



Executive Summary

1.0 Introduction

The City of Calgary and Canada Lands Company (CLC) jointly engaged ISL Engineering to complete a Transportation Planning Study (TPS) Update for the Crowchild Trail / Flanders Avenue interchange. The study updated the prior TPS, which had been approved by City Council in 2008 to support land use initiatives in the area including Currie Barracks, Westmount Business Campus and Mount Royal University.

Since then, the City created an integrated Land Use and Mobility Plan, through the combined Municipal Development Plan (MDP) and the Calgary Transportation Plan (CTP). In light of these policy changes, CLC is now revisiting the Currie Barracks Master Plan, with the intent to increase density and further align with City objectives for a substantial urban development in the area. The study considered the following high-level objectives:

- Accommodate increased mixed-use density in the area.
- Further improve the multi-modal connectivity in the area.
- Contextually manage future congestion.
- Provide an innovative, cost-effective solution.

2.0 Existing Conditions / Previous Studies

The existing interchange has a unique form due to the intersection of three roadways: Crowchild Trail, the cross-street Flanders Avenue, and Richard Road, an arterial street which runs closely parallel to Crowchild Trail in the area. To connect these streets, the interchange operates with three intersections. The 2008 Transportation Planning Study completed by Watt Consulting considered several alternatives for the Flanders Avenue interchange. The recommended 2008 plan included the following features:

- Southbound exit movements from Crowchild Trail split between two ramps.
- Northbound through movements prohibited at the Richard Road south junction, so that general traffic could not access northbound Crowchild Trail (transit access was maintained, however).
- Single-lane roundabout at the east junction, with widening / flaring of the existing bridge structure.

This Transportation Planning Study Update was completed concurrently with a proposed Land Use Amendment for the Currie Barracks site, which was submitted to The City in May 2014, and remains under review at the time of this report. The application incorporates and reflects the recommendations of this TPS update, along with other proposed transportation network improvements including:

- Extending Quesnay Wood Drive north to connect to 33 Avenue with an all-turns intersection near the existing Richmond Green access.
- Localized widening of the 33 Avenue exit ramps from Crowchild Trail, to improve overall performance and safety of the 33 Avenue interchange.
- Providing a grid-like internal street network within Currie Barracks, with multiple new connections to Richard Road and Richardson Way on the east / south sides of the site.
- Routing the Southwest BRT through the heart of Currie Barracks, providing frequent, direct transit service to the downtown core and southwest destinations including Mount Royal University, along with supporting local transit services.
- An extensive open space and pathway network, with a refined grid of pedestrian and cycling routes through all areas of the community.

Crowchild Trail and Flanders Avenue SW Interchange Transportation Planning Study Update - Executive Summary



**Crowchild Trail / Flanders Avenue Interchange
Transportation Planning Study Update**
Canada Lands Company and The City of Calgary

Executive Summary

The most significant existing traffic flows at the interchange are the movements that follow from northbound Richard Road to northbound Crowchild Trail, and vice versa. These movements also contribute to existing operational issues, with the interchange exhibiting significant congestion in both the a.m. and p.m. peak periods (as well as the afternoon school peak, around 3:30 p.m.) In particular, the 3-way stop controlled intersection at the east junction does not adequately accommodate these peak-direction demands, with significant queuing on all approach roads from the west.

Calgary Transit operates three routes through the interchange: Route 18 (Lakeview), Route 20 (Heritage / Northmount) and Route 118 (MRU North Express).

The existing bridge carrying Flanders Avenue over Crowchild Trail is a two span concrete structure constructed in 1992. Although in relatively good condition, the bridge does not lend itself well to incorporation in the new interchange, due to the substantial widening and additional vertical clearance needed over Crowchild Trail, and due to the original pre-stressed / post-tensioned cast-in-place concrete construction (which required the complete closure of Crowchild Trail to construct formwork / falsework).

3.0 Interchange Concepts and Evaluation

Evaluation of the interchange was completed in four parts, as follows:

- Initial Concepts – review and screen feasible geometric and operational options.
- Land Use / Network Refinement – define the final transportation network for Currie Barracks, and complete evaluation of options to accommodate the proposed networks for all modes.
- Intersection Analysis – detailed analysis of traffic signals and roundabouts as potential intersection forms in the vicinity of the interchange.
- Final Evaluation – selection of the recommended interchange form.

