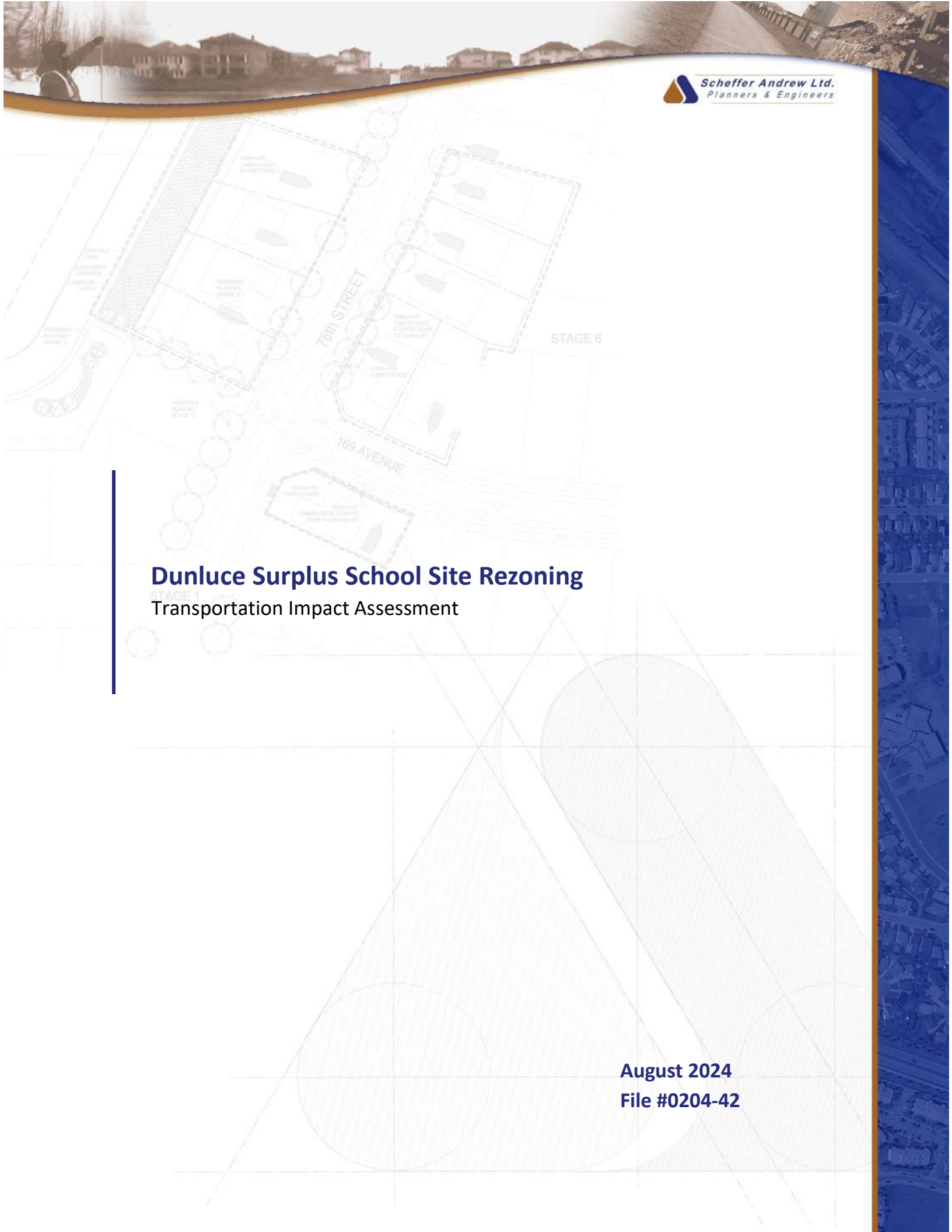




Dunluce Surplus School Site Rezoning

Transportation Impact Assessment

August 2024
File #0204-42

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1 Introduction

The City of Edmonton, Real Estate – Land Development group (CoE-LD) is completing assessments at surplus school sites with the intent of rezoning and acquiring development approvals for future affordable housing facilities. As part of the rezoning and development approval process the City has retained Scheffer Andrew Ltd. to complete a Transportation Impact Assessment (TIA) for the Dunluce surplus school site proposed rezoning.

1.1 Proposed Development

The Dunluce Neighbourhood is located in North Edmonton, bounded by 167 Avenue to the north, 153 Avenue to the south, Castle Downs Road to the east, and 127 Street to the west. When the neighbourhood was originally planned, several sites were identified for schools.

In particular, a site along Dunluce Road near Warwick Road was identified as a school site. However, the local school boards have declared this site surplus, and have identified that this site will not be required for a school in the future. As a result, the City of Edmonton is seeking to rezone and develop this parcel to provide additional housing units in the neighbourhood.

The proposed housing site examined in this TIA is located on the west edge of Herb Link Park.

The subject property is located northeast of the 161 Avenue and Dunluce Road intersection at municipal address 12030 – 163 Avenue NW. The proposed development is adjacent to Herb Link Park which includes soccer fields and baseball diamonds.

Dunluce School, St. Lucy Catholic School, and Dunluce Community League are located about 500m southeast.

The property is proposed to be zoned as RM h.16.0 – Medium Scale Residential.

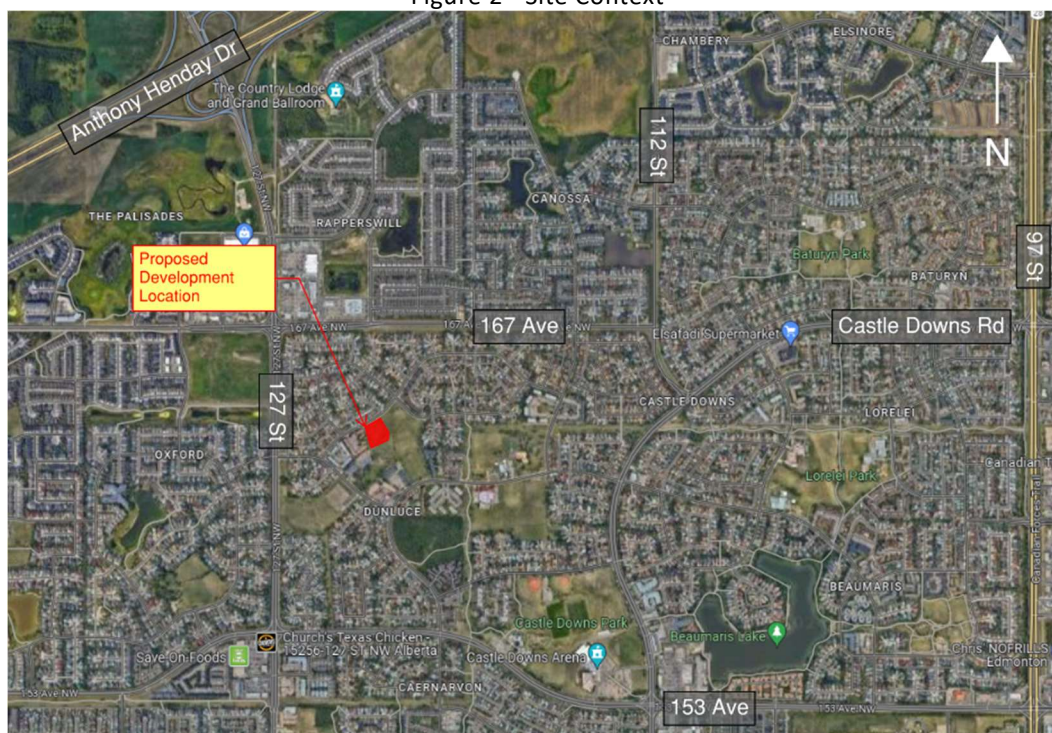
The proposed site location is identified in **Figure 1** below. The site rezoning plan is included in **Appendix A**.

Figure 1 - Proposed Development Location



Context within the City of Edmonton is provided in **Figure 2** below.

Figure 2 - Site Context



As noted above, the Dunluce surplus school site is proposed as the RM h16.0 – Medium Scale Residential Zone. The City's Land Use Bylaw identified the minimum density for this zone at 45 dwelling units per hectare. The total area of the proposed development is 1.00 ha and therefore the minimum development potential is 45 units. CoE-LD has completed a market analysis and other studies to identify a range of development concepts that are feasible for this site.

The proposed RM h16.0 zone will allow for townhouses or low-rise apartments. Based on the range of built forms, COE-LD has identified a minimum development concept of 45 townhouses and a maximum development concept of 150 low rise apartment units (4 stories). At this time, a final development concept has not been developed, but the total number of units should fall within the range identified.

This TIA considers and reviews both the minimum (45) and maximum (150) proposed dwelling units to identify future transportation impacts to the surrounding neighbourhood.

1.2 Study Scope

Scheffer Andrew Ltd. (SAL) met with Greg Ablett and Marie Rudiak of Planning Coordination | Development Services to determine a scope for this Transportation Impact Assessment (TIA). Generally, this TIA consists of the following tasks:

- Start-up meeting with CoE-LD.
- Scoping meeting with COE Development Services.
- Traffic Counts (48 hours), at intersection of 161 Avenue and Dunluce Road.

- Background information review. Including site servicing study, proposed development, existing ASPs/NSPs, previous or adjacent TIAs, existing traffic volume information.
- Site review to ascertain existing vehicular, pedestrian, bicycle, and other access modes.
- Trip generation, distribution, assignment for proposed development (2 scenarios).
- Traffic volume assessment and analysis for intersection of 161 Avenue and Dunluce Road.
- Assessment and recommendations for vehicular, pedestrian, cycling, and transit access.
- Identification of any upgrades or improvements that will be required with site development.
- TIA report summarizing the above.
- Coordination, responses, and updates to the report as required/requested based on LDA comments.

This study will evaluate the subject intersection under existing 2024 conditions. As such two scenarios will be evaluated:

- 2024 background traffic only.
- 2024 combined (background and development) traffic for minimum built form (Case 1).
- 2024 combined (background and development) traffic for maximum built form (Case 2).

1.3 Roadway Access

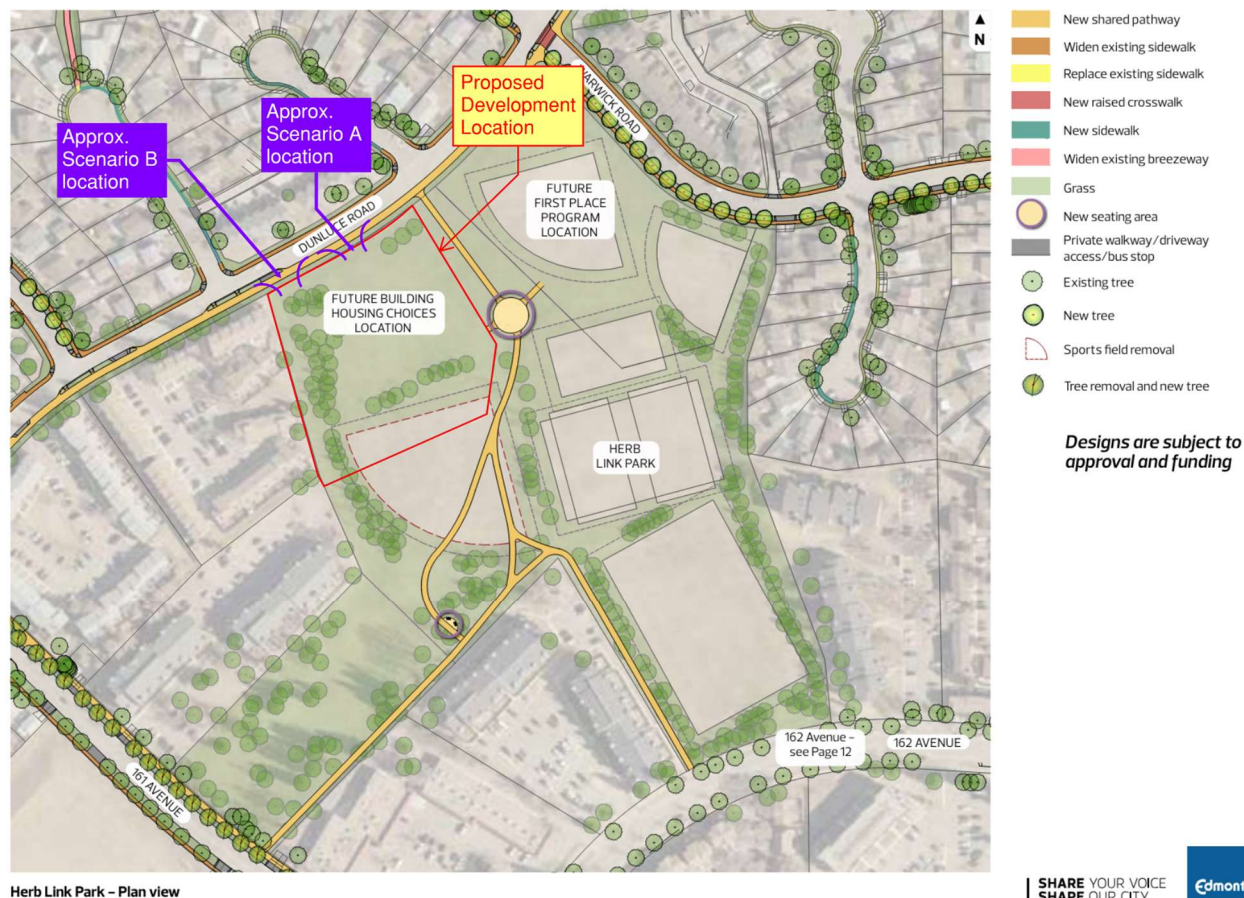
The proposed development is assumed to have vehicular access from Dunluce Road approximately 280m north of 161 Avenue. This location is consistent with the options discussed in the site servicing study. Site access Scenario A and Scenario B in the site servicing study are both along Dunluce Road directly across from the existing row homes. The Scenario B access is approximately 30m west of Scenario A, as well as 20m east of an existing bus stop pad with a bus shelter. For Scenario A, no existing infrastructure would need to be relocated.

