target Density (people/h ^a)		Land Area (ha)		Dwelling Units		Total Trips		% IN		% OUT		Total In		Total Out		Reduced Trips		Reduced In		Reduced Out		Population	
	50	101.76	2035	2035	2035	2035	2035	2035	65%	65%	35%	35%	1323	1323	712	712	1879	1879	1221	1221	658	658	5088	5088
PM Peak	50	101.76	2035	2035	2035	2035	2035	2035	65%	65%	35%	35%	1323	1323	712	712	1879	1879	1221	1221	658	658	5088	5088

Peak Hour Scenario	Land Use	Raw Trips		% IN		% OUT		Reduced Trips		Pass-By Trips		Pass-By Trips		Primary Trips	
		Total		In	Out	Total	In	Out	Total	In	Out	Total	In	Out	
Phase 1 - PM	Low Density Residential	171	63%	37%	108	63	158	99	58	0	0	0	158	99	58
	Medium Density Residential	317	67%	33%	212	104	292	196	96	0	0	0	292	196	96
	Live Work Residential	69	67%	33%	46	23	64	43	21	0	0	0	64	43	21
	High Density Residential	1115	65%	35%	725	390	1030	669	360	0	0	0	1030	669	360
	Residential Total	1671			1091	581	1543	1007	536	0	0	0	1543	1007	536
Phase 1 - PM	Large Format Retail	1443	48%	52%	692	750	1391	667	723	473	236	236	918	441	477
	Community Retail	880	48%	52%	423	458	849	407	441	289	144	144	560	269	291
	Main Street Retail	375	48%	52%	180	195	362	174	188	123	61	61	239	115	124
	Prestige Office	584	14%	86%	82	502	562	79	484	0	0	0	562	79	484
	Retail / Office Total	3282			1377	1905	3164	1327	1836	884	442	442	2279	885	1394
Phase 1 Total	4953			2468	2486	4707	2334	2372	884	442	442	3822	1892	1930	
Phase 2 - PM Peak				2035	65%	35%	1323	712	1879	1221	658	0	1879	1221	658
Westerra Total	6988			3790	3198	6586	3556	3030	884	442	442	5701	3113	2588	

COMMONLY USED LEVEL OF SERVICE DEFINITIONS

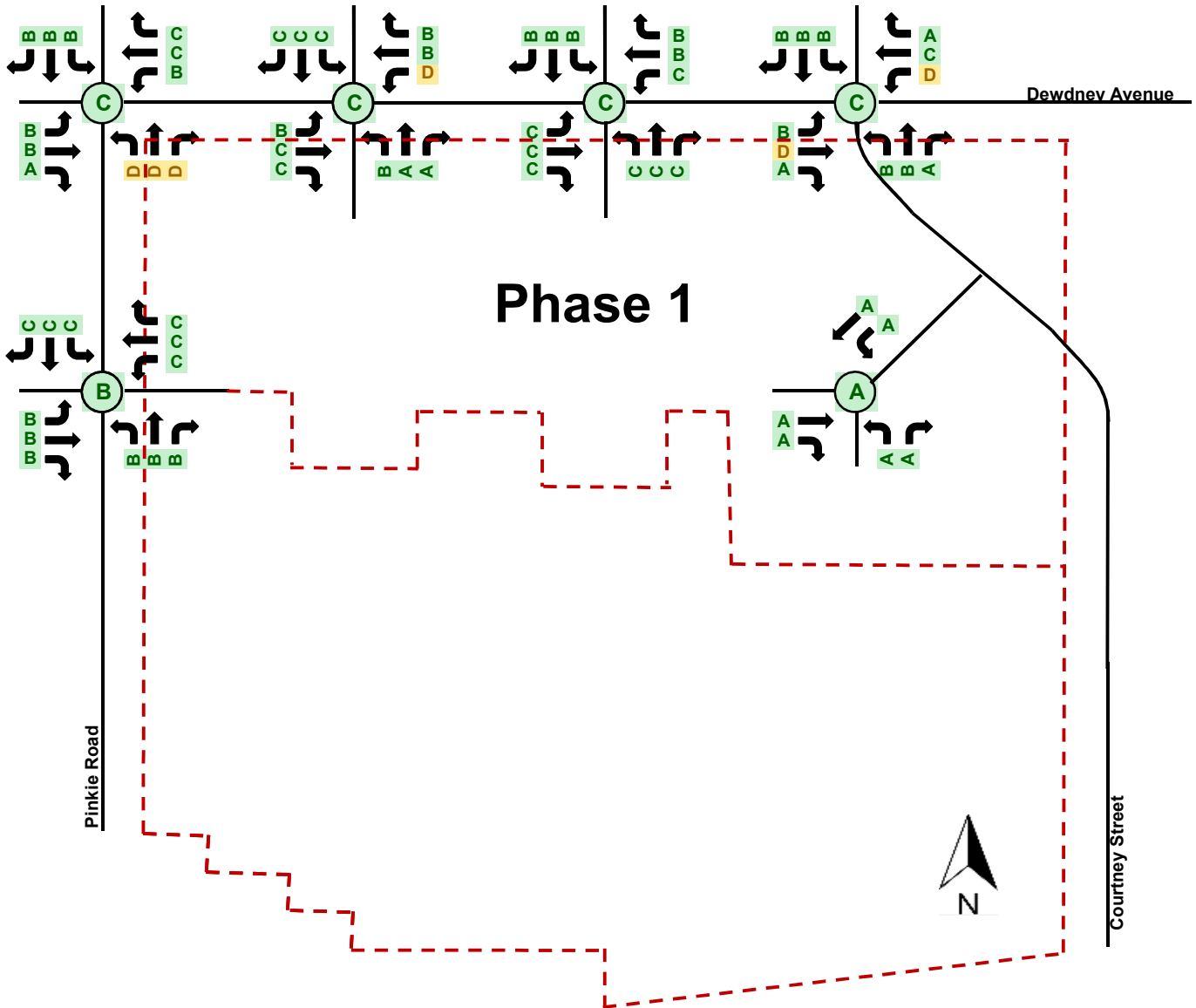
Level of Service For Urban Arterial Road	Level of Service For Traffic Signal Controlled Intersection
<p>Free flowing traffic with average overall travel speed in the upper range.</p>	<p>A</p> <p>Minimal delay experienced by motorists and no traffic signal phase is fully utilized. Very seldom does a motorist wait longer than the duration of one red signal interval. The approaches appear open, turning movements are easily made and drivers have freedom of operation. The (Poisson) probability is that 95% of the time all vehicles arriving on one complete cycle will clear during the next green interval.</p>
<p>Delay is not unreasonable. Average overall speeds drop due to intersection delay and intervehicular conflicts.</p>	<p>B</p> <p>Traffic signal phases are occasionally fully utilized and delays experienced by motorists are not unreasonable. Many drivers begin to feel somewhat restricted within groups of vehicles approaching the intersection. The (Poisson) probability is that 90% of the time all vehicles arriving on one cycle will clear during the next green interval.</p>
<p>Traffic flow still stable with acceptable delays. Average overall travel speeds in the middle range.</p>	<p>C</p> <p>Traffic signal phases are more frequently fully utilized, but delays are still acceptable. Drivers feel more restricted, may have to wait more than the duration of one red signal interval and queues may develop behind turning vehicles. The (Poisson) probability is that 75% of the time all vehicles arriving on one complete cycle will clear during the next green interval.</p>
<p>Approaching unstable flow. Delays at intersections may become extensive. Average overall speeds in the lower range.</p>	<p>D</p> <p>Drivers experience increasing restriction and instability of flow. There are substantial delays to approaching vehicles during short peaks within the peak period but there are enough traffic signal cycles with lower demand to permit the occasional clearance of developing queues and prevent excessive back-ups. The (Poisson) probability is that 60% of the time all vehicles arriving on one complete cycle will clear during the next green interval.</p>
<p>Unstable flow. Continuous backup on approaches to intersections. Average overall traffic speed variable but in the lower range.</p>	<p>E</p> <p>Traffic flow demand equals the capacity. Continuous delays are experienced. There are long queues of vehicles waiting upstream of the intersection and delays to vehicles may extend to several traffic signal cycles. The (Poisson) probability is that 50% of the time all vehicles arriving on one complete cycle will clear during the next green interval.</p>

Level of Service (LOS) Definitions for a Stop Controlled Intersection		
LOS	Average Delay per Vehicle (Seconds)	Description
A	0 - 10	Progression is very favourable.
B	>10 - 15	Progression is good. More vehicles delayed than LOS A, causing higher average delay.
C	>15 - 25	Progression is fair. The number of vehicles delayed is significant, though many vehicles are progressing well.
D	>25 - 35	Progression is unfavourable with high flow rate to capacity ratio. Many vehicles experience delay.
E	>35 - 50	Progression is poor. High flow rate to capacity ratio.
F	>50	Progression is very poor. Arrival rates exceed the capacity of the intersection. This level is considered unacceptable to most drivers.

Westerra Traffic Analysis

Project No.: 5412022-000

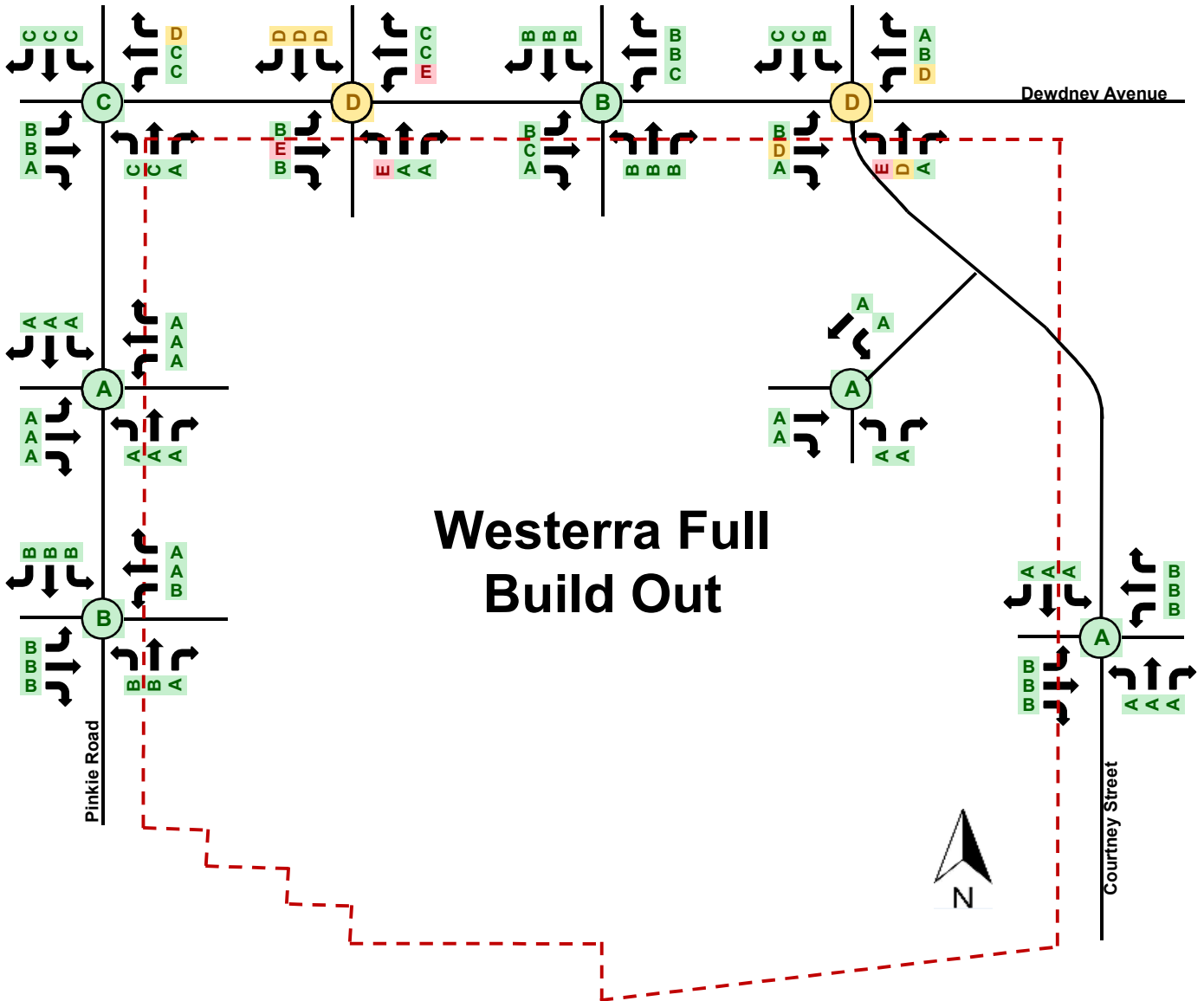
Year 2020 Revised Total Level of Service - Afternoon Peak Hour



Westerra Traffic Analysis

Project No.: 5412022-000

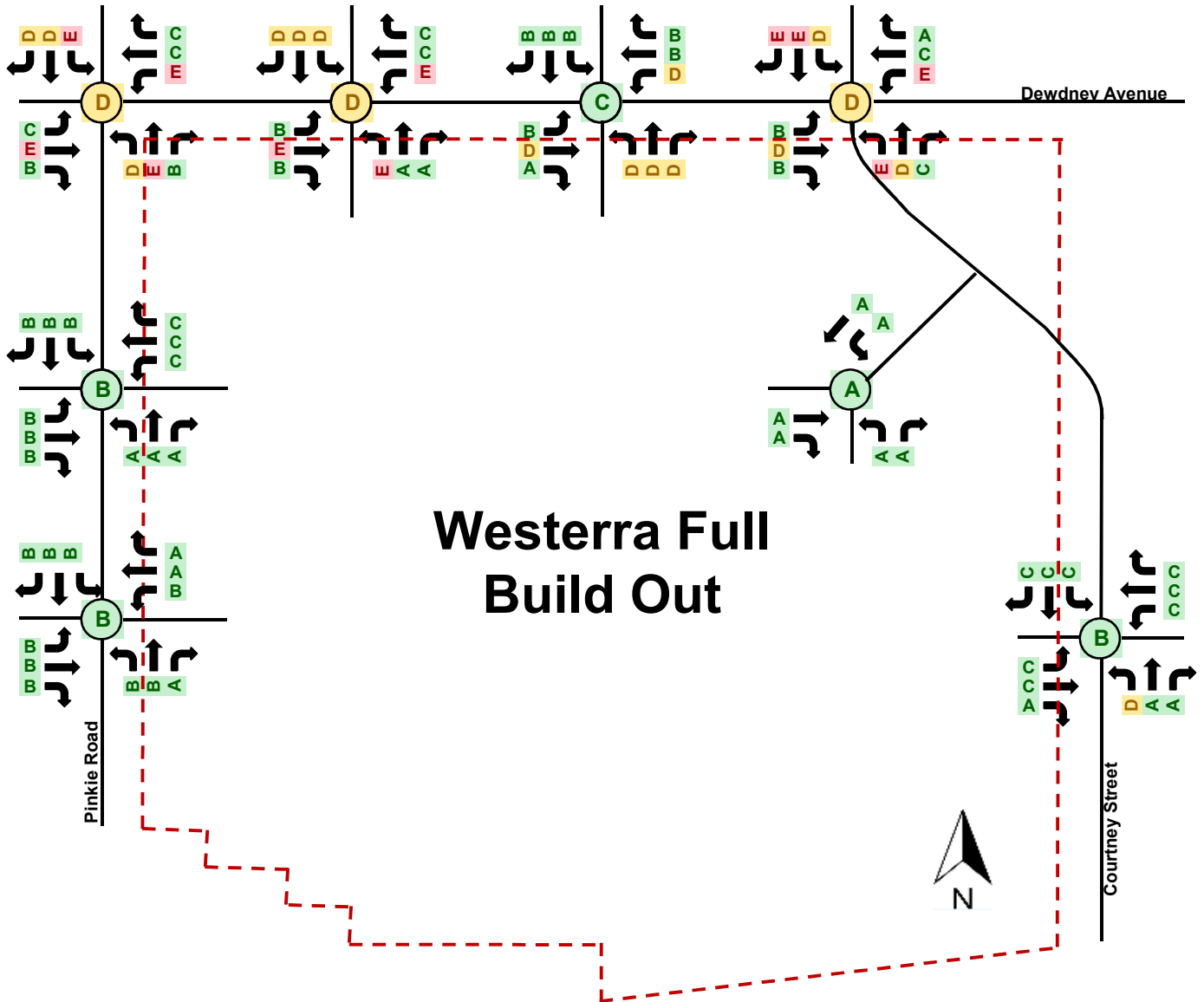
Year 2040 Revised Background Level of Service - Afternoon Peak Hour



Westerra Traffic Analysis

Project No.: 5412022-000

Year 2040 Revised Total Level of Service - Afternoon Peak Hour



Lanes, Volumes, Timings
1: Pinkie Rd & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Volume (vph)	15	440	10	5	270	360	5	80	40	10	45	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		60.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.923			0.957			0.944	
Flt Protected		0.998						0.998			0.995	
Satd. Flow (prot)	0	1859	1583	0	1719	0	0	1779	0	0	1750	0
Flt Permitted		0.976			0.997			0.992			0.972	
Satd. Flow (perm)	0	1818	1583	0	1714	0	0	1768	0	0	1709	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			22		197			43			43	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		159.0			424.8			477.6			117.6	
Travel Time (s)		11.4			30.6			34.4			8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	478	11	5	293	391	5	87	43	11	49	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	494	11	0	689	0	0	135	0	0	103	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	30.0	30.0	30.0	30.0	30.0		20.0	20.0		20.0	20.0	
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	26.0	26.0	26.0	26.0	26.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0	0.0		0.0			0.0			0.0	
Total Lost Time (s)		4.0	4.0		4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		26.0	26.0		26.0			16.0			16.0	
Actuated g/C Ratio		0.52	0.52		0.52			0.32			0.32	
v/c Ratio		0.52	0.01		0.70			0.23			0.18	
Control Delay		10.4	2.0		19.0			10.2			9.1	

Lanes, Volumes, Timings
 1: Pinkie Rd & Dewdney Ave

07/01/2014

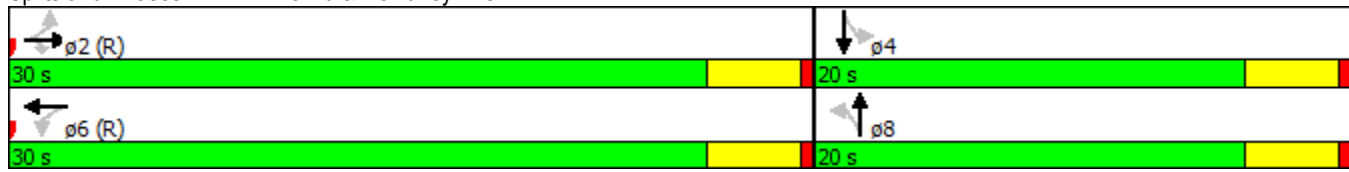


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0			0.0			0.0	
Total Delay		10.4	2.0		19.0			10.2			9.1	
LOS		B	A		B			B			A	
Approach Delay		10.3			19.0			10.2			9.1	
Approach LOS		B			B			B			A	

Intersection Summary

Area Type:	Other
Cycle Length:	50
Actuated Cycle Length:	50
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle:	50
Control Type:	Pretimed
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	14.4
Intersection LOS:	B
Intersection Capacity Utilization	71.5%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 1: Pinkie Rd & Dewdney Ave



Lanes, Volumes, Timings
2: Lg / Comm Retail & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	5	510	5	5	635	5	5	5	5	5	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.999			0.955			0.955	
Flt Protected								0.984			0.984	
Satd. Flow (prot)	0	1861	0	0	1861	0	0	1750	0	0	1750	0
Flt Permitted		0.995			0.997			0.953			0.953	
Satd. Flow (perm)	0	1852	0	0	1855	0	0	1695	0	0	1695	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			1			5			5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		424.8			405.9			284.1			123.7	
Travel Time (s)		30.6			29.2			20.5			8.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	554	5	5	690	5	5	5	5	5	5	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	564	0	0	700	0	0	15	0	0	15	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	20.0		20.0	20.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	26.0	26.0		26.0	26.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		26.0			26.0			16.0			16.0	
Actuated g/C Ratio		0.52			0.52			0.32			0.32	
v/c Ratio		0.59			0.73			0.03			0.03	
Control Delay		18.5			4.8			10.2			10.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		18.5			4.8			10.2			10.2	
LOS		B			A			B			B	

Lanes, Volumes, Timings
 2: Lg / Comm Retail & Dewdney Ave

07/01/2014

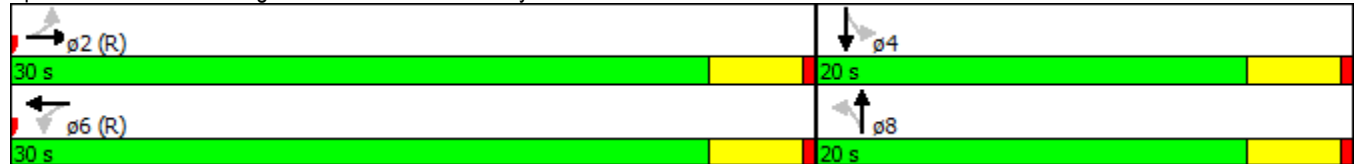


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		18.5			4.8			10.2			10.2	
Approach LOS		B			A			B			B	

Intersection Summary

Area Type:	Other
Cycle Length:	50
Actuated Cycle Length:	50
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle:	50
Control Type:	Pretimed
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	10.9
Intersection LOS:	B
Intersection Capacity Utilization	56.0%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 2: Lg / Comm Retail & Dewdney Ave



Lanes, Volumes, Timings

3: Main St Retail & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	5	535	5	5	625	5	5	5	5	5	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.999			0.955			0.955	
Flt Protected								0.984			0.984	
Satd. Flow (prot)	0	1861	0	0	1861	0	0	1750	0	0	1750	0
Flt Permitted		0.996			0.997			0.953			0.953	
Satd. Flow (perm)	0	1853	0	0	1855	0	0	1695	0	0	1695	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			1			5			5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		405.9			411.3			239.1			119.7	
Travel Time (s)		29.2			29.6			17.2			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	582	5	5	679	5	5	5	5	5	5	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	592	0	0	689	0	0	15	0	0	15	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	30.0	30.0		30.0	30.0		20.0	20.0		20.0	20.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	26.0	26.0		26.0	26.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		26.0			26.0			16.0			16.0	
Actuated g/C Ratio		0.52			0.52			0.32			0.32	
v/c Ratio		0.61			0.71			0.03			0.03	
Control Delay		5.2			14.5			10.2			10.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.2			14.5			10.2			10.2	
LOS		A			B			B			B	

Lanes, Volumes, Timings
 3: Main St Retail & Dewdney Ave

07/01/2014

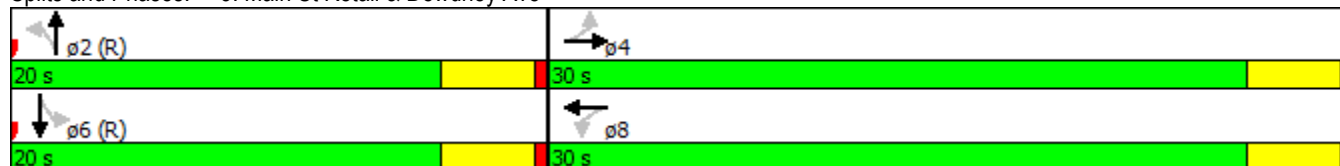


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		5.2			14.5			10.2			10.2	
Approach LOS		A			B			B			B	

Intersection Summary

Area Type:	Other
Cycle Length:	50
Actuated Cycle Length:	50
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	50
Control Type:	Pretimed
Maximum v/c Ratio:	0.71
Intersection Signal Delay:	10.2
Intersection LOS:	B
Intersection Capacity Utilization	55.5%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 3: Main St Retail & Dewdney Ave



Lanes, Volumes, Timings
4: Courtney St & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↕			↕			↕	
Volume (vph)	5	355	175	45	115	15	510	40	130	10	20	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	60.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.956			0.983			0.974			0.982	
Flt Protected				0.950				0.964			0.986	
Satd. Flow (prot)	0	1781	0	1770	3479	0	0	1749	0	0	1804	0
Flt Permitted		0.998		0.215				0.755			0.865	
Satd. Flow (perm)	0	1777	0	400	3479	0	0	1370	0	0	1582	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37			16			27				5
Link Speed (k/h)		50			50			50				50
Link Distance (m)		411.3			149.0			381.7				128.0
Travel Time (s)		29.6			10.7			27.5				9.2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	386	190	49	125	16	554	43	141	11	22	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	581	0	49	141	0	0	738	0	0	38	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0				0.0
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	27.0	27.0		27.0	27.0		43.0	43.0		43.0	43.0	
Total Split (%)	38.6%	38.6%		38.6%	38.6%		61.4%	61.4%		61.4%	61.4%	
Maximum Green (s)	23.0	23.0		23.0	23.0		39.0	39.0		39.0	39.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		4.0		4.0	4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		23.0		23.0	23.0			39.0			39.0	
Actuated g/C Ratio		0.33		0.33	0.33			0.56			0.56	
v/c Ratio		0.96		0.37	0.12			0.95			0.04	
Control Delay		51.4		28.0	14.9			39.6			6.6	

Lanes, Volumes, Timings
4: Courtney St & Dewdney Ave

07/01/2014

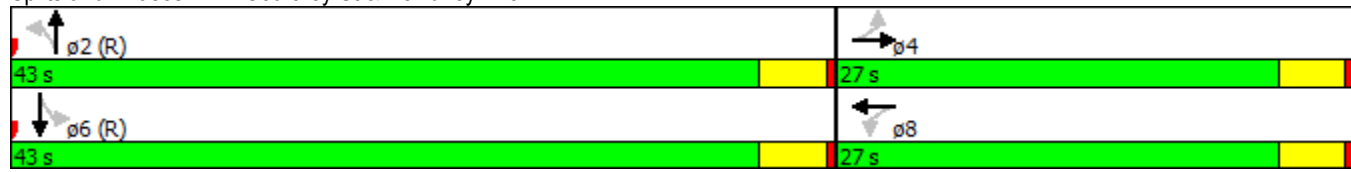


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		51.4		28.0	14.9			39.6			6.6	
LOS		D		C	B			D			A	
Approach Delay		51.4			18.3			39.6			6.6	
Approach LOS		D			B			D			A	

Intersection Summary

Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	70
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	70
Control Type:	Pretimed
Maximum v/c Ratio:	0.96
Intersection Signal Delay:	40.6
Intersection LOS:	D
Intersection Capacity Utilization	85.1%
ICU Level of Service	E
Analysis Period (min)	15

Splits and Phases: 4: Courtney St & Dewdney Ave



Lanes, Volumes, Timings
5: Pinkie Rd & Residential / Lg Retail

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	5	5	5	5	5	5	5	120	5	5	30	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.955			0.955			0.995			0.984	
Flt Protected		0.984			0.984			0.998			0.994	
Satd. Flow (prot)	0	1750	0	0	1750	0	0	1850	0	0	1822	0
Flt Permitted		0.956			0.956			0.994			0.975	
Satd. Flow (perm)	0	1701	0	0	1701	0	0	1842	0	0	1787	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			5			5			5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		140.9			249.5			350.6			477.6	
Travel Time (s)		10.1			18.0			25.2			34.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	5	5	5	5	5	5	130	5	5	33	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	15	0	0	140	0	0	43	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		16.0			16.0			16.0			16.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
v/c Ratio		0.02			0.02			0.19			0.06	
Control Delay		6.4			6.4			8.4			7.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		6.4			6.4			8.4			7.1	
LOS		A			A			A			A	

Lanes, Volumes, Timings
 5: Pinkie Rd & Residential / Lg Retail

07/01/2014

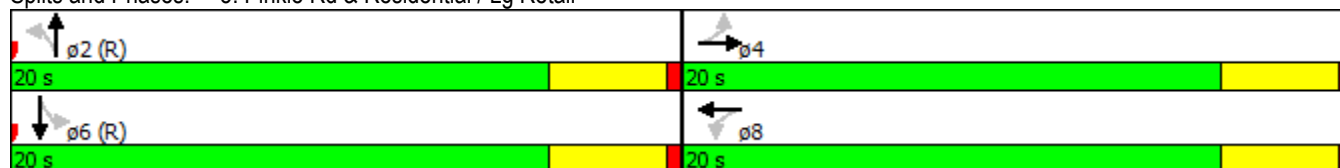


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		6.4			6.4			8.4			7.1	
Approach LOS		A			A			A			A	

Intersection Summary

Area Type:	Other
Cycle Length:	40
Actuated Cycle Length:	40
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	40
Control Type:	Pretimed
Maximum v/c Ratio:	0.19
Intersection Signal Delay:	7.9
Intersection LOS:	A
Intersection Capacity Utilization	31.7%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 5: Pinkie Rd & Residential / Lg Retail



Lanes, Volumes, Timings
6: Residential & Pr. Ind. / Res. Greenway

07/01/2014



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	5	5	5	5	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932				0.932	
Flt Protected				0.976	0.976	
Satd. Flow (prot)	1736	0	0	1818	1694	0
Flt Permitted				0.976	0.976	
Satd. Flow (perm)	1736	0	0	1818	1694	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	272.5			217.7	204.4	
Travel Time (s)	19.6			15.7	14.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	5	5	5	5	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	0	10	10	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Yield			Yield	Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	14.7%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
1: Pinkie Rd & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕	↗	↖	↕↕			↕↕			↕↕	
Volume (vph)	15	510	20	95	785	735	100	305	140	30	70	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		60.0	60.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.850		0.927			0.965			0.962	
Fl _t Protected		0.999		0.950				0.991			0.989	
Satd. Flow (prot)	0	3536	1583	1770	3281	0	0	1781	0	0	1772	0
Fl _t Permitted		0.812		0.400				0.911			0.832	
Satd. Flow (perm)	0	2874	1583	745	3281	0	0	1638	0	0	1491	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			26		347			27			30	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		159.0			424.8			477.6			117.6	
Travel Time (s)		11.4			30.6			34.4			8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	554	22	103	853	799	109	332	152	33	76	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	570	22	103	1652	0	0	593	0	0	152	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	6	6		8	8		4	4	

Lanes, Volumes, Timings
1: Pinkie Rd & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0		24.8	24.8		24.8	24.8	
Total Split (s)	42.0	42.0	42.0	42.0	42.0		33.0	33.0		33.0	33.0	
Total Split (%)	56.0%	56.0%	56.0%	56.0%	56.0%		44.0%	44.0%		44.0%	44.0%	
Maximum Green (s)	38.0	38.0	38.0	38.0	38.0		28.2	28.2		28.2	28.2	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		1.3	1.3		1.3	1.3	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)		4.0	4.0	4.0	4.0			4.8			4.8	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max	Max	Max	Max		None	None		None	None	
Walk Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	6.0	6.0	6.0	6.0	6.0		15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)		38.0	38.0	38.0	38.0			27.5			27.5	
Actuated g/C Ratio		0.51	0.51	0.51	0.51			0.37			0.37	
v/c Ratio		0.39	0.03	0.27	0.89			0.95			0.27	
Control Delay		12.2	3.7	13.0	21.0			50.2			14.4	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		12.2	3.7	13.0	21.0			50.2			14.4	
LOS		B	A	B	C			D			B	
Approach Delay		11.9			20.5			50.2			14.4	
Approach LOS		B			C			D			B	

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	74.3
Natural Cycle:	75
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.95
Intersection Signal Delay:	24.3
Intersection LOS:	C
Intersection Capacity Utilization:	107.3%
ICU Level of Service:	G
Analysis Period (min):	15

Splits and Phases: 1: Pinkie Rd & Dewdney Ave



Lanes, Volumes, Timings
2: Lg / Comm Retail & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗			↗	
Volume (vph)	5	600	100	240	810	10	615	25	130	5	30	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		0.0	60.0		0.0	100.0		0.0	60.0		0.0
Storage Lanes	1		0	2		0	2		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	0.95	0.97	0.95	0.95	0.95	0.95	0.95
Fr _t		0.979			0.998			0.874			0.983	
Fl _t Protected	0.950			0.950			0.950				0.994	
Satd. Flow (prot)	1770	3465	0	3433	3532	0	3433	3093	0	0	3458	0
Fl _t Permitted	0.280			0.950			0.950				0.908	
Satd. Flow (perm)	522	3465	0	3433	3532	0	3433	3093	0	0	3159	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			1			141				5
Link Speed (k/h)		50			50			50				50
Link Distance (m)		424.8			405.9			284.1				123.7
Travel Time (s)		30.6			29.2			20.5				8.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	652	109	261	880	11	668	27	141	5	33	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	761	0	261	891	0	668	168	0	0	43	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2				7.2
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Prot	NA		Prot	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2									4		
Detector Phase	5	2		1	6		3	8		4	4	

Lanes, Volumes, Timings
2: Lg / Comm Retail & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	15.0	15.0		7.0	15.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	19.0	21.0		19.0	21.0		19.0	28.1		28.1	28.1	
Total Split (s)	19.0	29.9		19.0	29.9		23.0	51.1		28.1	28.1	
Total Split (%)	19.0%	29.9%		19.0%	29.9%		23.0%	51.1%		28.1%	28.1%	
Maximum Green (s)	15.0	25.9		15.0	25.9		19.0	46.0		23.3	23.3	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	1.6		1.3	1.3	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	5.1			4.8	
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	None		None	None	
Walk Time (s)		5.0			5.0			5.0		5.0	5.0	
Flash Dont Walk (s)		12.0			12.0			18.0		12.0	12.0	
Pedestrian Calls (#/hr)		0			0			0		0	0	
Act Effct Green (s)	40.7	26.5		11.4	38.7		19.5	28.9			15.4	
Actuated g/C Ratio	0.51	0.33		0.14	0.48		0.24	0.36			0.19	
v/c Ratio	0.01	0.66		0.54	0.52		0.80	0.14			0.07	
Control Delay	12.2	28.0		37.8	19.7		40.1	4.8			28.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	12.2	28.0		37.8	19.7		40.1	4.8			28.8	
LOS	B	C		D	B		D	A			C	
Approach Delay		27.9			23.8			33.0			28.8	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 80.3

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 27.7

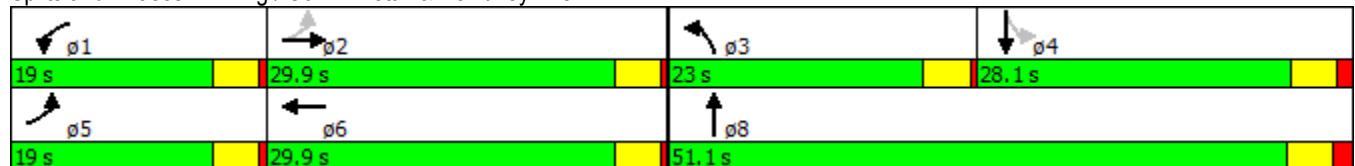
Intersection LOS: C

Intersection Capacity Utilization 70.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Lg / Comm Retail & Dewdney Ave