3.1 Initial Concepts and Evaluation

A wide range of concepts were initially developed for the interchange to provide high-level screening to a number of feasible geometric and operational options. A “status quo” option which would retain the approved 2008 plan as-is was reviewed first, but was not considered feasible for the following reasons:

- By not providing direct access from Richard Road to northbound Crowchild Trail, the plan would risk having this regional traffic demand relocate to alternate routes on the smaller local streets within Currie Barracks itself.
- The lack of connectivity from Richard Road to Crowchild Trail is inconsistent with the connectivity policies of the Calgary Transportation Plan.
- The plan did not enhance active modes connectivity, and the retention of the existing bridge “as is” would retain a relatively uncomfortable pedestrian environment between Currie Barracks and Garrison Woods.
- While enhancing capacity relative to existing conditions, the plan would no longer accommodate the planned development at Currie Barracks and surrounding areas.

Following the review of the previous plan, a total of 13 initial options were developed, grouped into five categories. Table ES-1 provides a general description and commentary on each category, including the rationale for short-listing the Diamond forms for further review.

Crowchild Trail and Flanders Avenue SW Interchange Transportation Planning Study Update - Executive Summary



**Crowchild Trail / Flanders Avenue Interchange
Transportation Planning Study Update**
Canada Lands Company and The City of Calgary

Executive Summary



Table ES-1 Initial Interchange Concepts

Concept	Commentary	Carried Forward?
A – Diamonds	The existing interchange configuration and the approved 2008 plan both fall under this general category and were retained with a number of variations. Generally, it was found that these forms were an effective way to connect the three intersecting roadways, and several variations of the interchange network and intersection control type (signals or roundabouts) were found to be a viable means to meet the project objectives.	Yes
B – Diverging Diamonds	In general, the need to incorporate Richard Road as a parallel third connecting roadway makes application of this form geometrically complex, with the possible need for additional grade-separations within the DDI. Proper cross-over geometry is also not feasible on the east side of the interchange, due to restricted property.	No
C – Richardson Way Extension	This configuration would have extended Richardson Way to the southeast between Bishop Carroll High School and École Sainte-Marguerite-Bourgeoys to connect to the east ramp terminal at 50 Avenue S on the opposite side of Crowchild Trail. Although it was found to be a cost-effective solution, the impacts to existing school and recreational sites were considered unsuitable at this time.	No
D – Split / Four Point Diamonds	These concepts were found to carry significant risk of queues spilling onto Crowchild Trail, and have other disadvantages including complicated way-finding and substantially reduced weave lengths along the Crowchild Trail mainline.	No
E – Rotaries	The rotary concepts were relatively ineffective at accommodating traffic demand (without incorporation of signals within the rotary), and came at considerably higher cost than standard diamonds.	No

Some of the diamond options (with signals and/or roundabouts) were presented to the public at the first open house in December 2013, to gain initial feedback about the concepts that could be used in the planning process. The engagement process is discussed further below.

3.2 Refined Transportation Network

Following initial public feedback, the interchange planning team worked closely with the land use planning team for Currie Barracks to consider optimal network and mobility solutions for the area. Through this process, a number of local network connections were recommended for Currie Barracks, as follows:

- Richard Road – extend north of Flanders Avenue into the proposed employment area at Parade Square.
- Barracks Street – connect to Richard Road adjacent to the SB Crowchild Trail entrance ramp.
- Bent Street – connect to Richard Road adjacent to Bishop Carroll High School.
- Quesnay Wood Drive – extend north and south to provide a continuous connection from 33 Avenue S to Richardson Way.
- Various new connections south to Richardson Way, which may ultimately extend into the MRU campus.

The resulting transportation networks planned for Currie Barracks are indicated in Exhibit ES-1. The plans layer the major cycling, pedestrian, transit and street connections in the region. The network review confirmed that the Flanders Avenue interchange will be a hub for all modes of transportation, both east-west along Flanders Avenue and north-south along Richard Road.

Crowchild Trail and Flanders Avenue SW Interchange Transportation Planning Study Update - Executive Summary



**Crowchild Trail / Flanders Avenue Interchange
Transportation Planning Study Update**
Canada Lands Company and The City of Calgary

Executive Summary

3.3 Refined Interchange Options

Following confirmation of the proposed transportation network within Currie Barracks, a number of refined Diamond-type options were considered to accommodate the north extension of Richard Road. This included review of larger-scale (five or six-leg) roundabouts, to consolidate all interchange ramps and road connections on the west side of Crowchild Trail. A summary of this evaluation is provided in the table below.