For Scenario B, as noted by the site servicing study, the bus shelter could potentially obstruct driver sightlines while using the access. To avoid this issue the bus stop and shelter should be relocated if Scenario B is pursued. However, a curb extension and bus pad are planned at the Dunluce Road cul-de-sac intersection to the west under the Dunluce Neighbourhood Renewal. These renewals likely make Scenario B not feasible. **Figure 3** shows the two access scenarios in relation to the Dunluce Neighbourhood Renewal concept design. As indicated in this figure, Scenario B falls within the proposed curb extension.

For the purpose of this study, we have assumed access will be developed to Dunluce Road at the Scenario A location, noting that the exact location will be confirmed through the development permit process.

Figure 3 - Neighbourhood Renewal Herb Link Park Concept

Herb Link Park



2 Existing Infrastructure & Conditions

2.1 Existing Road Network Conditions

2.1.1 161 Avenue

161 Avenue is a two-way undivided, paved, neighbourhood collector roadway with an approximate width of 11.5m. There is boulevard sidewalk and parking permitted on both sides. The speed limit is not posted, so the speed limit is the default 40km/h. At its west end 161 Avenue intersects 127 Street at a signalized intersection. 161 Avenue ends at a T-intersection with 121 Street to the east. 161 Avenue runs east-west about 280m south of the proposed site.

2.1.2 Dunluce Road

Dunluce Road is a two-way, undivided, paved neighbourhood collector roadway. It is approximately 11.5m wide with monolithic sidewalks and parking permitted on both sides. The speed limit is not posted, so the speed limit is the default 40km/h. Dunluce Road runs northeast-southwest along the northwest edge of

the proposed development site. To the south it ends at a T-intersection with 161 Avenue, and to the northeast it ends at a T-intersection with 115 Street.

2.1.3 161 Avenue & Dunluce Road Intersection

The 161 Avenue and Dunluce Road intersection is a yield-controlled T-intersection with Dunluce Road as the minor yield-controlled approach and 161 Avenue free through the intersection. Dunluce Road terminates at this intersection. Dunluce Road has a shared left/right turn lane, and 161 Avenue has a shared left/through lane on the west approach and a shared right/through lane on the east approach. Sightline conditions at this intersection appear to be adequate.

2.2 Existing Neighbourhood Context

The City's market analysis notes, "the Dunluce Site is located within a mature low to medium density residential neighbourhood comprised of single detached, semi-detached, row housing, and low-rise apartment buildings." Specifically, the development directly adjacent to the proposed development is comprised of low-density residential housing as well as higher density multi-family sites.

The proposed development is adjacent to Herb Link Park which include soccer fields and baseball diamonds.

Dunluce School, St. Lucy Catholic School, and Dunluce Community League are located east on 162 Avenue about 500m from the proposed development site.

2.3 Existing Public Transit Conditions

There are several bus stops adjacent to the proposed development along Dunluce Road and 161 Avenue. Route 124 runs on 161 Avenue and Routes 109 and 150X run on Dunluce Road. School Special Bus Routes also run along 161 Avenue and Dunluce Road, specifically, Routes 613 and 683. Route 613 starts at 157 Avenue and 121 Street and services the following schools: Rosslyn, Queen Elizabeth, Killarney, St. Cecilla, and Archbishop O'Leary. Route 683 starts at Castle Downs Transit Centre and services Ross Sheppard and Archbishop MacDonald.

A bus stop for Routes 109, 150X, 613, and 683 is nearest to the proposed development (within 50m of the furthest proposed site access), whereas Route 124 is within 400m.

Figure 4 shows the adjacent ETS bus day map.

Figure 4 - Adjacent ETS Bus Day Map

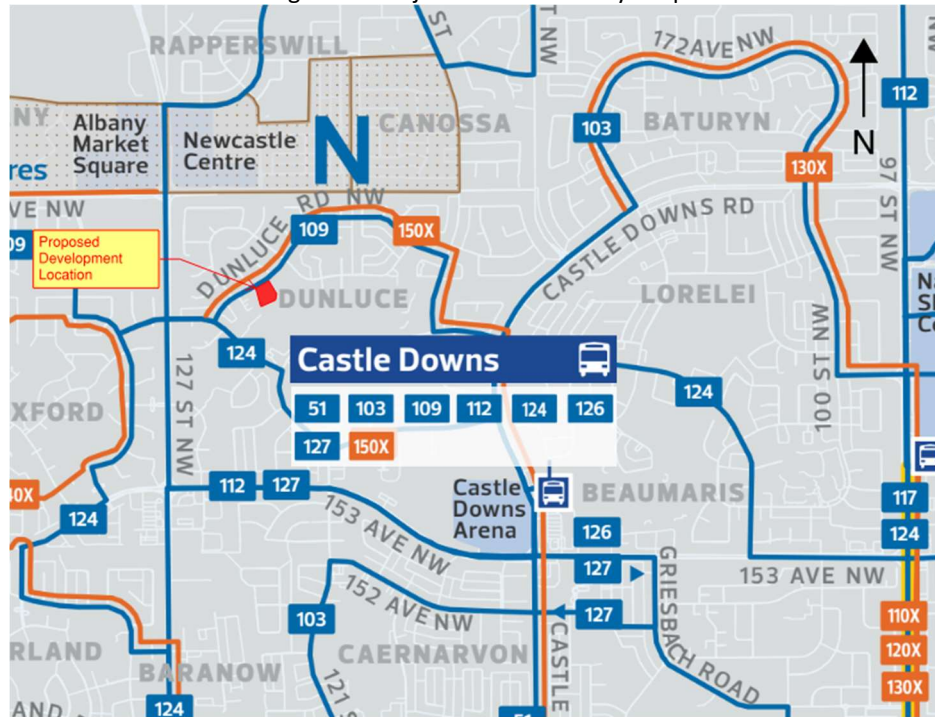


Figure 5 shows the ETS bus late night/owl map.

Figure 5 - Adjacent ETS Late Night/Owl Map

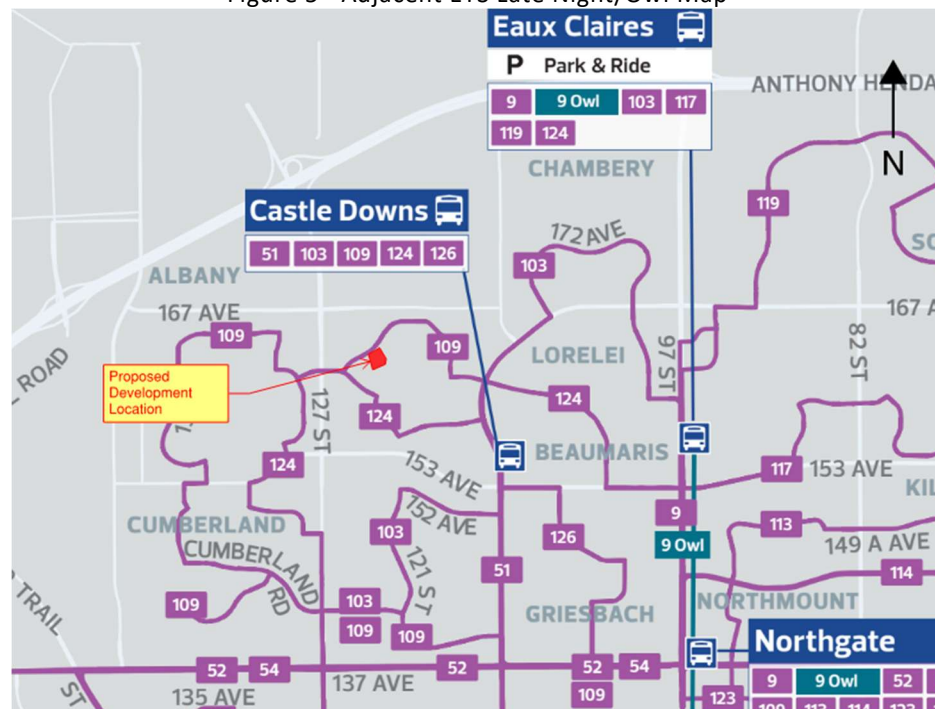


Figure 6 shows the bus stop locations nearest to the proposed development.

Figure 6 - Nearest Bus Stop Locations



2.4 Historical City of Edmonton Traffic Count Review

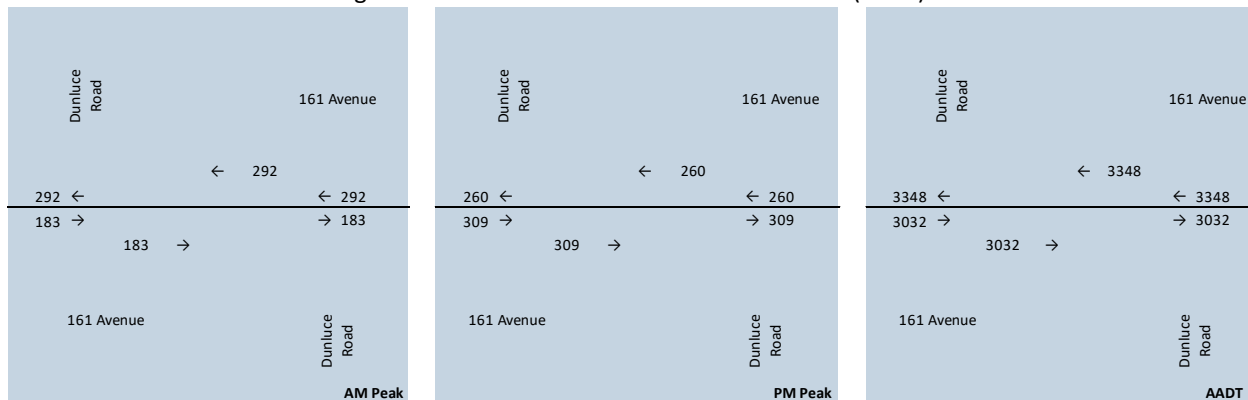
The City of Edmonton (COE) manages a traffic count database (intersection turning movement and link volume data) for the City's roadway network. The most recent and relevant traffic count data from this COE database was reviewed as presented in the following section.

A link volume diagram was created for 161 Avenue west of Dunluce Road.

2.4.1 161 Avenue West of Dunluce Road

Figure 7 shows the average AM Peak, PM Peak, and AADT link volumes for 161 Avenue west of Dunluce Road in 2016, extracted from the City of Edmonton traffic count database.

Figure 7 - 161 Avenue West of Dunluce Road (2016)



From the data above, it is noted that in 2016 161 Avenue had an AADT in the range of 6400 vpd west of Dunluce Road. 161 Avenue west of Dunluce Road is the most likely route from the proposed development to an arterial roadway (127 Street).

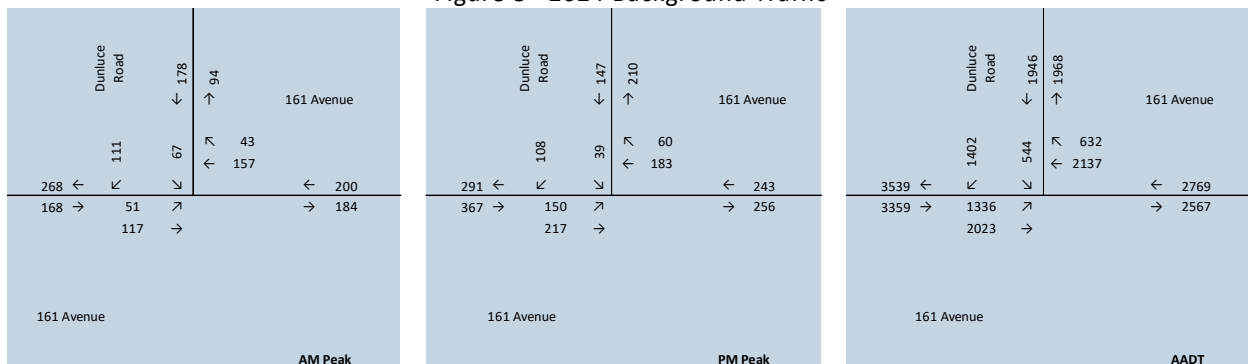
3 Traffic Projections

The property is proposed to be zoned as RM h.16.0 – Medium Scale Residential with a minimum density of 45 dwelling units per hectare. The City is proposing two built form cases. Case 1 is the minimum development concept of 45 townhouses and Case 2 is the maximum development concept of 150 low rise apartment units (4 stories). The following sections present the background, development, and combined traffic for these two cases under 2024 existing conditions.

3.1 2024 Background Traffic – Traffic Count

On March 20-22, 2024, a traffic count was conducted by our project team at the intersection of 161 Avenue and Dunluce Road to obtain current data southwest of the proposed development. The 48-hour count was completed using video analysis. The AM Peak, PM Peak, and AADT turning diagrams for the 161 Avenue/Dunluce Road intersection from March 20-22, 2024, are shown in **Figure 8** below. A summary of the traffic count data is included in **Appendix B**.

Figure 8 - 2024 Background Traffic



The 2024 count shows that the AADT on 161 Avenue is in the range of 6900 vpd and the AADT on Dunluce Road is in the range of 3920 vpd.

The subject property is northeast of this intersection with proposed site access from Dunluce Road.

3.2 Development Traffic

The subject surplus school site is proposed to be rezoned as RM h16.0 Medium Scale Residential with a minimum density of 45 dwelling units per hectare. The total area is 1.00 ha. The minimum built form is 45 townhouse units, and the maximum built form is 150 low rise apartment units (4 stories).

Trip generation was calculated for both the minimum and maximum built form scenarios (Case 1 and Case 2). Trip generation rates were sourced from *Table D.1 City of Edmonton 2013 Trip Generation Rates – Residential Land Uses* from the COE 2016 TIA guidelines. The *RF5 – Row Housing* rates were used for Case 1, and the *RA7 & RA8 – Apartment Housing* rates were used for Case 2.

The calculation of the estimated trips generated by the proposed site are described further below.

3.2.1 Trip Generation

Trip Rates

Table 1 below identifies the applicable trip generation rates from the COE 2016 TIA guidelines for Case 1 and Case 2 of this development. Note that the 'Note' column identifies where the COE 2016 TIA guidelines obtained these values.