Lanes, Volumes, Timings
3: Main St Retail & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕		↔↔	↕↕			↕↕			↕↕	
Volume (vph)	15	645	95	240	625	10	435	20	95	5	20	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	70.0		0.0	60.0		0.0	0.0		0.0
Storage Lanes	0		0	2		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	0.95	0.95	0.95	0.97	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Fr _t		0.981			0.998			0.974			0.944	
Fl _t Protected		0.999		0.950				0.962			0.994	
Satd. Flow (prot)	0	3468	0	3433	3532	0	0	3316	0	0	3321	0
Fl _t Permitted		0.937		0.950				0.740			0.909	
Satd. Flow (perm)	0	3253	0	3433	3532	0	0	2551	0	0	3037	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			3			34			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		405.9			411.3			239.1			119.7	
Travel Time (s)		29.2			29.6			17.2			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	701	103	261	679	11	473	22	103	5	22	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	820	0	261	690	0	0	598	0	0	43	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4						2			6		
Detector Phase	4	4		3	8		2	2		6	6	

Lanes, Volumes, Timings
 3: Main St Retail & Dewdney Ave

07/01/2014

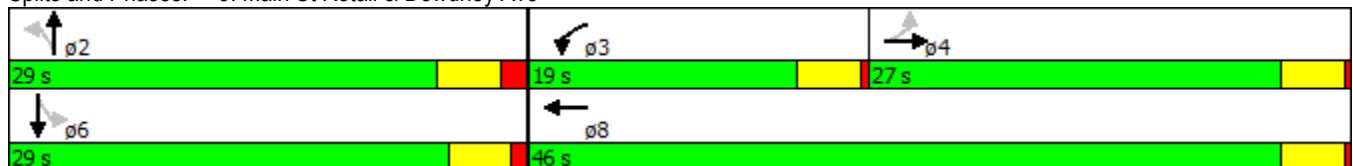


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	15.0	15.0		7.0	15.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	27.0	27.0		19.0	27.0		28.1	28.1		21.5	21.5	
Total Split (s)	27.0	27.0		19.0	46.0		29.0	29.0		29.0	29.0	
Total Split (%)	36.0%	36.0%		25.3%	61.3%		38.7%	38.7%		38.7%	38.7%	
Maximum Green (s)	23.0	23.0		15.0	42.0		23.9	23.9		24.5	24.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		1.6	1.6		1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		4.0		4.0	4.0			5.1			4.5	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	18.0	18.0			18.0		18.0	18.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		20.8		10.5	35.4			24.0			24.6	
Actuated g/C Ratio		0.30		0.15	0.52			0.35			0.36	
v/c Ratio		0.82		0.50	0.38			0.95dl			0.04	
Control Delay		29.6		30.4	10.4			22.7			11.8	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		29.6		30.4	10.4			22.7			11.8	
LOS		C		C	B			C			B	
Approach Delay		29.6			15.9			22.7			11.8	
Approach LOS		C			B			C			B	

Intersection Summary

Area Type: Other
 Cycle Length: 75
 Actuated Cycle Length: 68.6
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 22.2
 Intersection LOS: C
 Intersection Capacity Utilization 80.6%
 ICU Level of Service D
 Analysis Period (min) 15
 dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 3: Main St Retail & Dewdney Ave



Lanes, Volumes, Timings
4: Courtney St & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	530	190	285	600	15	255	55	370	10	25	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		60.0	60.0		60.0	60.0		60.0	60.0		0.0
Storage Lanes	1		1	2		1	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850		0.925	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1770	1863	1583	1770	1723	0
Flt Permitted	0.389			0.950			0.603			0.718		
Satd. Flow (perm)	725	3539	1583	3433	3539	1583	1123	1863	1583	1337	1723	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			207			129			402			27
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		411.3			149.0			381.7			128.0	
Travel Time (s)		29.6			10.7			27.5			9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	576	207	310	652	16	277	60	402	11	27	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	576	207	310	652	16	277	60	402	11	54	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	

Lanes, Volumes, Timings
4: Courtney St & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0	15.0	15.0	15.0	15.0	7.0	15.0	
Minimum Split (s)	19.0	28.1	28.1	19.0	24.8	24.8	20.1	28.1	28.1	19.0	24.0	
Total Split (s)	19.0	28.1	28.1	19.0	28.1	28.1	20.1	28.9	28.9	19.0	27.8	
Total Split (%)	20.0%	29.6%	29.6%	20.0%	29.6%	29.6%	21.2%	30.4%	30.4%	20.0%	29.3%	
Maximum Green (s)	13.9	23.0	23.0	14.2	23.3	23.3	15.0	23.8	23.8	15.0	23.8	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.6	1.6	1.6	1.3	1.3	1.3	1.6	1.6	1.6	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.1	5.1	5.1	4.8	4.8	4.8	5.1	5.1	5.1	4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	
Flash Dont Walk (s)		18.0	18.0		15.0	15.0		18.0	18.0		15.0	
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	
Act Effct Green (s)	26.8	19.7	19.7	12.5	32.6	32.6	42.9	40.8	40.8	30.9	23.9	
Actuated g/C Ratio	0.30	0.22	0.22	0.14	0.36	0.36	0.48	0.45	0.45	0.34	0.26	
v/c Ratio	0.09	0.75	0.41	0.65	0.51	0.02	0.43	0.07	0.43	0.02	0.11	
Control Delay	16.7	39.6	7.0	44.1	25.2	0.1	18.1	17.5	3.9	14.8	17.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	16.7	39.6	7.0	44.1	25.2	0.1	18.1	17.5	3.9	14.8	17.1	
LOS	B	D	A	D	C	A	B	B	A	B	B	
Approach Delay		30.5			30.8			10.3			16.7	
Approach LOS		C			C			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 90.2

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 24.5

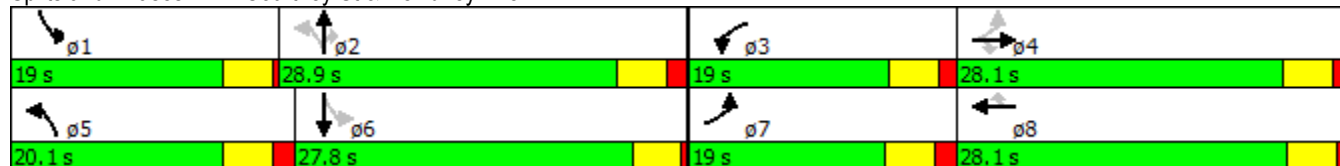
Intersection LOS: C

Intersection Capacity Utilization 56.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 4: Courtney St & Dewdney Ave



Lanes, Volumes, Timings
5: Pinkie Rd & Residential / Lg Retail

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	5	25	5	125	25	230	5	320	510	190	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982			0.918			0.918			0.997	
Flt Protected		0.993			0.984						0.954	
Satd. Flow (prot)	0	1816	0	0	1683	0	0	1710	0	0	1772	0
Flt Permitted		0.959			0.876			0.999			0.307	
Satd. Flow (perm)	0	1754	0	0	1498	0	0	1708	0	0	570	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			142			235			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		140.9			249.5			350.6			477.6	
Travel Time (s)		10.1			18.0			25.2			34.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	27	5	136	27	250	5	348	554	207	5	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	37	0	0	413	0	0	907	0	0	217	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	

Lanes, Volumes, Timings
 5: Pinkie Rd & Residential / Lg Retail

07/01/2014

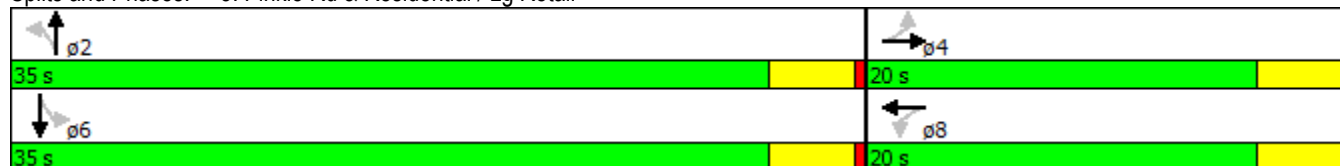


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	20.0	20.0		20.0	20.0		35.0	35.0		35.0	35.0	
Total Split (%)	36.4%	36.4%		36.4%	36.4%		63.6%	63.6%		63.6%	63.6%	
Maximum Green (s)	16.0	16.0		16.0	16.0		31.0	31.0		31.0	31.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		15.6			15.6			31.5			31.5	
Actuated g/C Ratio		0.28			0.28			0.57			0.57	
v/c Ratio		0.07			0.79			0.84			0.66	
Control Delay		13.3			25.0			17.1			21.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.3			25.0			17.1			21.7	
LOS		B			C			B			C	
Approach Delay		13.3			25.0			17.1			21.7	
Approach LOS		B			C			B			C	

Intersection Summary

Area Type:	Other
Cycle Length:	55
Actuated Cycle Length:	55.1
Natural Cycle:	55
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	19.7
Intersection LOS:	B
Intersection Capacity Utilization:	99.9%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 5: Pinkie Rd & Residential / Lg Retail



Lanes, Volumes, Timings
6: Residential & Pr. Ind. / Res. Greenway

07/01/2014



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	130	5	75	200	5	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.995			0.875		
Flt Protected				0.986	0.996	
Satd. Flow (prot)	1853	0	0	1837	1623	0
Flt Permitted				0.986	0.996	
Satd. Flow (perm)	1853	0	0	1837	1623	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	272.5			217.7	204.4	
Travel Time (s)	19.6			15.7	14.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	5	82	217	5	65
Shared Lane Traffic (%)						
Lane Group Flow (vph)	146	0	0	299	70	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	15		25	25		15
Sign Control	Yield			Yield	Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	35.8%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
1: Pinkie Rd & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↑↑	↗	↘	↑↑	↗
Volume (vph)	250	980	95	15	300	530	160	680	60	105	200	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		60.0	60.0		60.0	60.0		60.0	60.0		0.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	0.0			7.5			0.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt			0.850			0.850			0.850		0.944	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3341	0
Flt Permitted	0.448			0.269			0.372			0.247		
Satd. Flow (perm)	835	3539	1583	501	3539	1583	693	3539	1583	460	3341	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			103			458			145		120	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		159.0			424.8			477.6			117.6	
Travel Time (s)		11.4			30.6			34.4			8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	272	1065	103	16	326	576	174	739	65	114	217	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	272	1065	103	16	326	576	174	739	65	114	347	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	0	1	2	0	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	0.0	2.0	10.0	0.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	0.0	2.0	0.6	0.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		
Detector Phase	5	2	2	6	6	6	3	8	8	7	4	

Lanes, Volumes, Timings
1: Pinkie Rd & Dewdney Ave

07/01/2014

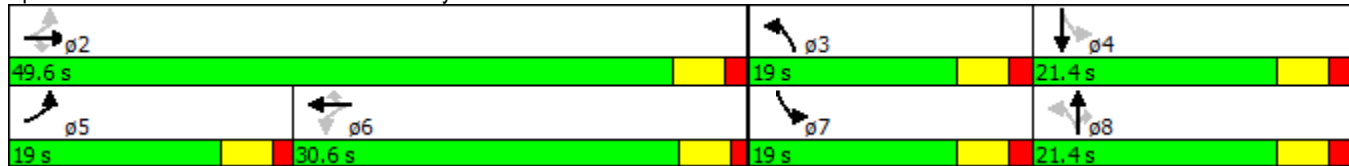


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	15.0	15.0	15.0	7.0	15.0	15.0	7.0	15.0	
Minimum Split (s)	19.0	28.1	28.1	24.8	24.8	24.8	19.0	21.1	21.1	19.0	21.1	
Total Split (s)	19.0	49.6	49.6	30.6	30.6	30.6	19.0	21.4	21.4	19.0	21.4	
Total Split (%)	21.1%	55.1%	55.1%	34.0%	34.0%	34.0%	21.1%	23.8%	23.8%	21.1%	23.8%	
Maximum Green (s)	14.2	44.5	44.5	25.8	25.8	25.8	13.9	16.3	16.3	13.9	16.3	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.3	1.6	1.6	1.3	1.3	1.3	1.6	1.6	1.6	1.6	1.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.8	5.1	5.1	4.8	4.8	4.8	5.1	5.1	5.1	5.1	5.1	
Lead/Lag	Lead			Lag			Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes			Yes			Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max	Max	Max	Max	Max	None	None	None	None	None	
Walk Time (s)		5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	
Flash Dont Walk (s)		18.0	18.0	15.0	15.0	15.0		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0	0	0	0		0	0		0	
Act Effct Green (s)	44.8	44.5	44.5	27.9	27.9	27.9	28.9	19.4	19.4	24.5	15.1	
Actuated g/C Ratio	0.52	0.52	0.52	0.32	0.32	0.32	0.34	0.23	0.23	0.28	0.18	
v/c Ratio	0.48	0.58	0.12	0.10	0.28	0.70	0.47	0.93	0.14	0.42	0.51	
Control Delay	15.3	16.3	2.9	24.9	23.6	11.4	23.7	54.6	0.6	23.7	23.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	15.3	16.3	2.9	24.9	23.6	11.4	23.7	54.6	0.6	23.7	23.9	
LOS	B	B	A	C	C	B	C	D	A	C	C	
Approach Delay		15.2			15.9			45.5			23.9	
Approach LOS		B			B			D			C	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 86.1
 Natural Cycle: 85
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 24.2
 Intersection LOS: C
 Intersection Capacity Utilization 81.0%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 1: Pinkie Rd & Dewdney Ave



Lanes, Volumes, Timings
2: Lg / Comm Retail & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	1145	5	5	845	5	5	5	5	5	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		60.0	60.0		0.0	60.0		0.0	0.0		0.0
Storage Lanes	1		1	2		0	2		0	0		0
Taper Length (m)	7.5			7.5			0.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	0.95	0.97	0.95	0.95	0.95	0.95	0.95
Frt			0.850		0.999			0.925				0.950
Flt Protected	0.950			0.950			0.950					0.984
Satd. Flow (prot)	1770	3539	1583	3433	3536	0	3433	3274	0	0	3308	0
Flt Permitted	0.294			0.950								0.955
Satd. Flow (perm)	548	3539	1583	3433	3536	0	3614	3274	0	0	3211	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			90		1			5				5
Link Speed (k/h)		50			50			50				50
Link Distance (m)		424.8			405.9			284.1				123.7
Travel Time (s)		30.6			29.2			20.5				8.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1245	5	5	918	5	5	5	5	5	5	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	1245	5	5	923	0	5	10	0	0	15	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2				7.2
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	0	1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	0.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases	2		2				8			4		
Detector Phase	5	2	2	1	6		8	8		4		4

Lanes, Volumes, Timings
2: Lg / Comm Retail & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	19.0	21.5	21.5	19.0	21.5		28.1	28.1		28.1	28.1	
Total Split (s)	19.0	32.9	32.9	19.0	32.9		28.1	28.1		28.1	28.1	
Total Split (%)	23.8%	41.1%	41.1%	23.8%	41.1%		35.1%	35.1%		35.1%	35.1%	
Maximum Green (s)	14.5	28.4	28.4	14.5	28.4		23.0	23.0		23.0	23.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0				0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		5.1	5.1				5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max	Max	None	Max		None	None		None	None	
Walk Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		12.0	12.0		12.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)		0	0		0		0	0		0	0	
Act Effct Green (s)	42.7	45.5	45.5	7.1	45.5		15.2	15.2				15.2
Actuated g/C Ratio	0.83	0.89	0.89	0.14	0.89		0.30	0.30				0.30
v/c Ratio	0.01	0.40	0.00	0.01	0.29		0.00	0.01				0.02
Control Delay	2.8	5.2	0.0	22.2	4.3		15.8	12.8				13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0				0.0
Total Delay	2.8	5.2	0.0	22.2	4.3		15.8	12.8				13.4
LOS	A	A	A	C	A		B	B				B
Approach Delay		5.1			4.4			13.8				13.4
Approach LOS		A			A			B				B

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	51.2
Natural Cycle:	80
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.40
Intersection Signal Delay:	4.9
Intersection LOS:	A
Intersection Capacity Utilization:	52.2%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 2: Lg / Comm Retail & Dewdney Ave



Lanes, Volumes, Timings
3: Main St Retail & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	1145	5	5	845	5	5	5	5	5	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		60.0	70.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	2		0	0		0	0		0
Taper Length (m)	0.0			7.5			0.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850		0.999			0.950			0.950	
Flt Protected	0.950			0.950				0.984			0.984	
Satd. Flow (prot)	1770	3539	1583	3433	3536	0	0	3308	0	0	3308	0
Flt Permitted	0.286			0.950				0.918			0.921	
Satd. Flow (perm)	533	3539	1583	3433	3536	0	0	3087	0	0	3097	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			90		1			5			5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		405.9			411.3			239.1			119.7	
Travel Time (s)		29.2			29.6			17.2			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1245	5	5	918	5	5	5	5	5	5	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	1245	5	5	923	0	0	15	0	0	15	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	0	1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	0.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2		6		6
Permitted Phases	4		4				2			6		
Detector Phase	4	4	4	3	8		2	2		6	6	

Lanes, Volumes, Timings
3: Main St Retail & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	7.0	15.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	21.5	21.5	21.5	19.0	21.5		28.1	28.1		21.5	21.5	
Total Split (s)	34.4	34.4	34.4	17.0	51.4		28.6	28.6		28.6	28.6	
Total Split (%)	43.0%	43.0%	43.0%	21.3%	64.3%		35.8%	35.8%		35.8%	35.8%	
Maximum Green (s)	29.9	29.9	29.9	12.5	46.9		23.5	23.5		24.1	24.1	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.6	1.6		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5			5.1			4.5	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	
Walk Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	12.0	12.0	12.0		12.0		18.0	18.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0	0		0		0	0		0	0	
Act Effct Green (s)	28.1	28.1	28.1	7.1	30.1			23.7			24.3	
Actuated g/C Ratio	0.44	0.44	0.44	0.11	0.47			0.37			0.38	
v/c Ratio	0.02	0.79	0.01	0.01	0.55			0.01			0.01	
Control Delay	12.0	20.8	0.0	28.4	13.0			13.0			12.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay	12.0	20.8	0.0	28.4	13.0			13.0			12.6	
LOS	B	C	A	C	B			B			B	
Approach Delay		20.7			13.1			13.0			12.6	
Approach LOS		C			B			B			B	

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	63.5
Natural Cycle:	80
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.79
Intersection Signal Delay:	17.4
Intersection LOS:	B
Intersection Capacity Utilization:	52.2%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 3: Main St Retail & Dewdney Ave



Lanes, Volumes, Timings
4: Courtney St & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	890	250	45	225	105	615	455	75	110	170	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		60.0	60.0		60.0	60.0		60.0	0.0		0.0
Storage Lanes	1		1	2		1	2		1	1		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Frt			0.850			0.850			0.850		0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	3433	3539	1583	1770	3525	0
Flt Permitted	0.600			0.950			0.950			0.471		
Satd. Flow (perm)	1118	3539	1583	3433	3539	1583	3433	3539	1583	877	3525	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			231			138			138			3
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		411.3			149.0			381.7			128.0	
Travel Time (s)		29.6			10.7			27.5			9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	967	272	49	245	114	668	495	82	120	185	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	967	272	49	245	114	668	495	82	120	190	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2			7.2	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	

Lanes, Volumes, Timings
4: Courtney St & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0	15.0	7.0	15.0	15.0	7.0	15.0	
Minimum Split (s)	19.0	28.1	28.1	19.0	24.8	24.8	19.0	25.1	25.1	19.0	25.1	
Total Split (s)	19.0	29.4	29.4	19.0	29.4	29.4	21.0	27.6	27.6	19.0	25.6	
Total Split (%)	20.0%	30.9%	30.9%	20.0%	30.9%	30.9%	22.1%	29.1%	29.1%	20.0%	26.9%	
Maximum Green (s)	14.2	24.3	24.3	13.9	24.6	24.6	16.2	22.5	22.5	14.2	20.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.3	1.6	1.6	1.6	1.3	1.3	1.3	1.6	1.6	1.3	1.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.8	5.1	5.1	5.1	4.8	4.8	4.8	5.1	5.1	4.8	5.1	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	
Flash Dont Walk (s)		18.0	18.0		15.0	15.0		15.0	15.0		15.0	
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	
Act Effct Green (s)	28.7	24.4	24.4	7.3	29.6	29.6	16.3	30.6	30.6	29.8	20.6	
Actuated g/C Ratio	0.34	0.29	0.29	0.09	0.35	0.35	0.20	0.37	0.37	0.36	0.25	
v/c Ratio	0.01	0.93	0.43	0.16	0.20	0.18	1.00	0.38	0.12	0.29	0.22	
Control Delay	15.2	47.1	8.2	38.5	19.8	3.5	71.0	23.2	1.4	15.4	26.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	15.2	47.1	8.2	38.5	19.8	3.5	71.0	23.2	1.4	15.4	26.7	
LOS	B	D	A	D	B	A	E	C	A	B	C	
Approach Delay		38.5			17.5			47.4			22.3	
Approach LOS		D			B			D			C	

Intersection Summary

Area Type: Other

Cycle Length: 95

Actuated Cycle Length: 83.5

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 37.7

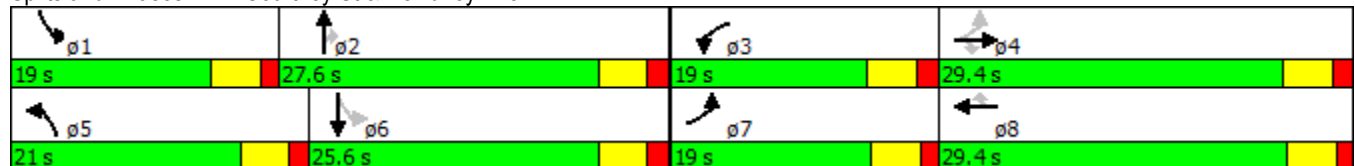
Intersection LOS: D

Intersection Capacity Utilization 67.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: Courtney St & Dewdney Ave



Lanes, Volumes, Timings
5: Pinkie Rd & Residential / Lg Retail

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	5	5	5	5	5	5	5	840	5	5	305	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.955			0.955			0.999			0.998	
Flt Protected		0.984			0.984						0.999	
Satd. Flow (prot)	0	1750	0	0	1750	0	0	1861	0	0	3529	0
Flt Permitted		0.920						0.999			0.947	
Satd. Flow (perm)	0	1637	0	0	1779	0	0	1859	0	0	3345	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			5			1			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		140.9			249.5			350.6			477.6	
Travel Time (s)		10.1			18.0			25.2			34.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	5	5	5	5	5	5	913	5	5	332	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	15	0	0	923	0	0	342	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	20.0	20.0		21.5	21.5		20.0	20.0		20.0	20.0	

Lanes, Volumes, Timings
 5: Pinkie Rd & Residential / Lg Retail

07/01/2014

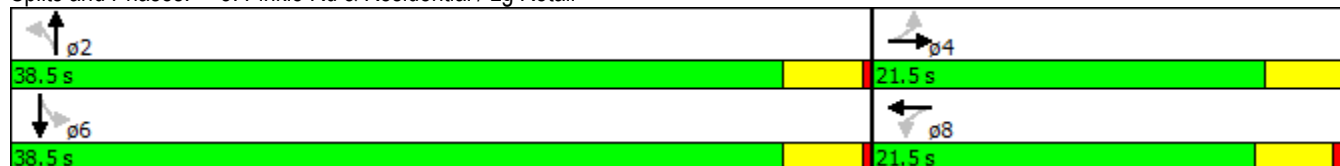


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	21.5	21.5		21.5	21.5		38.5	38.5		38.5	38.5	
Total Split (%)	35.8%	35.8%		35.8%	35.8%		64.2%	64.2%		64.2%	64.2%	
Maximum Green (s)	17.5	17.5		17.0	17.0		34.5	34.5		34.5	34.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		1.0	1.0		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.5			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	6.0	6.0		12.0	12.0		6.0	6.0		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		15.3			15.2			53.3			53.3	
Actuated g/C Ratio		0.27			0.27			0.93			0.93	
v/c Ratio		0.03			0.03			0.53			0.11	
Control Delay		15.9			16.1			4.0			1.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		15.9			16.1			4.0			1.4	
LOS		B			B			A			A	
Approach Delay		15.9			16.1			4.0			1.4	
Approach LOS		B			B			A			A	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	57.1
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.53
Intersection Signal Delay:	3.6
Intersection LOS:	A
Intersection Capacity Utilization:	68.1%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 5: Pinkie Rd & Residential / Lg Retail



Lanes, Volumes, Timings
6: Residential & Pr. Ind. / Res. Greenway

07/01/2014



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	5	5	5	5	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932				0.932	
Flt Protected				0.976	0.976	
Satd. Flow (prot)	1736	0	0	1818	1694	0
Flt Permitted				0.976	0.976	
Satd. Flow (perm)	1736	0	0	1818	1694	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	272.5			217.7	204.4	
Travel Time (s)	19.6			15.7	14.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	5	5	5	5	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	0	10	10	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Yield			Yield	Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	14.7%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
7: Pinkie Rd & Residential Greenway

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	5	5	5	5	5	5	5	810	5	5	305	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.955			0.955			0.999			0.998	
Flt Protected		0.984			0.984						0.999	
Satd. Flow (prot)	0	1750	0	0	1750	0	0	1861	0	0	1857	0
Flt Permitted								0.999			0.992	
Satd. Flow (perm)	0	1779	0	0	1779	0	0	1859	0	0	1844	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			5			1			2	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		124.2			213.8			198.8			350.6	
Travel Time (s)		8.9			15.4			14.3			25.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	5	5	5	5	5	5	880	5	5	332	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	15	0	0	890	0	0	342	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	

Lanes, Volumes, Timings
7: Pinkie Rd & Residential Greenway

07/01/2014

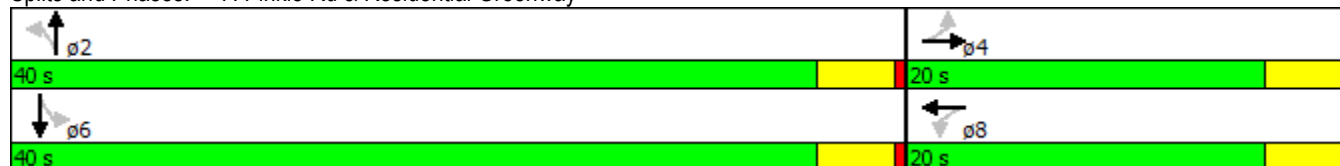


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	20.0	20.0		20.0	20.0		40.0	40.0		40.0	40.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%		66.7%	66.7%		66.7%	66.7%	
Maximum Green (s)	16.0	16.0		16.0	16.0		36.0	36.0		36.0	36.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		15.2			15.2			54.8			54.8	
Actuated g/C Ratio		0.26			0.26			0.94			0.94	
v/c Ratio		0.03			0.03			0.51			0.20	
Control Delay		16.6			16.6			3.6			1.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		16.6			16.6			3.6			1.8	
LOS		B			B			A			A	
Approach Delay		16.6			16.6			3.6			1.8	
Approach LOS		B			B			A			A	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	58.5
Natural Cycle:	60
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.51
Intersection Signal Delay:	3.4
Intersection LOS:	A
Intersection Capacity Utilization:	64.8%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 7: Pinkie Rd & Residential Greenway



Lanes, Volumes, Timings
8: Courtney St & Residential

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	5	5	5	5	5	5	5	1160	5	5	465	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.955			0.955			0.999			0.999	
Flt Protected		0.984			0.984							
Satd. Flow (prot)	0	1750	0	0	1750	0	0	3536	0	0	3536	0
Flt Permitted								0.954			0.946	
Satd. Flow (perm)	0	1779	0	0	1779	0	0	3373	0	0	3345	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			5			1			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		180.1			124.2			222.6			641.9	
Travel Time (s)		13.0			8.9			16.0			46.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	5	5	5	5	5	5	1261	5	5	505	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	15	0	0	15	0	0	1271	0	0	515	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	21.5	21.5		21.5	21.5		20.0	20.0		20.0	20.0	

Lanes, Volumes, Timings
8: Courtney St & Residential

07/01/2014

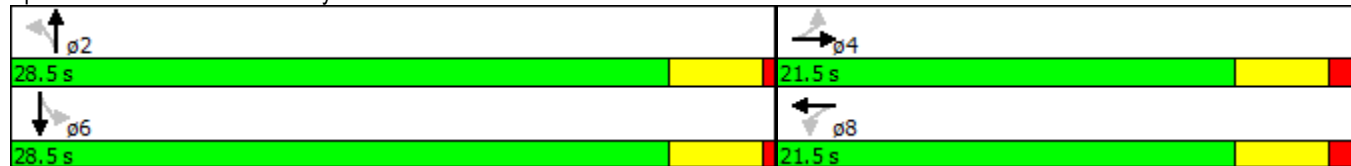


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	21.5	21.5		21.5	21.5		28.5	28.5		28.5	28.5	
Total Split (%)	43.0%	43.0%		43.0%	43.0%		57.0%	57.0%		57.0%	57.0%	
Maximum Green (s)	17.0	17.0		17.0	17.0		24.5	24.5		24.5	24.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		6.0	6.0		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		15.2			15.2			43.0			43.0	
Actuated g/C Ratio		0.33			0.33			0.92			0.92	
v/c Ratio		0.03			0.03			0.41			0.17	
Control Delay		11.8			11.8			2.7			1.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		11.8			11.8			2.7			1.8	
LOS		B			B			A			A	
Approach Delay		11.8			11.8			2.7			1.8	
Approach LOS		B			B			A			A	

Intersection Summary

Area Type:	Other
Cycle Length:	50
Actuated Cycle Length:	46.7
Natural Cycle:	50
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.41
Intersection Signal Delay:	2.6
Intersection LOS:	A
Intersection Capacity Utilization:	55.3%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 8: Courtney St & Residential



Lanes, Volumes, Timings
1: Pinkie Rd & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	1235	145	235	790	570	175	705	235	225	345	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		60.0	60.0		60.0	60.0		60.0	60.0		0.0
Storage Lanes	1		1	1		1	1		1	2		0
Taper Length (m)	0.0			7.5			0.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frt			0.850			0.850			0.850		0.961	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	3433	3401	0
Flt Permitted	0.214			0.070			0.252			0.950		
Satd. Flow (perm)	399	3539	1583	130	3539	1583	469	3539	1583	3433	3401	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			94			322			179			31
Link Speed (k/h)		50			50			50				50
Link Distance (m)		159.0			424.8			477.6				117.6
Travel Time (s)		11.4			30.6			34.4				8.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	272	1342	158	255	859	620	190	766	255	245	375	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	272	1342	158	255	859	620	190	766	255	245	505	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			7.2				7.2
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	0	1	2	0	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	0.0	2.0	10.0	0.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	0.0	2.0	0.6	0.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8			
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	

Lanes, Volumes, Timings
1: Pinkie Rd & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0	15.0	7.0	15.0	15.0	7.0	15.0	
Minimum Split (s)	19.0	28.1	28.1	19.0	25.1	25.1	19.0	28.1	28.1	19.0	28.1	
Total Split (s)	21.0	60.0	60.0	23.0	62.0	62.0	22.0	37.0	37.0	20.0	35.0	
Total Split (%)	15.0%	42.9%	42.9%	16.4%	44.3%	44.3%	15.7%	26.4%	26.4%	14.3%	25.0%	
Maximum Green (s)	16.2	54.9	54.9	17.9	56.9	56.9	16.9	31.9	31.9	14.9	29.9	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.3	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.8	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	
Flash Dont Walk (s)		18.0	18.0		15.0	15.0		18.0	18.0		18.0	
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	
Act Effct Green (s)	70.3	54.9	54.9	74.9	57.5	57.5	46.4	31.6	31.6	13.8	30.6	
Actuated g/C Ratio	0.51	0.40	0.40	0.54	0.42	0.42	0.34	0.23	0.23	0.10	0.22	
v/c Ratio	0.77	0.95	0.23	0.92	0.58	0.73	0.64	0.95	0.51	0.72	0.65	
Control Delay	32.7	55.9	12.7	76.4	33.4	21.6	41.8	73.4	18.5	72.7	50.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	32.7	55.9	12.7	76.4	33.4	21.6	41.8	73.4	18.5	72.7	50.7	
LOS	C	E	B	E	C	C	D	E	B	E	D	
Approach Delay		48.5			35.5			56.9			57.9	
Approach LOS		D			D			E			E	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 138.1

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 47.5

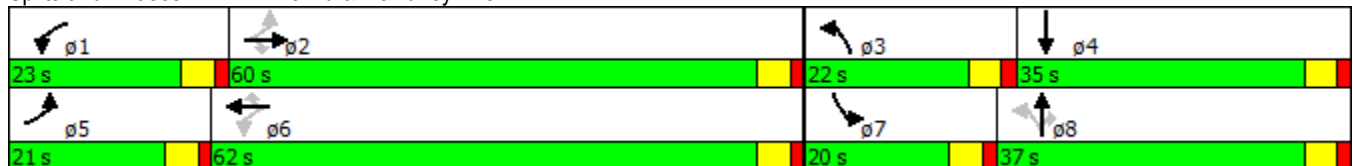
Intersection LOS: D

Intersection Capacity Utilization 90.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Pinkie Rd & Dewdney Ave



Lanes, Volumes, Timings
2: Lg / Comm Retail & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	1425	260	370	1055	10	540	30	225	5	35	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		60.0	60.0		0.0	60.0		0.0	0.0		0.0
Storage Lanes	1		1	2		0	2		0	0		0
Taper Length (m)	7.5			7.5			0.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	0.95	0.97	0.95	0.95	0.95	0.95	0.95
Frt			0.850		0.999			0.868				0.984
Flt Protected	0.950			0.950			0.950					0.995
Satd. Flow (prot)	1770	3539	1583	3433	3536	0	3433	3072	0	0	3465	0
Flt Permitted	0.199			0.950			0.950					0.904
Satd. Flow (perm)	371	3539	1583	3433	3536	0	3433	3072	0	0	3148	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			149		1			207				5
Link Speed (k/h)		50			50			50				50
Link Distance (m)		424.8			405.9			284.1				123.7
Travel Time (s)		30.6			29.2			20.5				8.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1549	283	402	1147	11	587	33	245	5	38	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	1549	283	402	1158	0	587	278	0	0	48	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2				7.2
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	0	1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	0.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA	Perm	Prot	NA		Prot	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8				4
Permitted Phases	2		2							4		
Detector Phase	5	2	2	1	6		3	8		4		4