Table ES-2 Refined Interchange Options

Concept	Commentary	Carried Forward?
Six Leg Roundabout	This would consolidate all movements at a single location, with very complex way finding and traffic operations. On review, it was found that the three successive exits on the south edge (to Richard Road, then SB Crowchild Trail, then EB Flanders Avenue) were untenable.	No
Five Leg Roundabout	This was similar to the six leg roundabout, but retains the SB Crowchild entrance ramp at its existing location. Although it simplifies the operations relative to the six-leg roundabout, the roundabout is still relatively large with more complex way-finding.	No
SB Crowchild Ramps at South Junction	This provides a series of simple four-legged intersections at the east, west and south junctions, which could operate with either traffic signals or roundabouts. Relocation of the SB Crowchild exit ramp also allows for development of a proper exit taper, without compromising the weaving distance from 33 Avenue S or impacting the existing pedestrian bridge.	Yes

From the evaluation, the larger-scale roundabouts were eliminated from further consideration. On this basis, the recommended network was finalized to include relocation of the southbound Crowchild Trail exit ramp to the south junction on Richard Road, providing a series of logical intersections through the interchange, as shown on Exhibit ES-2. With the interchange form confirmed, the detailed analysis and evaluation focused on alternatives related to the use of traffic signals or roundabouts as the primary intersection form.

The preferred network configuration was presented at a second open house in April 2014, showing options with either traffic signal or roundabout control, and feedback was sought to prioritize evaluation parameters and determination of the recommended plan. The engagement process is discussed further below.

4.0 Land Use, Forecasting and Traffic Analysis

4.1 Land Use

Transportation planning for Currie Barracks evolved concurrently with the land use planning, interchange planning and public engagement processes. Forecasting and analysis were iterative processes that helped inform the optimal solution for Flanders Avenue. This is addressed more fully in the Currie Barracks Phase 3 Transportation Impact Assessment (TIA) prepared separately by Watt Consulting, and submitted as part of the Currie Barracks land-use re-designation application. The development program for the Currie Barracks Phase 3 site is summarized in Table ES-3 below. As shown, there are a mix of uses including single family residential, multi-family residential (of all types), office, and retail development parcels, along with a private school site (Clearwater Academy) which will be retained in the development program. The summary also includes a projected development program for the Department of National Defense (DND) and City of Calgary Roads Depot sites, which have been "shadow planned" by CLC as part of their application.

Crowchild Trail and Flanders Avenue SW Interchange Transportation Planning Study Update - Executive Summary



**Crowchild Trail / Flanders Avenue Interchange
Transportation Planning Study Update**
Canada Lands Company and The City of Calgary

Executive Summary



Table ES-3 Proposed Currie Barracks Development Program

Land Use	Intensity		
	Phase 3	DND & Roads	Total
Single Family Residential	123 Units	0 Units	123 Units
Multi-Family Residential	5,009 Units	686 Units	5,695 Units
Retail	231,486 ft ²	13,759 ft ²	245,245 ft ²
Office	613,806 ft ²	139,500 ft ²	753,306 ft ²
School (K-12)	750 Students	0 Students	750 Students

4.2 Trip Generation

The trip-generation process for Currie Barracks included the following components:

- Base trip generation reflective of standard City of Calgary suburban rates.
- Reductions for internal trips (between various uses within Currie Barracks, i.e. – home to work).
- Reductions for shifting trips to transit mode, reflecting the high level of service that will be provided.
- Reductions for shifting trips to cycling mode, reflecting the site's proximity to the downtown core, Mount Royal University and other major activity centres and cycling routes.
- Reductions for Travel Demand Management (TDM) measures which will include parking management and price incentives, car sharing, and a community-wide TDM and carpool coordinator.

For the p.m. peak hour, the calculated trip generation of approximately 7,000 vehicle trips at standard suburban rates was reduced by 2,100 trips as a result of the mixed use nature of the community (internal capture), and a further 1,800 trips as a result of mode shift and TDM factors.

Distribution of the trips was based on regional demand patterns in The City of Calgary's Regional Traffic Model, along with local distribution by use of a detailed block-by-block VISUM travel demand model developed for the Currie Barracks TIA. The local distribution indicates that about 40% of external traffic demand for Currie Barracks will use the Flanders Avenue interchange, but that the demand is well spread among the connecting roadways including Bent Street, Barracks Street, Flanders Avenue and the north extension of Richard Road.

In addition to Currie Barracks, the final trip generation and analysis for the Flanders Avenue interchange included the following regional development assumptions, based on current approved master plans:

- ATCO Site (located at Crowchild Trail / 50 Avenue).
- Westmount Corporate Campus (located along Richard Road).
- Mount Royal University.

4.3 Traffic Analysis

Traffic forecasting for the interchange highlighted the following as the higher-demand traffic patterns, which were tested with dual left or dual right turns, as indicated:

- NB Crowchild Trail to WB Flanders Avenue (dual left)
- WB Flanders Avenue to SB Richard Road (dual left)
- SB Crowchild Trail to SB Richard Road (dual left)
- EB Flanders Avenue to NB Crowchild Trail (dual left)
- NB Richard Road to EB Flanders Avenue (dual right)

Crowchild Trail and Flanders Avenue SW Interchange Transportation Planning Study Update - Executive Summary



**Crowchild Trail / Flanders Avenue Interchange
Transportation Planning Study Update**
Canada Lands Company and The City of Calgary

Executive Summary

Dual lefts were also considered for the SB Richard Road to SB Crowchild Trail movement, but ruled out due to the short available merging distance and relatively small radius of the downstream entrance ramp.