Table 1 - Minimum & Maximum Built Form Trip Generation Rates

Land Use	Time Period	Rate (trips/du)	In (%)	Out (%)	Notes
Case 1: RF5 - Row Housing (Minimum Built Form)	AM Peak Hour	0.46	21%	79%	ITE LUC 221
	PM Peak Hour	0.58	65%	35%	ITE LUC 221
	Daily	6.59	50%	50%	ITE LUC 221
Case 2: RA7 & RA8 - Apartment Housing (Maximum Built Form)	AM Peak Hour	0.34	17%	83%	Measured
	PM Peak Hour	0.40	63%	37%	Measured
	Daily	5.81	50%	50%	ITE LUC 230

Projected trips generated by the proposed development were calculated using the estimated number of dwelling units for the minimum and maximum built forms (Case 1 & Case 2), and the rates presented above. In addition, it was determined from data presented in the 2016 Census – Population by Mode of Transportation (Neighbourhood/Ward) dataset available in the City's Open Data Portal that of the total responses received for Dunluce, 15% fell under the walk, bicycle, and public transit categories. Therefore, a 15% mode split reduction was used to adjust the rates shown in **Table 1** above. The unadjusted and adjusted calculated trips are shown in **Table 2**.

Table 2 - Trip Generation for Proposed Site (Minimum & Maximum Built Forms)

Trip Generation for Proposed Site (Min & Max Built Forms)															
				AADT				AM				PM			
	Unit Type	Units	Mode Split Reduction	Rate	Trips	In	Out	Rate	Trips	In	Out	Rate	Trips	In	Out
Case 1: Townhouses (Minimum Built Form)	/dwelling	45	0%	6.59	297	148	148	0.46	21	4	16	0.58	26	17	9
Adjusted Case 1: Townhouses (Minimum Built Form)	/dwelling	45	15%	5.60	252	126	126	0.39	18	4	14	0.49	22	14	8
Case 2: Low Rise Apartments (4 Stories) (Maximum Built Form)	/dwelling	150	0%	5.81	872	436	436	0.34	51	9	42	0.40	60	38	22
Adjusted Case 2: Low Rise Apartments (4 Stories) (Maximum Built Form)	/dwelling	150	15%	4.94	741	370	370	0.29	43	7	36	0.34	51	32	19

Considering the mode split reduction, the minimum built form (Case 1) is projected to generate an AADT of 252, an AM Peak of 18, and a PM Peak of 22. The maximum built form (Case 2) is projected to generate an AADT of 741, an AM Peak of 43, and a PM Peak of 51.

Trip Assignment and Distribution

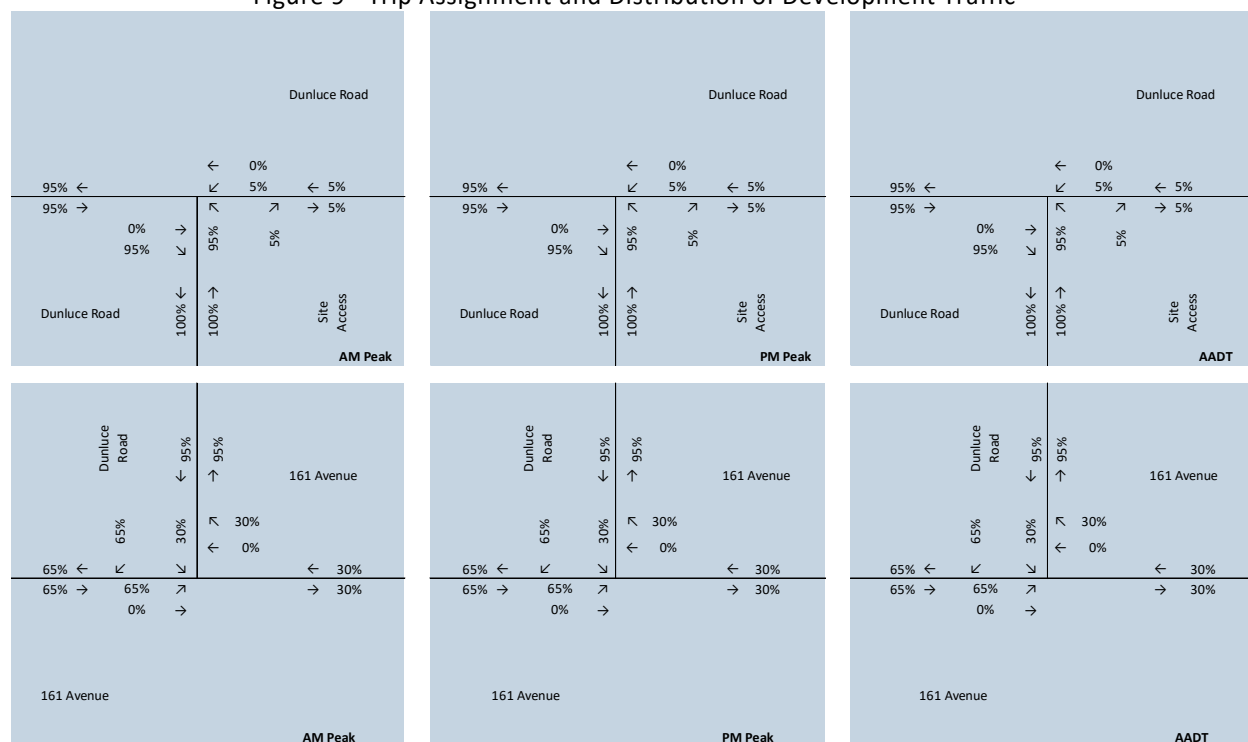
Trip assignment and distribution for future traffic is based on an estimate of where people will be traveling to and from when accessing the development.

As the nearest major arterial connection is southwest of the subject property at the intersection of 127 Street and 161 Avenue, it is anticipated that the majority of the traffic will occur to the southwest. Therefore, it is assumed that 95% of the development traffic will use the 161 Avenue/Dunluce Road intersection, and 5% will travel northeast away from the subject intersection.

The trip assignment and distribution of this 95% at the intersection of 161 Avenue and Dunluce Road is based on the traffic distribution observed during the 2024 count as shown in **Figure 8**. It is assumed that 65% of the development traffic uses the west approach and 30% uses the east approach.

Figure 9 presents the trip assignment and distribution assumptions of the proposed development traffic at the subject intersections.

Figure 9 - Trip Assignment and Distribution of Development Traffic



3.2.2 Projected Development Traffic

Using the trip assignment and distribution percentages in **Figure 9**, the proposed future site generated traffic volumes at the site access and the study intersection for the minimum and maximum built forms (Case 1 and Case 2) were calculated and summarized in **Figure 10** and **Figure 11**.

Figure 10 - Case 1: Minimum Built Form Proposed Development Traffic Volumes

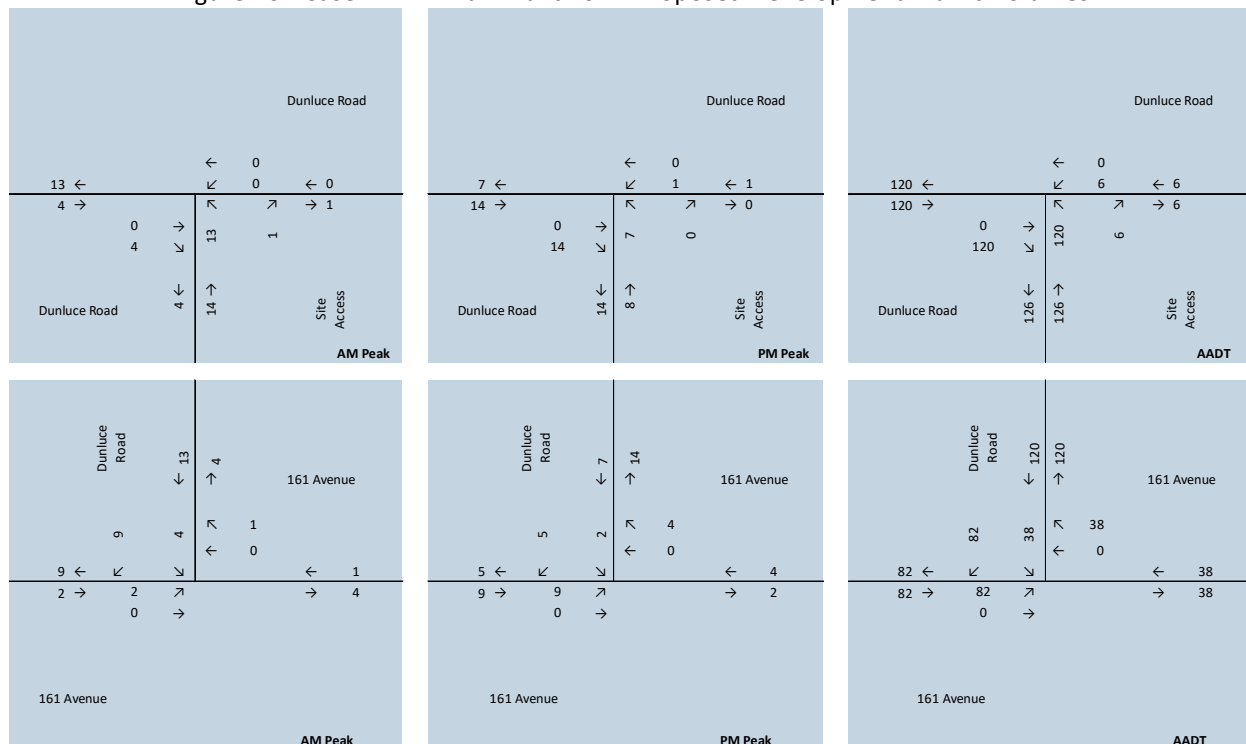
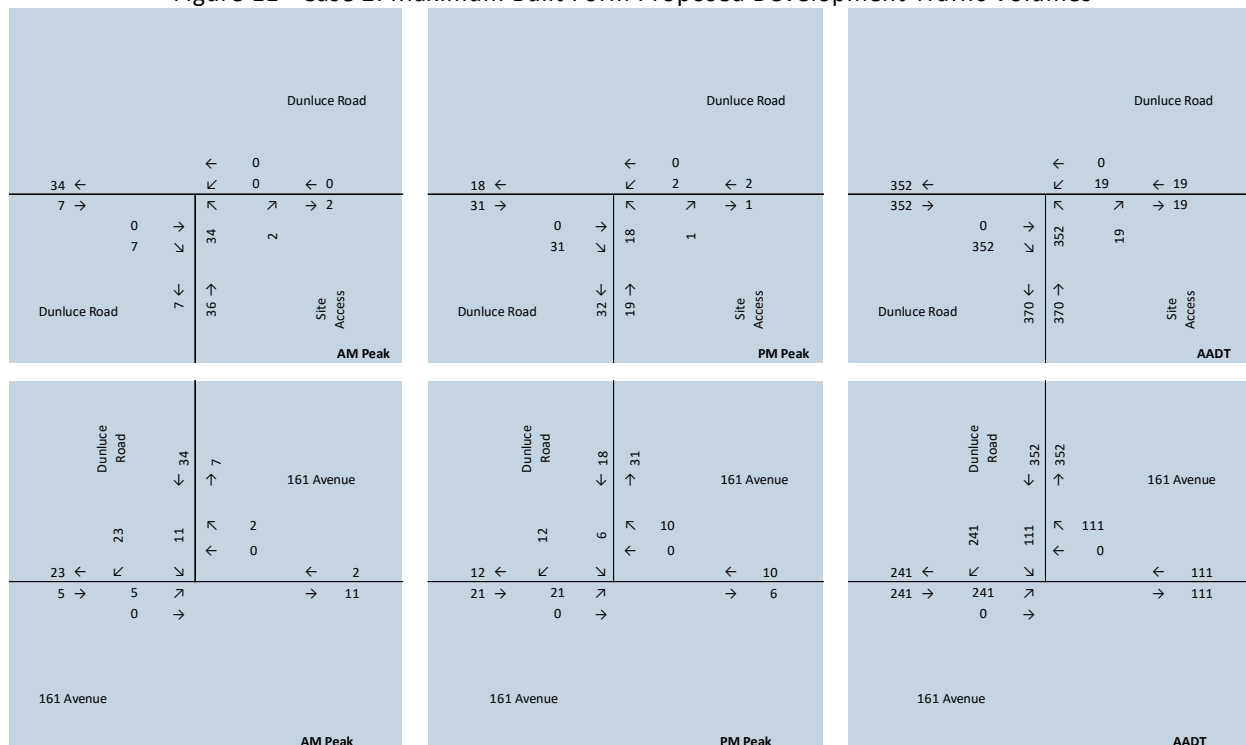


Figure 11 - Case 2: Maximum Built Form Proposed Development Traffic Volumes



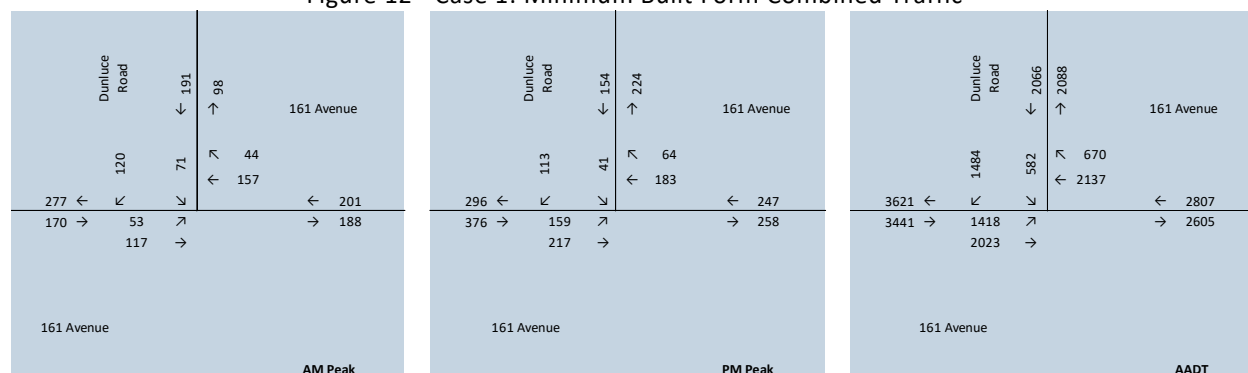
3.3 2024 Combined Traffic

The 2024 background and development traffic, as presented in **Sections 3.1** and **3.2**, respectively, is combined in the following sections for the minimum and maximum built form cases.