Lanes, Volumes, Timings
2: Lg / Comm Retail & Dewdney Ave

07/01/2014

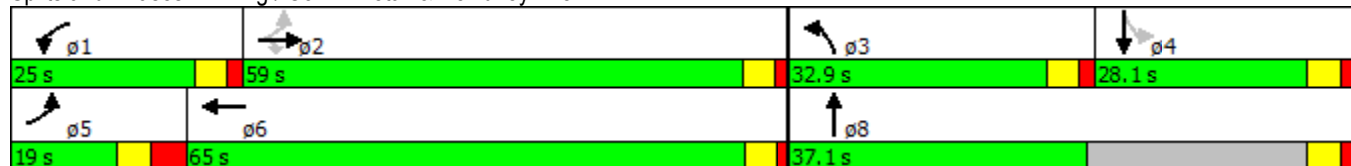


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0		7.0	15.0		15.0	15.0	
Minimum Split (s)	19.0	28.1	28.1	19.0	21.8		19.0	28.1		28.1	28.1	
Total Split (s)	19.0	59.0	59.0	25.0	65.0		32.9	37.1		28.1	28.1	
Total Split (%)	13.1%	40.7%	40.7%	17.2%	44.8%		22.7%	25.6%		19.4%	19.4%	
Maximum Green (s)	11.5	53.9	53.9	19.9	60.2		27.8	32.0		23.0	23.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	4.0	1.6	1.6	1.6	1.3		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	7.5	5.1	5.1	5.1	4.8		5.1	5.1			5.1	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max	Max	None	Max		None	None		None	None	
Walk Time (s)		5.0	5.0		5.0			5.0		5.0	5.0	
Flash Dont Walk (s)		18.0	18.0		12.0			18.0		18.0	18.0	
Pedestrian Calls (#/hr)		0	0		0			0		0	0	
Act Effct Green (s)	59.3	54.6	54.6	18.7	76.1		25.9	41.2			15.2	
Actuated g/C Ratio	0.46	0.42	0.42	0.14	0.59		0.20	0.32			0.12	
v/c Ratio	0.02	1.04	0.38	0.81	0.56		0.86	0.25			0.13	
Control Delay	14.8	73.3	14.8	68.9	20.4		64.6	9.2			51.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	14.8	73.3	14.8	68.9	20.4		64.6	9.2			51.4	
LOS	B	E	B	E	C		E	A			D	
Approach Delay		64.1			32.9			46.8			51.4	
Approach LOS		E			C			D			D	

Intersection Summary

Area Type:	Other
Cycle Length:	145
Actuated Cycle Length:	130
Natural Cycle:	145
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.04
Intersection Signal Delay:	49.2
Intersection LOS:	D
Intersection Capacity Utilization:	84.8%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 2: Lg / Comm Retail & Dewdney Ave



Lanes, Volumes, Timings
3: Main St Retail & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	1480	155	125	1030	10	390	20	170	5	25	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		60.0	70.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	2		0	0		0	0		0
Taper Length (m)	0.0			7.5			0.0			0.0		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850		0.999			0.956			0.950	
Flt Protected	0.950			0.950				0.967			0.995	
Satd. Flow (prot)	1770	3539	1583	3433	3536	0	0	3272	0	0	3345	0
Flt Permitted	0.236			0.950				0.753			0.908	
Satd. Flow (perm)	440	3539	1583	3433	3536	0	0	2548	0	0	3053	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102		2			60			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		405.9			411.3			239.1			119.7	
Travel Time (s)		29.2			29.6			17.2			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	1609	168	136	1120	11	424	22	185	5	27	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	1609	168	136	1131	0	0	631	0	0	48	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	0	1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	0.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4				2			6		
Detector Phase	4	4	4	3	8		2	2		6	6	

Lanes, Volumes, Timings
 3: Main St Retail & Dewdney Ave

07/01/2014

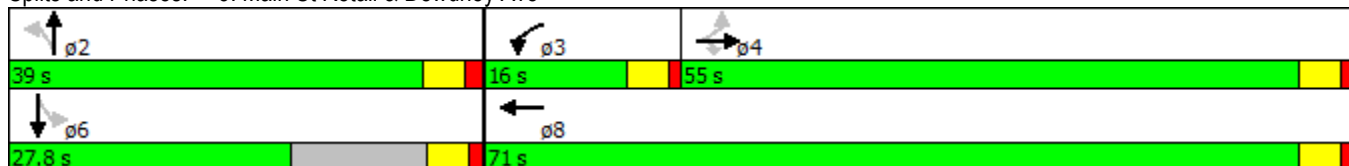


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	7.0	15.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	21.5	21.5	21.5	19.0	21.5		28.1	28.1		27.8	27.8	
Total Split (s)	55.0	55.0	55.0	16.0	71.0		39.0	39.0		27.8	27.8	
Total Split (%)	50.0%	50.0%	50.0%	14.5%	64.5%		35.5%	35.5%		25.3%	25.3%	
Maximum Green (s)	50.5	50.5	50.5	11.5	66.5		33.9	33.9		23.0	23.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.6	1.6		1.3	1.3	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5			5.1			4.8	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	
Walk Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	12.0	12.0	12.0		12.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)	0	0	0		0		0	0		0	0	
Act Effct Green (s)	50.5	50.5	50.5	9.4	64.5			33.9			34.2	
Actuated g/C Ratio	0.47	0.47	0.47	0.09	0.60			0.31			0.32	
v/c Ratio	0.08	0.97	0.21	0.45	0.54			0.91dl			0.05	
Control Delay	17.9	45.2	7.9	51.8	14.0			36.7			19.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay	17.9	45.2	7.9	51.8	14.0			36.7			19.5	
LOS	B	D	A	D	B			D			B	
Approach Delay		41.5			18.0			36.7			19.5	
Approach LOS		D			B			D			B	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 108
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.97
 Intersection Signal Delay: 32.5
 Intersection LOS: C
 Intersection Capacity Utilization 86.8%
 ICU Level of Service E
 Analysis Period (min) 15
 dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 3: Main St Retail & Dewdney Ave



Lanes, Volumes, Timings
4: Courtney St & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	1300	325	170	480	105	660	475	335	110	180	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	60.0		60.0	60.0		60.0	60.0		60.0	0.0		0.0
Storage Lanes	1		1	2		1	2		1	1		0
Taper Length (m)	7.5			7.5			7.5			0.0		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	0.95
Frt			0.850			0.850			0.850		0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	3433	3539	1583	1770	3476	0
Flt Permitted	0.459			0.950			0.950			0.461		
Satd. Flow (perm)	855	3539	1583	3433	3539	1583	3433	3539	1583	859	3476	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			171			124			227			8
Link Speed (k/h)		50			50			50				50
Link Distance (m)		411.3			149.0			381.7				128.0
Travel Time (s)		29.6			10.7			27.5				9.2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	1413	353	185	522	114	717	516	364	120	196	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	1413	353	185	522	114	717	516	364	120	223	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.2			7.2			7.2				7.2
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	

Lanes, Volumes, Timings
4: Courtney St & Dewdney Ave

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0	15.0	7.0	15.0	15.0	7.0	15.0	
Minimum Split (s)	19.0	28.1	28.1	19.0	24.8	24.8	19.0	28.1	28.1	19.0	21.8	
Total Split (s)	19.0	71.0	71.0	19.0	71.0	71.0	39.0	41.8	41.8	19.0	21.8	
Total Split (%)	12.6%	47.1%	47.1%	12.6%	47.1%	47.1%	25.9%	27.7%	27.7%	12.6%	14.5%	
Maximum Green (s)	14.2	65.9	65.9	13.9	66.2	66.2	34.2	36.7	36.7	13.9	17.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.3	1.6	1.6	1.6	1.3	1.3	1.3	1.6	1.6	1.6	1.3	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.8	5.1	5.1	5.1	4.8	4.8	4.8	5.1	5.1	5.1	4.8	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	
Flash Dont Walk (s)		18.0	18.0		15.0	15.0		18.0	18.0		12.0	
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	
Act Effct Green (s)	69.7	62.3	62.3	12.4	73.1	73.1	32.8	37.9	37.9	28.6	17.3	
Actuated g/C Ratio	0.48	0.43	0.43	0.09	0.51	0.51	0.23	0.26	0.26	0.20	0.12	
v/c Ratio	0.06	0.93	0.45	0.63	0.29	0.13	0.92	0.56	0.63	0.50	0.53	
Control Delay	15.4	50.6	16.3	75.0	22.1	3.1	73.2	50.1	23.3	41.4	64.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	15.4	50.6	16.3	75.0	22.1	3.1	73.2	50.1	23.3	41.4	64.2	
LOS	B	D	B	E	C	A	E	D	C	D	E	
Approach Delay		43.3			31.4			54.4			56.2	
Approach LOS		D			C			D			E	

Intersection Summary

Area Type: Other

Cycle Length: 150.8

Actuated Cycle Length: 144.6

Natural Cycle: 125

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 46.0

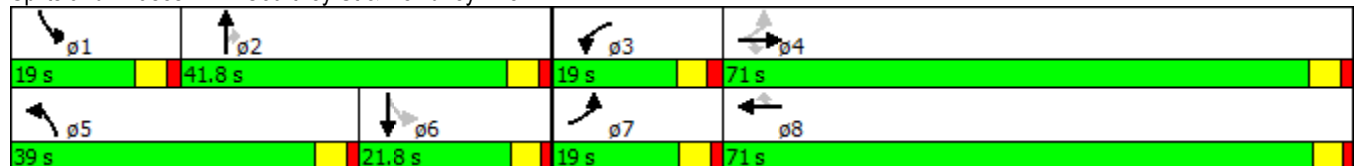
Intersection LOS: D

Intersection Capacity Utilization 89.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 4: Courtney St & Dewdney Ave



Lanes, Volumes, Timings
5: Pinkie Rd & Residential / Lg Retail

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	5	30	5	125	30	270	5	790	280	310	425	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.984			0.914			0.961			0.999	
Flt Protected		0.994			0.985						0.979	
Satd. Flow (prot)	0	1822	0	0	1677	0	0	3401	0	0	3461	0
Flt Permitted		0.959			0.885			0.952			0.550	
Satd. Flow (perm)	0	1758	0	0	1507	0	0	3238	0	0	1945	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			134			138			2	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		140.9			249.5			350.6			477.6	
Travel Time (s)		10.1			18.0			25.2			34.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	33	5	136	33	293	5	859	304	337	462	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	43	0	0	462	0	0	1168	0	0	804	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	21.5	21.5		21.5	21.5		20.0	20.0		20.0	20.0	

Lanes, Volumes, Timings
 5: Pinkie Rd & Residential / Lg Retail

07/01/2014

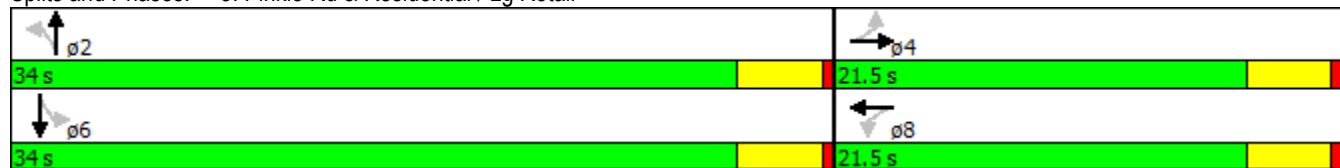


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	21.5	21.5		21.5	21.5		34.0	34.0		34.0	34.0	
Total Split (%)	38.7%	38.7%		38.7%	38.7%		61.3%	61.3%		61.3%	61.3%	
Maximum Green (s)	17.0	17.0		17.0	17.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0		6.0	6.0		6.0	6.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		16.4			16.4			30.0			30.0	
Actuated g/C Ratio		0.30			0.30			0.55			0.55	
v/c Ratio		0.08			0.85			0.64			1.94dl	
Control Delay		13.1			30.5			9.6			15.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.1			30.5			9.6			15.9	
LOS		B			C			A			B	
Approach Delay		13.1			30.5			9.6			15.9	
Approach LOS		B			C			A			B	

Intersection Summary

Area Type: Other
 Cycle Length: 55.5
 Actuated Cycle Length: 54.9
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 15.6
 Intersection LOS: B
 Intersection Capacity Utilization 94.0%
 ICU Level of Service F
 Analysis Period (min) 15
 dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 5: Pinkie Rd & Residential / Lg Retail



Lanes, Volumes, Timings
6: Residential & Pr. Ind. / Res. Greenway

07/01/2014



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	165	20	125	245	5	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.985				0.871	
Flt Protected					0.983	0.998
Satd. Flow (prot)	1835	0	0	1831	1619	0
Flt Permitted					0.983	0.998
Satd. Flow (perm)	1835	0	0	1831	1619	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	272.5			217.7	204.4	
Travel Time (s)	19.6			15.7	14.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	179	22	136	266	5	114
Shared Lane Traffic (%)						
Lane Group Flow (vph)	201	0	0	402	119	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	15		25	25		15
Sign Control	Yield			Yield	Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	46.5%
	ICU Level of Service A
Analysis Period (min)	15

Lanes, Volumes, Timings
7: Pinkie Rd & Residential Greenway

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕	↗		↕	
Volume (vph)	5	15	5	290	10	55	5	985	540	190	360	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	60.0		0.0	0.0		60.0	0.0		0.0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (m)	0.0			0.0			0.0			0.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	0.95
Fr _t		0.974			0.873				0.850		0.999	
Fl _t Protected		0.990		0.950							0.983	
Satd. Flow (prot)	0	1796	0	1770	1626	0	0	3539	1583	0	3476	0
Fl _t Permitted				0.588				0.953			0.565	
Satd. Flow (perm)	0	1814	0	1095	1626	0	0	3373	1583	0	1998	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			9				587			1
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		124.2			213.8			198.8			350.6	
Travel Time (s)		8.9			15.4			14.3			25.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	16	5	315	11	60	5	1071	587	207	391	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	26	0	315	71	0	0	1076	587	0	603	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	0	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	0.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	0.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		3	8		2	2	2	6	6	

Lanes, Volumes, Timings
7: Pinkie Rd & Residential Greenway

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	15.0	15.0		7.0	15.0		15.0	15.0	15.0	15.0	15.0	
Minimum Split (s)	21.5	21.5		19.5	21.5		20.0	20.0	20.0	20.0	20.0	
Total Split (s)	21.5	21.5		19.5	41.0		24.0	24.0	24.0	24.0	24.0	
Total Split (%)	33.1%	33.1%		30.0%	63.1%		36.9%	36.9%	36.9%	36.9%	36.9%	
Maximum Green (s)	17.0	17.0		15.0	36.5		20.0	20.0	20.0	20.0	20.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.5	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		4.5		4.5	4.5			4.0	4.0		4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		Max	Max	Max	Max	Max	
Walk Time (s)	5.0	5.0			5.0		5.0	5.0	5.0	5.0	5.0	
Flash Dont Walk (s)	12.0	12.0			12.0		6.0	6.0	6.0	6.0	6.0	
Pedestrian Calls (#/hr)	0	0			0		0	0	0	0	0	
Act Effct Green (s)		15.3		18.4	18.4			21.9	21.9		21.9	
Actuated g/C Ratio		0.31		0.38	0.38			0.45	0.45		0.45	
v/c Ratio		0.05		0.51	0.12			0.71	0.57		1.35dl	
Control Delay		13.0		13.8	8.1			17.5	4.1		19.1	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		13.0		13.8	8.1			17.5	4.1		19.1	
LOS		B		B	A			B	A		B	
Approach Delay		13.0			12.7			12.8			19.1	
Approach LOS		B			B			B			B	

Intersection Summary

Area Type: Other
 Cycle Length: 65
 Actuated Cycle Length: 48.9
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 14.2
 Intersection LOS: B
 Intersection Capacity Utilization 76.2%
 ICU Level of Service D
 Analysis Period (min) 15
 dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 7: Pinkie Rd & Residential Greenway



Lanes, Volumes, Timings
8: Courtney St & Residential

07/01/2014



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↖	↕			↕	↖
Volume (vph)	75	5	290	5	5	5	540	1475	5	5	575	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		60.0	0.0		0.0	60.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			0.0			0.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95
Frt			0.850		0.955							0.964
Flt Protected		0.955			0.984		0.950					
Satd. Flow (prot)	0	1779	1583	0	1750	0	1770	3539	0	0	3412	0
Flt Permitted		0.728			0.929		0.162				0.943	
Satd. Flow (perm)	0	1356	1583	0	1653	0	302	3539	0	0	3217	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			315		5			1				55
Link Speed (k/h)		50			50			50				50
Link Distance (m)		180.1			124.2			222.6				641.9
Travel Time (s)		13.0			8.9			16.0				46.2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	5	315	5	5	5	587	1603	5	5	625	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	87	315	0	15	0	587	1608	0	0	826	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.8			4.8			4.8				4.8
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	0	1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	0.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2				6
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		6	6	

Lanes, Volumes, Timings
8: Courtney St & Residential

07/01/2014

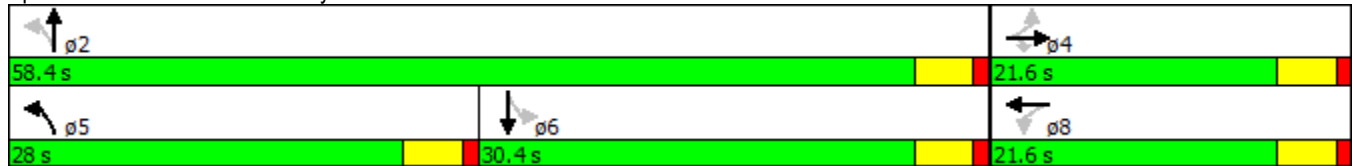


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0		7.0	15.0		15.0	15.0	
Minimum Split (s)	21.5	21.5	21.5	21.5	21.5		19.0	21.5		21.5	21.5	
Total Split (s)	21.6	21.6	21.6	21.6	21.6		28.0	58.4		30.4	30.4	
Total Split (%)	27.0%	27.0%	27.0%	27.0%	27.0%		35.0%	73.0%		38.0%	38.0%	
Maximum Green (s)	17.1	17.1	17.1	17.1	17.1		23.5	53.9		25.9	25.9	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0			0.0	
Total Lost Time (s)		4.5	4.5		4.5		4.5	4.5			4.5	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		Max	Max	
Walk Time (s)	5.0	5.0	5.0	5.0	5.0			5.0		5.0	5.0	
Flash Dont Walk (s)	12.0	12.0	12.0	12.0	12.0			12.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0		0	0	
Act Effct Green (s)		15.0	15.0		15.0		53.9	53.9			26.6	
Actuated g/C Ratio		0.19	0.19		0.19		0.69	0.69			0.34	
v/c Ratio		0.33	0.56		0.05		0.92	0.66			0.73	
Control Delay		31.3	8.0		21.8		38.7	8.4			25.6	
Queue Delay		0.0	0.0		0.0		0.0	0.0			0.0	
Total Delay		31.3	8.0		21.8		38.7	8.4			25.6	
LOS		C	A		C		D	A			C	
Approach Delay		13.0			21.8			16.5			25.6	
Approach LOS		B			C			B			C	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 77.9
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 18.3
 Intersection LOS: B
 Intersection Capacity Utilization 86.5%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 8: Courtney St & Residential





Westerra

Phase 1 Concept Plan

DECEMBER 2013

Version 1.0





Westerra

Phase 1 Concept Plan

December 2013

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Table of Contents

1.0 Introduction	1	4.0 Transportation	56
1.1 Background	1	4.1 Transportation System Overview	56
1.2 Plan Area Context	5	4.2 Road Network Hierarchy	57
1.3 Project Vision	13	4.3 Road Cross Sections	59
1.4 Goals and Objectives	14	4.4 Traffic Impact Analysis & Off Site Improvements	65
2.0 Existing Conditions	16	4.5 Public Transit	65
2.1 Location & Ownership	16	5.0 Servicing	67
2.2 Natural Features	21	5.1 Servicing Overview	67
2.3 Built Features	23	5.2 Water	67
2.4 Heritage Resources	23	5.3 Sanitary	69
2.5 Shallow Utilities	23	5.4 Stormwater	71
3.0 Land Use Strategy	25	5.5 Shallow Utilities	74
3.1 Community Design	25	6.0 Implementation	75
3.2 Commercial	37	6.1 Phasing	75
3.3 Civic/Recreation	49	6.2 Capital Improvement Plan	77
3.4 Community Services	49	6.3 Proposed Land Use	77
3.5 Parks and Open Space	49	6.4 Subdivision	80
3.6 Municipal Reserve	55		

Figures

Figure 1: Location and Context Plan	4
Figure 2: Development Constraints	6
Figure 3: Westerra Neighbourhood Plan Context	8
Figure 4: Westerra Neighbourhood Plan Detailed Land Use Concept	9
Figure 5: City of Regina Official Community Plan Context	10
Figure 6: Local and Regional Transportation Network	17
Figure 7: Existing Zoning	18
Figure 8: Legal Description and Ownership	20
Figure 9: Site Context and Natural Features	22
Figure 10: Existing Shallow Utilities	24
Figure 11: Westerra - Phase 1 Illustrative Plan	26
Figure 12: Key Neighbourhood Plan Elements	27
Figure 13: General Land Use Concept for Phase 1	28
Figure 14: Detailed Land Use Concept for Phase 1	29
Figure 15: Live-Work Residential in Relation to Main Street	35
Figure 16: Main street retail Area Plan Overview	39
Figure 17: Key Elements of Main Street and Live-Work Area	40
Figure 17a: Main Street Detail Looking South	41
Figure 18: Key Elements of Large Format and Community Retail Area	44
Figure 19: Concept Rendering Large Format Retail	46
Figure 19a: Key Elements of Eastern Gateway	47
Figure 20: Industrial - Residential Interface	48
Figure 21: Overview of Parks and Open Space Looking Southwest	51
Figure 22: Parks, Pathway and Open Space	52
Figure 23: Main Entrance from Courtney Street - Looking SW	54
Figure 24: Internal Transportation System	58
Figure 25: Road Cross Sections	60
Figure 26: Transit Coverage and Mobility Assessment	66
Figure 27: Water Servicing	68
Figure 28: Sanitary Servicing	70
Figure 29: Catchment Area Concept	72
Figure 30: Storm Servicing Concept	73
Figure 31: Phasing	76
Figure 32: Proposed Zoning	79

Tables

Table 1: Westerra Phase 1 Concept Plan Elements and Policy Alignment	11
Table 2: Westerra Phase 1 Concept Plan Land Use Composition	30
Table 3: Residential Densities and Population Projections	36
Table 4: Residential Densities and Population Intensity	36
Table 5: Municipal Reserve	55

Appendices

Appendix A:	
Land Use Plan	82
Detailed Land Use Plan	83
Water Servicing	84
Sanitary Servicing	85
Catchment Area Concept	86
Storm Servicing Concept	87
Circulation Plan	88
Phasing	89
Appendix B: Supporting Technical Studies	90

1.0 Introduction

1.1 Background

Westerra is a new community by Harvard Developments Inc., Forster Projects Inc and Westland Ventures Inc. located in central - west Regina as shown on **Figure 1. Location and Context Plan**. Westerra is approximately +/- 198.46 ha (490 acres +/-) in size and at full build out is designed to accommodate a future population of approximately 6,200 – 9,200 residents. Phase 1 of Westerra is 96.71 ha (238.96 acres) in size and will comprise commercial uses, a prestige industrial park and a residential neighbourhood. Phase 1 of Westerra is projected to be developed in a phased manner immediately upon concept plan, rezoning and subdivision approval.

Westerra is envisioned as a complete community which aligns with the City's recently approved Official Community Plan. Land uses for Westerra consist of low, medium and high density residential uses, large format retail, community retail, main street retail, and prestige industrial area. The Westerra Phase 1 Concept Plan (CP) encompasses a range of these lands uses including a variety of commercial areas, a range of areas, the prestige industrial area and portions of the parks and open space system. Collectively, Phase 1 of Westerra marks the beginning of the development of a complete community in this area of the City of Regina.

URBAN CENTRE

The Urban Centre is identified as a planning component within the OCP and the Westerra Neighbourhood Plan (NP). This component creates a distinct focus for the community of Westerra and provides an area for transit supportive development. The Urban Centre area within Westerra will contain the most intense types of land uses, which will focus on and radiate from the proposed main street retail area which is envisioned as one of the key entrances to the development.

EXPRESS TRANSIT CORRIDOR

Westerra benefits by being located along the key transportation route namely Dewdney Avenue, which connects to the West Bypass as well as Courtney Street and Pinkie Road. Employment areas formed by commercial and industrial uses in Phase 1 along with access to a residential portion of the development create the critical mass required for the viability of the Urban Centre and accompanying express transit corridor.



RESIDENTIAL

The Westerra Phase 1 residential focus will be provided to the south of the proposed prestige industrial area and commercial area and consists of varying residential intensities. Residential uses include low, medium and high density gradients of development and accommodate mixed use where appropriate. Live work residential uses will be focused adjacent to the Main Street area to take advantage of the synergies and short commuting distances. Stemming from policy on the creation of new mixed use neighbourhoods, the Urban Centre and adjacent residential area will have a distinct sense of place. The Noise Exposure Forecast (NEF) contour along the northeast corner and the commercial area provides the easterly boundary for proposed residential uses contained within the Phase 1 concept plan.

HOUSING MIX

Within the residential portion of the plan area, a diversity of housing product is envisioned. This housing mix will contain low density residential housing forms including single family dwellings, medium density residential housing forms including semi-detached dwellings, row houses and townhouses and high density residential housing forms including apartment buildings less than five storeys. Live-work development is planned to the south of the Main Street area and forms part of the Westerra's approach to offer and facilitate innovative housing alternatives within the community.

FUSED GRID PATTERN

A modified grid pattern is fundamental to the design of Westerra. This pattern will provide multiple linkages, connecting the various areas within Phase 1 with the Urban Centre and the express transit corridor, as well as the perimeter arterial roads in Westerra. The parks and open space system and related amenities have been located to promote connectivity and enhance a sense of place within the neighborhood.



PARKS AND OPEN SPACE

The parks and open space network centres on the joint-use school site within the centre of Westerra and radiates outward towards the northeast and southwest of the plan area. It will incorporate the joint use school site, the on-street greenway and stormwater infrastructure to create an integrated parks and open space system. Neighbourhood parks, walkways and buffers will support passive and active recreational uses, enhance pedestrian connectivity and provide visual, social and ecological functions within the community. The proposed open space area forming part of the Phase 1 concept plan will represent the initial assembly of parks space for Westerra. As per the approved Neighbourhood Plan, the parks and open space system is envisioned to connect to the Devonian pathway system and surrounding open space network through future connections to the north of the plan area.

ACCESS

Access to Phase 1 will be provided by access points off of Dewdney Avenue, Pinkie Road and Courtney Street, which serve the area from a regional perspective. A portion of Courtney Street will be closed and realigned to connect with Dewdney Avenue. The realignment of Courtney has been undertaken to support the development of the proposed prestige industrial area as well as to optimize a future intersection location with Dewdney Avenue which can support the development of the adjacent lands to the north of the plan area.





Figure 1 - Location and Context Plan



- Legend
- Subject Lands
 - Global Transportation Hub (Under Construction)
 - Intermodal Area (Under Construction)

1.2 Plan Area Context

1.2.1 Oil and Gas Facilities

There are no known operating wells or sour gas pipelines within the CP area as shown on **Figure 2. Development Constraints**. A primary natural gas pipeline operated by SaskEnergy bisects the Plan area on a north-south axis. This pipeline does not have any setbacks other than the existing right-of-way which has been incorporated into the proposed blocking of land within the Phase 1 Concept Plan with the exception of the proposed institutional uses to accommodate a future joint use school site which requires a minimum setback of 41 metres. Future development of lands which are encumbered by easements will be required to establish appropriate development and building plans which address and respect these constraints. While not contained within this Phase 1 Concept Plan, the proposed joint use school site has been setback approximately 45 metres from this existing pipeline right of way.

The “Final Report on Analysis of Risks to the Proposed Westerra Subdivision from Adjacent Industrial Facilities,” as completed by Bercha Group Limited, provides a risk assessment for the subject lands. The Spectra Energy site located to the northwest of the subject lands contains propane and butane subterranean storage caverns. The Newalta facility located to the southwest of the site is a used oil recycling facility. It was found that no land use restrictions on the subject lands are necessary except for a strip of 10 m outside the facility fence line of the Newalta facility where development should be restricted to low density development (approximately less than 25 units per hectare). As there are no impacts stemming from either the Spectra Energy Facility or existing Newalta site within the proposed plan area, no special planning considerations are required.

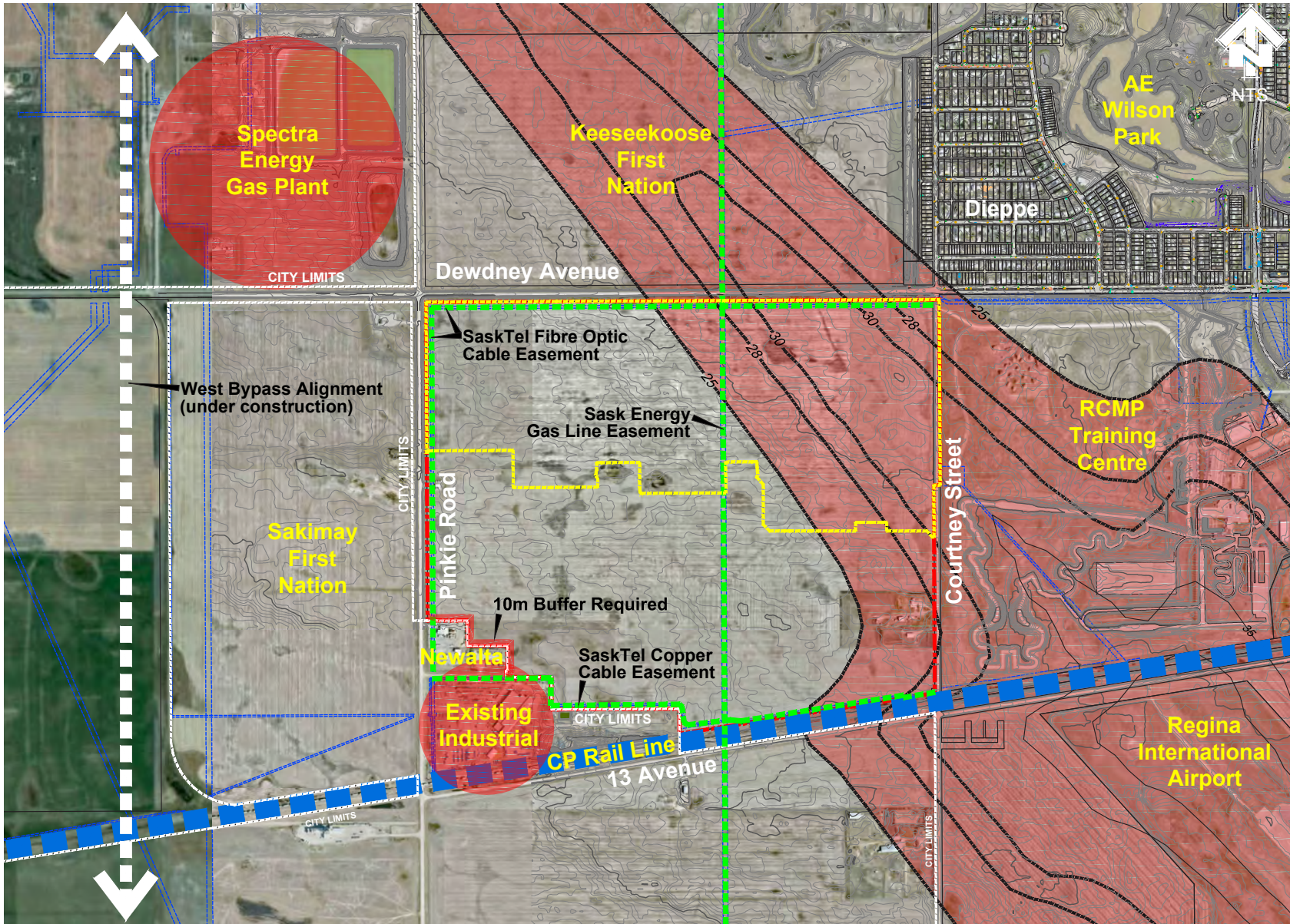


Figure 2 - Development Constraints

Legend					
	Subject Lands		NEF Contours		Existing Easement
	Phase 1 Boundary		Airport Area of Influence		CP Rail Line

1.2.2 Existing Policy

1.2.2.1 Westerra Neighbourhood Plan

The Phase 1 Concept Plan will be subject to the policies contained within the Westerra Neighbourhood Plan. **Figure 3. Westerra Neighbourhood Plan Context** and **Figure 4. Westerra Neighbourhood Plan Detailed Land Use Plan Context** provides the NP Land Use Concept. Key elements of the NP policy and Official Community Plan (OCP) are identified in **Table 1: Westerra Phase 1 Concept Plan Elements and Policy Alignment**.