Findings of the traffic analysis are summarized in Table ES-4 below.

Table ES-4 Traffic Analysis Summary

Scenario	Findings
Traffic Signals	A few movements are near the limits of acceptable delay, though with careful coordination of the timing plans, the queueing and weaving between intersections can be managed.
Roundabouts	Roundabouts provide significantly better operations compared to signalized intersections. All approaches operate effectively with low delay and minimal queueing. Weaving is minimized by use of continuous lane assignments for the major movements through the system.

Although it may have been physically possible to develop a hybrid solution with a mixture of signalized intersections and roundabouts, the hybrid approaches presented a number of additional challenges such as complicated / mixed laning requirements, signal platoons disrupting roundabouts, queue-spilling from signals to roundabouts, and reduced ability to coordinate signals as a system when roundabouts are introduced between. Therefore the hybrid approaches were not considered further.

4.4 Sensitivity Analysis

A final assessment of the two interchange options was conducted to evaluate their performance at volumes over and above those calculated as the design volumes. The benefit of the sensitivity analysis is to consider potential impacts arising from such factors as additional growth or densification in the vicinity of the interchange, delays in other assumed infrastructure, special events, variations in the trip generation of future developments, or reduced effectiveness of mode shift or TDM strategies. Sensitivity volumes were thus based on the design volumes, but assuming no additional mode shift or TDM shift in Currie Barracks. This reflects traffic demand from Currie Barracks with standard suburban trip generation rates, accounting only for internal trip capture between complementary land uses.

Results of the sensitivity analysis were as follows:

- Traffic signals – the signalized intersections are not well suited to accommodating traffic at the levels analyzed in this sensitivity test, with long delays for all movements and some significant queueing concerns that would spill between intersections, and onto the Crowchild Trail mainline.
- Roundabouts – the roundabouts accommodate the sensitivity volumes relatively well. The only movement of concern is the southbound approach at the south roundabout, which operates with longer delay and queues in the p.m. peak hour.

Given that the sensitivity volumes are significantly higher than the anticipated volumes, the sensitivity analysis demonstrates that the roundabout interchange is a robust solution that is capable of handling variable traffic demand patterns, and has appropriate laning. This is a beneficial approach in interchange design, as the additional capacity ensures that the interchange is capable of handling a range of growth scenarios including growth of individual movements (as opposed to the “across the board” growth used in the sensitivity check). The availability of many alternate routes in and out of Currie Barracks is also of benefit, as it allows drivers to shift to parallel streets in the event that a single movement becomes problematic in future.

Crowchild Trail and Flanders Avenue SW Interchange Transportation Planning Study Update - Executive Summary



**Crowchild Trail / Flanders Avenue Interchange
Transportation Planning Study Update**
Canada Lands Company and The City of Calgary

Executive Summary



4.5 Freeway Weave Analysis

Analyses were completed to consider operations of the weaving sections along Crowchild Trail. Spacing between adjacent interchanges is relatively short, with about 800 m each between Flanders Avenue and 33 Avenue (to the north), and 50 Avenue (to the south). Weaving segment lengths are on the order of 300 to 500 m, excepting the southbound weave to 50 Avenue, which is very short at 170 m.

From analyses of both the design volumes and the sensitivity volumes, it was found that the southbound weave between Flanders Avenue and 50 Avenue is the only movement of concern. It operates just under capacity in the design traffic scenario, and over capacity at LOS F in the sensitivity analysis. Fundamentally, this is due to the short distance between interchanges, and is not primarily a function of traffic demand, particularly from Flanders Avenue. The southbound entrance ramp from Flanders Avenue carries around 700 vph in both peak periods in the design scenario and 1100 vph in the sensitivity scenario, which is well within the typical merging capacity of a single-lane ramp.

Although beyond the scope of this study, consideration may be made by The City to review basket-weave options between Flanders Avenue and 50 Avenue S as part of the future corridor upgrades leading to the Glenmore Trail interchange.

5.0 Final Interchange Evaluation

Evaluation criteria for the project were based on the City's Triple Bottle Line (TBL) Policy Framework, which was developed by the City to support Council's 2020 Sustainability Direction. The framework has three themes, Economic, Environmental and Social. When integrated, these three themes together support smart, sustainable growth and urban development, and incorporate and complement traditional evaluation measures for transportation projects, as follows:

- Social Themes – vehicle and vulnerable user safety, public realm, residential impacts, traffic noise
- Economic Themes – traffic operations, capital costs, life cycle costs, business impacts
- Environmental Themes – air (reduced emissions), land (efficient use of land) and water (accommodates stormwater run-off) considerations
- Policy Themes – compatibility with MDP / CTP policies, Complete Streets principles

The final evaluation was completed for the roundabout and signalized intersection options at the Flanders Avenue interchange. Ranking of evaluation criteria was based directly on public engagement feedback through a Dotmocracy exercise and online survey conducted in conjunction with the second open house in April 2014. A number of criteria were provided as suggestions for the ranking exercises, and the public also generated two new criteria for the project team to consider, namely "Community Connectivity" and "Cut Through Traffic".