3.3.1 Case 1: Minimum Built Form (45 Townhouses)

The 2024 combined traffic volumes for Case 1 are the sum of the 2024 background traffic volumes and the minimum built form development concept (45 townhouses) traffic projections. **Figure 12** presents the estimated 2024 combined traffic volumes for Case 1.

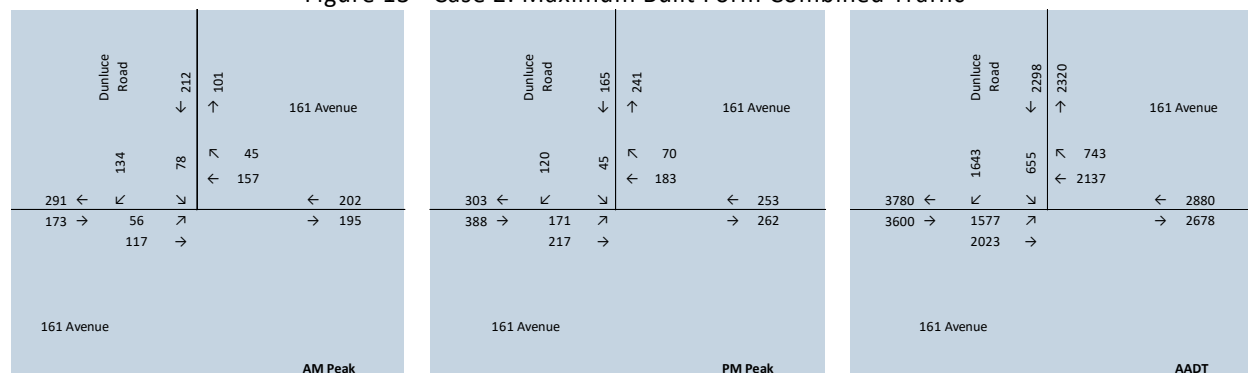
Figure 12 - Case 1: Minimum Built Form Combined Traffic



3.3.2 Case 2: Maximum Built Form (150 Low-Rise Apartment Units)

The 2024 combined traffic volumes for Case 2 are the sum of the 2024 background traffic volumes and the maximum built form development concept (150 low rise Apartment units) traffic projections. Figure 13 presents the estimated 2024 combined traffic volumes for Case 2.

Figure 13 - Case 2: Maximum Built Form Combined Traffic



4 Analysis

A Capacity Analysis using the Highway Capacity Manual (HCM) methodology for the subject intersection has been completed as described in the following sections. A pedestrian network review, cycling network review, public transit review, driveway access review, and parking review have also been completed as shown below.

4.1 Capacity Analysis

A Highway Capacity Manual (HCM) analysis was completed. Synchro Studio was used to perform these calculations to determine intersection delays and levels of service.

Level of Service is based on the estimated average delay per vehicle for all traffic passing through an intersection. A good level of service is a result of a very low average delay; the highest level of service is identified as LOS A. A poor level of service is a result of a large average delay; typically, the lowest level of service is identified as LOS F. The level of service categories also vary depending on whether an intersection is signalized or stop- or yield- controlled. The Highway Capacity Manual justifies this difference by noting that drivers stopped at a signal light will have more tolerance for delays because their perception is that eventually they will get their turn, even with a longer wait. Poor level of service can contribute to drivers taking risks and proceeding unsafely into an intersection. **Table 3** identifies the level of service criteria for intersections.

Table 3 - Level of Service Definition

Level of Service	Average Signalized Control Delay per Vehicle (s)	Average Stop Control Delay per Vehicle (s)
A	less than 10	less than 10
B	10 – 20	10 – 15
C	20 – 35	15 – 25
D	35 – 55	25 – 35
E	55 – 80	35 – 50
F	greater than 80	greater than 50

The volume-to-capacity ratio of an intersection describes the extent to which the traffic volumes can be accommodated by the theoretical physical capacity of the road configuration and traffic control. A v/c ratio less than 0.9 indicates that there is generally sufficient capacity to accommodate the traffic on the approach or at the intersection. A value between 0.9 and 1.0 suggests unstable operations and congestion may occur as volumes are nearing the theoretical capacity of the roadway. A calculated value over 1.0 indicates that volumes are theoretically exceeding capacity. **Table 4** identifies the volume-to-capacity criteria for intersections.

Table 4 - Volume to Capacity Ratio Definition

Volume-to-Capacity Ratio	Indication
less than 0.9	sufficient intersection capacity
0.9 to 1.0	volumes approaching intersection capacity
greater than 1.0	volumes exceed theoretical intersection capacity

The City of Edmonton defines short-term and long-term Volume-to-Capacity (v/c) ratio and LOS requirements in Section 3.10 of the 2016 *City of Edmonton: Transportation Impact Assessment Guidelines* (2016 COE TIA Guidelines). In the short-term the City targets roadways to have an overall LOS D or better and a v/c ratio less than 0.85. In the long-term (30 – 40 years) the City targets roadways to have an overall LOS E or better and a v/c ratio less than 0.95. Based on these City requirements, we have identified a target LOS D or better with a v/c of 0.85 or better as the short term is being examined with this analysis.

Section 3.15 of the 2016 TIA Guidelines notes an allowable 5% mode split to account for pedestrian, cycling, and transit trips. However, a vehicular trip generation estimate was completed according to data presented in the 2016 Census – Population by Mode of Transportation data set available in the City of Edmonton’s Open Data Portal. This census data estimates that 15% of people in Dunluce walk, bike, or take transit and as such a 15% mode split reduction was applied as shown in **Table 2**.

All analyses generally use typical Synchro Studio default values or as defined by the City’s TIA guidelines unless otherwise indicated. A peak hour factor of 1.0 was used, the heavy vehicle split was 3% for all movements, and a saturation flow rate of 1,900 pcu/hr/ln was used based on the 2016 COE TIA Guidelines.

The lane configuration for 161 Avenue was considered as one eastbound shared left/through lane and one westbound shared right/through lane. The lane configuration of Dunluce Road was considered as one southbound shared left/right turn lane and one northbound receiving lane. The intersection is a yield-controlled T-intersection with Dunluce Road as the minor yield-controlled approach. Through discussions with the City of Edmonton Dunluce Neighbourhood Renewal design team, we have confirmed that this lane configuration will be maintained after the Dunluce Neighbourhood Renewal. However, the yield control will likely change to stop control and curb extensions are proposed that will constrain 161 Avenue and Dunluce Road to a single 3.55m lane in each direction, with a shared use path on the north side of 161 Avenue and east side of Dunluce Road. There will also be a raised crossing on the north leg of this intersection. In addition, this will likely be used as a pilot location for a warning tab below the stop sign where bicycle traffic is prioritized via a raised crosswalk.

These proposed changes do not have a material effect on the parameters used for analysis of this intersection in the following sections. **Figure 14** below shows these intersection changes as proposed in the Dunluce Neighbourhood Renewal concept.

Figure 14 - Dunluce Road/161 Avenue Neighbourhood Renewal Concept



The Synchro intersection capacity analysis results were identical when the Dunluce Road control was changed between yield and stop control, and because Synchro is unable to produce an HCM report for a yield control condition, the HCM Synchro results and reports presented below and in **Appendix C** were generated for a stop control condition. These stop-controlled results are understood to be representative of the capacity of a yield-controlled intersection.

Capacity analysis was completed for existing 2024 conditions for background traffic only as well as combined (background and development) traffic for Case 1 and Case 2.

Detailed Synchro HCM analysis is provided in **Appendix C**.

4.1.1 2024 Background Traffic Analysis

Table 5 provides a summary of the HCM analysis for the 2024 Background AM and PM peak hours. This analysis identifies that the existing configuration is expected to operate at acceptable service levels with 2024 background traffic volumes. The eastbound and westbound approaches operate at LOS A in the AM and PM peak hours. The southbound approach operates at LOS B in the AM and PM peak hours. This indicates that there are no operational issues with the current lane configuration and control.

Table 5 - 2024 Background Traffic Analysis

Approach		Eastbound		Westbound		Southbound	
Geometry							
Control		Free		Free		Yield*	
AM Peak	Movement Volume (vph)	51	117	157	43	67	111
	Approach v/c	0.037	0	0	0	0.244	
	Approach Delay (s) [LOS]	2.3 [A]		0 [A]		11.5 [B]	
	Int. Delay (s) [LOS]	4.5 [A]					
PM Peak	Movement Volume (vph)	150	217	183	60	39	108
	Approach v/c	0.114	0	0	0	0.246	
	Approach Delay (s) [LOS]	3.3 [A]		0 [A]		13 [B]	
	Int. Delay (s) [LOS]	4.1 [A]					

*Stop controlled results are presented for yield controlled intersection. Capacity is equivalent in Synchro.

4.1.2 2024 Combined Traffic Analysis – Case 1

Table 6 provides a summary of the HCM analysis for the 2024 Case 1: Minimum Built Form Combined AM and PM peak hours. This analysis identifies that the existing configuration is expected to operate at acceptable service levels under these conditions. The eastbound and westbound approaches operate at LOS A in the AM and PM peak hours. The southbound approach operates at LOS B in the AM and PM peak hours. This indicates that there are no operational issues with the current lane configuration and control.

Table 6 - Case 1: Minimum Built Form Combined Traffic Analysis

Approach		Eastbound		Westbound		Southbound	
Geometry							
Control		Free		Free		Yield*	
AM Peak	Movement Volume (vph)	53	117	157	44	71	120
	Approach v/c	0.039	0	0	0	0.262	
	Approach Delay (s) [LOS]	2.4 [A]		0 [A]		11.7 [B]	
	Int. Delay (s) [LOS]	4.7 [A]					
PM Peak	Movement Volume (vph)	159	217	183	64	41	113
	Approach v/c	0.121	0	0	0	0.263	
	Approach Delay (s) [LOS]	3.4 [A]		0 [A]		13.3 [B]	
	Int. Delay (s) [LOS]	4.3 [A]					

*Stop controlled results are presented for yield controlled intersection. Capacity is equivalent in Synchro.

4.1.3 2024 Combined Traffic Analysis – Case 2

Table 7 provides a summary of the HCM analysis for the 2024 Case 2: Maximum Built Form Combined AM and PM peak hours. This analysis identifies that the existing configuration is expected to operate at acceptable service levels under these conditions. The eastbound and westbound approaches operate at LOS A in the AM and PM peak hours. The southbound approach operates at LOS B in the AM peak and PM peak hours. This indicates that there are no operational issues with the current lane configuration and control.

Table 7 - Case 2: Maximum Built Form Combined Traffic Analysis

Approach		Eastbound		Westbound		Southbound	
Geometry							
Control		Free		Free		Yield*	
AM Peak	Movement Volume (vph)	56	117	157	45	78	134
	Approach v/c	0.041	0	0	0	0.292	
	Approach Delay (s) [LOS]	2.5 [A]		0 [A]		12[B]	
	Int. Delay (s) [LOS]	5.1 [A]					
PM Peak	Movement Volume (vph)	171	217	183	70	45	120
	Approach v/c	0.131	0	0	0	0.292	
	Approach Delay (s) [LOS]	3.6 [A]		0 [A]		14 [B]	
	Int. Delay (s) [LOS]	4.6 [A]					

*Stop controlled results are presented for yield controlled intersection. Capacity is equivalent in Synchro.

4.2 Intersection Configuration Summary and Recommendations

Based on the above capacity analysis, the existing intersection is appropriate for both background traffic and combined traffic for both cases analyzed. This illustrates that no upgrades will be required because of the proposed development.

4.3 Pedestrian Network Review

Monolithic sidewalk runs along both sides of Dunluce Road and intersects boulevard walk on the north side of 161 Avenue. Boulevard sidewalk also runs along the south side of 161 Avenue. Curb ramps are provided to cross the west leg of the intersection.

Bus stops adjacent to the proposed development are accessible via the pedestrian network.

The Dunluce neighbourhood is currently planned to undergo neighbourhood renewal starting in 2025. As part of this work, the existing sidewalks along the north side of 161 Avenue and the east side of Dunluce Road are planned to be upgraded to shared pathways. The new shared pathway on Dunluce Road will be constructed immediately in front of the proposed development site. A new pathway is also proposed along the east side of the development site in Herb Link Park which will provide pedestrian and cyclist connectivity south to 161 Avenue and 162 Avenue. In addition, as shown in **Figure 3** there are curb extensions at the intersection west of the proposed development site access as well as a raised crossing and curb extensions at Warwick Road northeast of the proposed development as proposed under the Dunluce Neighbourhood Renewal concept. Furthermore, an additional raised crossing and additional curb extensions are also proposed at the Dunluce Road/161 Avenue intersection southwest of the subject property. In addition, the yield control on Dunluce Road is likely to change to stop control during the neighbourhood renewal.

These proposed neighbourhood renewal upgrades will improve the quality of pedestrian infrastructure near the site.

No additional upgrades are recommended as part of this proposed development.

Figure 15 illustrates the pedestrian and cycling network adjacent to the proposed development. **Figure 16** shows the proposed neighbourhood renewal upgrades.