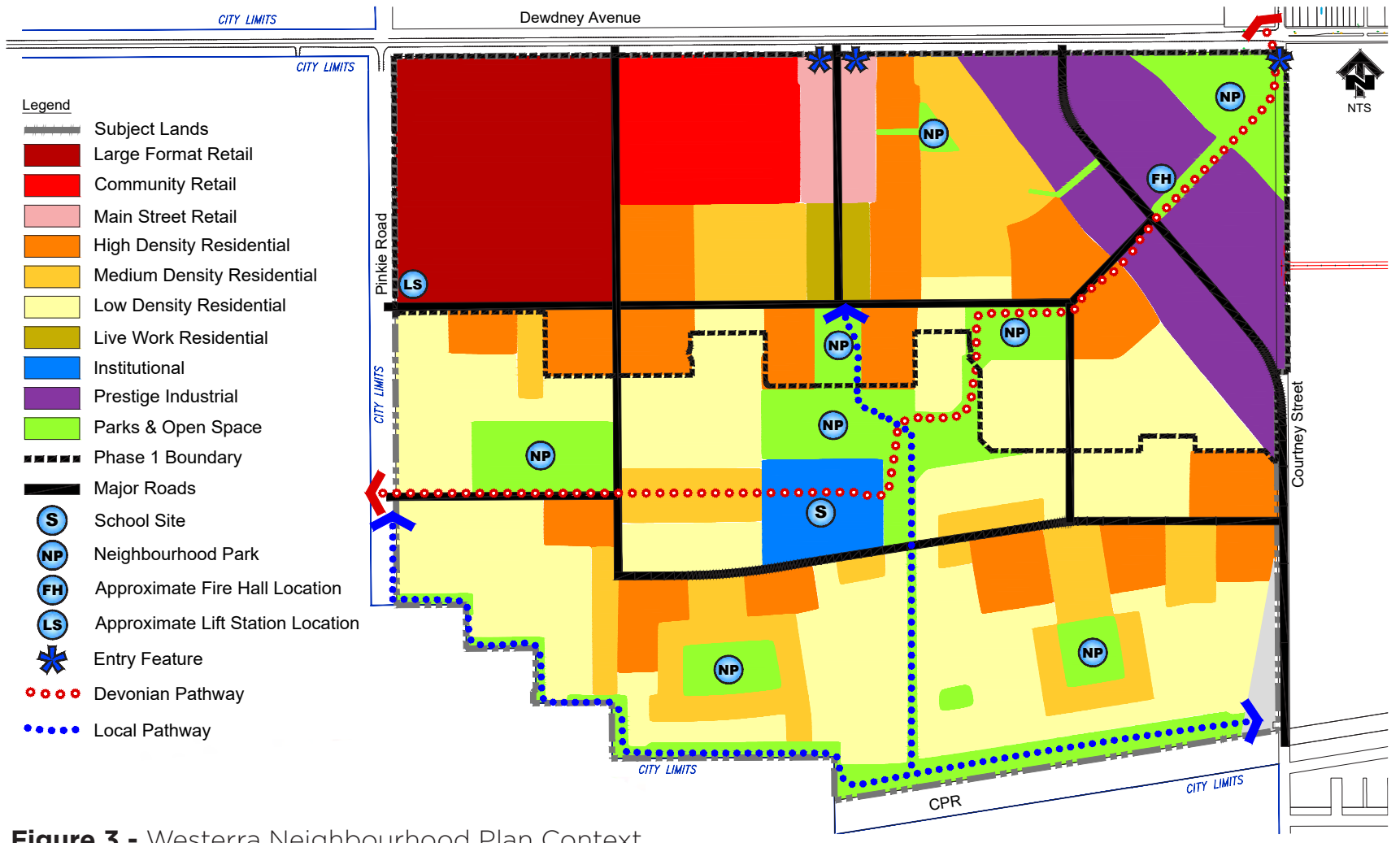


Figure 3 - Westerra Neighbourhood Plan Context

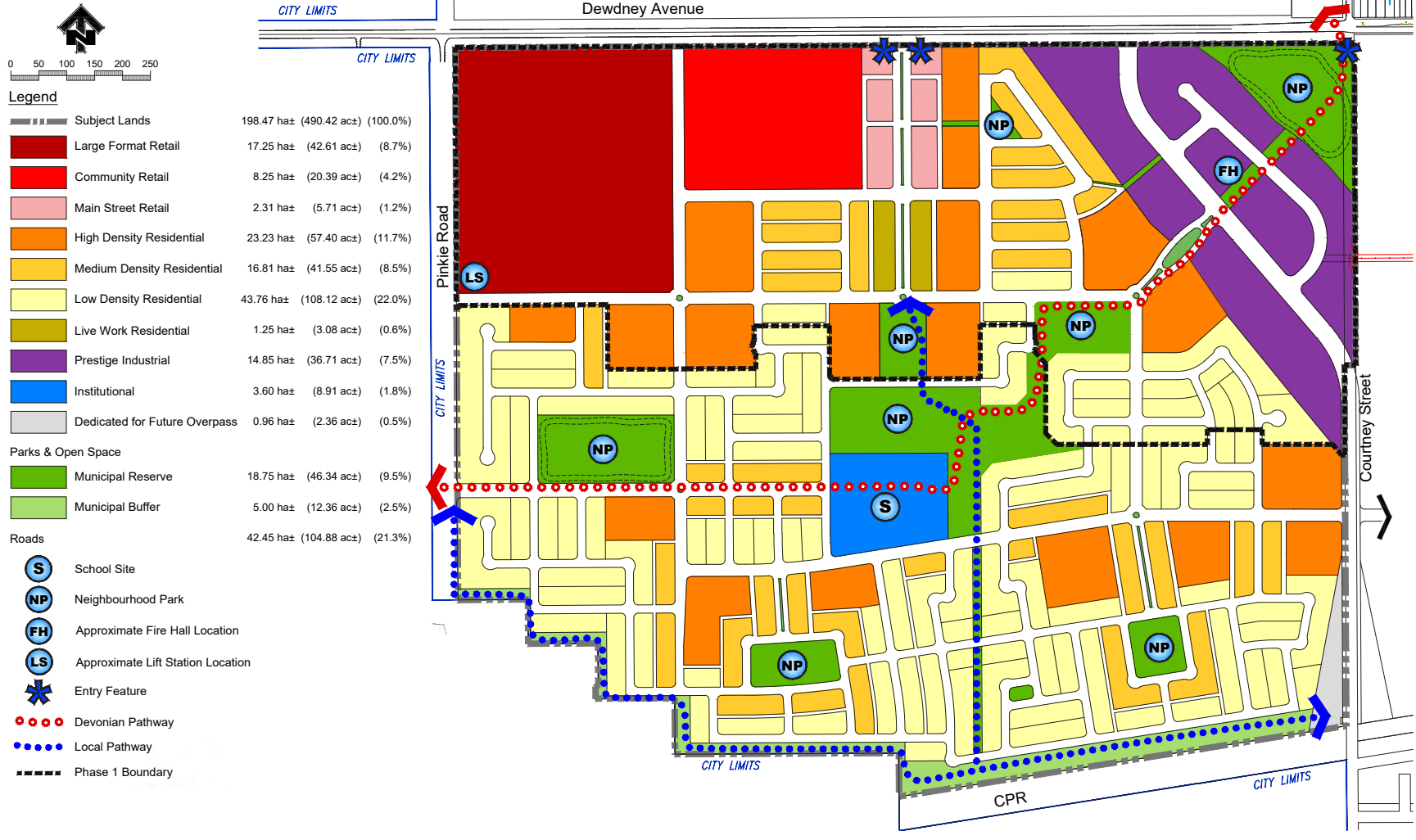


Figure 4 - Westerra Neighbourhood Plan Detailed Land Use Plan Context

1.2.2.2 Official Community Plan Conformity

In addition to the NP, other relevant policy documents include the Official Community Plan (OCP). A new Official Community Plan was approved in 2013. The OCP is a city - wide plan with broad policy objectives. The OCP informed the policies within the Neighbourhood Plan, such as the complete community and mixed use aspect of the development, the Urban Centre, and the Express Transit Corridor as shown in **Figure 5: City of Regina Official Community Plan Context. Table 1. Westerra Phase 1 Concept Plan Elements and Policy Alignment** as detailed below outlines how the proposed concept plan aligns with higher level planning policy as approved by the City of Regina.

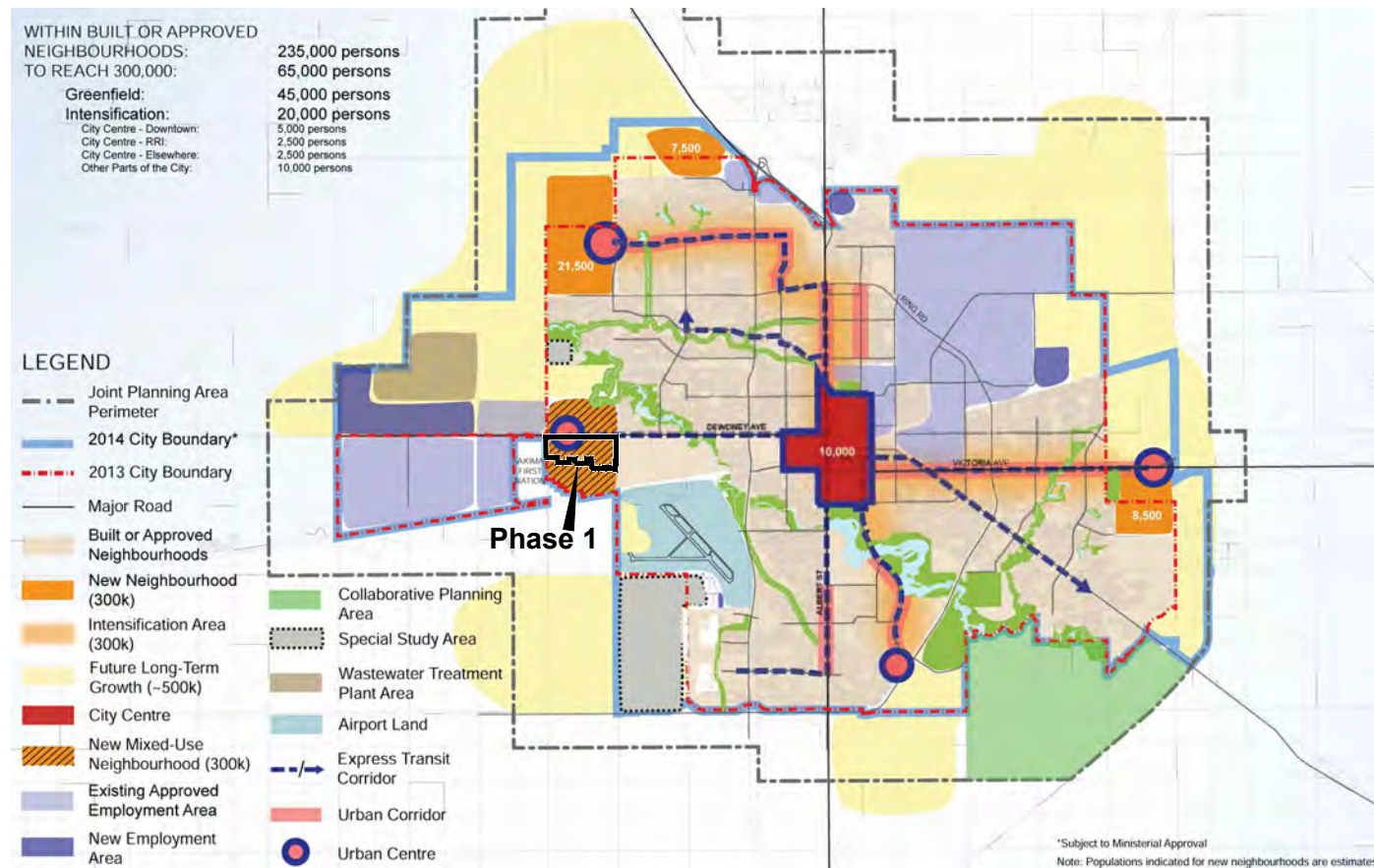


Figure 5 - City of Regina Official Community Context Plan

1.2.2.3 Policy Alignment

Table 1 - Westerra Phase 1 Concept Plan Elements and Policy Alignment

Key Element of Westerra Phase 1: Concept Plan	Approved Neighbourhood Plan and OCP Policy Context	Design Response
URBAN CENTRE	An Urban Centre is an area of intensity and mixed use with opportunities for transit oriented development.	There will be an overall higher density of residential development mixed with employment, commercial and transit services.
EXPRESS TRANSIT CORRIDOR	Westerra is bordered by an Express Transit Corridor	Dewdney Avenue will be protected as an Express Transit Corridor that will serve as a link to transit nodes within the City. Development has been intensified and mixed along the Express Transit Corridor within the Phase 1 plan area and includes main street retail, a prestige industrial park, large format and community retail uses.
NEW MIXED-USE NEIGHBOURHOOD	OCP indicates new mixed-use neighbourhoods that will be designed and planned as complete neighbourhoods with a minimum gross population density of 50 persons per hectare (pph) during the Concept Plan process	A Neighbourhood Plan has been designed for the entire area that meets the mixed-use and density requirement and has been incorporated into the Phase 1 Concept Plan. Based on the proposed housing mix, density factors and unit projections, the projected population intensity per net hectare is estimated between 76.91 and 139.74 persons per net hectare for the proposed residential area within the Phase 1 plan area.



<p>URBAN CENTRE AND LARGE FORMAT RETAIL</p>	<p>Large Format Retail is to be concentrated within Urban Centres according to the OCP (Goal 4, 7.17).</p>	<p>A large format retail area has been located along the northwest portion of the Phase 1 Concept Plan. Convenience and main street retail uses have also been oriented towards Dewdney Avenue to provide a range of employment opportunities while serving regional and local service requirements.</p>
<p>NEF CONTOURS</p>	<p>Residential development is prohibited within the 30 NEF contour.</p>	<p>Prestige industrial development has been located in alignment with the NP and the 30 NEF. A residential – industrial interface has been provided via a 15 metre landscaped berm.</p>
<p>PARKS AND OPEN SPACE SYSTEM</p>	<p>A series of Neighbourhood Parks has been identified throughout the plan area</p>	<p>The open space system has been designed to support a pathway system and stormwater management functions and is integrated throughout the plan area.</p>
<p>GUIDELINES FOR COMPLETE NEIGHBOURHOODS</p>	<p>Interconnectivity, mixed-use, sense of place, diversity, open space and mobility considerations have all been incorporated into the design.</p>	<p>Westerra Phase 1 provides a gradient of densities and intensity of use to support transit oriented and sustainable development.</p>



1.3 Project Vision

The vision of the Phase 1 Westerra Concept Plan is to create an innovative community in Regina – one that recognizes the values and needs of residents. Westerra provides choice, convenience and a sense of place. Westerra is a complete community with opportunities to live, work and play. Services, recreation and employment are accessible to residents in a community with a vibrant ambience.

Westerra offers a range of housing types and styles. Main Street, the open space system and the organization of uses and amenities all function together to create a sense of place. Transportation options are supported throughout the community contributing to environmental sustainability. The modified grid promotes connectivity and an overall community design creates a sense of identity. The result is a community that is distinct, exciting and vital.



1.4 Goals and Objectives

Certain goals guided the design process for the Westerra Phase 1 Concept Plan. These goals are as follows.

Westerra will be designed:

- To connect people and places;
- To create places to live, work and play;
- To allow people to stay in the community;
- To provide choice in housing forms and mobility;
- To create an employment area with amenities and services;
- To respect the environment; and
- To establish a smart – growth and sustainable community.



The objectives of the Westerra Phase 1 Concept Plan are to:

- a) Summarize existing conditions for Phase 1 plan area within the context of the Westerra Neighbourhood Plan to confirm development opportunities and significant constraints which require appropriate mitigation strategies;
- b) Refine the development concept for Phase 1 within the approved Neighbourhood Plan land use framework in order to facilitate implementation of the commercial, prestige industrial and residential uses in accordance with the Official Community Plan's and Westerra Neighbourhood Plan policy provisions;
- c) Establish a detailed strategy to implement appropriate transportation and utility service infrastructure improvements as required for proposed development in Phase 1;
- d) Confirm the general configuration of public and private open spaces within the development area;
- e) Establish expectations for provision of emergency response within the CP area; and
- f) Establish an overall phasing strategy for development within Phase 1 based on infrastructure availability and market demand.



2.0 Existing Conditions

2.1 Location & Ownership

The Phase 1 Concept Plan comprises the first concept plan within the approved Neighborhood Plan. The Phase 1 Concept Plan area consists of the following key elements:

- Consist of +/- 96.71 ha (238.96 ac);
- Bounded by Dewdney Avenue to the north, Pinkie Road to the west and Courtney Street to the east (as shown in **Figure 6. Local and Regional Transportation Network**);
- Forms a portion of the Westerra Neighbourhood Plan, to be approved at a Public Hearing of Council in 2014;
- Is bordered by the RCMP lands to the east and the airport to the southeast;
- Is bordered by the Sakimay First Nations to the west;
- Is bordered by the Dieppe residential neighbourhood to the northeast;
- Is bordered by Keeseekoose land to the North of the CP area;
- Is legally owned by Westerra Development Corp.
- Currently zoned as Urban Holding District (as shown in Figure 7. Existing Zoning).



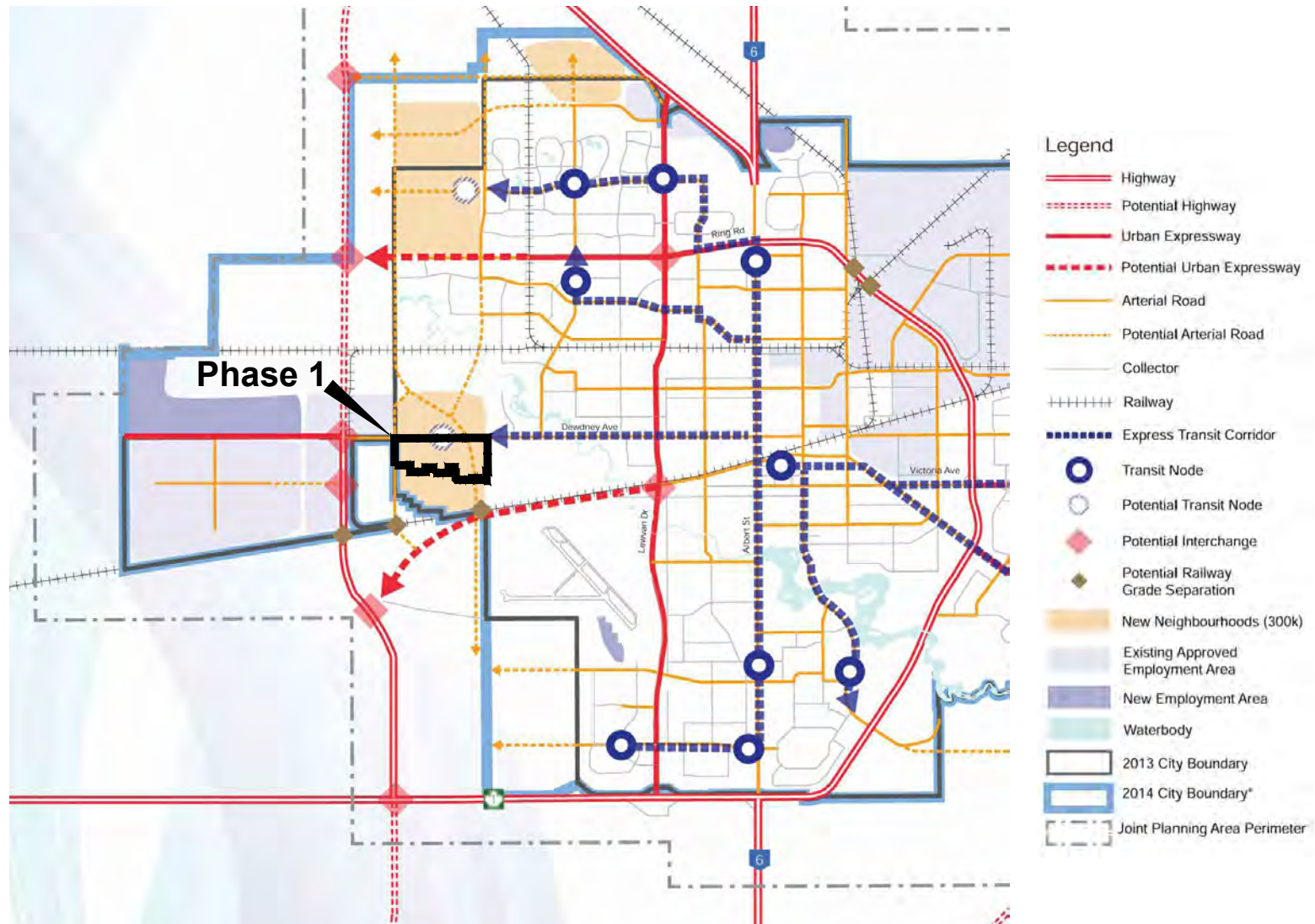


Figure 6 - Local and Regional Transportation Network

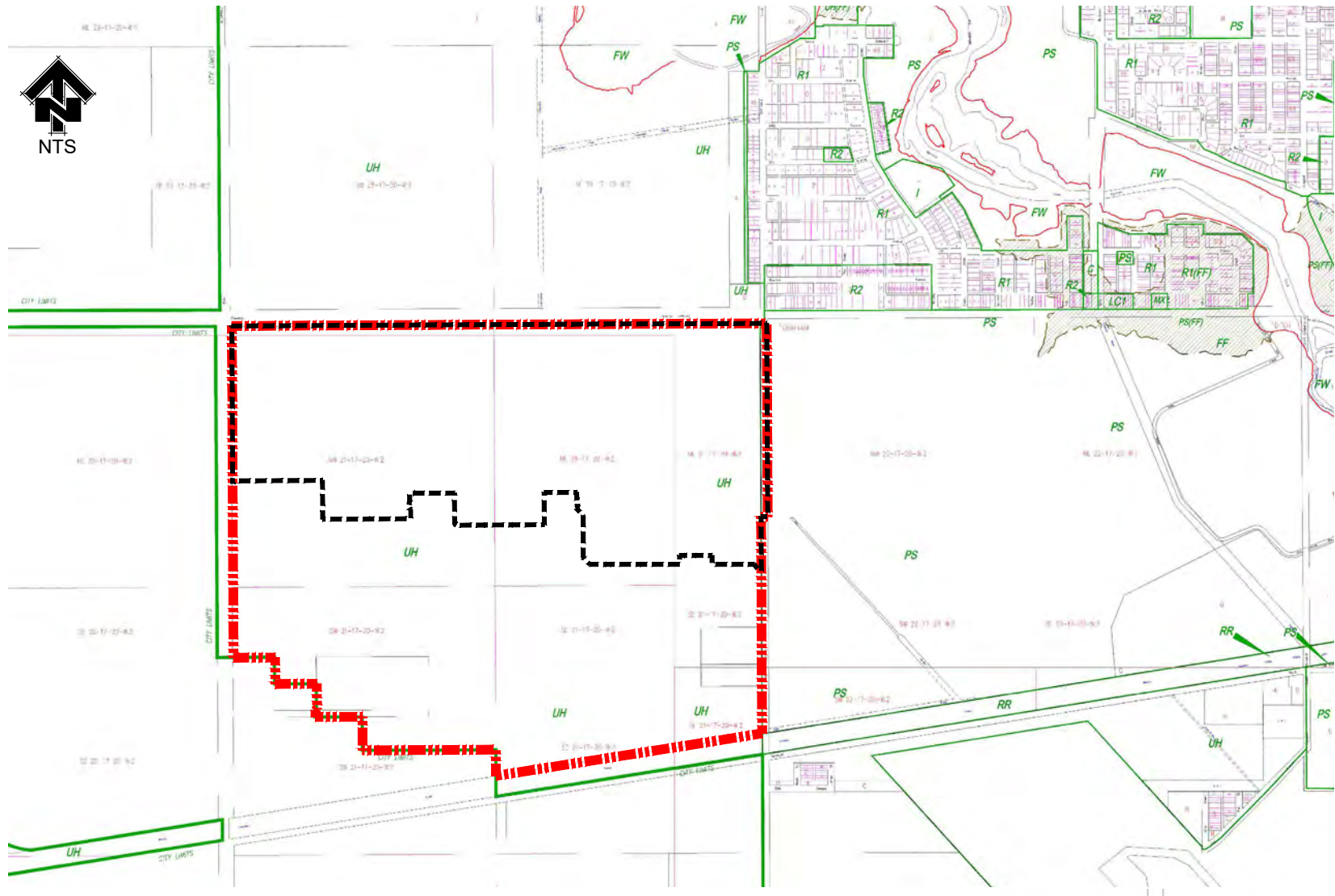


Figure 7 - Existing Zoning

- Legend
- Subject Lands
 - Phase 1 Boundary

Legal Description:

As shown on **Figure 8. Legal Description and Ownership**, the Concept Plan area includes +/-96.27 ha (237.87 ac) with current ownership and legal descriptions described as per the following:

Legal Description	Owner	Area (ac)
Pt Sec. 21-17-20-2	Westerra Development Corporation	237.87
Portions of Courtney Street - Closure and Consolidation with Plan Area Assumed	City of Regina	1.09
TOTAL		238.97

Areas of Courtney Street will need to be closed and consolidated with the remainder of the CP area. These have been included within the CP area total.



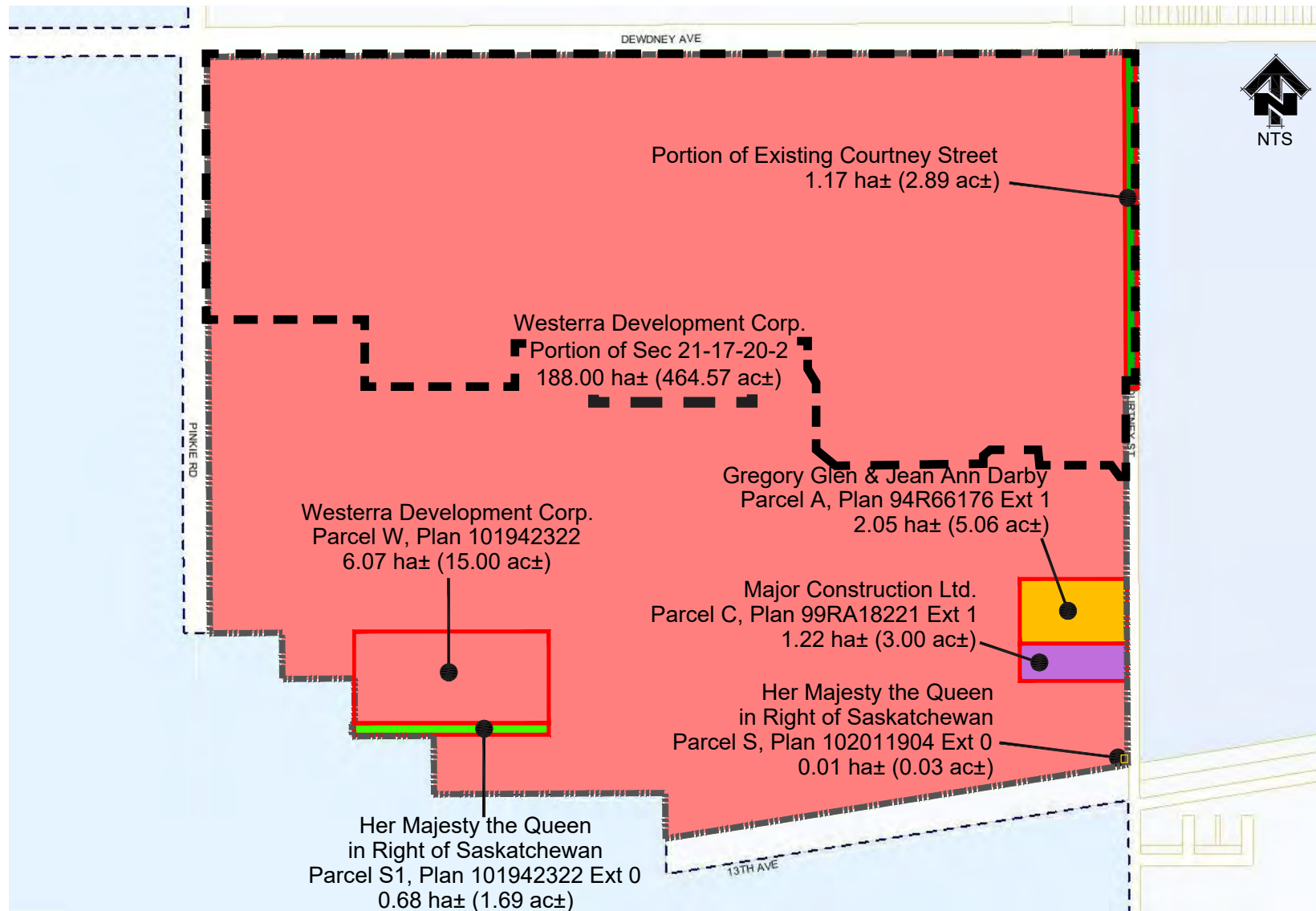


Figure 8 - Legal Description and Ownership

Legend

- ▬▬▬▬▬▬ Subject Lands
- ▬▬▬▬▬▬ Phase 1 Boundary
- ▬ Ownership Boundaries

2.2 Natural Features

The following is a brief description of the existing Phase 1 CP area conditions.

2.2.1 Topography and High Points

Westerra contains a high point which generally aligns with the existing SaskEnergy gas line easement through the centre of the CP area and consequently splits drainage between the southwest and the northeast. Within the Phase 1 Concept Plan drainage is generally towards the northeast corner and the southwest corner. The topography is generally flat and there are no slope constraints.

2.2.2 Existing Drainage Course and Wetlands

As indicated in the Westerra Neighbourhood Plan, there is little to no vegetation on the subject lands and there are no wetlands. Existing drainage pathways traverse the CP area as shown on **Figure 9. Site Context and Natural Features**. As such, no Biophysical Impact Assessment was required for the Neighbourhood Plan and no further study is required for this northern portion of the CP area. The existing drainage pattern has been incorporated into the stormwater management design.



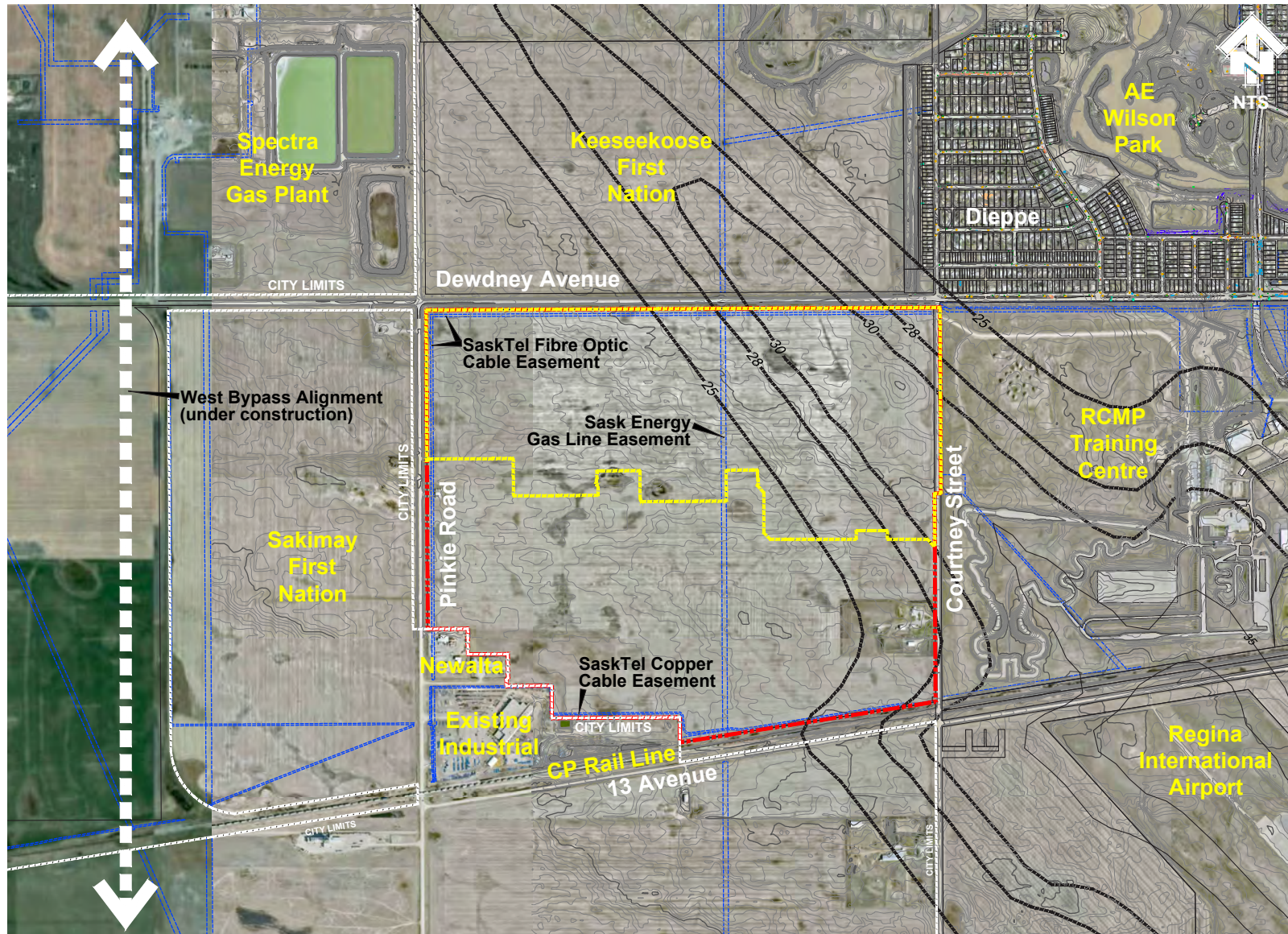


Figure 9 - Site Context and Natural Features

Legend
Subject Lands Phase 1 Boundary NEF Contours

2.3 Built Features

The Phase 1 Concept Plan area is relatively flat with a few low areas and drainage paths. As shown in Figure 9: Site Context and Natural Features, currently the CP area is cultivated with little to no vegetation. The surrounding land uses include agricultural uses, smaller scale development along Dewdney Avenue and the residential neighbourhood of Dieppe to the northeast. The Regina International Airport is located adjacent to the southeast of the CP area. Land uses located to the west include the Sakimay First Nations. Directly to the north, the CP area is bordered by First Nations lands and to the east by the RCMP training centre. Located to the northwest of the plan are the wastewater treatment plant, lagoon and Spectra facility. To the southwest of the CP area is the Newalta facility. The Westerra development is in compliance with all required setbacks from these off site features.

2.4 Heritage Resources

The CP area has been subject to a prolonged history of agricultural disturbances. The subject lands do not contain any significant topographical features or water courses.

Notwithstanding, in support of the Neighbourhood Plan, an application for Historical Resource Clearance was submitted to the Province. Historical Resource Clearance was obtained and no Historical Resource Impact Assessment is required.

2.5 Shallow Utilities

Shallow utility services including electric power, natural gas, telephone, cable and internet services will be provided by local utility companies. It is anticipated that underground utilities will be located within the road rights-of-way and private easements as required to serve all proposed development.

Existing power, gas, and telecommunications infrastructure is shown on **Figure 10. Existing Shallow Utilities**. Stakeholder meetings held with the utility corporations have confirmed that adequate capacity exists within their systems to provide service to the land use proposed for the Westerra Neighbourhood Plan. The developer will work with the utility companies at the time of subdivision to provide all necessary services.