Based on the public feedback, the evaluation criteria were organized into three categories consisting of High, Medium and Lower Priorities, with High Priority items having been chosen by 60 or more people, and Lower Priority items having been chosen by fewer than 30 people. The prioritized evaluation ranking is summarized in Table ES-5 below.

Crowchild Trail and Flanders Avenue SW Interchange Transportation Planning Study Update - Executive Summary



**Crowchild Trail / Flanders Avenue Interchange
Transportation Planning Study Update**
Canada Lands Company and The City of Calgary

Executive Summary

Table ES-5 Ranking of Evaluation Criteria

Evaluation Criteria		Open House	Online	Total
High Priority	Traffic Safety	57	39	96
	Public Transit	59	17	76
	Pedestrian Accommodation	43	29	72
	Bicycle Accommodation	37	23	60
Medium Priority	Business and School Access	26	20	46
	Emergency Access (Police, Fire, Ambulance)	33	12	45
	Urban Character / Aesthetics	22	23	45
	Vehicle Travel Times	15	28	43
Lower Priority	Environmental Sustainability	19	8	27
	Other ("Community Connectivity")	0	22	22
	Car Pooling	14	2	16
	Construction Costs	6	6	12
	Other ("Cut Through Traffic")	8	0	8
	Goods Movement (Commercial Vehicles)	2	5	7
	Other ("Unspecified Comments")	0	5	5

A final evaluation of the interchange options with either traffic signal or roundabout intersections was completed for all criteria, with the High Priority Criteria summarized in Table ES-6 below.

Legend:

✓ More Desirable — Neutral ✗ Less Desirable

Table ES-6 Evaluation of High Priority Criteria

Higher Priority	Traffic Signal Option	Roundabout Option
Traffic Safety	Signals have more conflict points and "weaving" movements across roads. ✗	Roundabout reduce conflict and accommodate traffic patterns naturally. ✓
Public Transit	Signals can be adapted to provide transit priority. ✓	Roundabouts provide better overall flow, but no specific transit priority. —
Pedestrian Accommodation	Pedestrians must cross wider roadways, with more conflict points. ✗	Pedestrians cross narrowed roadways, with few conflict points. ✓
Bicycle Accommodation	Cyclists can be accommodated in dedicated areas. ✓	Cyclists behave as vehicles or as pedestrians. —

From the ranked evaluation, it was found that the roundabout is generally more advantageous on each of the High, Medium and Low Priority levels. Although it is neutral on several higher priority items including the lack of opportunity for specific transit priority or the need for cyclists to move with pedestrians, it provides distinct advantages for traffic safety, pedestrian accommodation and other, medium- and low-priority items.

Based on the evaluation, roundabouts are the recommended intersection form for the Crowchild Trail / Flanders Avenue interchange. The ranked evaluation aligns well with the stated preferences of the public, as well, which overwhelmingly favored roundabouts when a choice was indicated in the written feedback.

Crowchild Trail and Flanders Avenue SW Interchange Transportation Planning Study Update - Executive Summary



**Crowchild Trail / Flanders Avenue Interchange
Transportation Planning Study Update**
Canada Lands Company and The City of Calgary

Executive Summary



6.0 Stormwater Management

With the changes to the interchange configuration and increase in impervious area, consideration for stormwater management is required. An integrated stormwater plan was developed for the proposed interchange in conjunction with the overall Currie Barracks project site. The proposed system includes three stormwater management facilities (ponds), five treatment structures, and associated piping as shown on Exhibit ES-3. Stormwater will tie into the existing storm sewer system that conveys runoff to the Elbow River to the east, with the proposed facilities reducing flows from the affected area to about 78% of current levels.

At the time of this report, there is interest from The City of Calgary, Water Resources to complete an updated stormwater plan for Crowchild Trail as a whole in the Flanders Avenue area. The status of this plan, including any associated funding requirements, will need to be confirmed at the design stage.

7.0 Flanders Avenue Bridge

The recommended plan for the Flanders Avenue interchange includes a new bridge structure carrying Flanders Avenue over Crowchild Trail. Due to the significant widening needed to support a roundabout intersection directly over Crowchild Trail, and the original pre-stressed / post-tension construction, retention of the existing bridge is not considered feasible. For planning purposes, a bridge concept was developed which consists of a two-span structure with a median pier in Crowchild Trail, providing a total span of about 51 m. The splaying of the bridge girders and the flaring of the roundabout approaches provide an opportunity for substantially widened pedestrian spaces on both sides of the bridge, with the variable width of the pedestrian realm along the bridge ranging from a minimum of 5.0 m to a maximum of 9.5 m.