Figure 15 - Pedestrian & Cycling Network

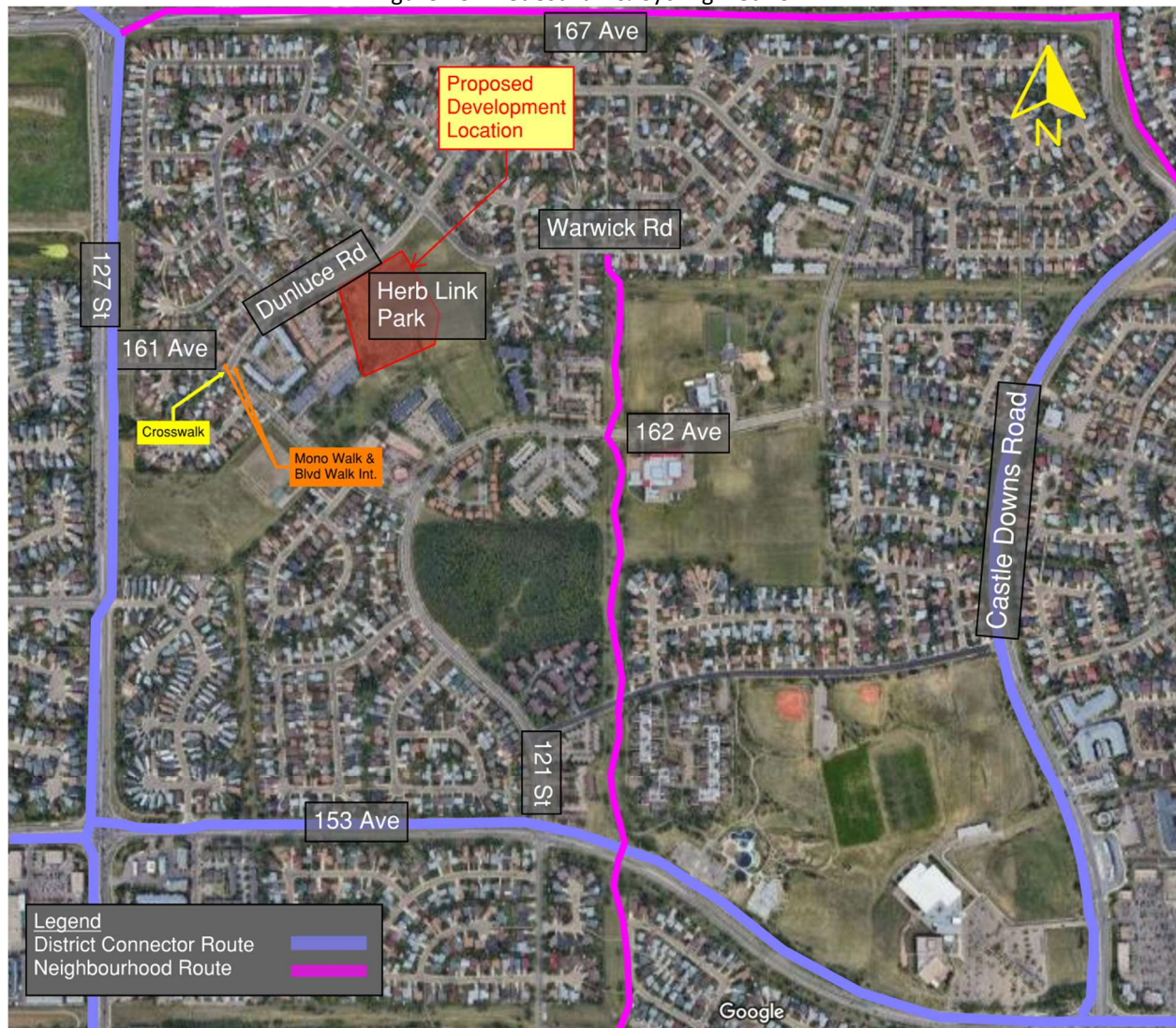
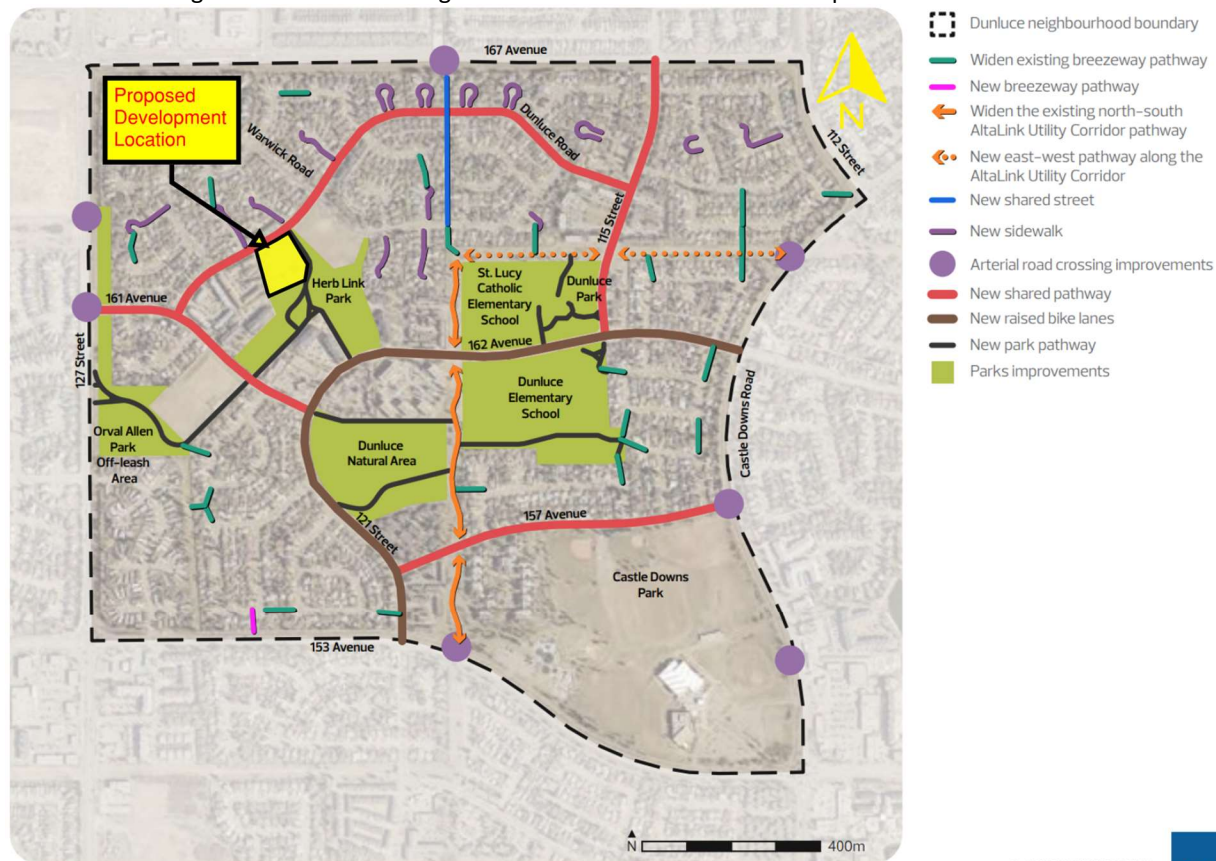


Figure 16 - Dunluce Neighbourhood Renewal Active Transportation Connections



Overall neighbourhood active transportation connections - Map

SHARE YOUR VOICE
SHAPE OUR CITY



4.4 Cycling Network Review

The 2020 City of Edmonton Bike Plan identifies existing District Connector Routes on Castle Downs Road, 153 Avenue, and 127 Street near the proposed development. It also identifies Neighbourhood Connector Routes from 153 Avenue north to Warwick Road as well as along 167 Avenue from 127 Street to Castle Downs Road.

Refer to **Figure 15** above for a depiction of the adjacent cycling network.

As noted above, Dunluce is scheduled for Neighbourhood and Alley Renewal with construction planned to begin in 2025. The active transportation network in the Dunluce Neighbourhood will be upgraded as part of this Neighbourhood and Alley Renewal. The draft design for the overall neighbourhood active transportation connections is shown in **Figure 16**. These proposed upgrades will improve network connectivity for people cycling in the neighbourhood, and in particular near the proposed development site.

With the proposed upgrades planned with neighbourhood renewal, no additional upgrades or changes are recommended with this proposed development.

4.5 Public Transit Review

Existing public transit connectivity is described in detail in **Section 2.3**. The nearest bus stop is for Routes 109, 150X, 613, and 683 northbound and is within about 50m of the subject property. **Figure 6** illustrates nearby bus stops. The bus stop for Routes 109, 150X, 613, and 683 southbound is 120m northeast of the subject property. The nearest stop for Route 124 is 400m from the subject property east on 161 Avenue.

Because the nearest bus stops fall within the recommended average walking distance to a bus stop (600m), no changes to the transit network are recommended.

4.6 Driveway Access

The proposed development is assumed to have vehicular access from Dunluce Road northeast of 161 Avenue directly across from the existing row homes. Both Scenario A and Scenario B in the site servicing study are within this area, however Scenario B would require relocating an existing bus pad and shelter, and it conflicts with the proposed curb extensions and bus pad that are proposed in the Dunluce Neighbourhood Renewal concept. Therefore, Scenario A is the preferred access location as no existing infrastructure would need to be relocated and it doesn't conflict with the neighbourhood renewal concept. As such, for the purposes of this TIA, site access was assumed to be located at Scenario A knowing that the exact location will be confirmed through the development permit process.

According to the *TAC Geometric Design Guide for Canadian Roads*, 50m sightlines are to be provided for roadways with a design speed of 40km/h. Sightlines along Dunluce Road from the Scenario A site access have been estimated to be in excess of 100m to the southwest and northeast. Therefore, sightlines for the proposed driveway access are adequate.

Driveway access from the proposed site to Dunluce Road should be stop-controlled.

4.7 Parking Review

The City of Edmonton's Land Use Bylaw does not require a minimum number of off-street parking spaces for new developments. However, we anticipate that the proposed development will consider an appropriate number of off-street parking stalls in consideration of the proposed housing types. Furthermore, we also note that there are on-street parking opportunities near the site along Dunluce Road and other nearby roads that could accommodate additional short-term parking for visitors and/or residents.

5 Conclusions and Recommendations

5.1 Summary

The City of Edmonton, Real Estate – Land Development group (CoE-LD) is completing assessments at surplus school sites to be rezoned and developed as future market and affordable housing facilities. As part of this process the City has retained Scheffer Andrew Ltd. to complete this Transportation Impact Assessment (TIA) for the Dunluce surplus school site.

The proposed development is located northeast of the 161 Avenue and Dunluce Road intersection at municipal address 12030 – 163 Avenue NW.

The subject property is proposed to be zoned as RM h.16.0 – Medium Scale Residential with a total area of 1.00 ha and minimum density of 45 dwelling units per hectare. This TIA analyzes two development concept cases (minimum and maximum built forms). The minimum built form is 45 townhouses, and the maximum built form is 150 low rise apartment units (4 stories). At this time, a final development concept has not been developed, but the total number of units should fall within the range identified.

The proposed development is assumed to have vehicular access from Dunluce Road northeast of 161 Avenue as discussed in the site servicing study as Scenario A.

The proposed development is adjacent to Herb Link Park which includes soccer fields and baseball diamonds.

Dunluce School, St. Lucy Catholic School, and Dunluce Community League are located east on 162 Avenue about 500m from the development.

ETS bus stops for Routes 109, 150X, 613, and 683 are nearest to the proposed development (within 50m), whereas Route 124 is within 400m.

The most recent and relevant traffic count data (intersection turning movement and link volume data) from the City of Edmonton traffic count database was reviewed.

In March 2024, a 48-hour traffic count was conducted by our project team at the intersection of 161 Avenue and Dunluce Road to obtain current data southwest of the proposed development.

Trip generation for both the minimum and maximum built form scenarios (Case 1 and Case 2) were calculated using rates from *Table D.1 City of Edmonton 2013 Trip Generation Rates – Residential Land Uses* from the COE 2016 TIA guidelines. The *RF5 – Row Housing* rates were used for Case 1, and the *RA7 & RA8 – Apartment Housing* rates were used for Case 2. These trips were assigned to the subject intersection based on the 2024 traffic count data.

Capacity Analysis using the Highway Capacity Manual (HCM) methodology was completed for the 161 Avenue/Dunluce Road intersection under the following conditions: 2024 background traffic, 2024 minimum built form combined traffic, and 2024 maximum built form combined traffic.

A pedestrian network review, cycling network review, public transit review, driveway access review, and parking review were completed.

5.2 Recommendation

The HCM capacity analysis identified that the intersection of 161 Avenue and Dunluce Road is expected to operate at acceptable service levels for all traffic conditions. Therefore, no improvements to the vehicular network are required to accommodate the proposed development.

A pedestrian network review identified that no changes to the pedestrian network are recommended.

A cycling network review identified that Dunluce has been chosen by the City for a Neighbourhood and Alley Renewal, and that significant upgrades are planned for construction starting in 2025. These improvements will benefit people walking and cycling in the neighbourhood. Other than those upgrades planned through neighbourhood renewal, no changes to the cycling network are recommended by this TIA as part of the proposed development.

A public transit review illustrated that no changes to the transit network are recommended.

A driveway access review showed that Scenario A in the site servicing study is preferred, sightlines from the proposed access are adequate, and the access should be stop controlled onto Dunluce Road.

A parking review noted that the City of Edmonton's Land Use Bylaw does not require a minimum number of off-street parking spaces for new developments. However, an appropriate number of off-street parking stalls are anticipated with the proposed development, and there are on-street parking opportunities near the site along Dunluce Road and Warwick Road.

6 Closure

This Transportation Impact Assessment was prepared in support of the Dunluce surplus school site rezoning in Edmonton, Alberta to determine recommendations for multi-modal connectivity to and from the site.

Respectfully Submitted,
Scheffer Andrew Ltd.

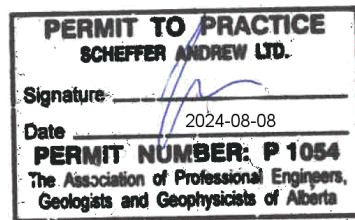


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Permit to practice:



APEGA ID#: 59668

This report was prepared by Scheffer Andrew Ltd. ("SAL") for the benefit of the client to whom it is addressed. The information and data contained herein represent SAL's best professional judgement in light of the knowledge and information available to SAL at the time of preparation. SAL accepts no liability whatsoever for any loss or damage suffered by any third party arising from their use of, or reliance upon, this report or any of its contents without the express written consent of SAL and the client

Figure 4 - Dunluce Surplus School Site Rezoning Plan



NOTE: ALL DIMENSIONS AND AREAS ARE APPROXIMATE AND MUST BE VERIFIED BY LEGAL SURVEY



DUNLUCE SURPLUS SCHOOL SITE - PROPOSED REZONING

FROM PS TO RM h16

LAND DEVELOPMENT PLANNING

PORTION OF PLAN 212 2664, BLOCK 56, LOT 69

FINANCIAL & CORPORATE SERVICES
REAL ESTATE

DATE: January 31, 2024
DRAWN BY: Y.L.
SCALE: 1:2000

Edmonton

161 Avenue & Dunluce Road Edmonton - TMC

Wed Mar 20, 2024

Full Length (4:30 PM-4:30 PM (+2))

All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 1167519, Location: 53.623596, -113.538122

Provided by: Scheffer Andrew Ltd.