Legend

- Existing SaskTel Line ---
- Existing Gas Line GAS
- Overhead Power Lines
- Power Pole ⊗

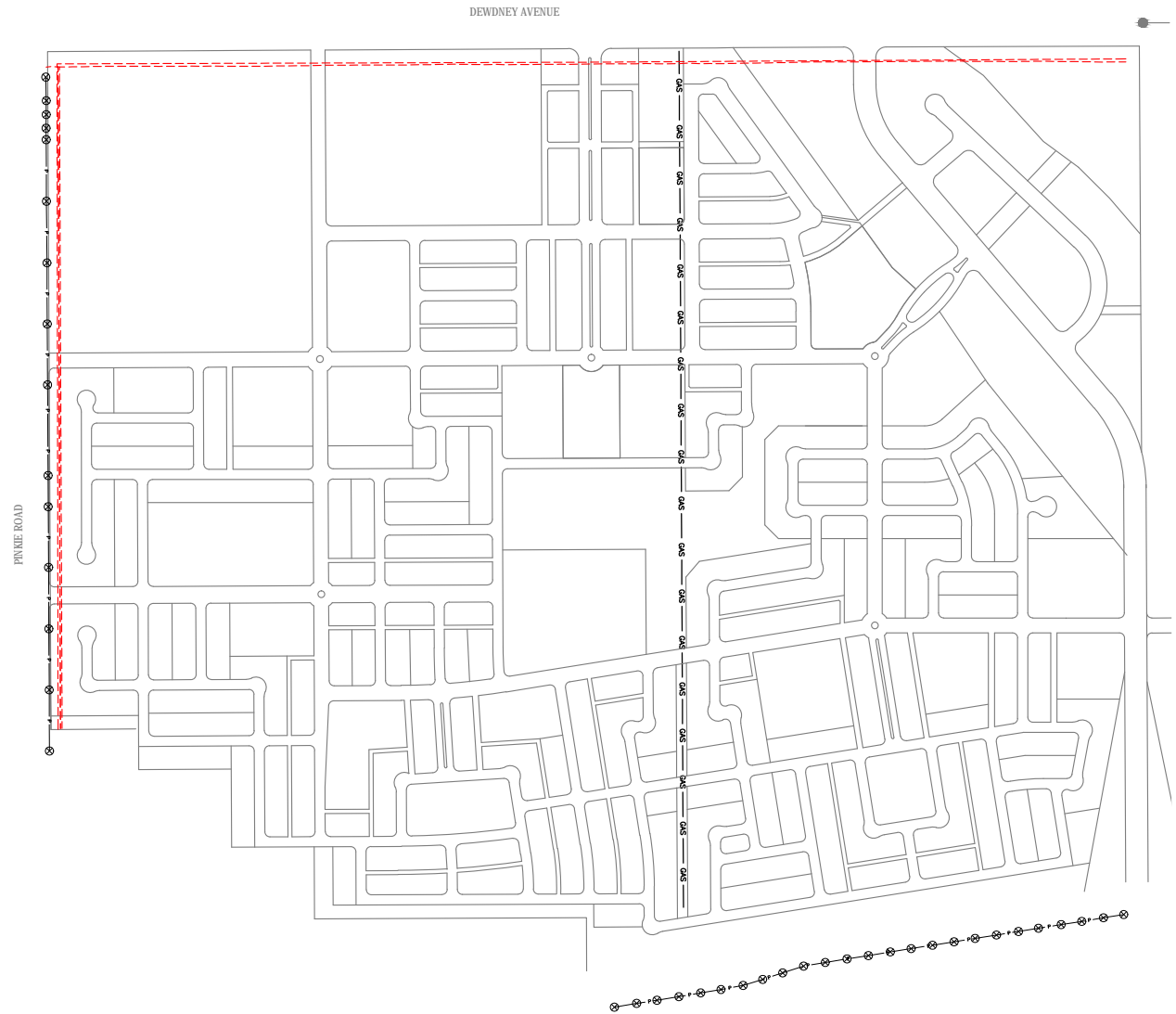


Figure 10 - Existing Shallow Utilities

3.0 Land Use Strategy

3.1 Community Design

The Westerra community provides the opportunity for future residents to live and work in an area that blends predominantly residential uses with commercial and prestige industrial uses. In essence, Phase 1 of Westerra includes an urban centre that accommodates a mix of employment and commercial uses, provides a range of housing product and intensity and is supported by an integrated road network and parks and open space system. The key elements of Westerra, of which the Phase 1 concept plan forms a part of, are illustrated in **Figure 11 -14** to provide an overview of the vision for this initial Phase of Westerra.

Residents will live in a variety of housing forms ranging from high to low-density housing including live-work units within an arrangement of uses that combine to create a vibrant community supported by an efficient and interconnected road network. The open space system serves an important function linking different areas in the community while providing a stormwater management function. The on-street greenway transitions from the prestige industrial area into the residential area and maintains mobility options for residents. The main street retail area serves as the main feature of the development and as the entrance into the community. Diversity in retail forms an important part of the sustainability of the community providing services and employment.

The Westerra Phase 1 Concept Plan consists of the retail portion of the community namely the large format, community retail and Main street retail as shown in Figure 11. Westerra – Phase One Illustrative Plan – Conceptual Overview. Prestige industrial development forms the main employment base in the northeast corner while the balance of Phase 1 contains residential development.

The residential component of Westerra Phase 1 Concept Plan consists of low, medium and high density development along with an area of live – work units. These uses are outlined in Table 2: Land use Statistics. Proposed residential densities for the Phase 1 concept plan area are outlined in Table 3. Residential Density Summary. Based on projected density, unit assumptions and household size, Table 4 provides a summary overview of the overall residential density and population intensity forecast for Phase 1 of the plan area.



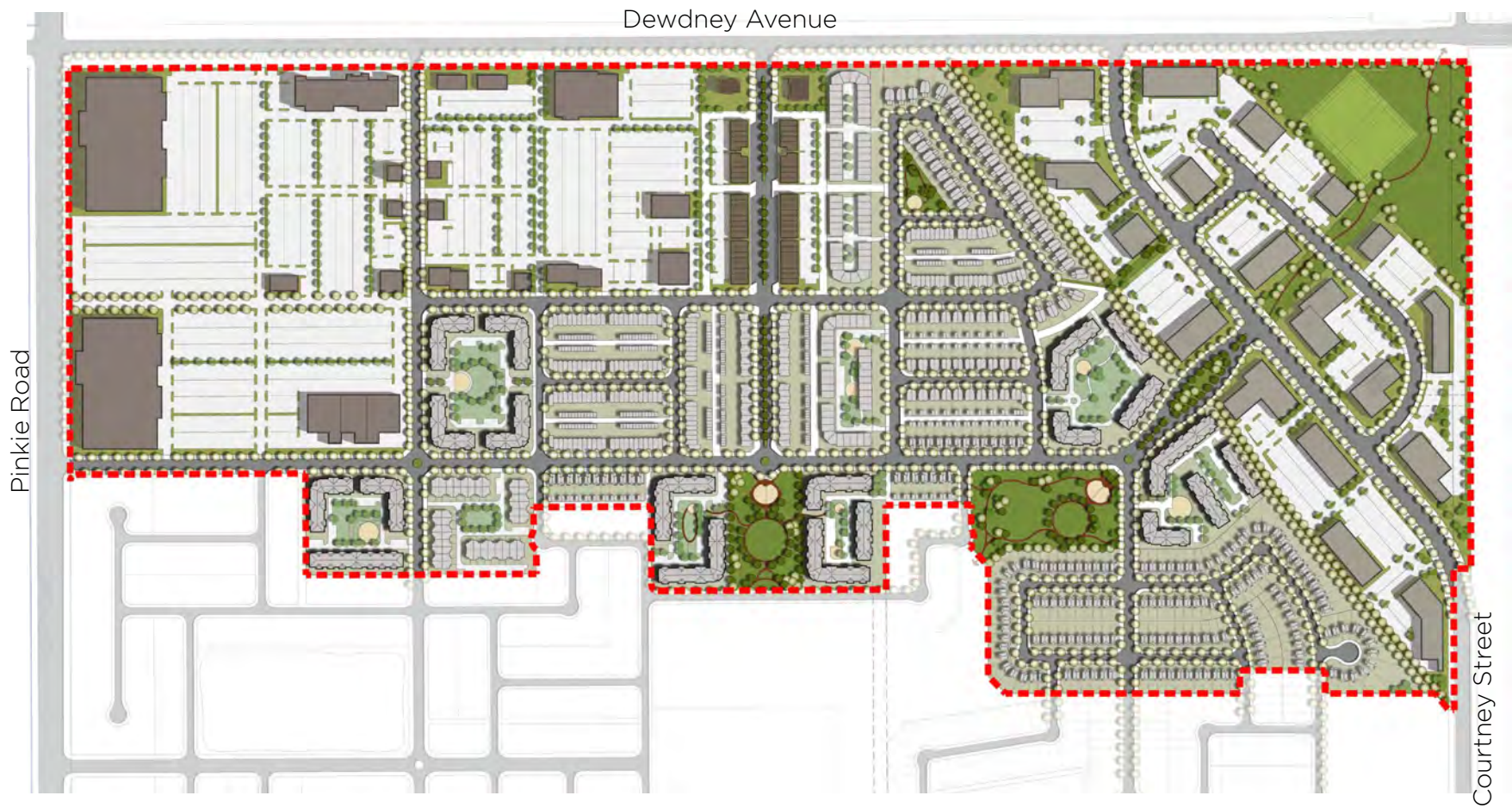


Figure 11 - Westerra - Phase One Illustrative Plan - Conceptual Overview



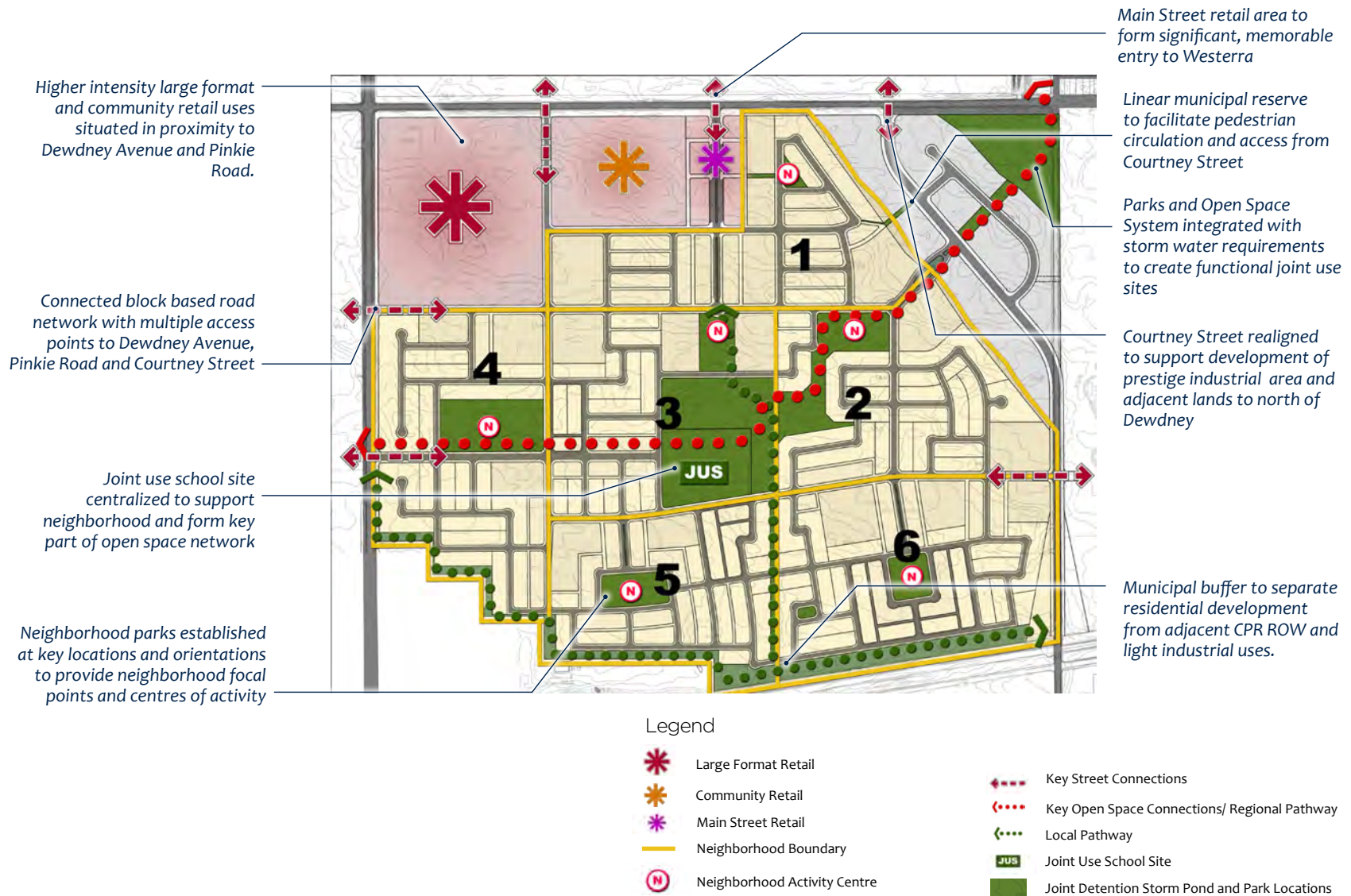


Figure 12 - Key Neighbourhood Plan Elements - Conceptual Overview

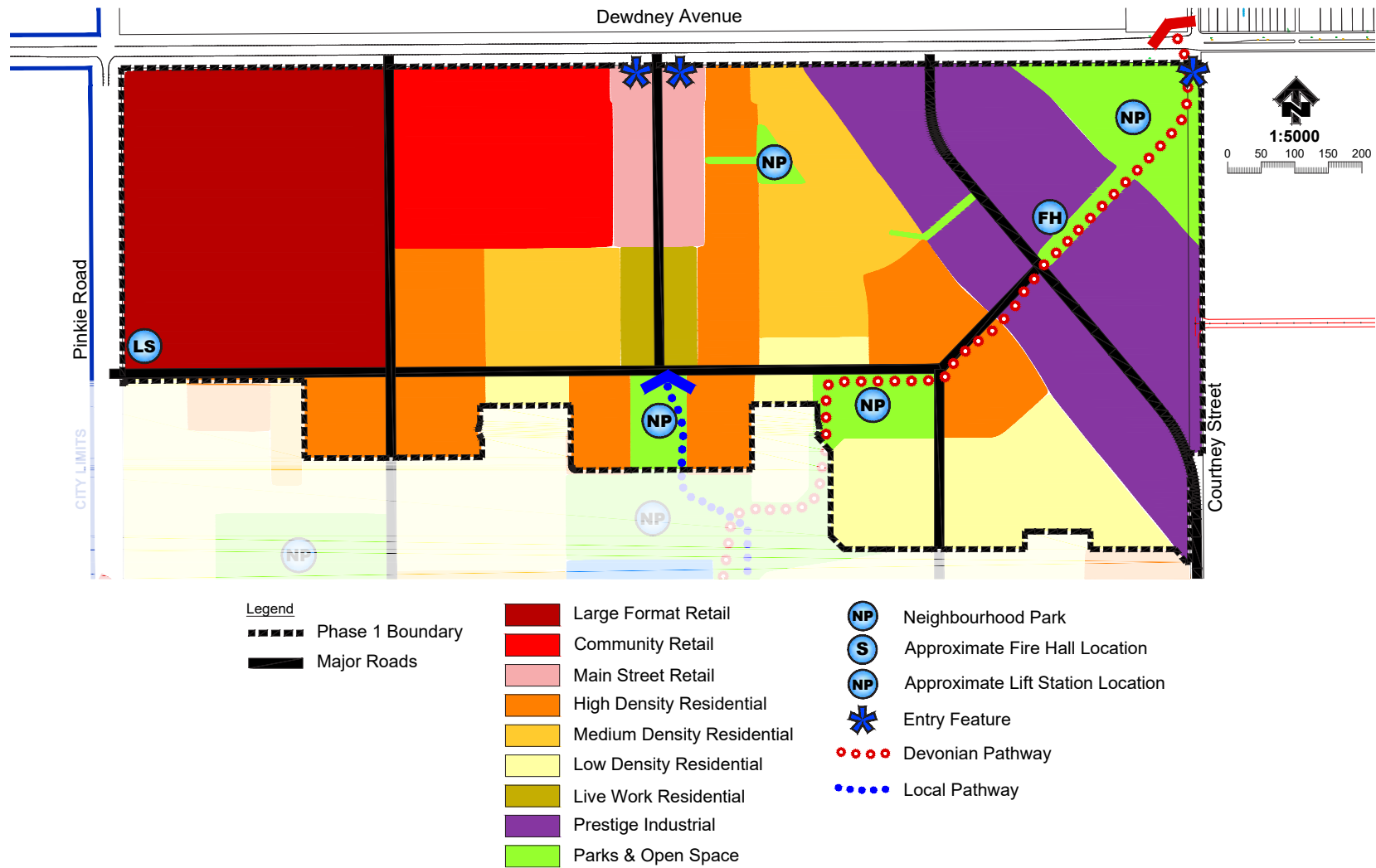


Figure 13 - General Land Use Concept for Phase 1

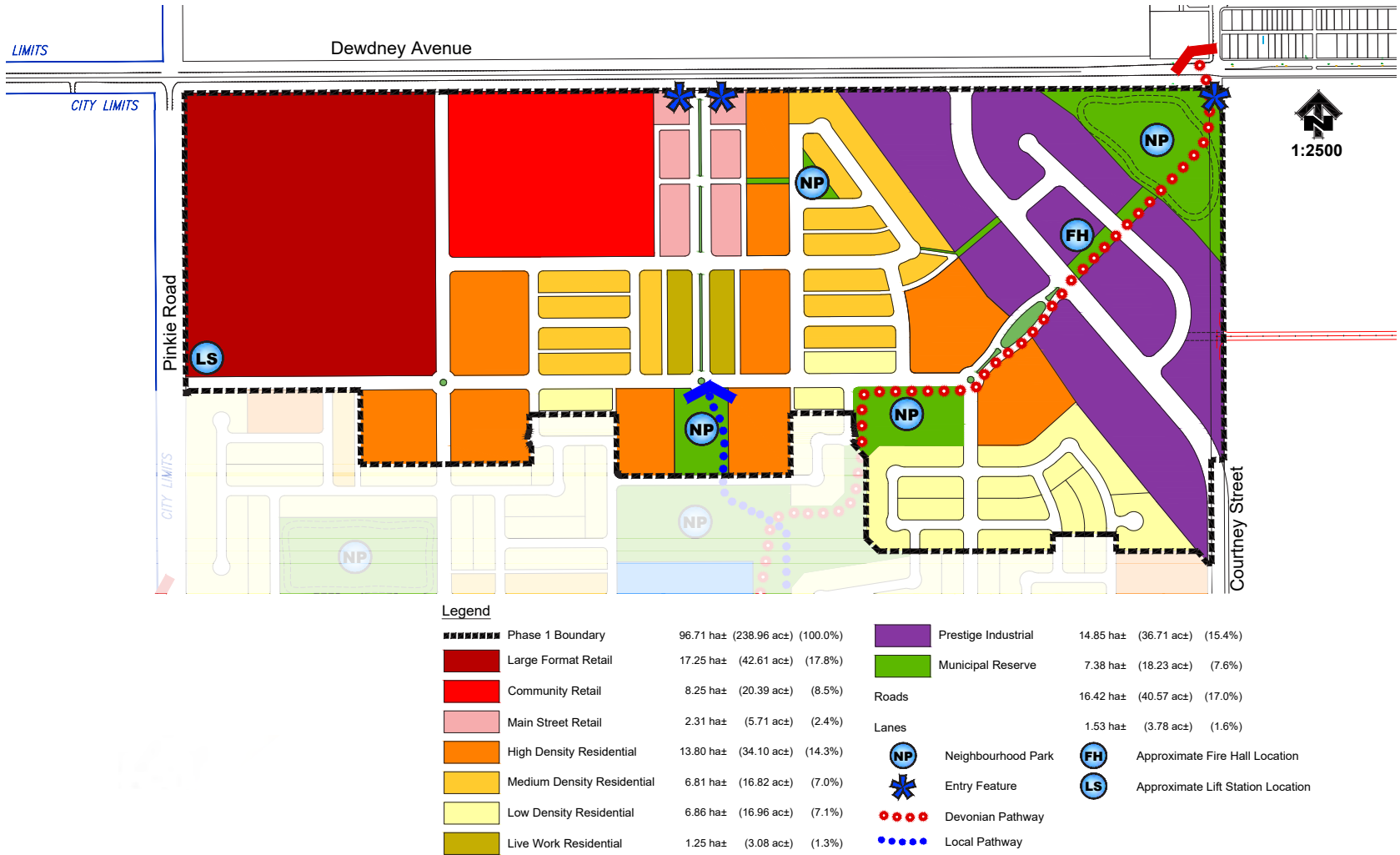


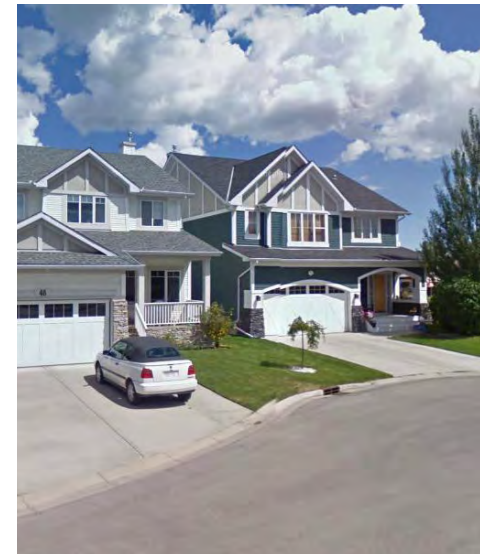
Figure 14 - Detailed Land Use Concept for Phase 1

Table 2 - Westerra Phase 1 Concept Plan Land Use Composition

Land Use (Phase 1)	Area (Hectares)	Area (Acres)	Percentage of Phase 1 Concept Plan Area
Low Density Residential	6.86	16.96	7.1
Medium Density Residential	6.81	16.82	7.0
High Density Residential	13.80	34.10	14.3
Live Work Residential	1.25	3.08	1.3
Large Format Retail	17.25	42.61	17.8
Community Retail	8.25	20.39	8.5
Main street retail	2.31	5.71	2.4
Prestige Industrial	14.85	36.71	15.4
Municipal Reserve	7.38	18.23	7.63
Roads	16.42	40.57	16.98
Laneways	1.53	3.78	1.59
Total	96.71	238.96	100

3.1.2 Low Density Residential Development

Located mainly in the southeast portion of the plan and along the south border of Phase 1, the low density residential development area will consist of predominantly laneless single detached housing. A few blocks of land situated in the central portion of the plan area have been identified for laned single detached housing product. The low density residential portion of Phase 1 is 6.86 ha (16.96 acres). The land use type is defined by major roads, local roads, the Neighbourhood Park in the southeast and the prestige industrial business park to the east. The residential – industrial interface provides a buffer with a berm along the back of the lots. This is discussed further in the industrial section of this CP. Table 3: Residential Densities provides an overview of the projected low –density residential area density targets, unit assumptions and projected population thresholds.



3.1.3 Medium Density Residential Development

Located to the east of the Main street retail area in the northeast portion of Phase 1 and to the south of the Community Retail area is the medium density development area consisting of 6.81 ha (16.82 acres). The medium density residential development will consist of both laned and non-laned product including semi-detached, townhouses, row housing and combinations thereof.

Defined by the modified grid street network in the east and the mainly grid network to the west, the medium density residential development area provides a transition between the low and high density development areas along with walkways connecting the pedestrian network. The residential – prestige industrial interface provides a buffer with a berm along the back of the lots. This is discussed further in the industrial section of this Plan. Table 3: Residential Densities provides an overview of the projected medium density area density targets, unit assumptions and projected population thresholds.



3.1.4 High Density Residential Development

Located north of the low – density residential development, at the entry to the residential area from Courtney Street, to the east of the Main Street Area and the live work units and to the south of the Large Format and Community Retail area is the high - density development of 13.80 ha (34.10 acres). Its boundaries are delineated largely by north-south and east-west major roads, a Neighborhood Park and the on-street greenway. The Neighborhood Parks support amenity areas for the higher density development area and its residents. The eastern edge is delineated by NEF 30 contour boundary and the prestige industrial area. The residential – industrial interface provides a buffer with a berm along the back of the lots. This is discussed further in the industrial section of this Plan. Table 3: Residential Densities provides an overview of the projected high –density residential area density targets, unit assumptions and projected population thresholds.



3.1.5 Live-Work Residential Development

Located within the central portion of the Concept Plan north of a Neighborhood Park and south of the Main Street area are the Live-Work units consisting of 1.25 hectares (3.08 acres). This is an innovative type of development intended to support the sustainability of Westerra by allowing residents to work from home, eliminating commuting distances and providing a market for the retail uses in the community. Live-work units are envisioned to take the form of attached housing units. The Neighborhood Park to the south provides an amenity both in terms of recreation and visual aesthetics. The Live-work unit area is shown in Figure 15. Live-work and High Density Residential and is essentially an extension and transition from the Main Street Commercial area to the residential portion of Phase 1. Table 3: Residential Densities provides an overview of the projected live-work residential area density targets, unit assumptions and projected population thresholds.



Main Street Retail area forms defining entrance to Westerra from Dewdney Avenue with high quality pedestrian environment and range of local services.

Live Work Area defined by central median and marks transition to neighbourhood park from Main Street Retail Area



Figure 15 - Live-Work Residential in Relation to Main Street



Table 3 - Residential Densities and Population Projections

Residential Land Use (Phase 1)	Proposed Zoning	Net Area (hectares)	Density – Low (upnh)	Density – High (upnh)	Number of Units Low	Number of Units High	Population Per Unit	Population Projections (Low)	Population Projections (High)
Low Density Residential	R1 or DCD	6.86	22	25	151	172	3.1	468	532
Medium Density Residential	R5	6.81	25	50	170	341	2.6	443	885
Live Work Residential	R5	1.25	25	50	31	63	1.8	56	113
High Density Residential	R6	13.80	50	100	690	1380	1.8	1242	2484
Total					1042	1955		2209	4013

Table 4 - Residential Densities and Population Intensity

Density Summary (Phase 1)	Low Population Scenario	High Population Scenario
Residential Density – Units per net hectare	36.30	68.05
Residential Density – Units per net acre	14.69	27.54
Population intensity of Residential Area (ppnh)	76.91	139.74
Population of Intensity of Residential Area (ppna)	31.13	56.56

3.2 Commercial

3.2.1 Urban Centre

Located in the central portion of the CP area along Dewdney Avenue is the Urban Centre and surrounding higher density residential area. The Urban Centre is a local shopping, living and working area for the surrounding community. Figure 2 of Appendix A of the Official Community Plan (OCP) shows Westerra as the location of an Urban Centre. According to Section D5, Goal 3 the OCP, an urban centre is defined as an area for pedestrian and transit-oriented mixed use development. It is also an area intended to function as a hub for community interaction and identity (p. 41). Goal 3, Policy 7.10 also defines an Urban Centre as area of higher density residential and commercial uses, transit oriented development and community amenities and open space. The Westerra community has been designed to meet this strategic goal. The Westerra Urban Centre is located at the intersection of Dewdney Avenue and the main entrance into the community. It is considered an Urban Centre because it is located along an express transit route, a major transportation route, and provides multiple pedestrian opportunities throughout. The Main street retail area is the focus of the Urban Centre and provides a sense of place in an area where residents interact. Mixed uses in the area include commercial, residential and employment uses. Overall, the Urban Centre is a transportation node supported by higher density development generally in the form of mixed use, aligning with the policy direction of the OCP.

The Urban Centre is an important contribution to the Westerra Community and West Regina because it provides an intensity and diversity of uses to this neighborhood and region. It also provides for increased connectivity through multiple access points to Dewdney Avenue and a strong modified grid road pattern.



As this Phase of the Westerra Neighbourhood Plan contains the Urban Centre, higher intensity uses will be located along Dewdney Avenue and Main Street. The Live – Work area provides a transition to the south and the rest of the CP area. A Neighborhood Park is centrally located adjacent to the Live-Work area serving as an amenity and a potential transit node. In addition to an amenity site, the Urban Centre contains a variety of housing types, retail uses, and open space amenities. The Urban Centre clusters smaller scaled main street retail development that can be phased in coordination with adjacent high residential densities.

The Urban Centre is supported by a range of townhouse and semi-detached housing envisioned within this radius resulting in higher densities and a distinct identity from the adjacent areas in Westerra Phase 1 Concept Plan.



3.2.2 Main street retail

The Main street retail area is envisioned as the central focal point of Westerra and will contain neighborhood scaled retail and mixed uses. This area, containing 2.31 ha (5.71 acres) is unique and the identity, design, product mix and density is based upon creating a high quality, pedestrian scaled atmosphere of the area. Main Street features a central landscaped median which serves to enhance the aesthetics and announces the entry into the area. Angled parking is accommodated on both sides of the street to promote accessible parking and easy pedestrian access for the businesses. The buildings have been situated to provide rear service access. The preliminary layout of the main street retail area is shown in Figure 16. Main street retail Area Plan Overview.

In general, buildings will be 1.5 – 2 storeys high with a mix of uses. Parking is envisioned to be angled in the front with perpendicular parking in the rear. All parking will comply with City land use bylaw standards. This Main Street includes a landscaped median and building fronts are anticipated to be approximately 120 feet across from each other. This creates a comfortable pedestrian environment. It is envisioned that this form of building will help contribute to the sense of enclosure of this area and a high quality pedestrian environment. Key elements forming part of the main street, live work and adjacent areas are outlined in Figure 17: Key elements of Main Street and Live Work Area – Conceptual Overview.



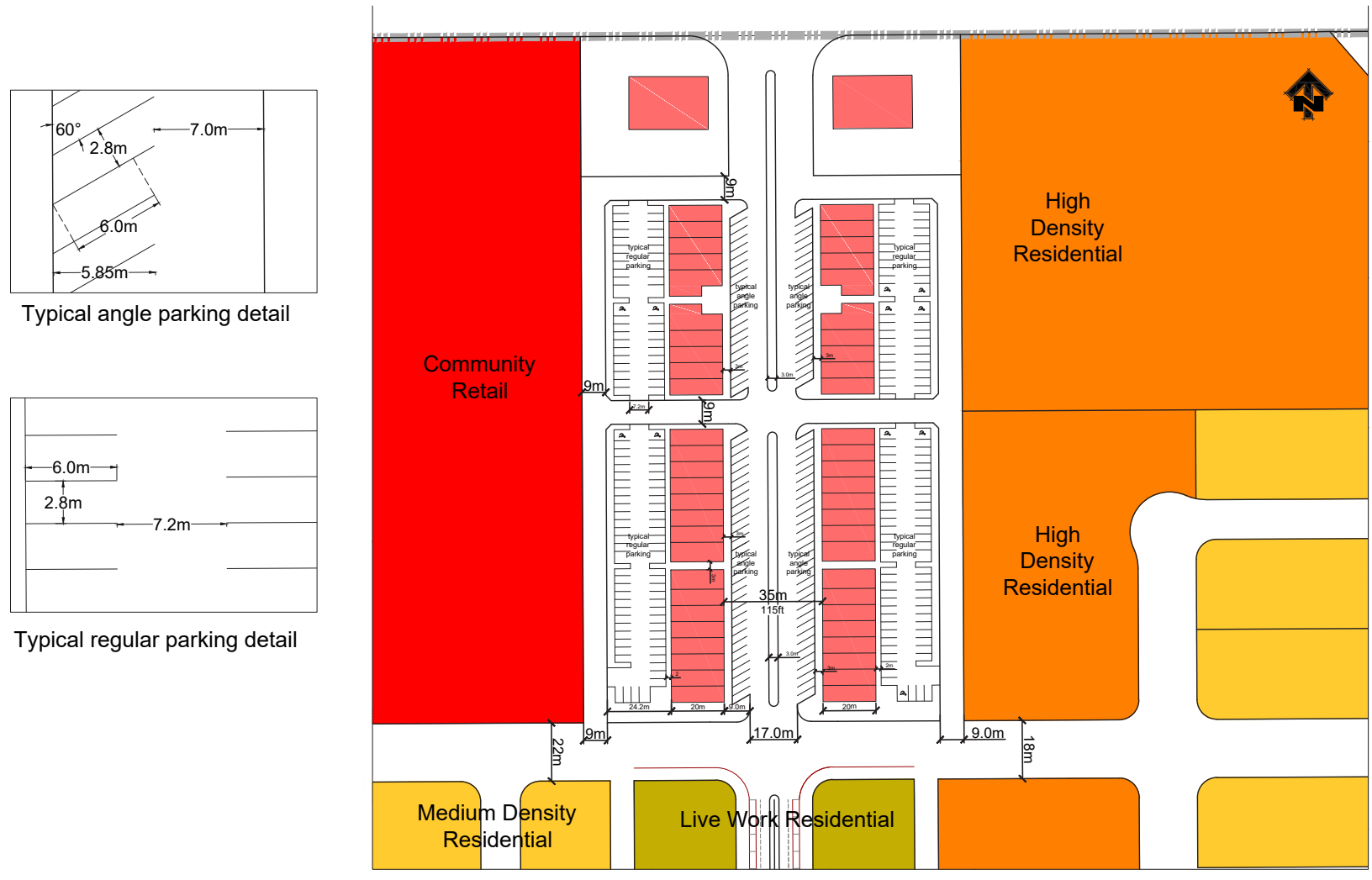


Figure 16 - Main street retail area plan overview

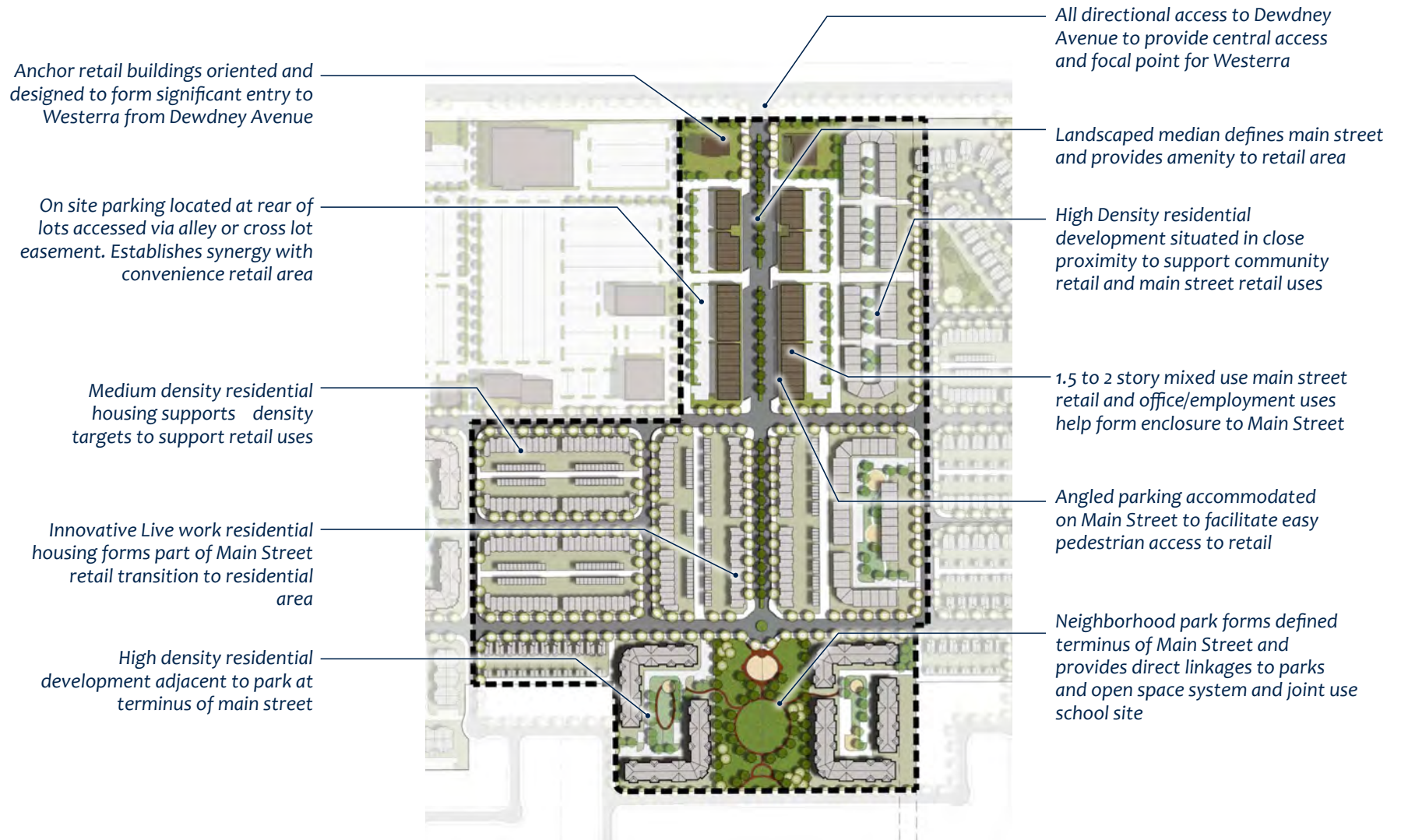


Figure 17 - Key Elements of Main Street and Live-Work Area - Conceptual Overview





Figure 17a - Main Street Detail Looking South - Conceptual Overview

3.2.3 Community Retail Area

Located to the west of the Main Street area, the community retail area of 8.25 hectares (20.39 acres) is intended to provide commercial amenities to residents of Westerra while also providing retail services to existing and future communities to the north and east. This area is shown in Figure 18. Westerra – Key Elements of Large Format and Community Retail Area – Conceptual Overview. The high emphasis placed on pedestrian connectivity within the CP area and the adjacent Main Street Area will help utilize the amenities provided and take advantage of synergies. People can park in the Community Retail area and walk over to the Main Street area. In essence, the close vicinity of shopping & services means residents will rely less on their cars to travel between the various locations in Westerra.