8.0 Utilities

There are a number of utility conflicts and site servicing requirements which will need to be accommodated in the modified interchange. These include:

- Significant revisions to the stormwater system and piping.
- Replacement of a sanitary connection across Crowchild Trail near the interchange.
- Water tie-ins for Currie Barracks.
- Realignment of various shallow utilities, though there are no trunk facilities in the area such as electrical transmission or high pressure gas. Some primary connections are provided along the existing Normandy Drive (future Richard Road), parallel to Crowchild Trail.

9.0 Recommended Plan

Through the engagement and evaluation processes, a recommended interchange plan was developed that included roundabouts as the preferred intersection form throughout the Flanders Avenue interchange. This is illustrated on Exhibit ES-4. Design details for the roundabouts were developed in conjunction with many internal stakeholders at the City of Calgary and included detailed consideration of roundabout laning, sightlines, approach speeds, signing and other design parameters.

9.1 Property Requirements

The recommended property lane and resulting property requirements are illustrated on Exhibit ES-5. Generally, the interchange is accommodated within City of Calgary right-of-way, with portions of the existing right-of-way also being designated for stormwater management. About 0.37 ha (0.92 ac) of land dedication

Crowchild Trail and Flanders Avenue SW Interchange Transportation Planning Study Update - Executive Summary



**Crowchild Trail / Flanders Avenue Interchange
Transportation Planning Study Update**
Canada Lands Company and The City of Calgary

Executive Summary

will be required for Canada Lands Company, which will be moderately offset by road closures / surplus exchanges of 0.02 ha (0.06 ac).

While no property acquisition is required on the east side of Crowchild Trail, the retaining walls will be constructed immediately adjacent to the property lines of Staywell Manor Village, Masters Academy and College and The Military Museums. Construction easements will be required in order to build the walls from the lower level on private property. Typical easements of 5 m are shown on the plan, though narrow to 4 m at several locations to ensure a minimum 1 m offset to existing buildings. The final easements will need to be confirmed with these landowners through an access agreement at the design stage.

9.2 Constructability Considerations

The following are constructability considerations that have been assumed in the recommended plan:

- In order to simplify construction staging, minimize construction costs and achieve the desired timelines, it is proposed that the Flanders Avenue bridge would be closed for much of the construction period.
- Crowchild Trail must remain open to traffic at most times. Periodic closures would occur overnight.

Generally, the construction is intended to occur over a three year period, as follows:

- Year 1 – Utility relocations, and construction of initial roads, ramps and detours.
- Year 1 / 2 (Winter) – Bridge demolition / construction.
- Year 2 – Construct remaining road connection, and re-open interchange.
- Year 3 – Streetscaping / finishing.

9.3 Cost Estimate

The following table summarizes the Class 3 cost estimate prepared for the Flanders Interchange upgrade project. The site costs relate primarily to the reconstruction of Richard Road North / Normandy Drive, but also the short westerly approach segments of Flanders Avenue and Barrack Street.

Table ES-7 Class 3 Cost Estimate Summary

Item	Description	Site Costs	Interchange Cost
1	Removals	\$ 210,000	\$ 1,070,000
2	Grading	\$ 230,000	\$ 1,360,000
3	Pavement Structure	\$ 880,000	\$ 2,510,000
4	Concrete	\$ 110,000	\$ 1,640,000
5	Wayfinding	\$ 0	\$ 1,030,000
6	Structures	\$ 2,000,000	\$ 13,600,000
7	Utilities	\$ 0	\$ 2,840,000
8	Miscellaneous	\$ 1,175,000	\$ 1,375,000
Construction Cost Sub-Total		\$ 4.6 Million	\$25.4 Million
Contingency (20%)		\$ 920,000	\$ 5.1 Million
Total Incl. Contingency		\$ 5.5 Million	\$ 30.5 Million
Engineering & Testing (15%)		\$ 830,000	\$ 4.6 Million
Total Class 3 Estimate (2014 Dollars)		\$ 6.3 Million	\$ 35.1 Million

Crowchild Trail and Flanders Avenue SW Interchange Transportation Planning Study Update - Executive Summary



**Crowchild Trail / Flanders Avenue Interchange
Transportation Planning Study Update**
Canada Lands Company and The City of Calgary

Executive Summary



10.0 Public Engagement

The public engagement process for the Flanders Avenue study overlapped and was complementary to the extensive public engagement program completed by Canada Lands Company in the pre-application phase of the Currie Barracks Land Use Re-designation. Overall, the engagement process for the study is illustrated in Figure ES-1 below, and described as follows:

1. Phase 1 – Issues and Constraint Identification
2. Phase 2 – Design Option Consultation
3. Phase 3 – Recommended Design Selection

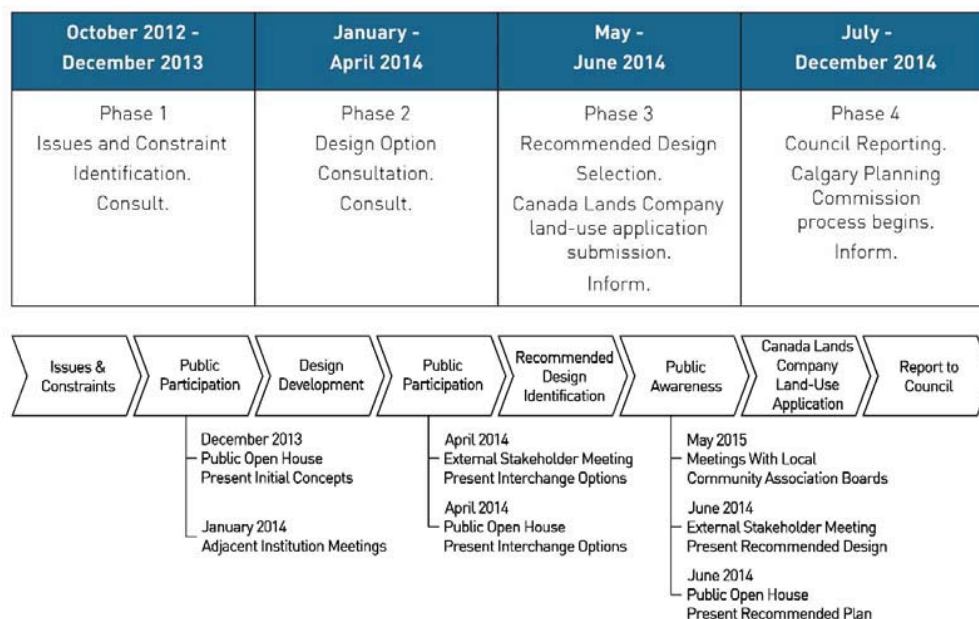


Figure ES-1 Engagement Process Diagram

10.1 Engagement Phase 1 – Issues and Constraint Identification

The initial interchange options formed the basis for the first phase of engagement, where simplified interchange network plans were presented and used as a basis for open discussion and feedback on public priorities and the identification of relevant issues and constraints. An open house was held on December 10, 2013 at the Currie Barracks Sales Centre, which was the second open house hosted by CLC for the Currie Barracks planning process (the first was held in November), and which provided an opportunity for the City's interchange study to be integrated with the presentation materials.

Crowchild Trail and Flanders Avenue SW Interchange Transportation Planning Study Update - Executive Summary



**Crowchild Trail / Flanders Avenue Interchange
Transportation Planning Study Update**
Canada Lands Company and The City of Calgary

Executive Summary

In general, the feedback heard at the December open house indicated the following priorities for Flanders Avenue:

- Provide a well-connected street network.
- Accommodate multiple modes of transportation (walking, cycling, transit).
- Provide multiple access points into the community.
- Minimize traffic impacts on existing neighborhoods.

External stakeholders including area Community Associations participated in a Community Advisory Committee meeting hosted by CLC prior to the December 2013 open house, and provided a range of feedback about transportation network issues in the area. To further broaden the stakeholder group, members of the Flanders Avenue team arranged a series of one-on-one meetings with representatives of the following organizations in January 2014. All are in the immediate vicinity of the interchange or are significant contributors to existing traffic demand:

- Staywell Manor Village.
- Masters Academy and College.
- The Military Museums.
- Calgary Catholic School Board (Bishop Carroll High School).
- Conseil Scolaire Catholique et Francophone du sud de l'Alberta (École Sainte-Marguerite-Bourgeoys).
- Clearwater Academy.
- Mount Royal University.

10.2 Engagement Phase 2 – Design Option Consultation

Following the first phase of engagement, a preferred transportation network was finalized for Currie Barracks and the Flanders Avenue interchange. The purpose of the second engagement phase was to obtain feedback from the public on options for active modes accommodation and intersection control (roundabouts or traffic signals), and to have the public help rank priorities for final evaluation and selection of the preferred plan.