#310, 4803 - 87 Street NW,
Edmonton, AB, T6E 0V3, CA

Leg Direction	Dunluce Road Southbound					161 Avenue Eastbound					161 Avenue Westbound					
Time	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	Int
2024-03-20 4:00PM	11	47	0	58	4	80	96	0	176	0	91	27	0	118	1	352
5:00PM	35	88	0	123	2	150	171	0	321	0	141	49	0	190	1	634
6:00PM	34	64	0	98	2	82	135	0	217	0	139	42	1	182	1	497
7:00PM	15	61	0	76	3	90	138	2	230	0	95	37	0	132	0	438
8:00PM	16	59	0	75	0	64	91	0	155	1	74	34	0	108	0	338
9:00PM	20	43	0	63	1	59	87	0	146	1	73	23	0	96	0	305
10:00PM	14	18	0	32	0	30	61	0	91	0	59	18	0	77	0	200
11:00PM	6	14	0	20	0	34	41	0	75	0	39	14	0	53	0	148
2024-03-21 12:00AM	7	9	0	16	0	7	27	0	34	0	20	6	0	26	0	76
1:00AM	7	4	0	11	0	4	12	0	16	0	9	5	0	14	0	41
2:00AM	0	3	0	3	0	8	10	0	18	0	2	5	0	7	0	28
3:00AM	1	3	0	4	0	1	9	0	10	0	12	4	0	16	0	30
4:00AM	5	7	0	12	0	3	6	0	9	0	15	4	0	19	0	40
5:00AM	7	44	0	51	2	9	13	1	23	0	46	1	0	47	0	121
6:00AM	25	93	0	118	1	20	38	0	58	0	96	8	0	104	0	280
7:00AM	45	125	0	170	0	28	64	0	92	0	151	22	0	173	0	435
8:00AM	52	99	0	151	3	43	112	1	156	2	170	41	0	211	0	518
9:00AM	23	73	0	96	1	42	65	1	108	1	115	22	0	137	0	341
10:00AM	30	58	0	88	0	47	76	1	124	0	77	23	0	100	0	312
11:00AM	22	61	0	83	1	55	84	1	140	0	90	21	0	111	0	334
12:00PM	24	79	0	103	1	59	100	0	159	0	111	35	0	146	0	408
1:00PM	40	75	0	115	2	65	97	0	162	0	107	26	0	133	0	410
2:00PM	36	77	0	113	3	75	137	0	212	0	122	35	0	157	0	482
3:00PM	31	81	1	113	1	121	196	0	317	1	181	59	0	240	0	670
4:00PM	43	104	0	147	0	155	206	0	361	0	176	59	0	235	0	743
5:00PM	29	82	0	111	5	132	209	0	341	2	144	58	0	202	1	654
6:00PM	37	76	1	114	3	106	126	0	232	0	109	41	0	150	0	496
7:00PM	19	69	0	88	2	93	128	0	221	2	97	42	0	139	1	448
8:00PM	19	46	1	66	3	64	79	0	143	0	60	29	0	89	1	298
9:00PM	15	48	0	63	3	49	84	0	133	0	64	40	0	104	0	300
10:00PM	13	29	0	42	0	50	66	0	116	0	61	22	0	83	0	241
11:00PM	9	22	0	31	0	46	40	0	86	0	36	24	0	60	0	177
2024-03-22 12:00AM	3	13	0	16	0	19	20	0	39	0	10	8	0	18	0	73
1:00AM	8	9	0	17	0	10	14	0	24	0	10	8	1	19	0	60
2:00AM	2	8	0	10	0	3	8	0	11	0	5	4	0	9	0	30
3:00AM	1	3	0	4	0	4	8	0	12	0	8	3	0	11	0	27
4:00AM	1	9	0	10	0	8	8	0	16	0	21	0	0	21	0	47
5:00AM	6	38	0	44	1	6	18	1	25	0	51	1	0	52	0	121
6:00AM	19	78	0	97	1	12	37	1	50	0	92	9	0	101	0	248
7:00AM	43	129	0	172	1	38	69	0	107	0	147	23	0	170	0	449
8:00AM	65	91	2	158	4	47	105	0	152	2	170	44	0	214	0	524
9:00AM	23	92	0	115	1	36	83	0	119	0	119	25	0	144	0	378
10:00AM	26	72	0	98	0	68	85	0	153	0	85	32	0	117	0	368
11:00AM	31	83	0	114	1	64	112	0	176	0	119	18	0	137	0	427
12:00PM	37	91	0	128	4	96	109	0	205	0	173	48	0	221	0	554
1:00PM	40	105	0	145	2	71	118	0	189	2	127	41	0	168	0	502
2:00PM	42	96	0	138	2	96	140	0	236	1	107	40	0	147	0	521
3:00PM	39	83	0	122	2	139	200	0	339	0	157	53	0	210	1	671
4:00PM	12	43	0	55	2	84	108	0	192	0	91	30	0	121	0	368
Total	1088	2804	5	3897	64	2672	4046	9	6727	15	4274	1263	2	5539	7	16163
% Approach	27.9%	72.0%	0.1%	-	-	39.7%	60.1%	0.1%	-	-	77.2%	22.8%	0%	-	-	-
% Total	6.7%	17.3%	0%	24.1%	-	16.5%	25.0%	0.1%	41.6%	-	26.4%	7.8%	0%	34.3%	-	-
Lights	1049	2637	5	3691	-	2533	3880	9	6422	-	4108	1194	2	5304	-	15417

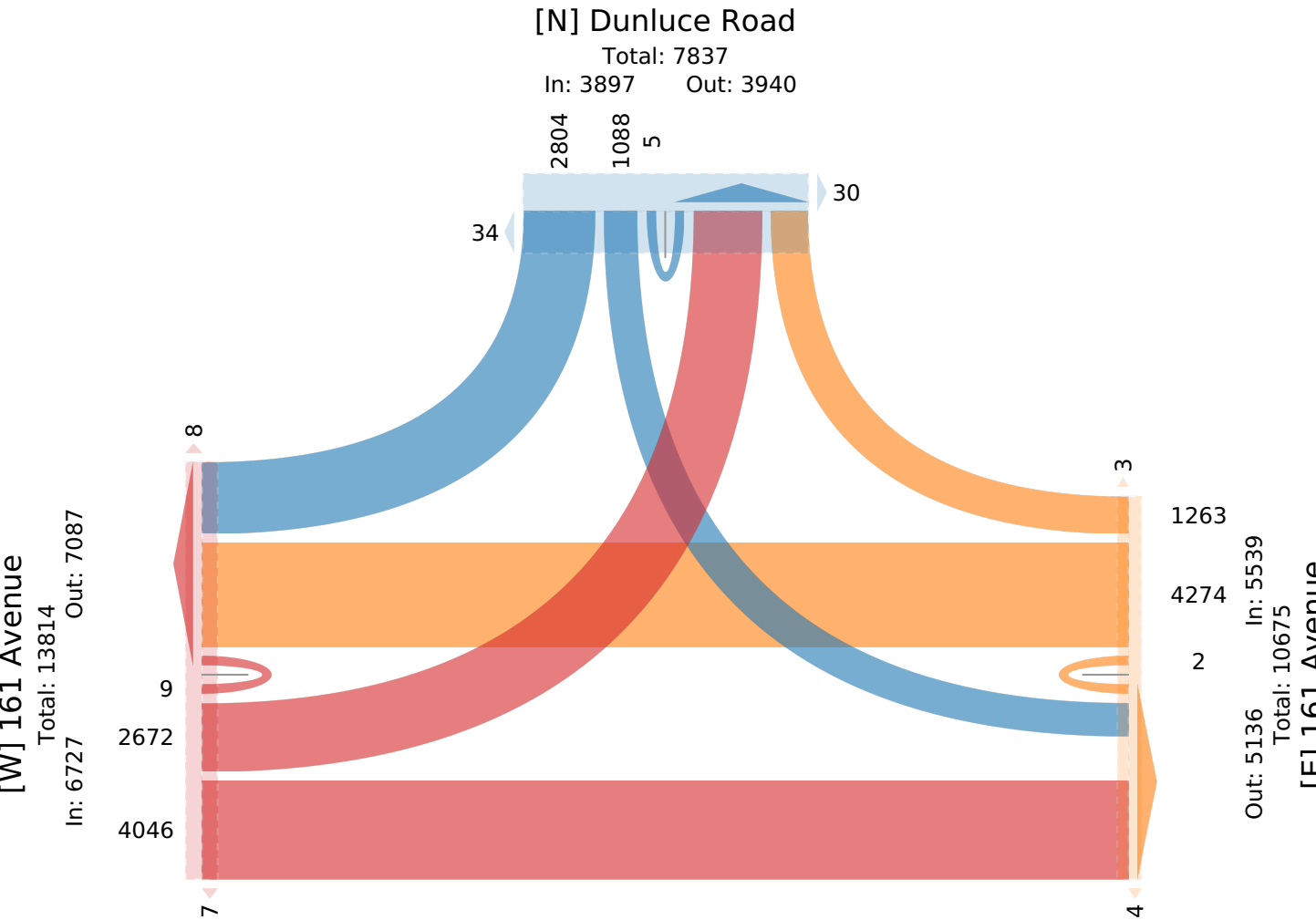
Leg Direction	Dunluce Road Southbound					161 Avenue Eastbound					161 Avenue Westbound					
Time	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	Int
% Lights	96.4%	94.0%	100%	94.7%	-	94.8%	95.9%	100%	95.5%	-	96.1%	94.5%	100%	95.8%	-	95.4%
Single-Unit Trucks	12	10	0	22	-	12	30	0	42	-	24	13	0	37	-	101
% Single-Unit Trucks	1.1%	0.4%	0%	0.6%	-	0.4%	0.7%	0%	0.6%	-	0.6%	1.0%	0%	0.7%	-	0.6%
Articulated Trucks	0	0	0	0	-	0	5	0	5	-	4	1	0	5	-	10
% Articulated Trucks	0%	0%	0%	0%	-	0%	0.1%	0%	0.1%	-	0.1%	0.1%	0%	0.1%	-	0.1%
Buses	27	156	0	183	-	127	130	0	257	-	137	54	0	191	-	631
% Buses	2.5%	5.6%	0%	4.7%	-	4.8%	3.2%	0%	3.8%	-	3.2%	4.3%	0%	3.4%	-	3.9%
Bicycles on Road	0	1	0	1	-	0	1	0	1	-	1	1	0	2	-	4
% Bicycles on Road	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0.1%	0%	0%	-	0%
Pedestrians	-	-	-	-	57	-	-	-	-	15	-	-	-	-	7	
% Pedestrians	-	-	-	-	89.1%	-	-	-	-	100%	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	7	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	10.9%	-	-	-	-	0%	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

161 Avenue & Dunluce Road Edmonton - TMC

Wed Mar 20, 2024
Full Length (4:30 PM-4:30 PM (+2))
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 1167519, Location: 53.623596, -113.538122

Provided by: Scheffer Andrew Ltd.
#310, 4803 - 87 Street NW,
Edmonton, AB, T6E 0V3, CA



161 Avenue & Dunluce Road Edmonton - TMC

Thu Mar 21, 2024

PM Peak (Mar 21 2024 3:45PM - 4:45 PM) - Overall Peak Hour

All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 1167519, Location: 53.623596, -113.538122

Provided by: Scheffer Andrew Ltd.

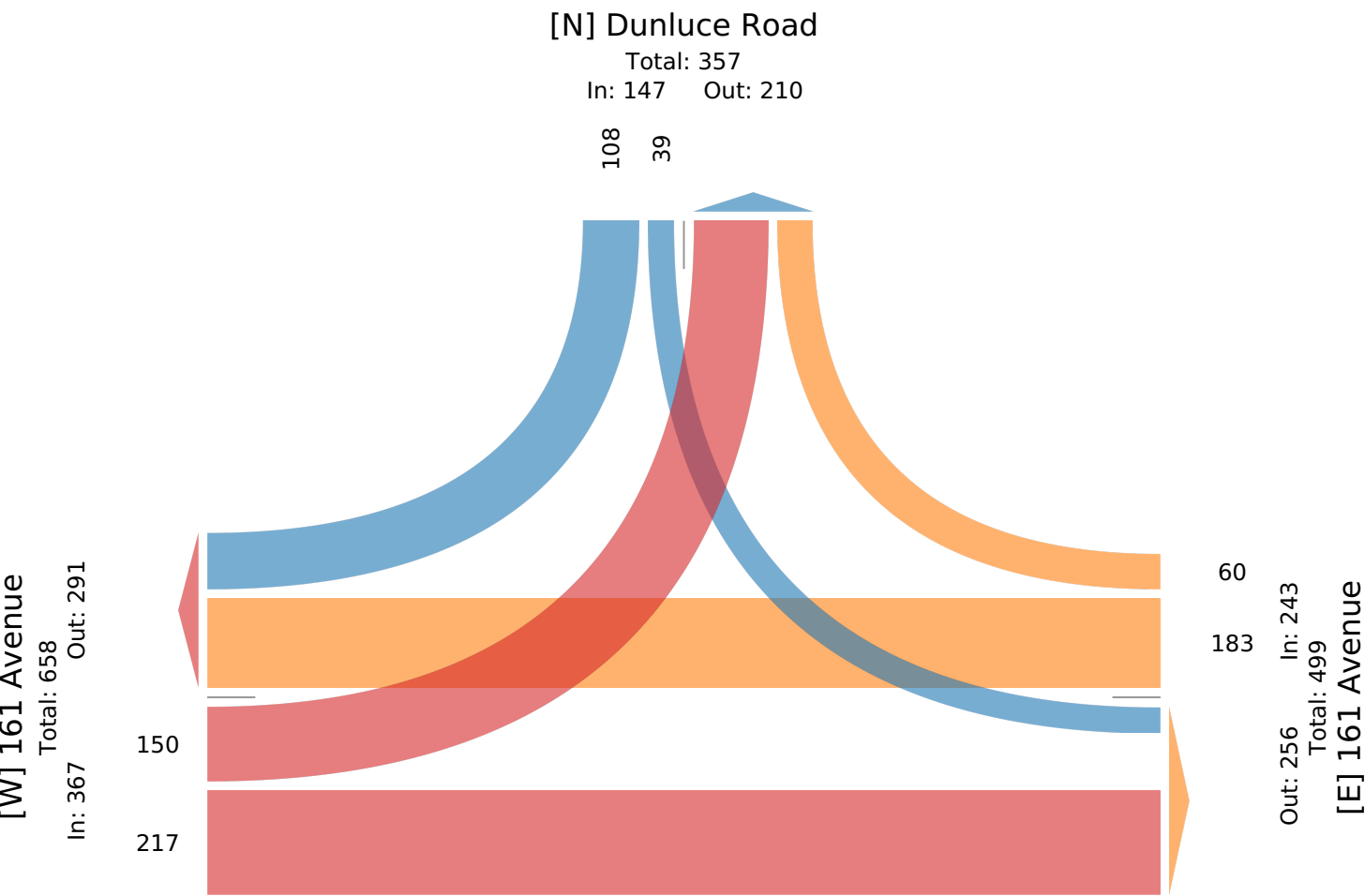
#310, 4803 - 87 Street NW,
Edmonton, AB, T6E 0V3, CA