The Community Retail area's west and south boundaries are delineated by major roads. Access to the community retail area is available from Dewdney Avenue and the northern edge is clearly defined by a major arterial creating the conditions for a transit hub. Uses might include small to medium scale commercial uses such as banks, pharmacies, liquor stores, grocery stores, restaurants, and personal services such as hair salons. Accessory uses are envisioned to include a parking area, pedestrian walkways and plazas where appropriate. Internal circulation and connections will be planned carefully to connect with the Large Format Retail area to the west and the Main street retail area to the east.



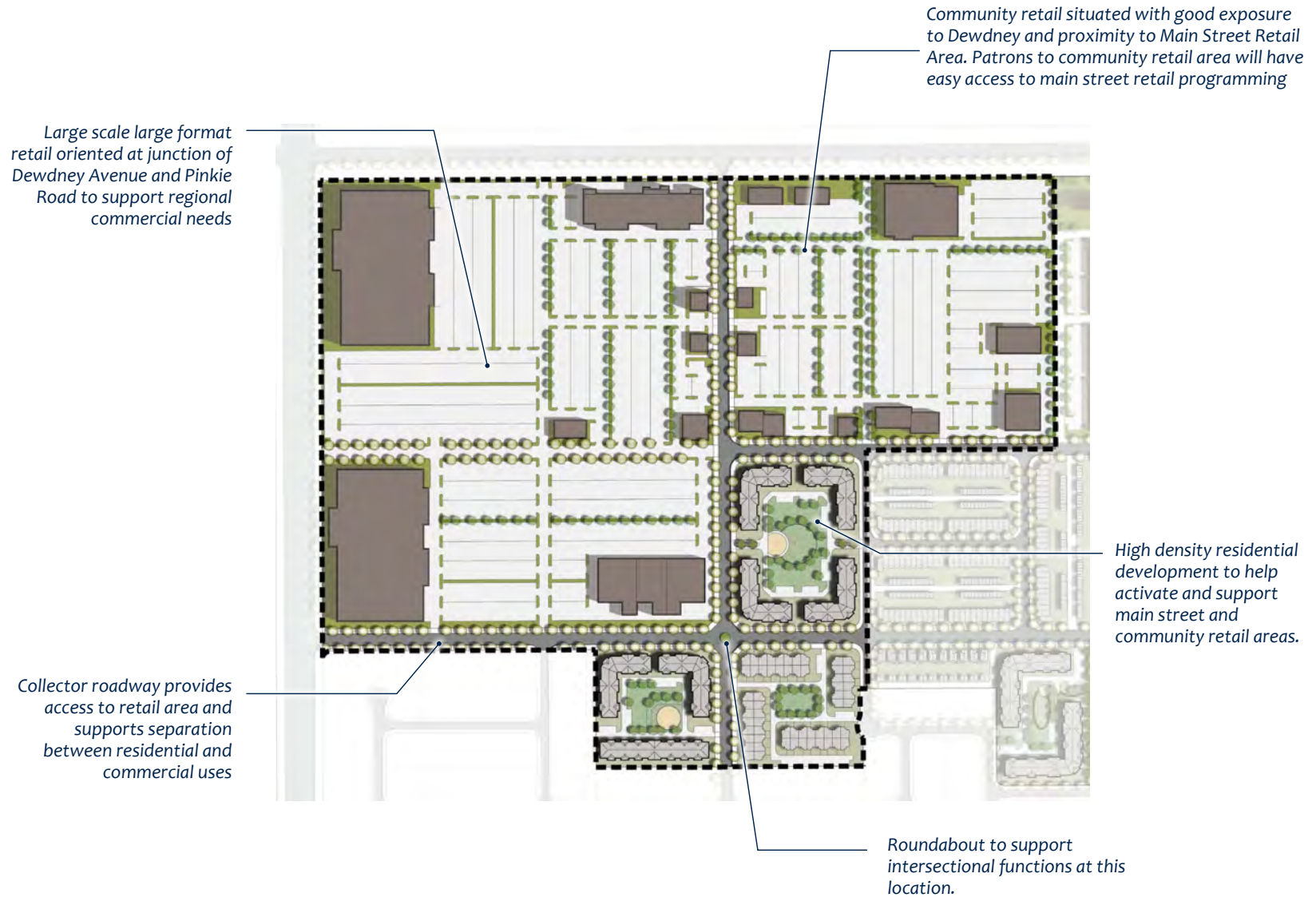


Figure 18 - Key Elements of Large Format and Community Retail Area - Conceptual Overview

3.2.4 Large Format Retail

The Large Format Retail area is located in the northwest corner of Westerra with access from Dewdney Avenue and Pinkie Road as illustrated on Figure 19. Conceptual Rendering Large Format Retail. This area is a high visibility site with excellent access off arterial roads and is intended to serve a regional market. This area will provide for building forms that typically include single story buildings with a large footprint on a single site. Large Format Retail can accommodate big – box, stand - alone types of development that require large parking areas.

The approximate location of a Lift Station intended to serve Westerra is shown in the southwest corner of the Large Format Retail site. Internal site circulation will accommodate traffic and pedestrian flows and connections to adjacent areas.





Figure 19 - Concept Rendering Large Format Retail



3.2.5 Prestige Industrial Area

The Prestige Industrial Area will accommodate a variety of business uses including a mix of office and light industrial developments – comprehensively planned in a campus-style setting. The form of development will blend with land use situated west of the NEF 30 contour. While the prestige industrial area serves as a compatible use with the adjacent residential use west of the NEF contour, consideration has been given to establishing an appropriate and consistent transition between the proposed prestige industrial and adjacent residential area. To support this transition, the plan envisions the construction of a landscaped berm between the prestige industrial and residential area. This interface is and illustrated in Figure 20. Residential and Prestige-Industrial Interface. The berm will be constructed by the developer and maintenance responsibilities would be assumed by lot owners.



Figure 19a - Key Elements of Eastern Gateway - Conceptual Overview

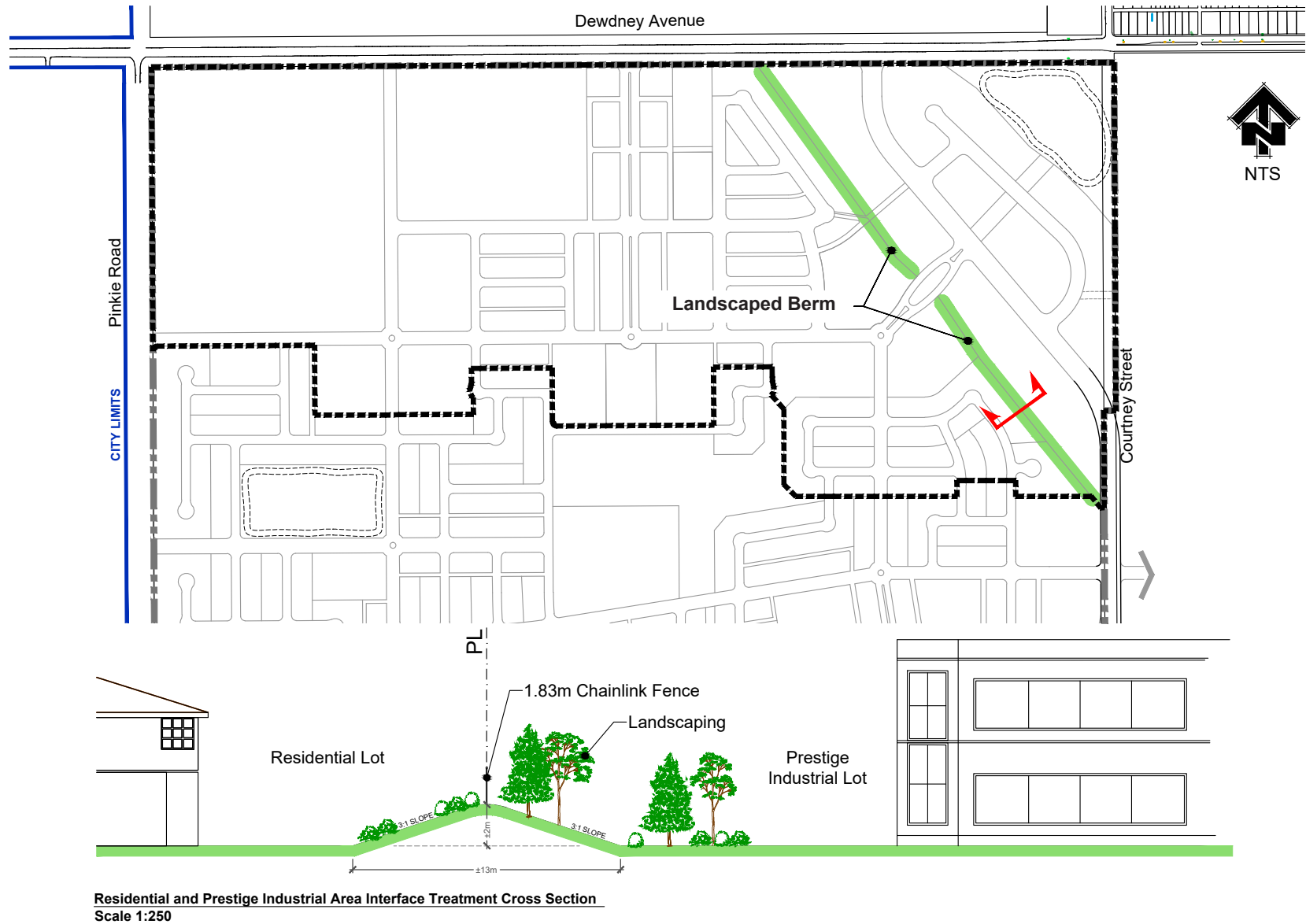


Figure 20 - Industrial - Residential Interface

3.3 Civic/Recreation

Although no school is contemplated within the immediate term for this development, a joint use area within the central portion of the plan has been set aside for this purpose. However, this area is not included within the Westerra Phase 1 Concept Plan and will be addressed at a later Phase in a subsequent concept plan. Nonetheless, the open space areas contained within Phase 1 are connected to this recreational/public use site and implementation of these connections are envisioned as part of the overall civic and open space strategy for the plan area.

3.4 Community Services

In terms of emergency services, the need for a fire hall has been identified through consultation with the City and a preliminary location has been identified within the prestige industrial area. This is shown on Figure 13. General Land Use Concept for Phase 1. To fulfill this need, the developer will work with City on finalizing this location at the redesignation and subdivision Phase.

3.5 Parks and Open Space

Open Space within the Westerra Phase 1 Concept Plan is designed to facilitate a range of passive and active recreational opportunities, enhance pedestrian connectivity and provide aesthetic, social and infrastructure functions in the context of the overall Westerra Neighbourhood Plan. Overall, the open space strategy in the Westerra Neighbourhood Plan area is based upon a dispersed and interconnected system of open spaces serving recreational, transportation and stormwater management functions. The open space system is centered on the joint-use school site in the centre which is connected to the various smaller neighbourhood parks situated throughout the community in proximity to residents of all the neighbourhoods in Westerra. These areas are all connected by various pathways and walkways. A regional pathway traverses the area from east to west and connects Westerra with adjacent lands to the west and the Devonian Pathwaysystem to the northeast. Key elements of the parks and open space system are illustrated in Figure 12. Key Neighbourhood Plan Elements – Conceptual Overview. Key components of the overall Westerra Neighbourhood Plan include:

- An interconnected open space network that integrates the central joint-use school site, the proposed stormwater facilities and the connections to the Devonian Regional and local pathway system.
- An on-street greenway aligned on a diagonal axis to accommodate multi-modal transportation and to connect to the Devonian pathway system.

The Phase 1 Concept Plan Open Space system involves the construction of portions of the proposed open space system as outlined in the approved Neighbourhood Plan and includes open space/detention pond in the north east corner, forming part of the stormwater management system and illustrated in Figure 21. This pond serves as a recreational and an aesthetic amenity for the employees in the prestige industrial park. This detention pond transitions into the on-street greenway and regional trail through the prestige industrial area to the residential area terminating in a neighbourhood park.

A second neighbourhood park is proposed to the north of the future joint-use school site, which connects to the pedestrian environment in the main street retail area. A central neighbourhood park is located strategically as a focal point of Main Street. Recreational amenities for the residents of Westerra are provided through the provision of pathways and neighbourhood parks throughout the various open space components. Lastly, a small neighbourhood park is proposed within the residential area situated to the east of the main street retail area. A small piece of linear municipal reserve has been proposed to support pedestrian access from this residential area to the main street retail area.

The configuration, siting and location of the open space components in Westerra Phase 1 Concept Plan are shown in Figure 22. Parks, Pathway and Open Space. While these elements form only part of the CP area, they form part of a larger open space network envisioned to unify and connect the entirety of Westerra as documented in the neighbourhood plan.





Figure 21 - Overview of Parks and Open Space Looking Southwest





Figure 22 - Parks, Pathway and Open Space

3.5.1 Pathway System

Implementation of a pedestrian and bike network is anticipated within the CP area as previously mentioned. The primary focus of the pedestrian and bike network within the Westerra Phase 1 Concept Plan will orient toward the Devonian Pathway and ultimately the Wascana Creek Trail System to the northeast of Westerra which will be constructed within a linear on-street greenway system as shown on Figure 22. Parks, Pathway and Open Space. Pathway connections within the CP area will facilitate pedestrian mobility onto the Devonian Pathway and Wascana Creek Trail System by trails connected adjacent to the roads. The on-street greenway includes a couplet with a landscaped median within the right-of-way (ROW) as shown in detail in Figure 23. The Devonian Pathway ultimately connects to the southwest portion of Westerra through the joint-use school site and to the local pathway.





Figure 23 - Main Entrance From Courtney Street - Looking Southwest



3.6 Municipal Reserve

The amount of Municipal Reserve (MR) outstanding after dedication shall be deferred to other lands within the Westerra Neighbourhood Plan area as shown in Table 5 Municipal Reserve. A summary of proposed municipal reserve dedication associated with the Phase 1 plan area is outlined below.

Table 5 - Municipal Reserve

	Acres	Hectares
MR Requirement for Neighbourhood Plan Area	42.88	17.35
Proposed Municipal Reserve (MR) dedication as part of Phase 1 Concept Plan	18.23	7.38
Amount of MR Outstanding – Deferred to Balance	24.65	9.97



4.0 Transportation

4.1 Transportation System Overview

The intent of the overall transportation system within the Westerra Neighbourhood Plan is to provide a road network that is compatible with the existing and future regional road network. Such network should also provide frequent and direct access to the boundary arterial and collector roads. The internal road network has been designed based on a modified grid network and provides two east-west road links through the central portion of the plan area. Three accesses off of Dewdney Avenue provide entrances into the community. Two other accesses are provided off Pinkie Road; one provides mainly commercial access and the other provides mainly residential access. Accesses off of Courtney Street are also provided; one through the prestige industrial area and one through the residential area.

The internal road network focusses accessibility to the major land use areas within the CP area and limits commercial and industrial traffic from entering the residential area. The internal road network has also been located in a fashion to maximize opportunities for future public transit.

The proposed internal road network builds on the conceptual road network presented in the Westerra Neighbourhood Plan and is customized for the Phase 1 Concept Plan. This is shown on Figure 24. Internal Transportation Systems. The CP recognizes that the road network shown on Figure 24. Internal Transportation Systems is preliminary and that the exact road and street pattern will be determined at the Subdivision Phase. It is also recognized that portions of Courtney Street will need to be closed and consolidated into the CP area during the realignment process. This will be implemented during the subdivision process for Phase 1.

4.2 Road Network Hierarchy

The proposed road network provides for multiple all directional access and egress points to Dewdney Avenue, Pinkie Road and Courtney Street in accordance with City standards and requirements. The internal road network is comprised of a series of collector, local and on-street greenway roads all based on a modified grid system. This system enhances the focus on the central joint – use school site. The internal collector road system is also designed to facilitate access to the major areas of the plan namely: 1) the Main Street Area, 2) the Community and Large Format Retail Area, 2) the Prestige Industrial Area and 3) the residential area. Courtney Street and provides access to the industrial area. The proposed road network hierarchy for Phase 1 is shown on Figure 24. Internal Transportation Systems.

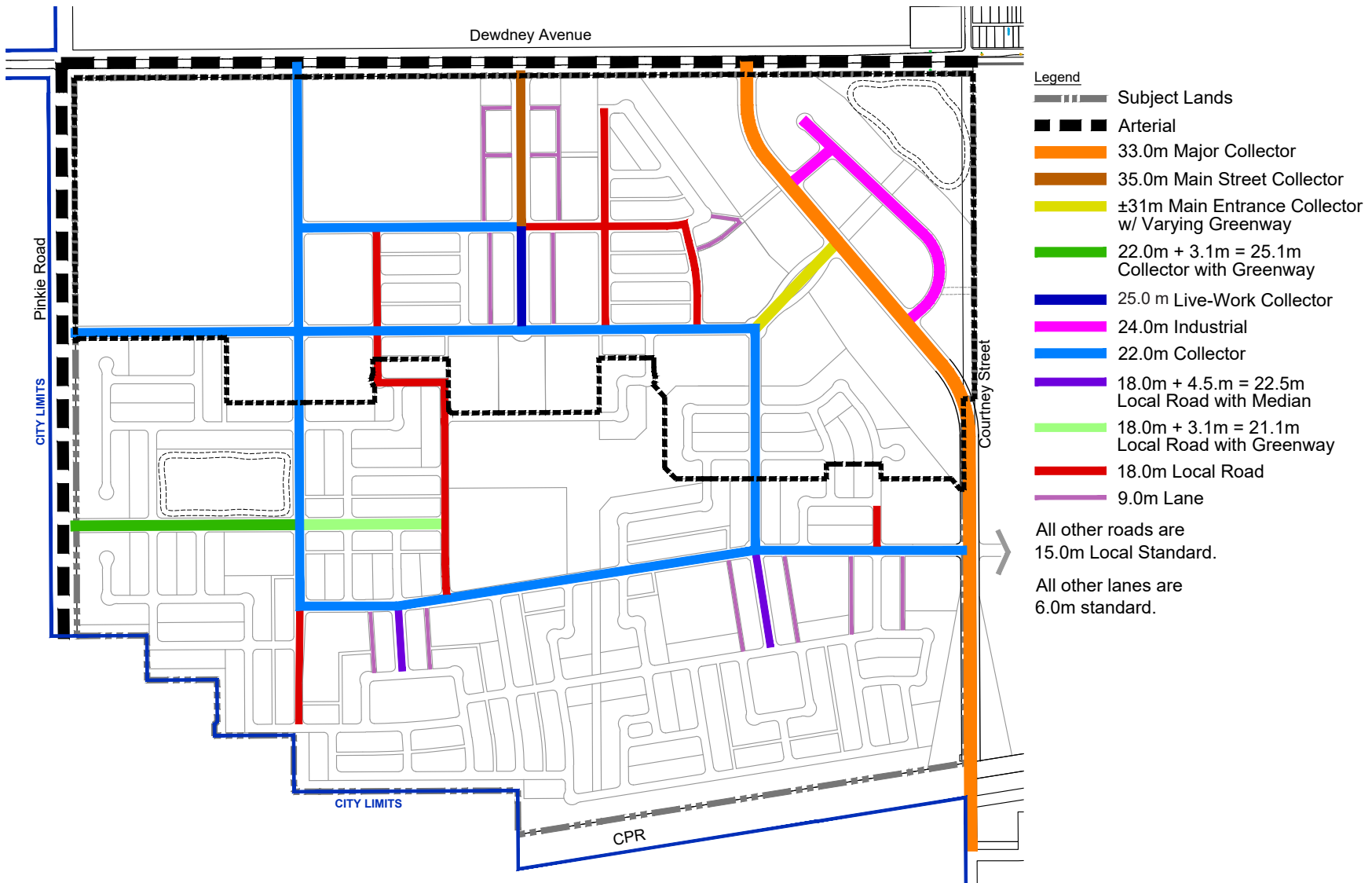


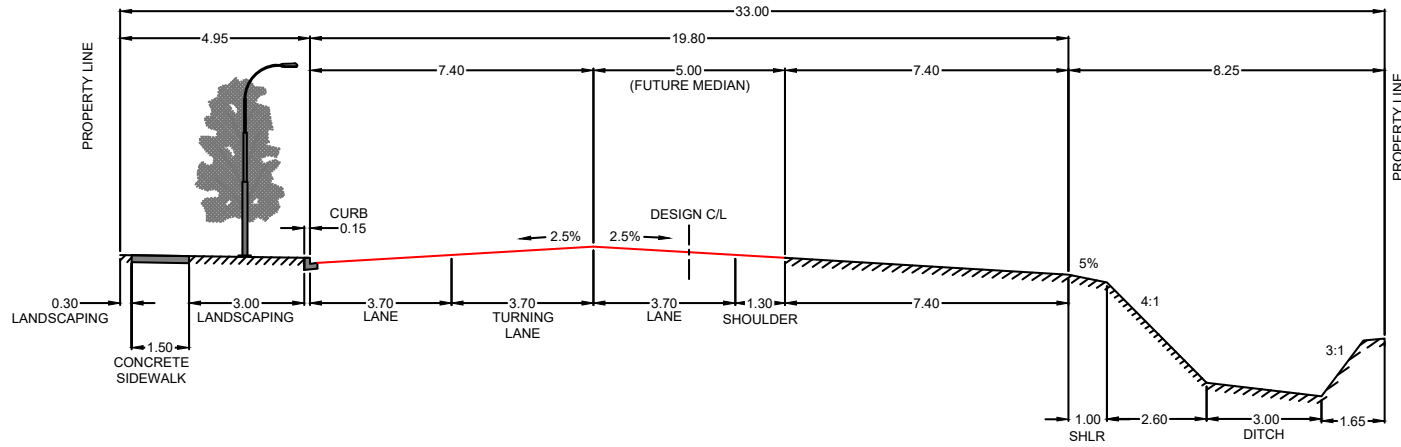
Figure 24 - Internal Transportation System

4.3 Road Cross Sections

Section drawings of the proposed road network hierarchy are outlined in Figure 25. Road Network Cross Sections. The proposed road network provides a layout that balances the needs of vehicle and pedestrian traffic in a safe and efficient manner. In this regard, the internal roads (i.e. collector and local roads) should facilitate connectivity and achieve a high quality neighbourhood environment. Connectivity results from a network design with multiple and parallel routes that disperse vehicle traffic flows and encourage walking, particularly for shorter destination and casual walking trips. A quality neighbourhood environment is achieved through a streetscape containing trees and sidewalks, together with on-street parking and appropriate building setbacks and facades. These measures are considered integral to the achievement of a sustainable community design.



33.0 m MAJOR COLLECTOR (COURTNEY STREET)



35.0 m MAIN STREET COLLECTOR

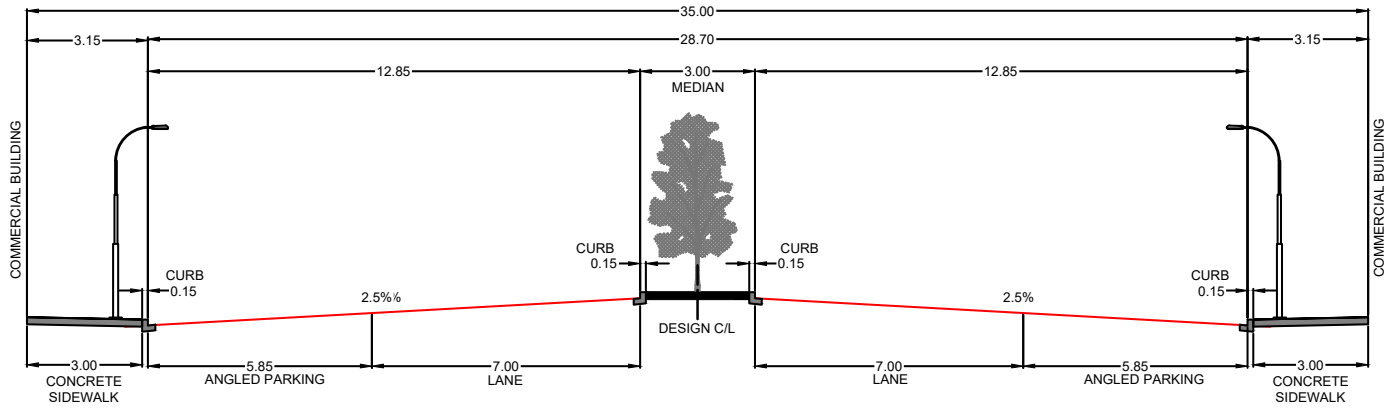
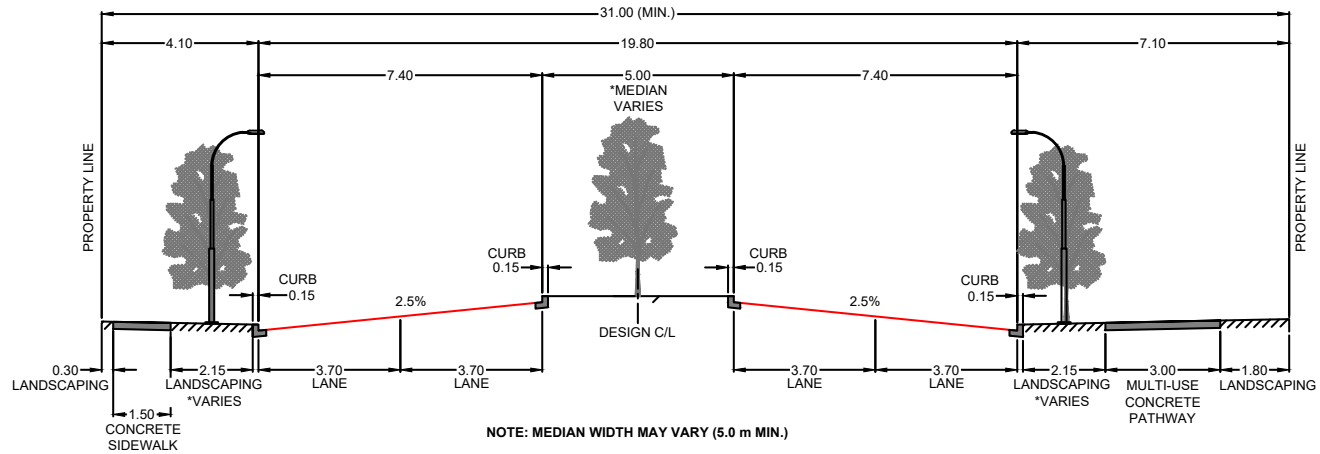
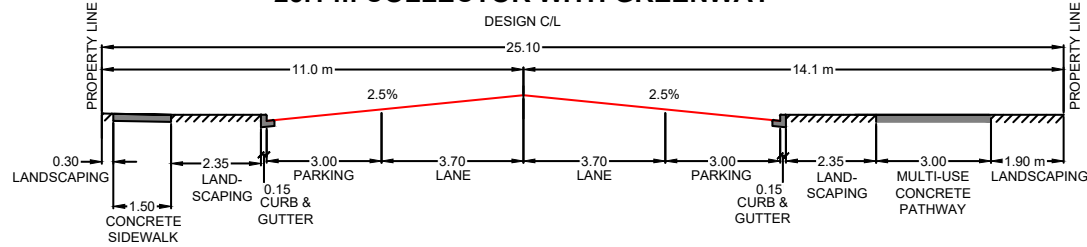


Figure 17 - Road Network Cross Sections

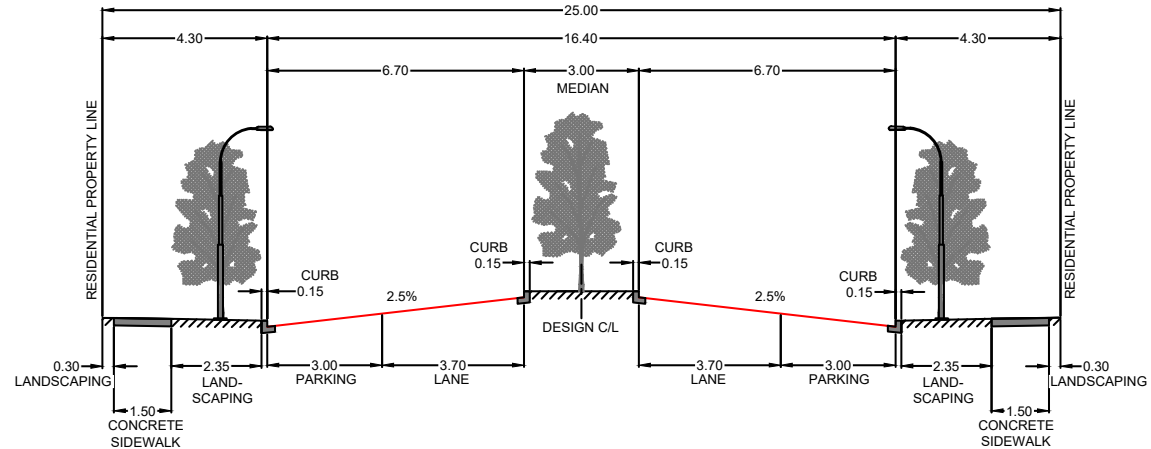
31.0 m MAIN ENTRANCE COLLECTOR



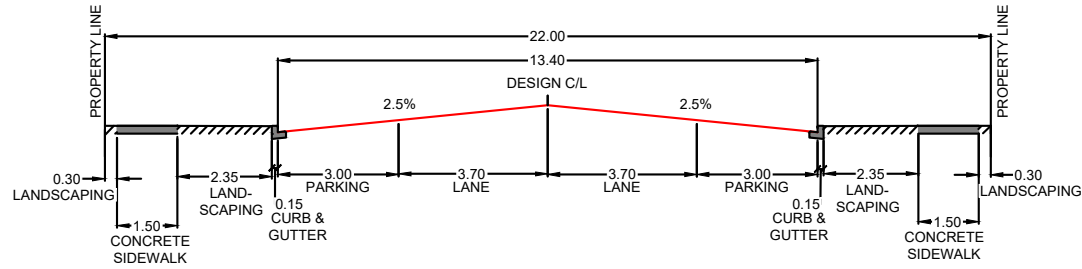
25.1 m COLLECTOR WITH GREENWAY



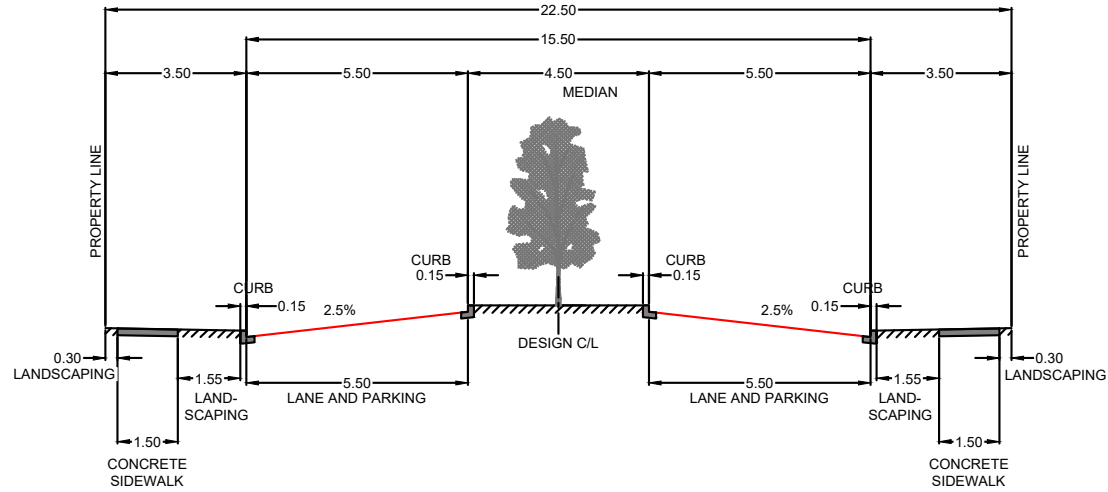
25.0 m LIVE WORK COLLECTOR



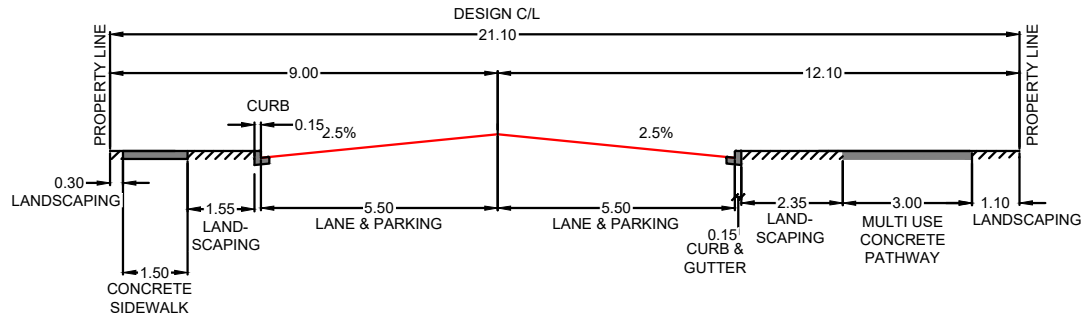
22.0 m COLLECTOR



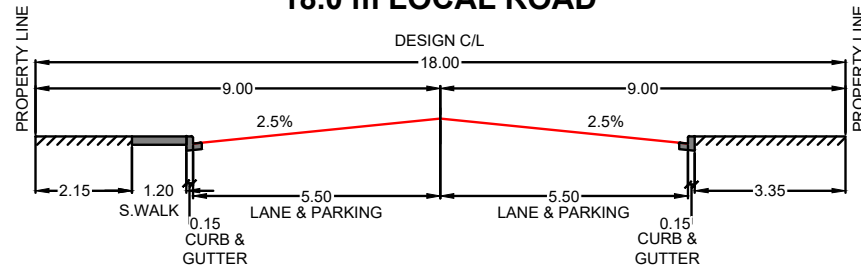
22.5 m LOCAL ROAD WITH MEDIAN

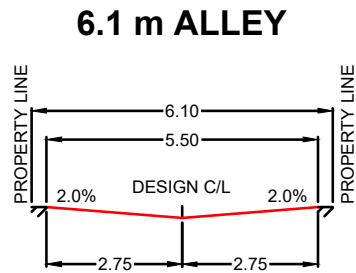
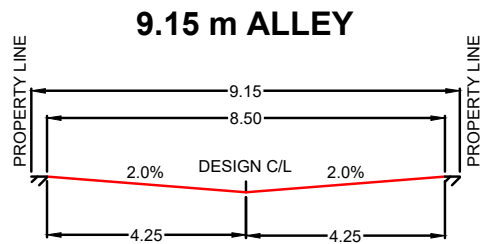
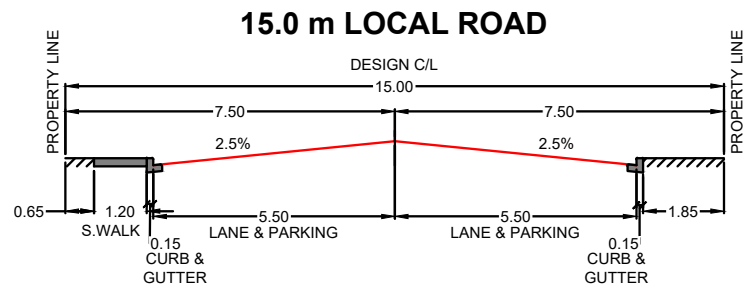


21.1 m LOCAL ROAD WITH GREENWAY



18.0 m LOCAL ROAD





4.4 Traffic Impact Analysis and Off Site Improvements

In support of the Concept Plan, a comprehensive traffic impact assessment has been completed to identify immediate and long term improvements to the transportation network necessary to support the implementation of Westerra. The improvements contemplated for Phase 1 shall be undertaken by the developer in accordance with the traffic impact assessment. The full report is appended to the Westerra Neighbourhood Plan.