Leg Direction	Dunluce Road Southbound					161 Avenue Eastbound					161 Avenue Westbound					
Time	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	Int
2024-03-21 3:45PM	7	26	0	33	0	31	61	0	92	0	42	15	0	57	0	182
4:00PM	5	32	0	37	0	31	45	0	76	0	44	13	0	57	0	170
4:15PM	16	23	0	39	0	49	53	0	102	0	50	14	0	64	0	205
4:30PM	11	27	0	38	0	39	58	0	97	0	47	18	0	65	0	200
Total	39	108	0	147	0	150	217	0	367	0	183	60	0	243	0	757
% Approach	26.5%	73.5%	0%	-	-	40.9%	59.1%	0%	-	-	75.3%	24.7%	0%	-	-	-
% Total	5.2%	14.3%	0%	19.4%	-	19.8%	28.7%	0%	48.5%	-	24.2%	7.9%	0%	32.1%	-	-
PHF	0.609	0.844	-	0.942	-	0.765	0.889	-	0.900	-	0.915	0.833	-	0.935	-	0.923
Lights	37	96	0	133	-	139	208	0	347	-	178	58	0	236	-	716
% Lights	94.9%	88.9%	0%	90.5%	-	92.7%	95.9%	0%	94.6%	-	97.3%	96.7%	0%	97.1%	-	94.6%
Single-Unit Trucks	0	1	0	1	-	2	1	0	3	-	0	1	0	1	-	5
% Single-Unit Trucks	0%	0.9%	0%	0.7%	-	1.3%	0.5%	0%	0.8%	-	0%	1.7%	0%	0.4%	-	0.7%
Articulated Trucks	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Articulated Trucks	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Buses	2	11	0	13	-	9	8	0	17	-	5	1	0	6	-	36
% Buses	5.1%	10.2%	0%	8.8%	-	6.0%	3.7%	0%	4.6%	-	2.7%	1.7%	0%	2.5%	-	4.8%
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Bicycles on Road	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

161 Avenue & Dunluce Road Edmonton - TMC
Thu Mar 21, 2024
PM Peak (Mar 21 2024 3:45PM - 4:45 PM) - Overall Peak Hour
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles
on Road, Bicycles on Crosswalk)
All Movements
ID: 1167519, Location: 53.623596, -113.538122

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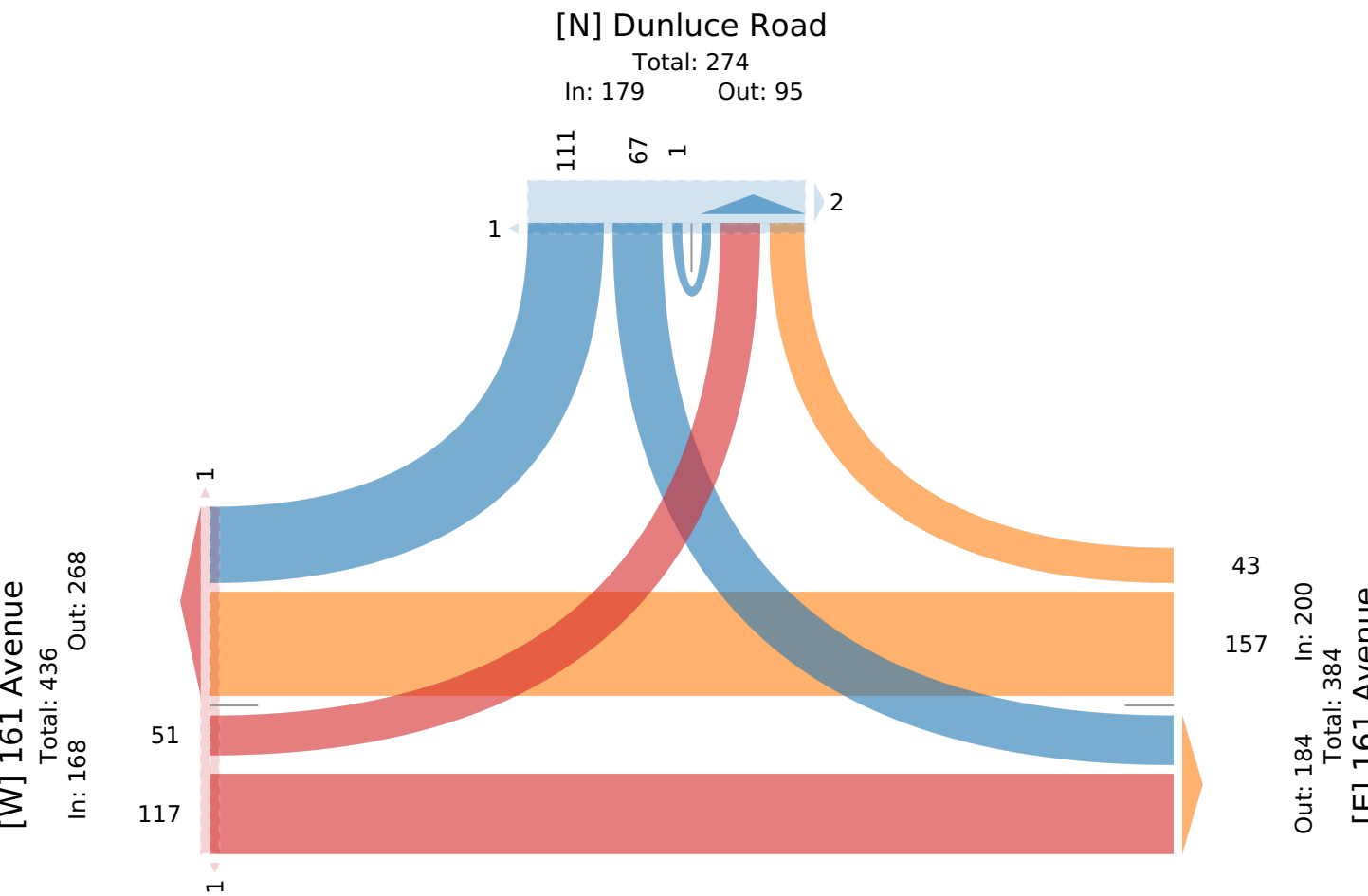
Leg Direction	Dunluce Road Southbound					161 Avenue Eastbound					161 Avenue Westbound					
Time	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	Int
2024-03-22 7:45AM	15	33	0	48	0	12	25	0	37	0	35	5	0	40	0	125
8:00AM	15	28	1	44	2	9	36	0	45	2	32	8	0	40	0	129
8:15AM	20	27	0	47	1	11	30	0	41	0	42	12	0	54	0	142
8:30AM	17	23	0	40	0	19	26	0	45	0	48	18	0	66	0	151
Total	67	111	1	179	3	51	117	0	168	2	157	43	0	200	0	547
% Approach	37.4%	62.0%	0.6%	-	-	30.4%	69.6%	0%	-	-	78.5%	21.5%	0%	-	-	-
% Total	12.2%	20.3%	0.2%	32.7%	-	9.3%	21.4%	0%	30.7%	-	28.7%	7.9%	0%	36.6%	-	-
PHF	0.838	0.841	0.250	0.932	-	0.671	0.813	-	0.933	-	0.818	0.597	-	0.758	-	0.906
Lights	65	98	1	164	-	44	109	0	153	-	145	34	0	179	-	496
% Lights	97.0%	88.3%	100%	91.6%	-	86.3%	93.2%	0%	91.1%	-	92.4%	79.1%	0%	89.5%	-	90.7%
Single-Unit Trucks	0	0	0	0	-	1	0	0	1	-	2	1	0	3	-	4
% Single-Unit Trucks	0%	0%	0%	0%	-	2.0%	0%	0%	0.6%	-	1.3%	2.3%	0%	1.5%	-	0.7%
Articulated Trucks	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Articulated Trucks	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Buses	2	13	0	15	-	6	8	0	14	-	10	8	0	18	-	47
% Buses	3.0%	11.7%	0%	8.4%	-	11.8%	6.8%	0%	8.3%	-	6.4%	18.6%	0%	9.0%	-	8.6%
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Bicycles on Road	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	3	-	-	-	-	2	-	-	-	-	0	
% Pedestrians	-	-	-	-	100%	-	-	-	-	100%	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

161 Avenue & Dunluce Road Edmonton - TMC

Fri Mar 22, 2024
AM Peak (Mar 22 2024 7:45AM - 8:45 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles
on Road, Bicycles on Crosswalk)
All Movements
ID: 1167519, Location: 53.623596, -113.538122

Provided by: Scheffer Andrew Ltd.
#310, 4803 - 87 Street NW,
Edmonton, AB, T6E 0V3, CA



161 Avenue & Dunluce Road Edmonton - TMC

Fri Mar 22, 2024

Midday Peak (Mar 22 2024 12:15PM - 1:15 PM)

All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 1167519, Location: 53.623596, -113.538122

Provided by: Scheffer Andrew Ltd.

#310, 4803 - 87 Street NW,

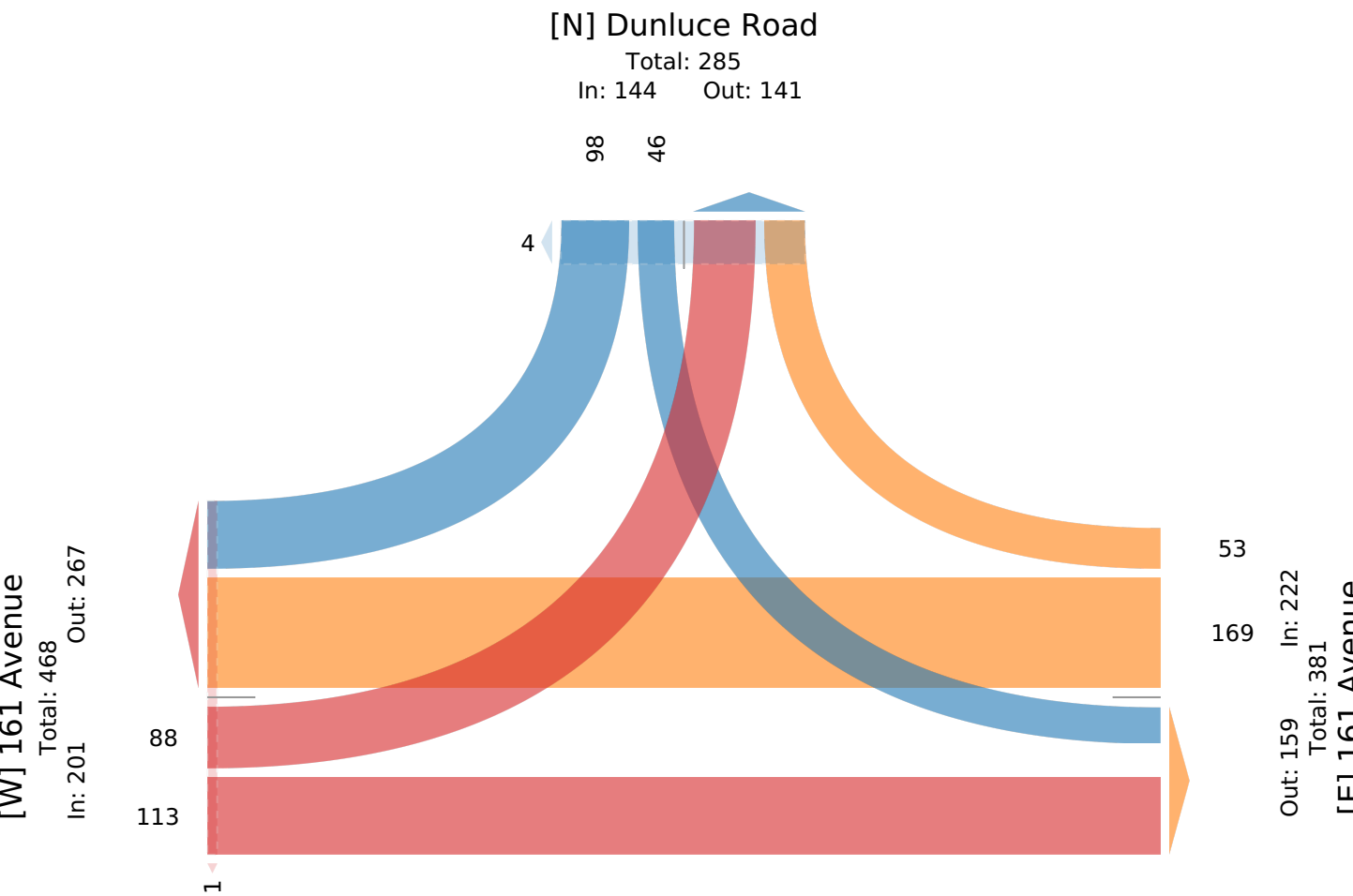
Edmonton, AB, T6E 0V3, CA

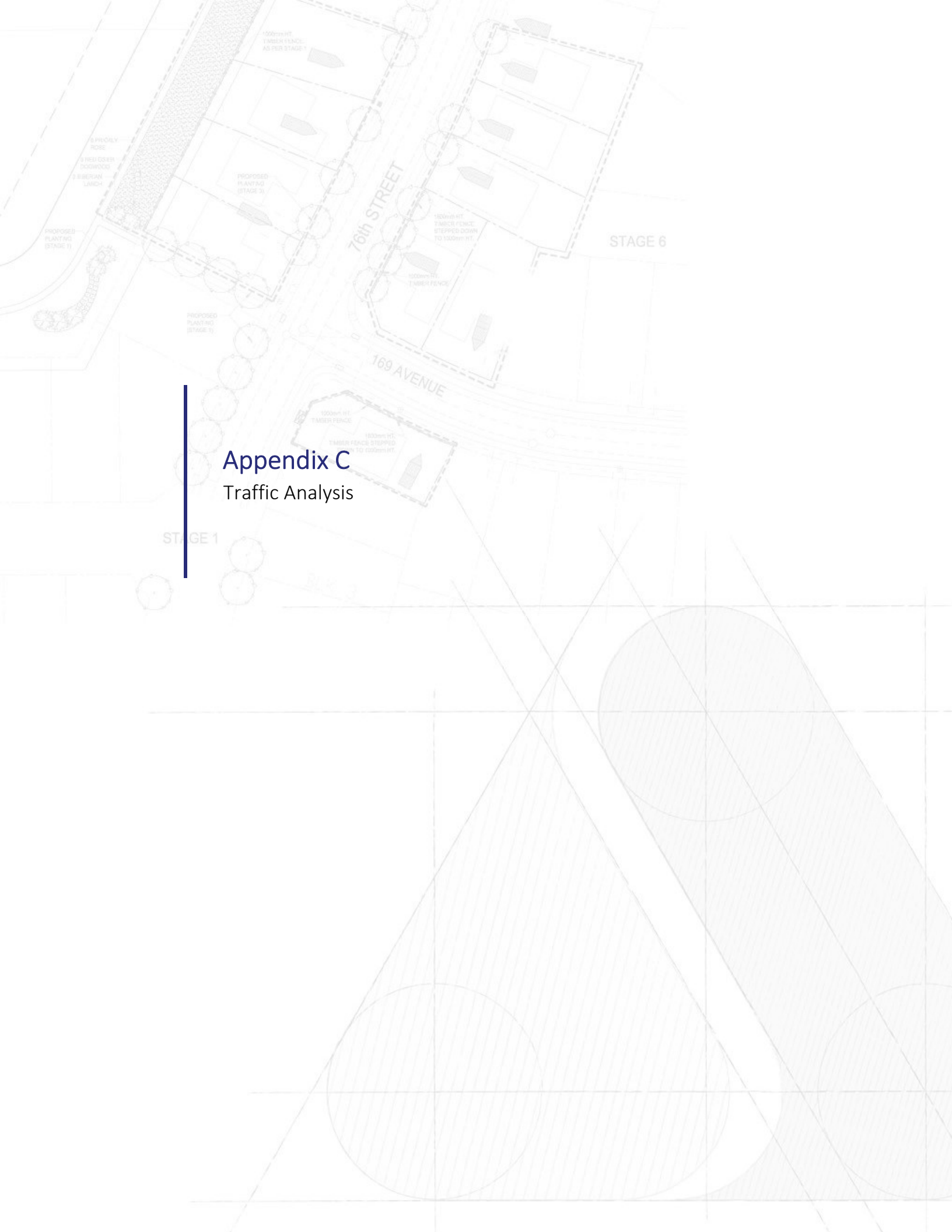
Leg Direction	Dunluce Road Southbound					161 Avenue Eastbound					161 Avenue Westbound					
Time	L	R	U	App	Ped*	L	T	U	App	Ped*	T	R	U	App	Ped*	Int
2024-03-22 12:15PM	6	26	0	32	0	18	25	0	43	0	50	17	0	67	0	142
12:30PM	10	23	0	33	3	29	29	0	58	0	63	14	0	77	0	168
12:45PM	14	21	0	35	1	24	24	0	48	0	31	8	0	39	0	122
1:00PM	16	28	0	44	0	17	35	0	52	1	25	14	0	39	0	135
Total	46	98	0	144	4	88	113	0	201	1	169	53	0	222	0	567
% Approach	31.9%	68.1%	0%	-	-	43.8%	56.2%	0%	-	-	76.1%	23.9%	0%	-	-	-
% Total	8.1%	17.3%	0%	25.4%	-	15.5%	19.9%	0%	35.4%	-	29.8%	9.3%	0%	39.2%	-	-
PHF	0.719	0.875	-	0.818	-	0.759	0.807	-	0.866	-	0.671	0.779	-	0.721	-	0.844
Lights	45	93	0	138	-	84	106	0	190	-	160	51	0	211	-	539
% Lights	97.8%	94.9%	0%	95.8%	-	95.5%	93.8%	0%	94.5%	-	94.7%	96.2%	0%	95.0%	-	95.1%
Single-Unit Trucks	0	1	0	1	-	1	1	0	2	-	2	1	0	3	-	6
% Single-Unit Trucks	0%	1.0%	0%	0.7%	-	1.1%	0.9%	0%	1.0%	-	1.2%	1.9%	0%	1.4%	-	1.1%
Articulated Trucks	0	0	0	0	-	0	1	0	1	-	1	0	0	1	-	2
% Articulated Trucks	0%	0%	0%	0%	-	0%	0.9%	0%	0.5%	-	0.6%	0%	0%	0.5%	-	0.4%
Buses	1	4	0	5	-	3	5	0	8	-	6	1	0	7	-	20
% Buses	2.2%	4.1%	0%	3.5%	-	3.4%	4.4%	0%	4.0%	-	3.6%	1.9%	0%	3.2%	-	3.5%
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Bicycles on Road	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	3	-	-	-	-	1	-	-	-	-	0	-
% Pedestrians	-	-	-	-	75.0%	-	-	-	-	100%	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	25.0%	-	-	-	-	0%	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

161 Avenue & Dunluce Road Edmonton - TMC
Fri Mar 22, 2024
Midday Peak (Mar 22 2024 12:15PM - 1:15 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles
on Road, Bicycles on Crosswalk)
All Movements
ID: 1167519, Location: 53.623596, -113.538122

Provided by: Scheffer Andrew Ltd.
#310, 4803 - 87 Street NW,
Edmonton, AB, T6E 0V3, CA





Appendix C
Traffic Analysis

Intersection

Int Delay, s/veh 4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
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Lane Configurations						
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Traffic Vol, veh/h	51	117	157	43	67	111
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Future Vol, veh/h	51	117	157	43	67	111
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Conflicting Peds, #/hr	0	0	0	0	0	0
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Sign Control	Free	Free	Free	Free	Stop	Stop
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RT Channelized	-	None	-	None	-	None
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Storage Length	-	-	-	-	0	-
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Veh in Median Storage, #	-	0	0	-	0	-
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Grade, %	-	0	0	-	0	-
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Peak Hour Factor	100	100	100	100	100	100
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Heavy Vehicles, %	3	3	3	3	3	3
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Mvmt Flow	51	117	157	43	67	111
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Major/Minor	Major1	Major2	Minor2
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Conflicting Flow All	200	0	0	398	179
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Stage 1	-	-	-	179	-
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Stage 2	-	-	-	219	-
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Critical Hdwy	4.13	-	-	6.43	6.23
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Critical Hdwy Stg 1	-	-	-	5.43	-
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Critical Hdwy Stg 2	-	-	-	5.43	-
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Follow-up Hdwy	2.227	-	-	3.527	3.327
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Pot Cap-1 Maneuver	1366	-	-	605	861
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Stage 1	-	-	-	850	-
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Stage 2	-	-	-	815	-
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Platoon blocked, %	-	-	-	-	-
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Mov Cap-1 Maneuver	1366	-	-	581	861
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Mov Cap-2 Maneuver	-	-	-	581	-
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Stage 1	-	-	-	816	-
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Stage 2	-	-	-	815	-
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Approach	EB	WB	SB
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HCM Control Delay, s	2.3	0	11.5
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HCM LOS			B
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Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
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Capacity (veh/h)	1366	-	-	-	729
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HCM Lane V/C Ratio	0.037	-	-	-	0.244
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HCM Control Delay (s)	7.7	0	-	-	11.5
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HCM Lane LOS	A	A	-	-	B
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HCM 95th %tile Q(veh)	0.1	-	-	-	1
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Intersection						
Int Delay, s/veh	4.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	150	217	183	60	39	108
Future Vol, veh/h	150	217	183	60	39	108
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	150	217	183	60	39	108
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	243	0	-	0	730	213
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	517	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1317	-	-	-	388	825
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	596	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1317	-	-	-	338	825
Mov Cap-2 Maneuver	-	-	-	-	338	-
Stage 1	-	-	-	-	713	-
Stage 2	-	-	-	-	596	-
Approach	EB	WB		SB		
HCM Control Delay, s	3.3	0		13		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1317	-	-	-	597	
HCM Lane V/C Ratio	0.114	-	-	-	0.246	
HCM Control Delay (s)	8.1	0	-	-	13	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.4	-	-	-	1	

HCM 6th TWSC
1: 161 Avenue & Dunluce Road

07-03-2024

Intersection

Int Delay, s/veh 4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	53	117	157	44	71	120
Future Vol, veh/h	53	117	157	44	71	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	53	117	157	44	71	120

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	201	0	0 402 179
Stage 1	-	-	- 179 -
Stage 2	-	-	- 223 -
Critical Hdwy	4.13	-	- 6.43 6.23
Critical Hdwy Stg 1	-	-	- 5.43 -
Critical Hdwy Stg 2	-	-	- 5.43 -
Follow-up Hdwy	2.227	-	- 3.527 3.327
Pot Cap-1 Maneuver	1365	-	- 602 861
Stage 1	-	-	- 850 -
Stage 2	-	-	- 812 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1365	-	- 577 861
Mov Cap-2 Maneuver	-	-	- 577 -
Stage 1	-	-	- 814 -
Stage 2	-	-	- 812 -

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1365	-	-	-	728
HCM Lane V/C Ratio	0.039	-	-	-	0.262
HCM Control Delay (s)	7.7	0	-	-	11.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1.1

HCM 6th TWSC
1: 161 Avenue & Dunluce Road

07-03-2024

Intersection

Int Delay, s/veh 4.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	159	217	183	64	41	113
Future Vol, veh/h	159	217	183	64	41	113
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	159	217	183	64	41	113

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	247	0	0 750 215
Stage 1	-	-	- 215 -
Stage 2	-	-	- 535 -
Critical Hdwy	4.13	-	- 6.43 6.23
Critical Hdwy Stg 1	-	-	- 5.43 -
Critical Hdwy Stg 2	-	-	- 5.43 -
Follow-up Hdwy	2.227	-	- 3.527 3.327
Pot Cap-1 Maneuver	1313	-	- 378 822
Stage 1	-	-	- 818 -
Stage 2	-	-	- 585 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1313	-	- 326 822
Mov Cap-2 Maneuver	-	-	- 326 -
Stage 1	-	-	- 705 -
Stage 2	-	-	- 585 -

Approach	EB	WB	SB
HCM Control Delay, s	3.4	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1313	-	-	-	585
HCM Lane V/C Ratio	0.121	-	-	-	0.263
HCM Control Delay (s)	8.1	0	-	-	13.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	1.1

Intersection

Int Delay, s/veh 5.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	56	117	157	45	78	134
Future Vol, veh/h	56	117	157	45	78	134
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	56	117	157	45	78	134

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	202	0	0 409 180
Stage 1	-	-	- 180 -
Stage 2	-	-	- 229 -
Critical Hdwy	4.13	-	- 6.43 6.23
Critical Hdwy Stg 1	-	-	- 5.43 -
Critical Hdwy Stg 2	-	-	- 5.43 -
Follow-up Hdwy	2.227	-	- 3.527 3.327
Pot Cap-1 Maneuver	1364	-	- 597 860
Stage 1	-	-	- 849 -
Stage 2	-	-	- 807 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1364	-	- 571 860
Mov Cap-2 Maneuver	-	-	- 571 -
Stage 1	-	-	- 812 -
Stage 2	-	-	- 807 -

Approach	EB	WB	SB
HCM Control Delay, s	2.5	0	12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1364	-	-	-	725
HCM Lane V/C Ratio	0.041	-	-	-	0.292
HCM Control Delay (s)	7.8	0	-	-	12
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1.2

Intersection

Int Delay, s/veh 4.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	171	217	183	70	45	120
Future Vol, veh/h	171	217	183	70	45	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	171	217	183	70	45	120

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	253	0	0 777 218
Stage 1	-	-	- 218 -
Stage 2	-	-	- 559 -
Critical Hdwy	4.13	-	- 6.43 6.23
Critical Hdwy Stg 1	-	-	- 5.43 -
Critical Hdwy Stg 2	-	-	- 5.43 -
Follow-up Hdwy	2.227	-	- 3.527 3.327
Pot Cap-1 Maneuver	1306	-	- 364 819
Stage 1	-	-	- 816 -
Stage 2	-	-	- 570 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1306	-	- 310 819
Mov Cap-2 Maneuver	-	-	- 310 -
Stage 1	-	-	- 694 -
Stage 2	-	-	- 570 -

Approach	EB	WB	SB
HCM Control Delay, s	3.6	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1306	-	-	-	566
HCM Lane V/C Ratio	0.131	-	-	-	0.292
HCM Control Delay (s)	8.2	0	-	-	14
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	1.2