4.5 Public Transit

The purpose of the overall Westerra Neighbourhood Plan is to accommodate efficient future public transit service at the point in time where population growth and transit demand makes the provision of local public transit feasible. A transit and mobility assessment has been addressed in the Neighbourhood Plan as shown on Figure 26. Transit Coverage and Mobility Assessment. As part of the Phase 1 CP, Figure 26 identifies an interim transit routing arrangement to service the CP area until such time as the Westerra NP is built out and the ultimate transit service in place. The developer will work cooperatively with Regina Transit and local officials to determine a preferred transit routing option to support the CP area.

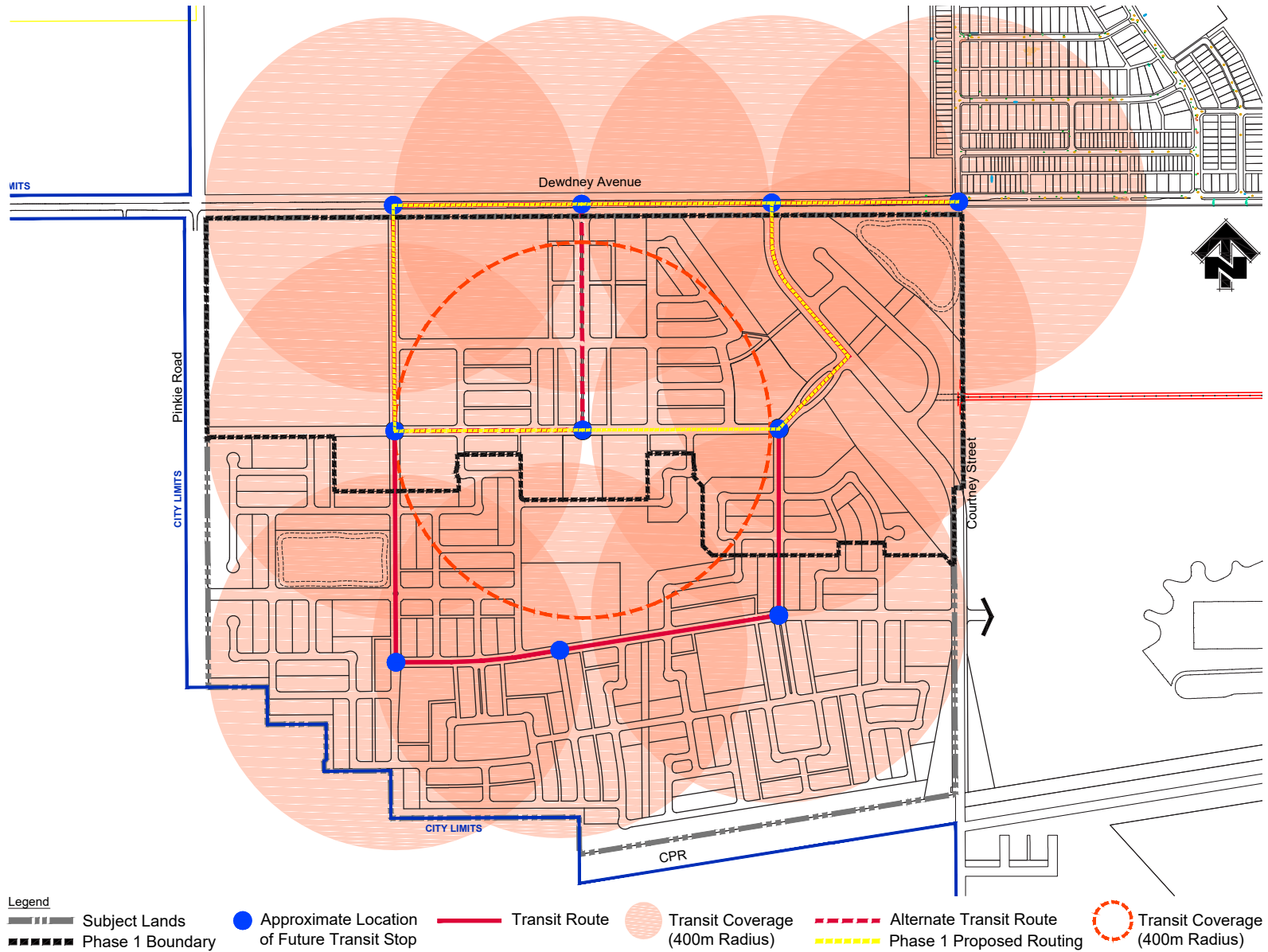


Figure 26 - Transit Coverage and Mobility Assessment

5.0 Servicing

5.1 Servicing Overview

Municipal utility services will be required to develop this Phase for its proposed land uses. Figures 27. Water Servicing, Figure 28. Sanitary Servicing, Figure: 29. Catchment Area Concept and Figure 30. Storm Servicing Concept illustrate the routing of wastewater, water and stormwater management








In general, stormwater management has been integrated within the open space system featuring a detention pond in the northeast corner. This area has potential to be enhanced further as a recreational and aesthetic feature. Water and sanitary servicing generally follows the routing of the road network. A lift station will be required as part of the sanitary servicing.

5.2 Water

Water service will be provided to this development as shown in the water servicing concept that is included in Figure 27. Water Servicing. Connections included in Phase 1 include a 250 mm distribution loop to provide Level 3 service to the prestige industrial lands connected to the 750 mm trunk at Courtney Street and the 600 m trunk at Dewdney Avenue. A 200 mm distribution main will be used to provide looped service for the Main street retail and live/work residential land use areas connected to the 600 mm trunk at Dewdney Avenue. The existing water mains along Courtney Street and Dewdney Avenue have sufficient capacity to provide water service to this subdivision. Consequently, no significant capital improvements shall be required within the water distribution system during the initial Phases of development. The detailed water servicing analysis is contained in the Servicing Plan prepared by Genivar, 2013 in support of the Westerra Neighbourhood Plan.



Legend

- Proposed 200mm Water 
- Proposed 250mm Water 
- Proposed 300mm Water 
- Existing Water line 
- Existing Gas Line 
- Subject Lands 
- Phase 1 Boundary 

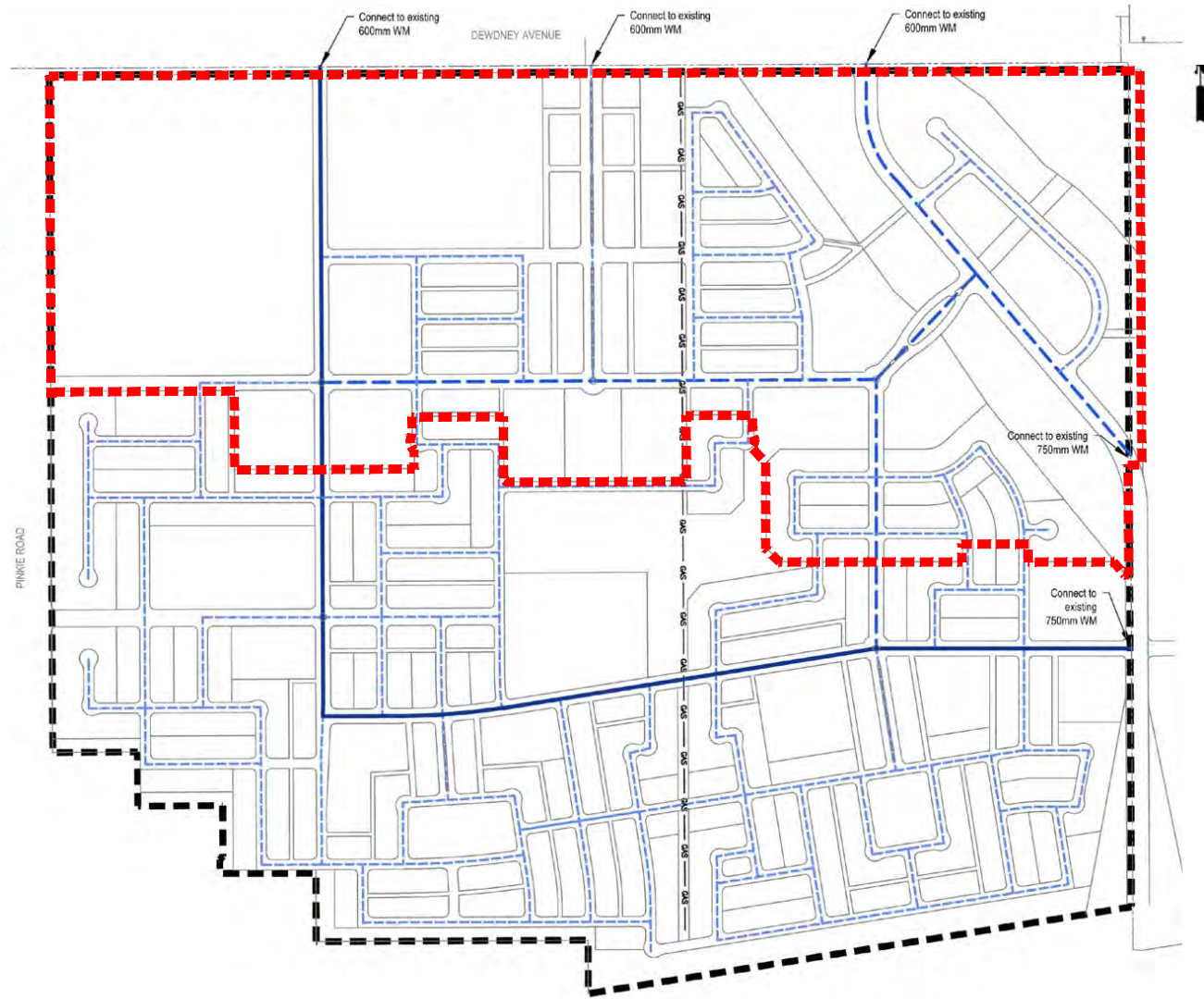


Figure 27 - Water Servicing

5.3 Sanitary

The preliminary sanitary collection system layout is shown in the Sanitary Servicing Concept diagram in Figure 28 Sanitary Servicing. Phase 1 includes construction of a lift station and force main, which may need to be expanded to accommodate off site sanitary flows depending on future development. The wet well and pumps should be designed to be constructed in phases and expanded as needed for future developments. Further, the force main from this lift station should either be oversized during the first phase of development or be twinned at a future date when additional capacity is required. The detailed wastewater servicing analysis is contained in the Servicing Plan prepared by Genivar, 2013 in support of the Westerra Neighbourhood Plan.



Legend

- Proposed 200mm Sanitary Sewer
- Proposed 250mm Sanitary Sewer
- Existing Gas Line GAS
- Direction of Flow
- Subject Lands
- Phase 1 Boundary

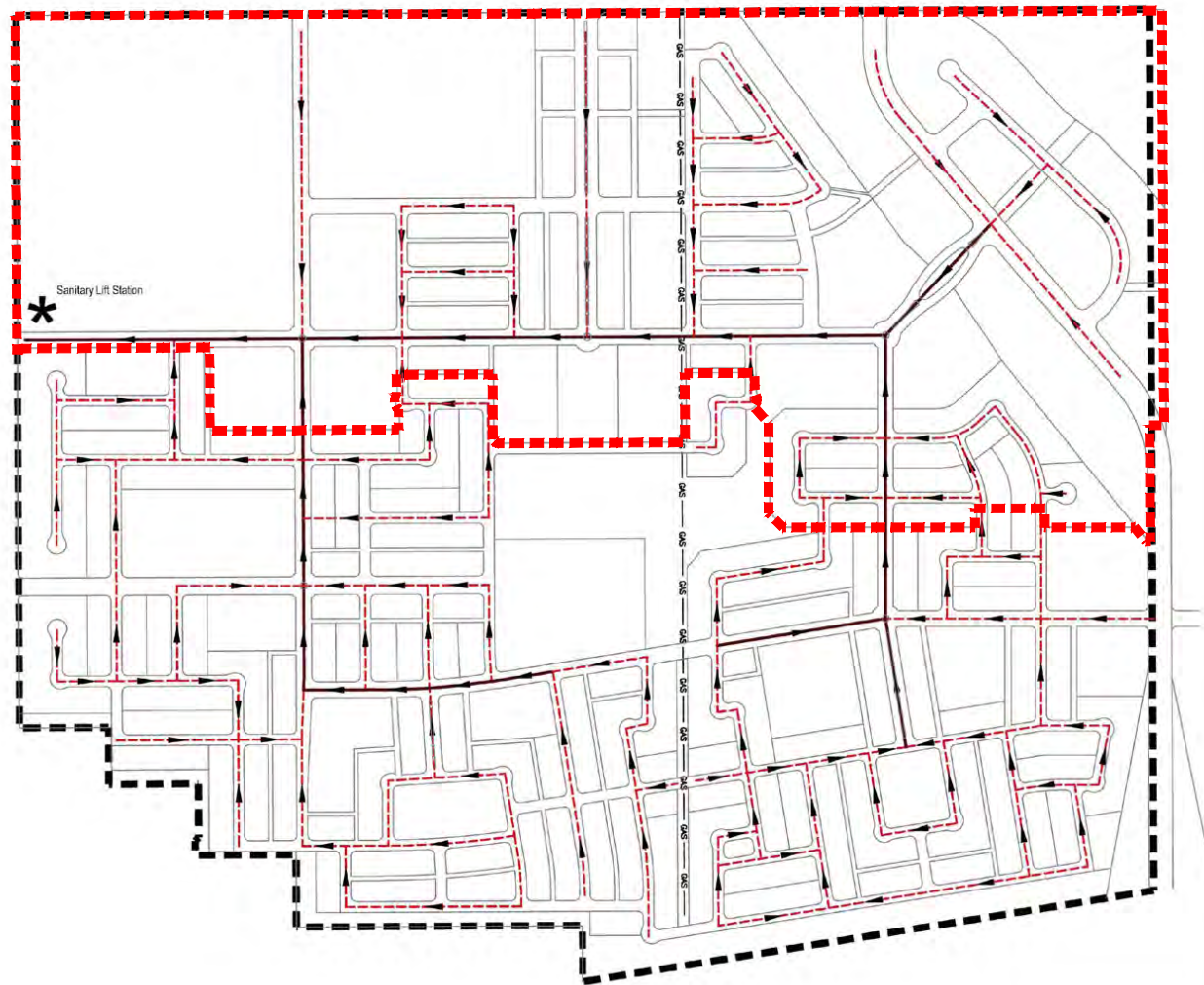


Figure 28 - Sanitary Servicing

5.4 Stormwater

The relationship of the plan area to proposed stormwater catchment areas is shown on Figure 29. Catchment Area Concept. Stormwater management in the Phase 1 Concept Plan will be accommodated by drainage facilities constructed by the developer as conceptually illustrated in Figure 30. Storm Servicing Concept. The approach and preferred option to stormwater management is further described and detailed by the Servicing Plan prepared by Genivar, 2013 prepared in support of the Westerra Neighbourhood Plan.

Surface drainage generated within the Phase 1 CP area will be conveyed to the detention pond in the northeast corner of the CP area and a lift station beside the pond will be constructed. The design of the pond will include capacity to contain the 1:100 year storm event. Discharge will be limited to the pre-development flow rate of 5 m³/s. Based on the relatively flat grades and the lack of a deep storm trunk, the Westerra proposed detention pond will need to be drained mechanically and exit the CP area via the Courtney Street Drainage Ditch.



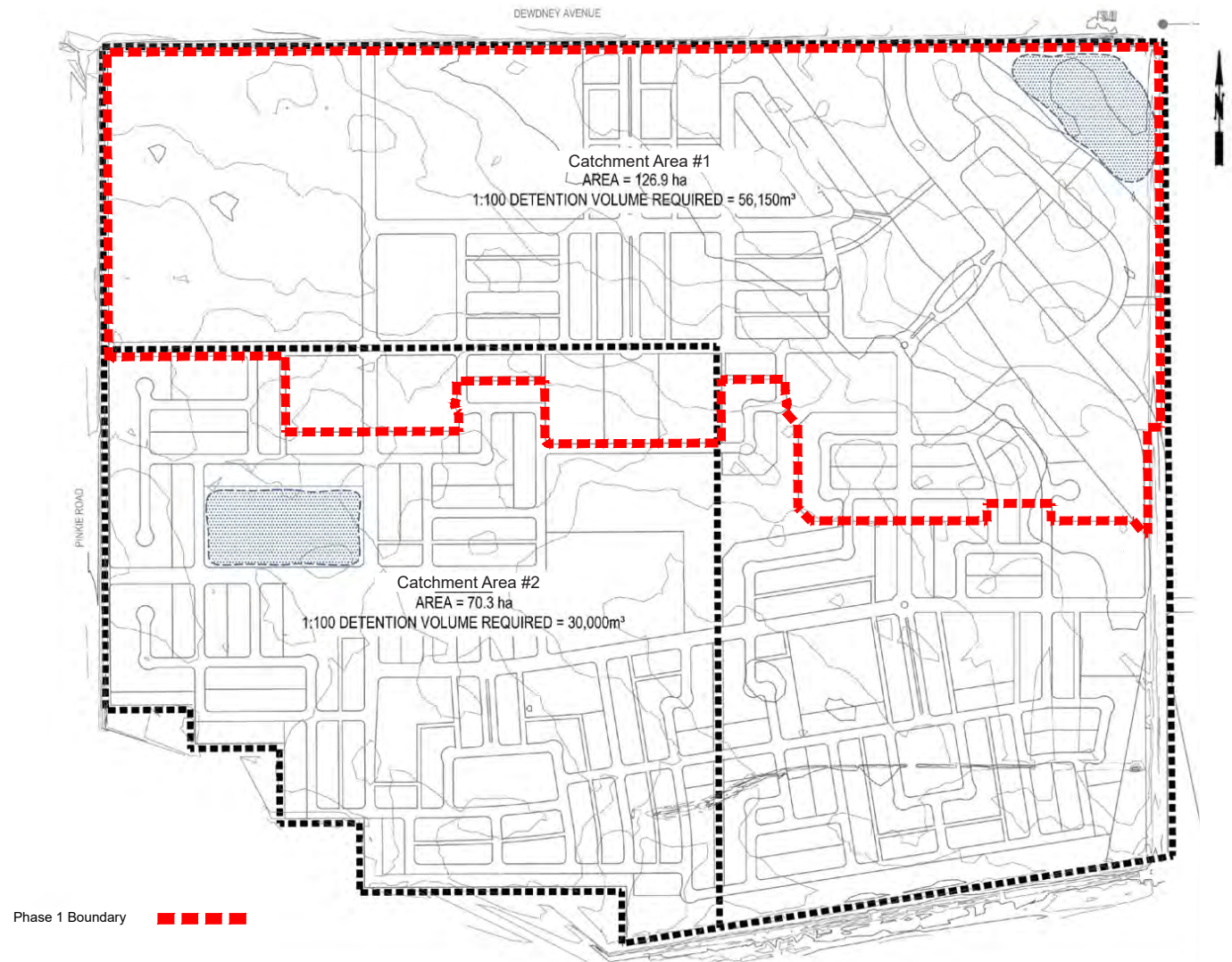






Figure 29 - Catchment Area Concept

Legend

- Proposed 300mm Storm Sewer 
- Proposed 375mm Storm Sewer 
- Proposed 450mm Storm Sewer 
- Proposed 600mm Storm Sewer 
- Proposed 750mm Storm Sewer 
- Proposed 900mm Storm Sewer 
- Proposed 1050mm Storm Sewer 
- Proposed Ditch Drainage 
- Detention Pond 
- Existing Gas Line 
- Direction of Flow 
- Subject Lands 
- Phase 1 Boundary 

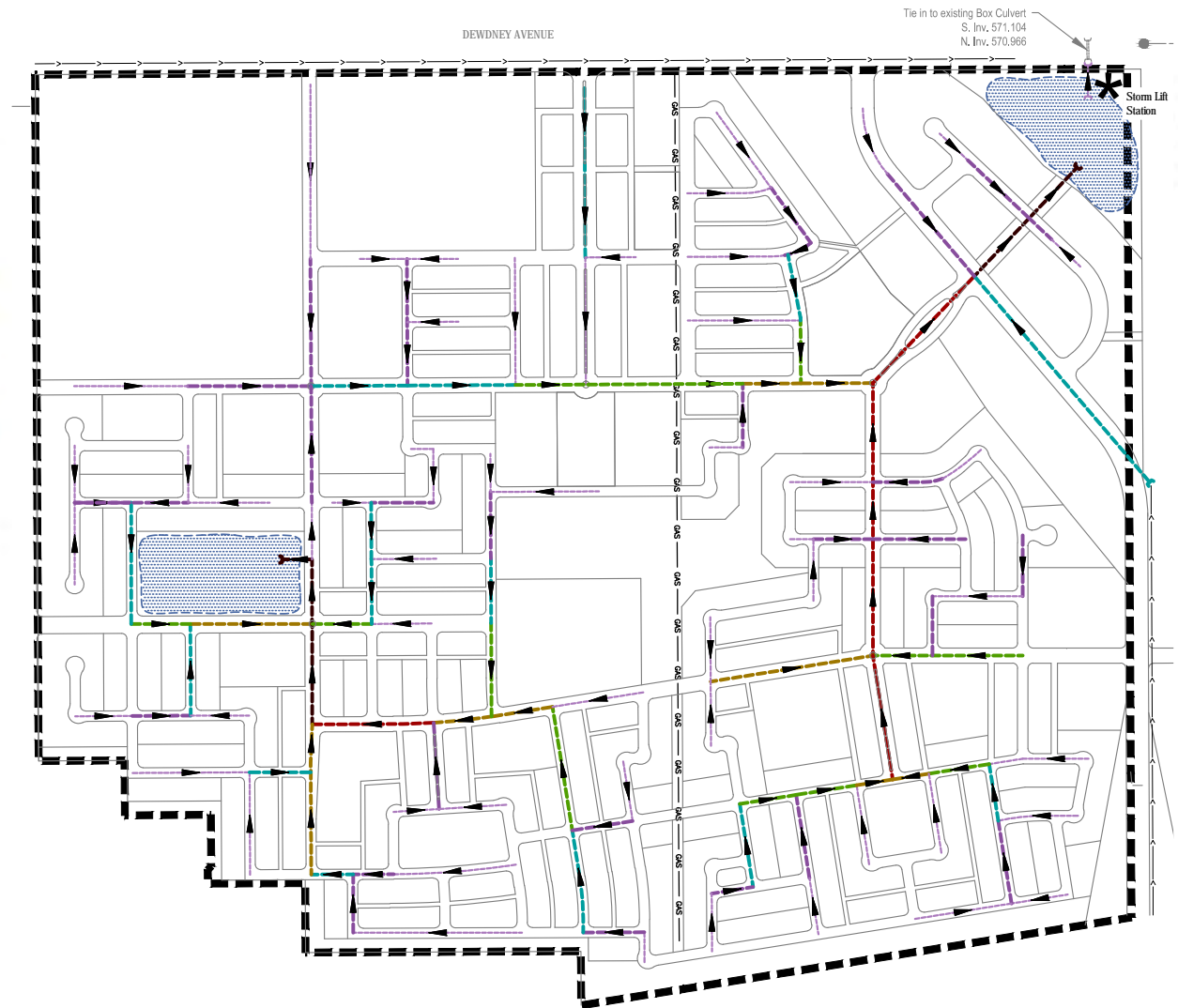


Figure 30 - Storm Servicing Concept

5.5 Shallow Utilities

Shallow utility services including electric power, natural gas, telephone, cable and internet services will be provided by local utility companies. It is anticipated that underground utilities will be located within the road rights-of-way and private easements as required to serve all proposed development. Existing power, gas, and telecommunications infrastructure is shown on Figure 10. Existing Shallow Utilities.

Stakeholder meetings held with the utility corporations have confirmed that adequate capacity exists within their systems to provide service to the land use proposed for the Westerra Neighbourhood Plan. The developer will work with the utility companies at the time of subdivision to provide all necessary services.



6.0 Implementation

6.1 Phasing

The Westerra Phase 1 Concept Plan consists of an area that may be developed in multiple phases. The general direction of phasing to implement the Phase 1 Concept Plan is indicated in Figure 31. Phasing. The general phasing and sequencing of development will remain contingent on market demand and the implementation and delivery of municipal infrastructure and utility improvements required to support the development.



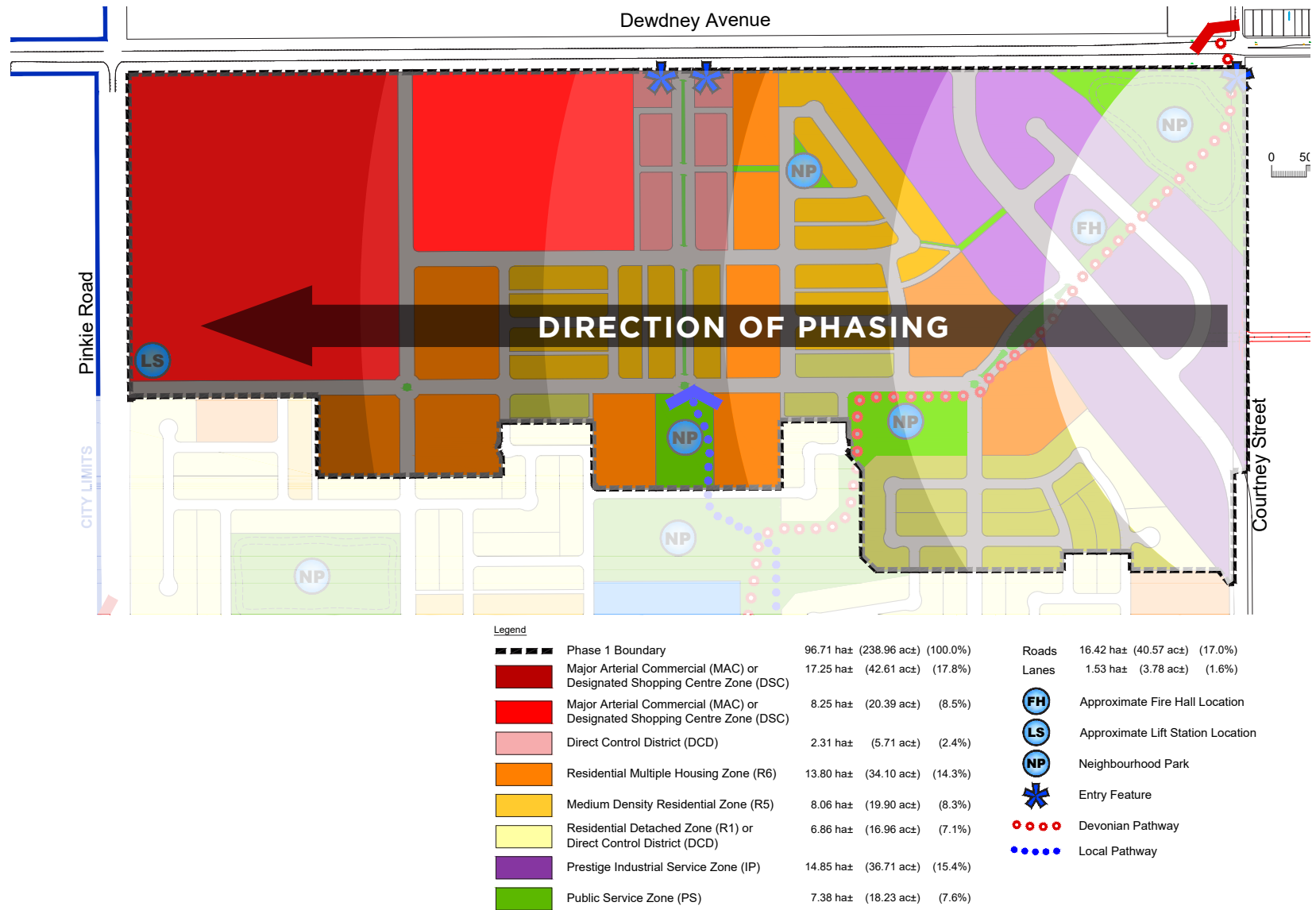


Figure 31 - Phasing

6.2 Capital Improvement Plan

Major infrastructure work required to implement Westerra has been addressed as part of the Westerra Neighbourhood Plan Servicing Strategy. The specific details of infrastructure design and improvements required to support a particular phase of development shall form part of detailed engineering plans and specifications prepared in support of conditional subdivision approvals and forming part of future development agreements with the City of Regina.

6.3 Anticipated Zoning

The following land use districts are anticipated for the Phase 1 Concept Plan area as shown in Figure 32. Proposed Zoning. However, these zones will be reviewed through the zoning application process and may change. Where required, direct control districts may be developed to outline and establish specific use regulations and development standards necessary to support the implementation of the Phase 1 Concept Plan.



- The low density residential area is expected to be designated Residential Detached Zone (R1) or Direct Control District (DCD).
- The medium density and the live – work residential areas are expected to be designated Medium Density Residential Zone (R-5).
- The high density areas are expected to be designated Residential Multiple Housing Zone (R6), which allows for townhouses, fourplexes and apartments (permitted if four story's or less and discretionary if 5 story's or more) with more than 50 dwellings per hectare.
- The Main street retail area is anticipated to be designated to Direct Control District (DCD).
- The Community Retail and Large Format retail area is expected to be designated to Major Arterial Commercial (MAC) or Designated Shopping Centre Zone (DSC).
- The Prestige Industrial area is expected to be designated Prestige Industrial Service Zone (IP).
- The neighbourhood parks/Municipal Reserve including the stormwater management facilities, are anticipated to be designated Public Service Zone (PS).

It is expected that the entire Phase 1 Concept Plan will be redesignated in accordance with a single land use amendment application. The proposed zoning should be considered preliminary and form



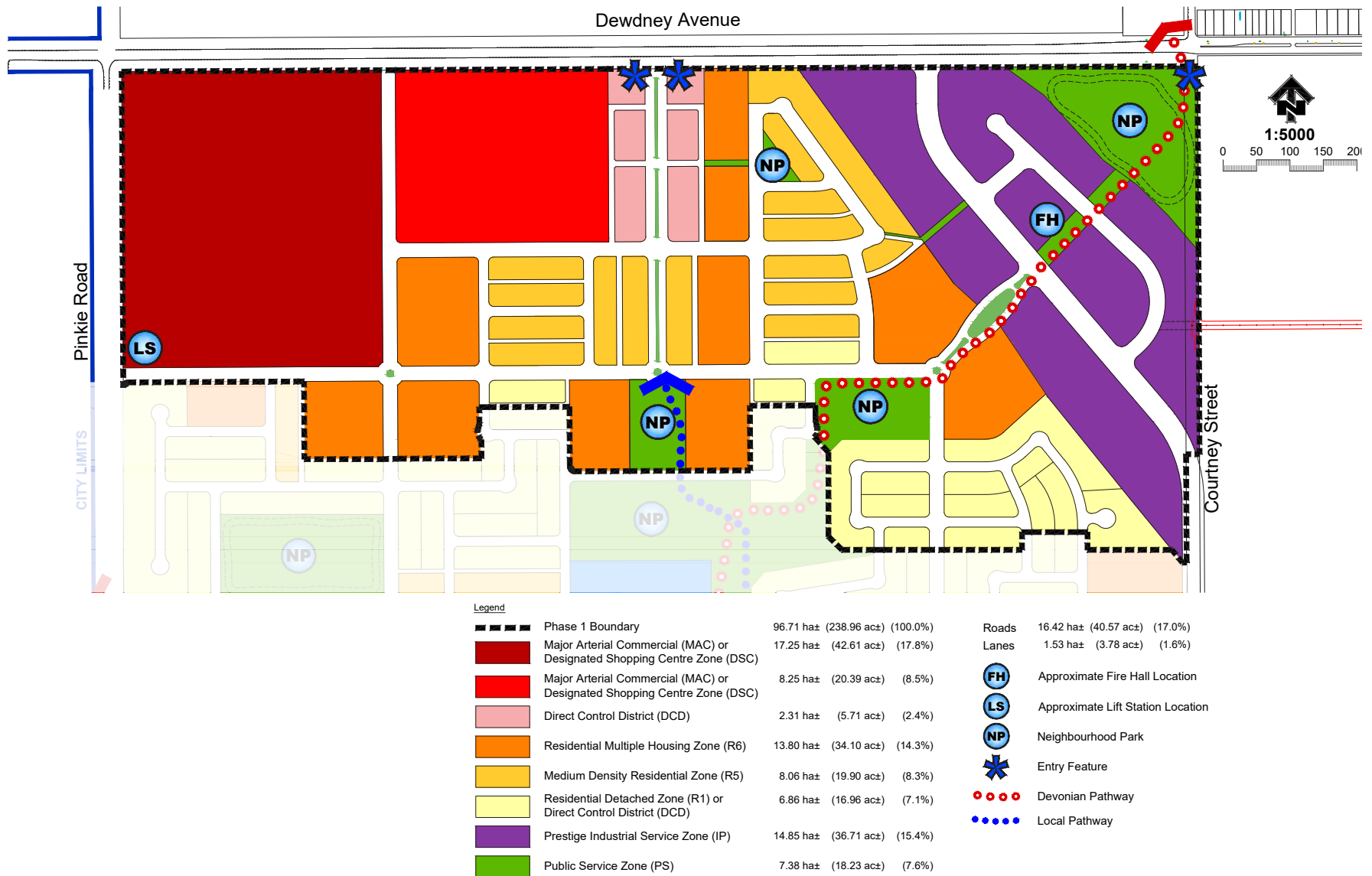


Figure 32 - Proposed Zoning

6.4 Subdivision

Subdivision of the Phase 1 Concept Plan area is expected to proceed in a number of phases which will remain contingent on market demand, and the implementation of required municipal infrastructure necessary to support development. Future plans of subdivision shall be in accordance with the City of Regina land use bylaw and zoning standards.

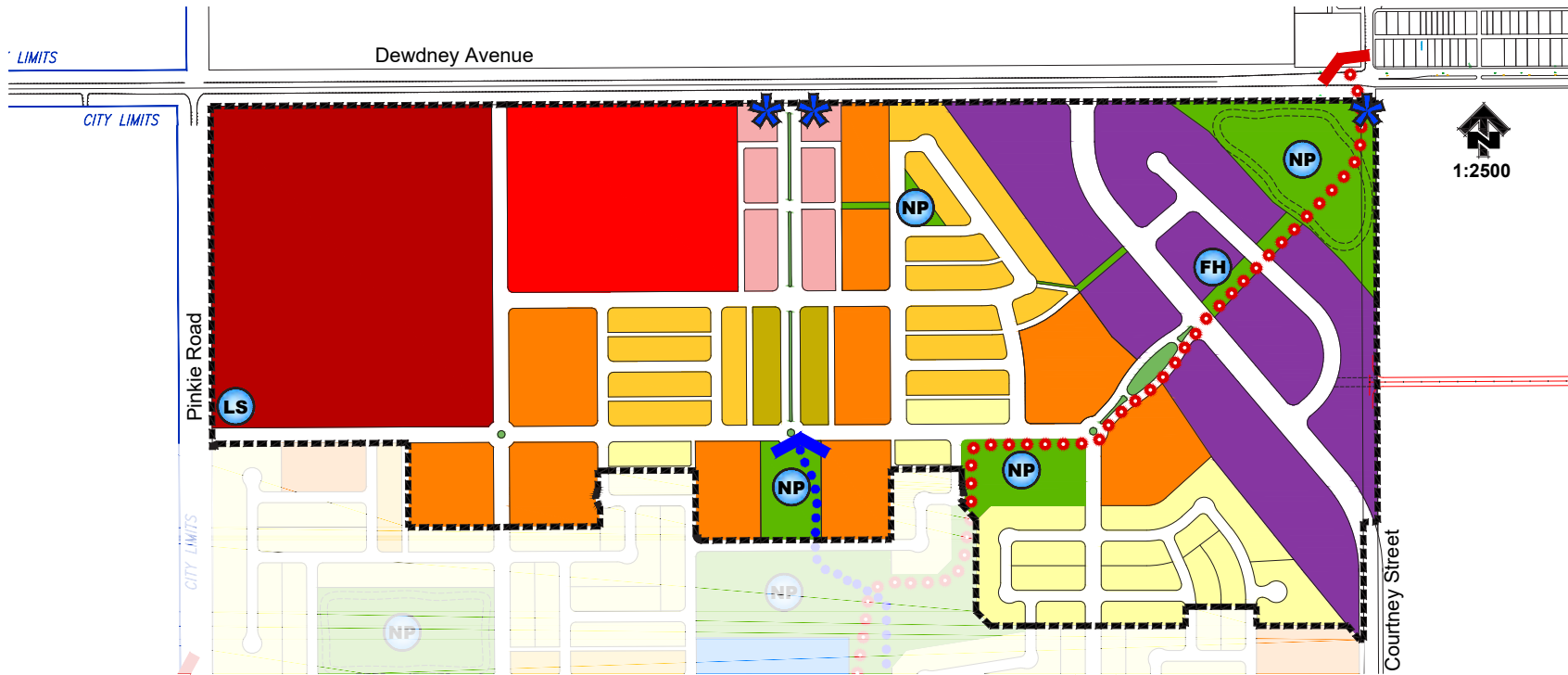
As a condition of subdivision approval, all required transportation, sanitary, water, stormwater, shallow utility servicing, and required park improvements shall be outlined in a development agreement negotiated between the City and developer. Upon execution of such agreement, all required infrastructure shall be implemented by the developer in accordance with the terms of such agreement.



Appendix A

- **Detailed Land-Use Plan**
- **Anticipated Zoning**
- **Servicing Plans**
 - Water Servicing
 - Sanitary Servicing
 - Catchment Area Concept
 - Storm Servicing Concept
- **Circulation Plan**
- **Phasing Plan**

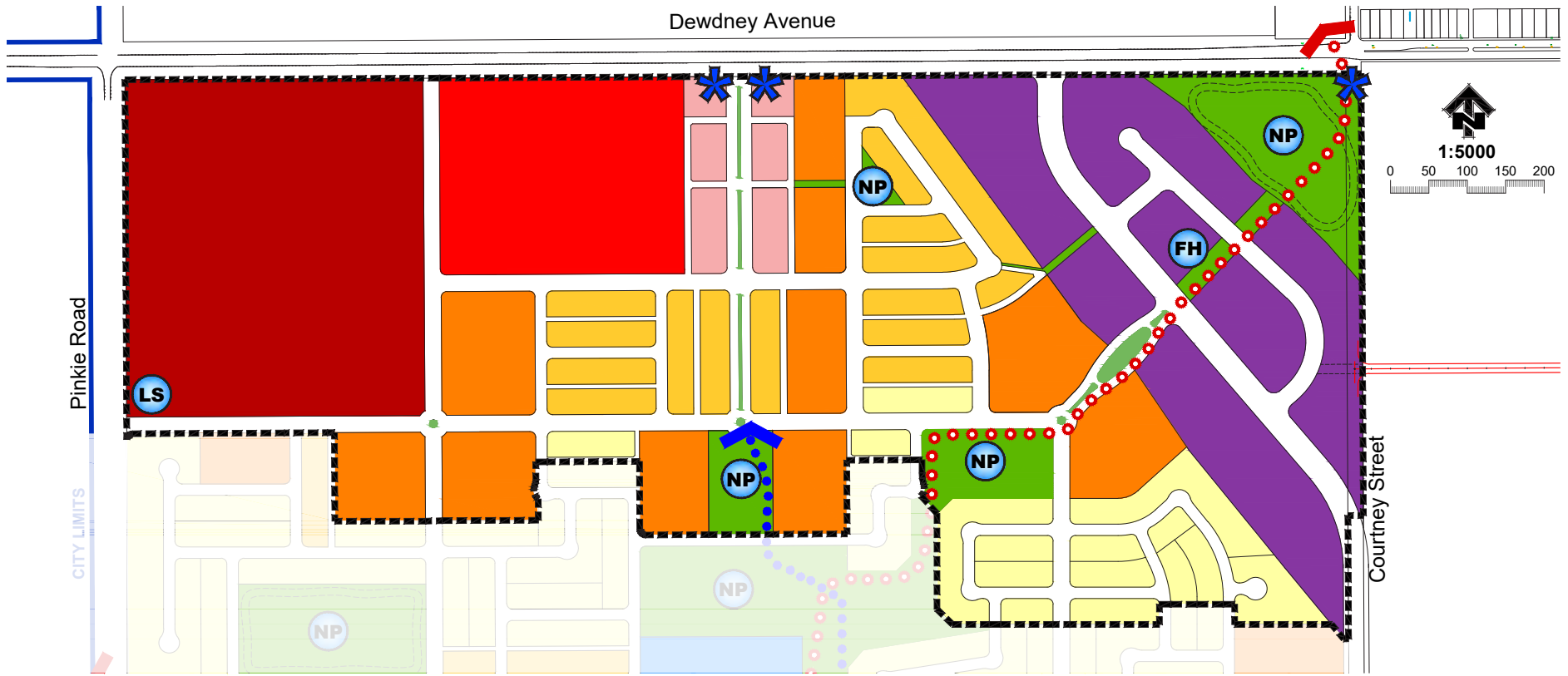




Legend

	Phase 1 Boundary	96.71 ha± (238.96 ac±) (100.0%)		Prestige Industrial	14.85 ha± (36.71 ac±) (15.4%)	
	Large Format Retail	17.25 ha± (42.61 ac±) (17.8%)		Municipal Reserve	7.38 ha± (18.23 ac±) (7.6%)	
	Community Retail	8.25 ha± (20.39 ac±) (8.5%)		Roads	16.42 ha± (40.57 ac±) (17.0%)	
	Main Street Retail	2.31 ha± (5.71 ac±) (2.4%)		Lanes	1.53 ha± (3.78 ac±) (1.6%)	
	High Density Residential	13.80 ha± (34.10 ac±) (14.3%)		Neighbourhood Park		Approximate Fire Hall Location
	Medium Density Residential	6.81 ha± (16.82 ac±) (7.0%)		Entry Feature		Approximate Lift Station Location
	Low Density Residential	6.86 ha± (16.96 ac±) (7.1%)		Devonian Pathway		
	Live Work Residential	1.25 ha± (3.08 ac±) (1.3%)		Local Pathway		

Detailed Land-Use Plan










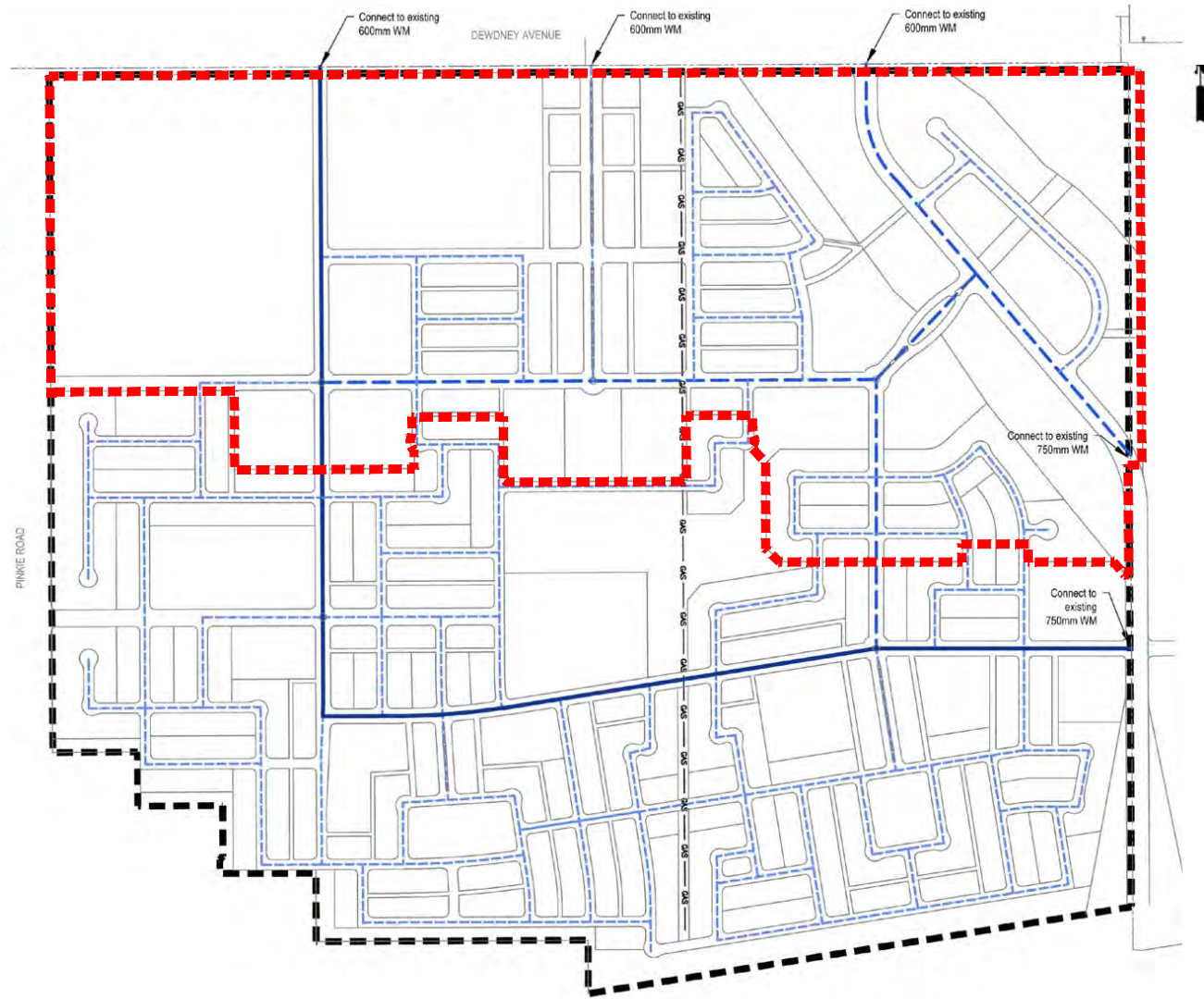
Legend		
	Phase 1 Boundary	96.71 ha± (238.96 ac±) (100.0%)
	Major Arterial Commercial (MAC) or Designated Shopping Centre Zone (DSC)	17.25 ha± (42.61 ac±) (17.8%)
	Major Arterial Commercial (MAC) or Designated Shopping Centre Zone (DSC)	8.25 ha± (20.39 ac±) (8.5%)
	Direct Control District (DCD)	2.31 ha± (5.71 ac±) (2.4%)
	Residential Multiple Housing Zone (R6)	13.80 ha± (34.10 ac±) (14.3%)
	Medium Density Residential Zone (R5)	8.06 ha± (19.90 ac±) (8.3%)
	Residential Detached Zone (R1) or Direct Control District (DCD)	6.86 ha± (16.96 ac±) (7.1%)
	Prestige Industrial Service Zone (IP)	14.85 ha± (36.71 ac±) (15.4%)
	Public Service Zone (PS)	7.38 ha± (18.23 ac±) (7.6%)
	Roads	16.42 ha± (40.57 ac±) (17.0%)
	Lanes	1.53 ha± (3.78 ac±) (1.6%)
	Approximate Fire Hall Location	
	Approximate Lift Station Location	
	Neighbourhood Park	
	Entry Feature	
	Devonian Pathway	
	Local Pathway	

Anticipated Zoning









Legend

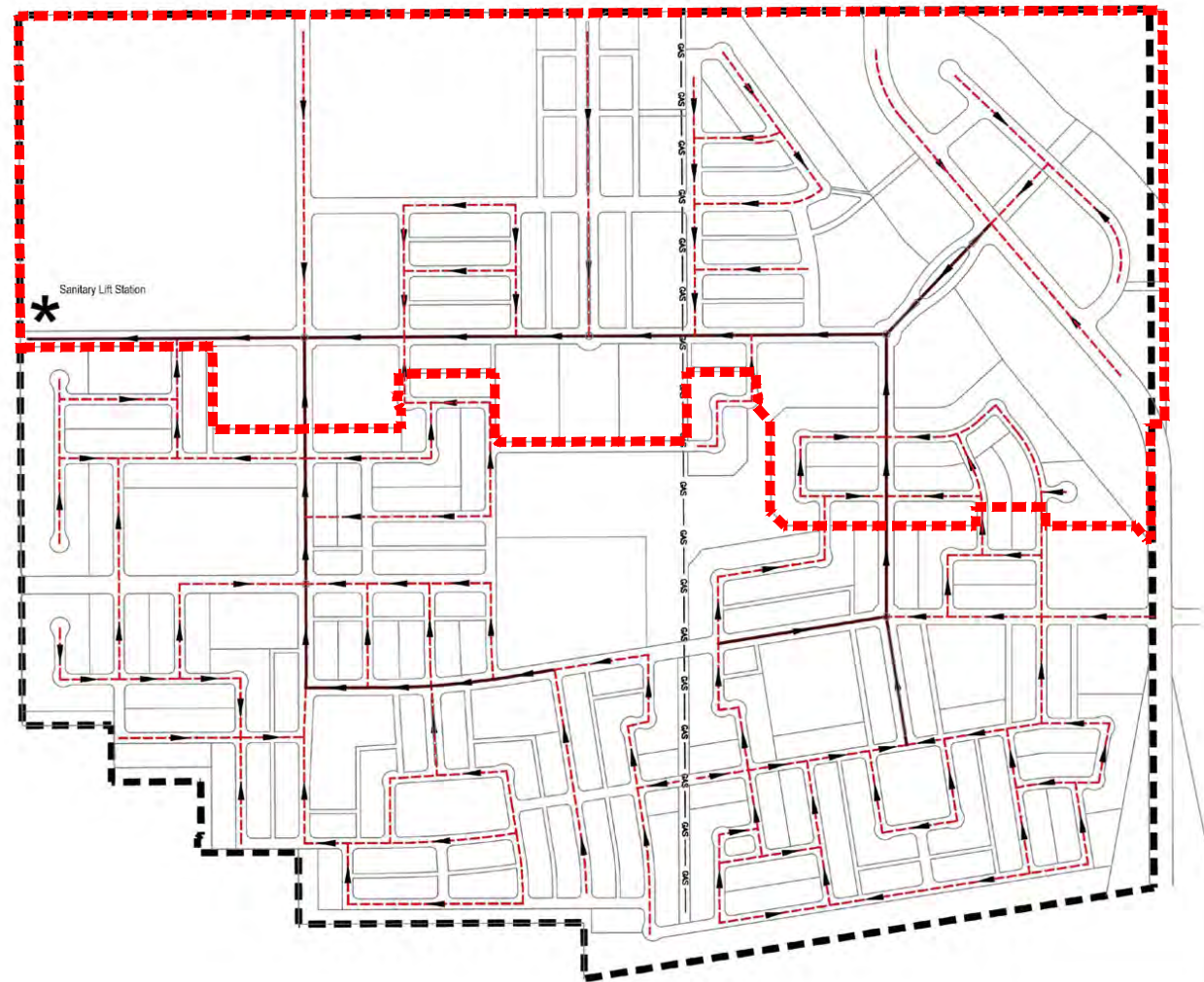
- Proposed 200mm Water 
- Proposed 250mm Water 
- Proposed 300mm Water 
- Existing Water line 
- Existing Gas Line 
- Subject Lands 
- Phase 1 Boundary 



Water Servicing

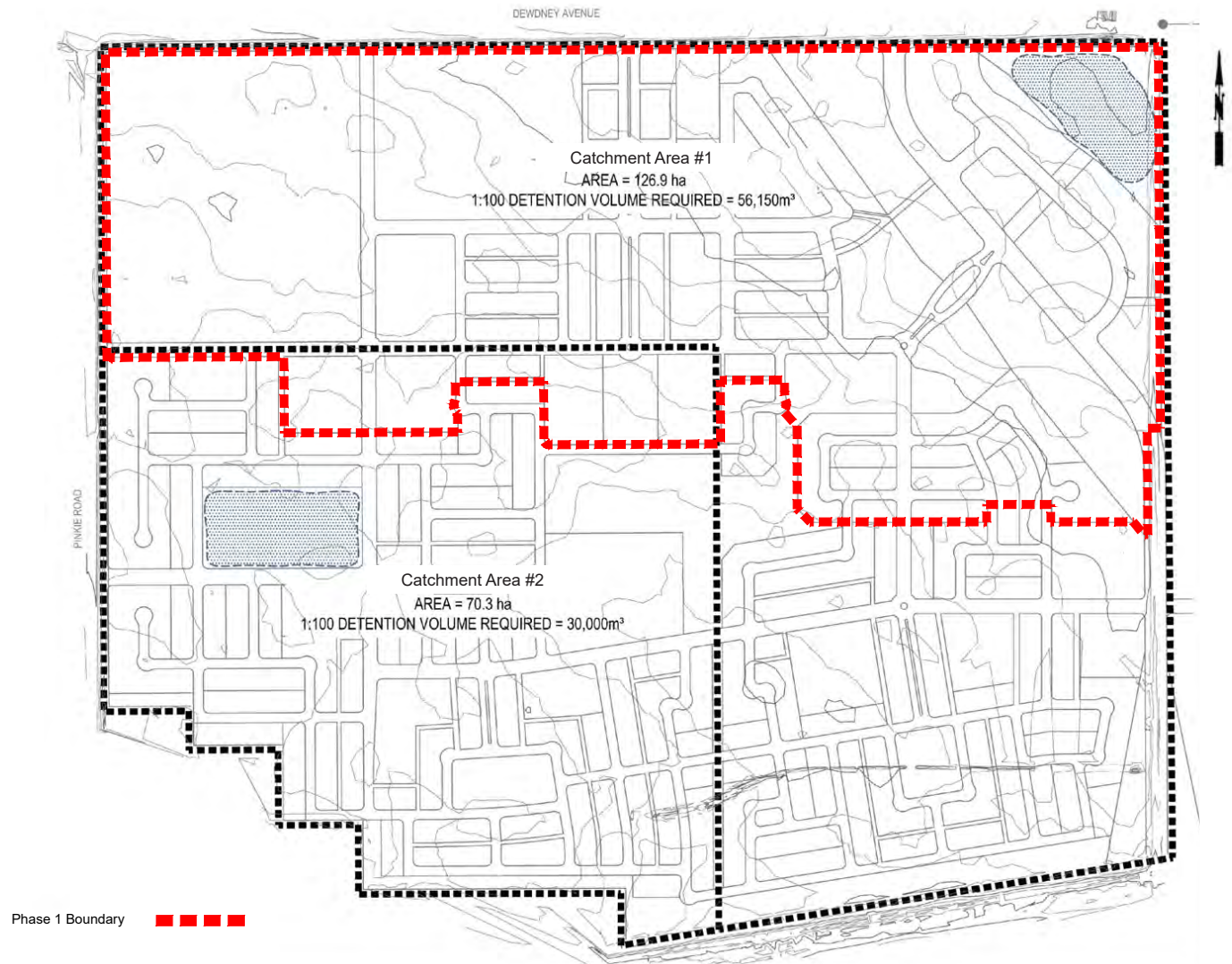
Legend

- Proposed 200mm Sanitary Sewer 
- Proposed 250mm Sanitary Sewer 
- Existing Gas Line 
- Direction of Flow 
- Subject Lands 
- Phase 1 Boundary 





Sanitary Servicing

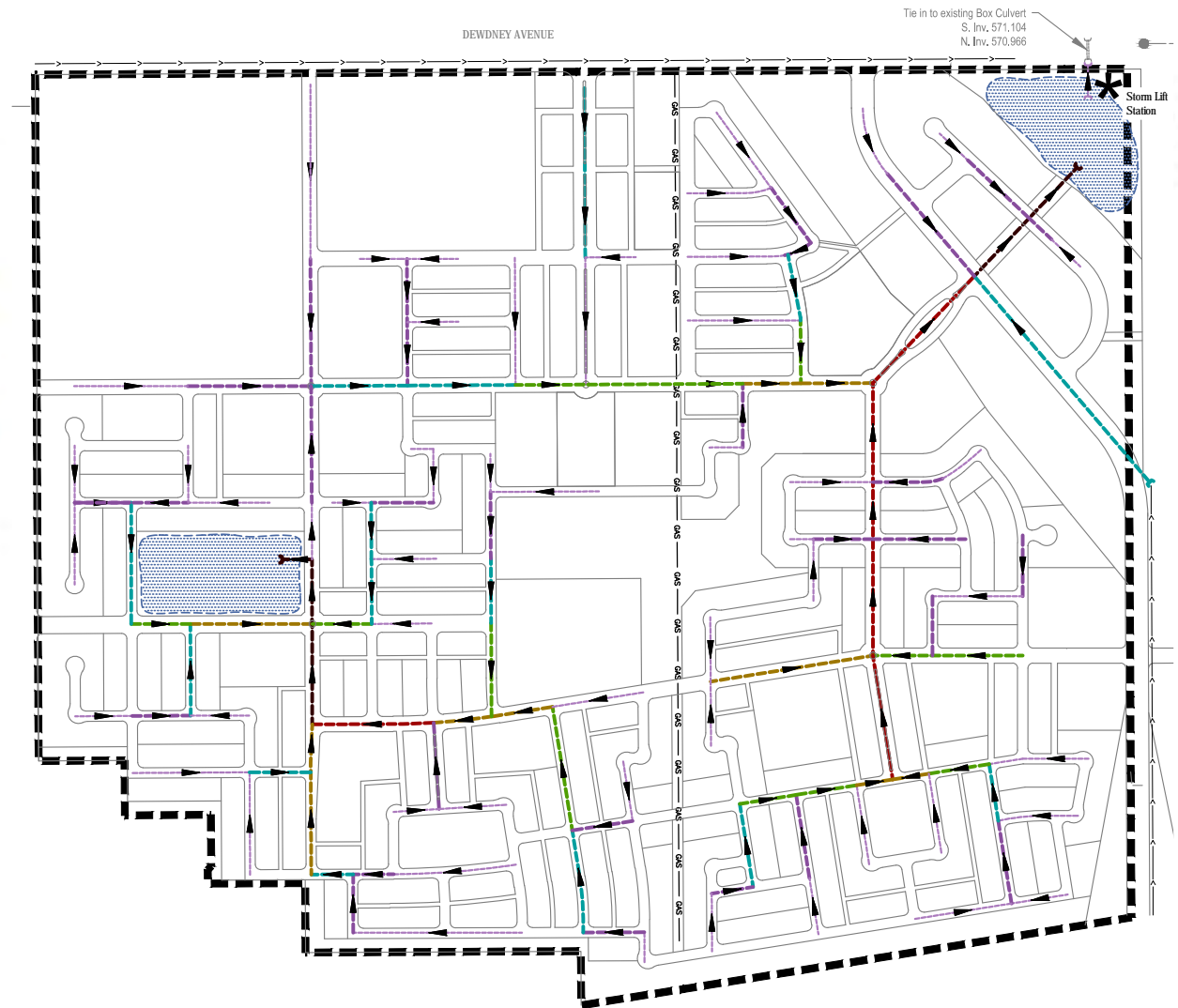




Catchment Area Concept

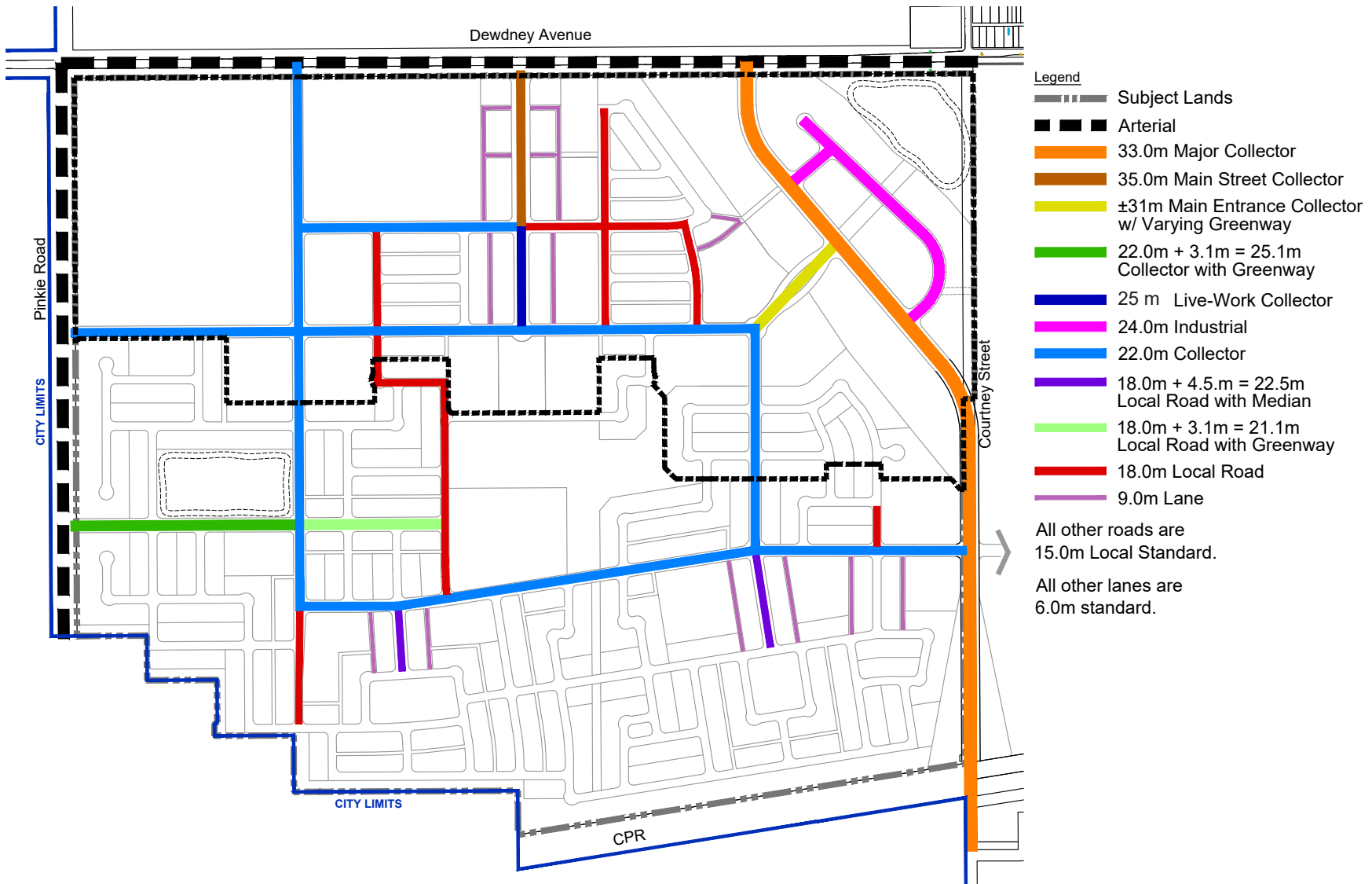
Legend

- Proposed 300mm Storm Sewer 
- Proposed 375mm Storm Sewer 
- Proposed 450mm Storm Sewer 
- Proposed 600mm Storm Sewer 
- Proposed 750mm Storm Sewer 
- Proposed 900mm Storm Sewer 
- Proposed 1050mm Storm Sewer 
- Proposed Ditch Drainage 
- Detention Pond 
- Existing Gas Line 
- Direction of Flow 
- Subject Lands 
- Phase 1 Boundary 

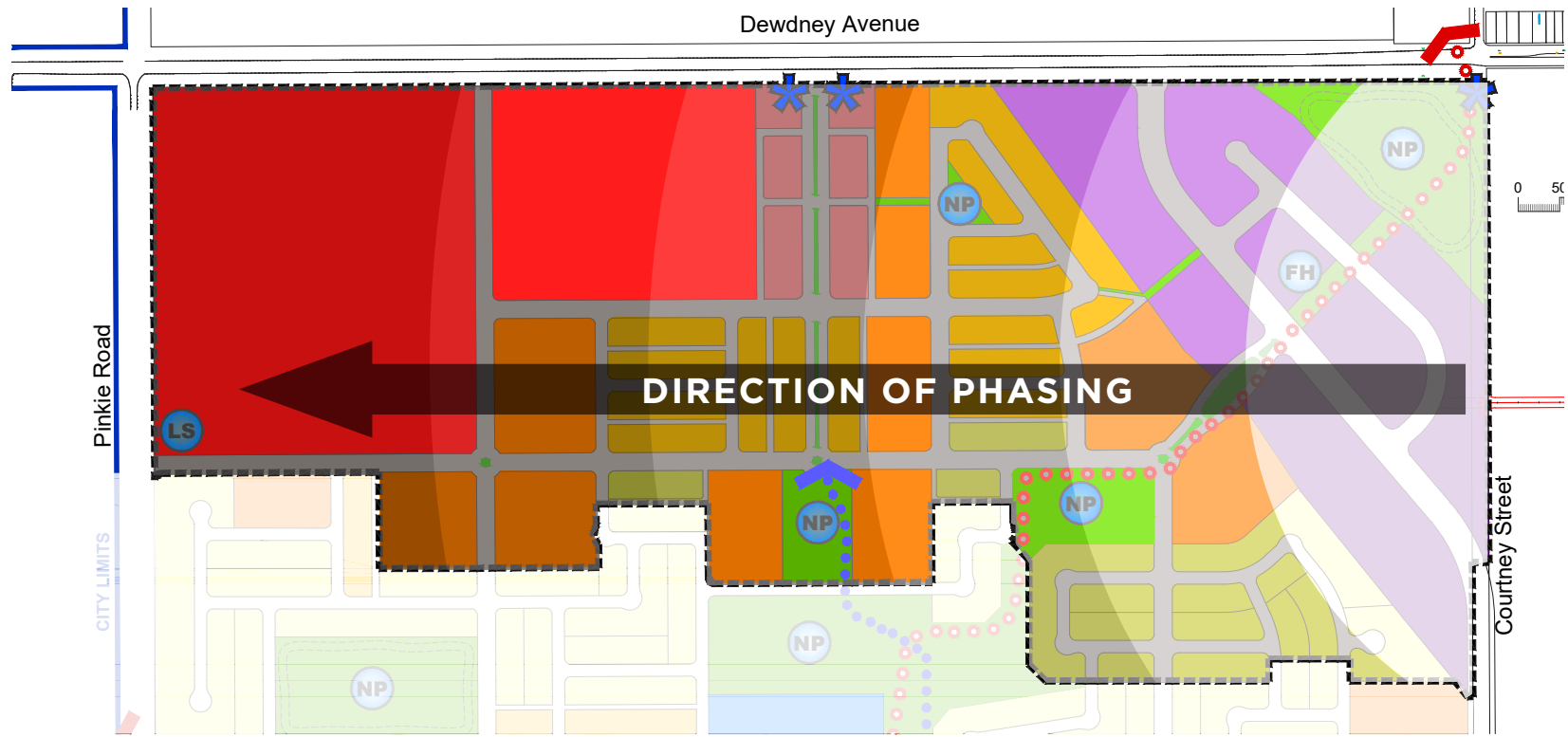


Storm Servicing Concept





Circulation Plan



Legend		
	Phase 1 Boundary	96.71 ha± (238.96 ac±) (100.0%)
	Major Arterial Commercial (MAC) or Designated Shopping Centre Zone (DSC)	17.25 ha± (42.61 ac±) (17.8%)
	Major Arterial Commercial (MAC) or Designated Shopping Centre Zone (DSC)	8.25 ha± (20.39 ac±) (8.5%)
	Direct Control District (DCD)	2.31 ha± (5.71 ac±) (2.4%)
	Residential Multiple Housing Zone (R6)	13.80 ha± (34.10 ac±) (14.3%)
	Medium Density Residential Zone (R5)	8.06 ha± (19.90 ac±) (8.3%)
	Residential Detached Zone (R1) or Direct Control District (DCD)	6.86 ha± (16.96 ac±) (7.1%)
	Prestige Industrial Service Zone (IP)	14.85 ha± (36.71 ac±) (15.4%)
	Public Service Zone (PS)	7.38 ha± (18.23 ac±) (7.6%)
	Roads	16.42 ha± (40.57 ac±) (17.0%)
	Lanes	1.53 ha± (3.78 ac±) (1.6%)
	Approximate Fire Hall Location	
	Approximate Lift Station Location	
	Neighbourhood Park	
	Entry Feature	
	Devonian Pathway	
	Local Pathway	

Phasing