External stakeholders including the institutional stakeholders indicated above, plus the Marda Loop, Rutland Park, Killarney / Glengarry and Richmond / Knob Hill Community Associations, met to review the planning on April 10, 2014, which was followed by the second open house for Flanders Avenue on April 14, 2014 at the Currie Barracks Sales Centre. This open house was formally hosted by both CLC and The City, with CLC leading the organization and advertising efforts related to the presentation of their proposed land use plans. There was extensive media coverage prior to the open house, as well as mail-drop advertising to more than 13,000 homes in the area and use of variable message boards of Crowchild Trail for a period of two weeks prior.

The open house was one of the most well attended ever for a City transportation project, with more than 600 members of the public coming through the doors. The City portion of the event provided six opportunities for public feedback, including the Dotmocracy / survey exercises to rank the evaluation priorities (refer to Section 5 above). In general, the key themes heard from the public feedback at this stage included:

- A strong preference for roundabouts over signals, when a preference was stated.
- Transit, safety, cycling and pedestrian connectivity are top priorities.
- Congestion elsewhere on Crowchild Trail (not necessarily at Flanders itself) poses a risk for community "short-cutting".
- A variety of feedback about Currie Barracks, which was generally unrelated to Flanders Avenue (i.e. – retail plans, parks, building locations, etc.)

Crowchild Trail and Flanders Avenue SW Interchange Transportation Planning Study Update - Executive Summary



**Crowchild Trail / Flanders Avenue Interchange
Transportation Planning Study Update**
Canada Lands Company and The City of Calgary

Executive Summary



Following the April open house, the project team was invited to participate in Board Meetings of the various Community Associations in the study area, which were completed between May 5 and May 26, 2014. The CA meetings provided an opportunity to review feedback from the April open houses, and hear direct feedback from board members about what they had been hearing about the project from their members.

10.3 Engagement Phase 3 – Recommended Design Selection

Following the second engagement phase, final evaluation and refinement of a preferred interchange plan was completed, as discussed in Section 5. A ranked evaluation based on public priorities confirmed that roundabouts were the preferred intersection form, which aligned well with the stated public preference and the technical evaluation of the project team.

CLC had submitted the Currie Barracks Land use Re-designation application by the end of May 2014, which included the preferred interchange plan. With this process completed, the final phase of public engagement for Flanders Avenue was hosted exclusively by The City, and dealt directly with the standalone recommendations for the upgraded interchange.

A final external stakeholders meeting was held the evening of June 18, 2014 at the Marda Loop Community Hall, with the final open house held June 24, 2014 at The Military Museums. Overall, the feedback confirmed that the plan was supported by the majority of respondents, and that the overall engagement process had been satisfactory. Key themes heard from the final feedback included:

- Pedestrian and cyclist safety are a priority.
- Important that the interchange does not encourage cut-through traffic in Garrison Woods.
- Important that the interchange recognize the safety of children at area schools.
- Interested in obtaining more information about traffic levels for Currie Barracks and where it will go.
- Some suggestions to consider traffic calming measures or speed limit revisions at various locations in Garrison Woods.
- Like the plan, but would like more information about Crowchild Trail and Currie Barracks.
- Like the landscaping concepts.

Overall themes heard about the engagement process included:

- The Open Houses have been good, and have provided several feedback opportunities.
- Staff have been helpful in answering questions and responding to feedback.
- Handouts of the information boards would have been helpful.
- Good 3D Visualization to understand the design.
- Some concern that the City scheduled several Public Engagement events on the same night as this open house, which may have reduced attendance.

10.4 3D Visualization

In the lead up to the final open house, ISL worked with CLC's Landscape Architect and Planning teams to develop final details for integration of the interchange within the community vision for Currie Barracks, which allowed ISL to develop 3D visualizations to present the recommended interchange plan. Figures ES-2 through ES-7 below represent some of the materials prepared, which included a fly-through video of the interchange. The visualizations were highly effective in communicating the vision for the interchange to the public, and were well received at the open house.

Crowchild Trail and Flanders Avenue SW Interchange Transportation Planning Study Update - Executive Summary



**Crowchild Trail / Flanders Avenue Interchange
Transportation Planning Study Update**
Canada Lands Company and The City of Calgary

Executive Summary



Figure ES-2 3D Visualization – Driver's Eye View, Northbound Crowchild Trail



Figure ES-3 3D Visualization – Bird's Eye View from the Southeast

Crowchild Trail and Flanders Avenue SW Interchange Transportation Planning Study Update - Executive Summary



**Crowchild Trail / Flanders Avenue Interchange
Transportation Planning Study Update**
Canada Lands Company and The City of Calgary

Executive Summary



Figure ES-4 3D Visualization – Bird's Eye View from the Southwest



Figure ES-5 3D Visualization – Bird's Eye View from the North

Crowchild Trail and Flanders Avenue SW Interchange Transportation Planning Study Update - Executive Summary



**Crowchild Trail / Flanders Avenue Interchange
Transportation Planning Study Update**
Canada Lands Company and The City of Calgary

Executive Summary

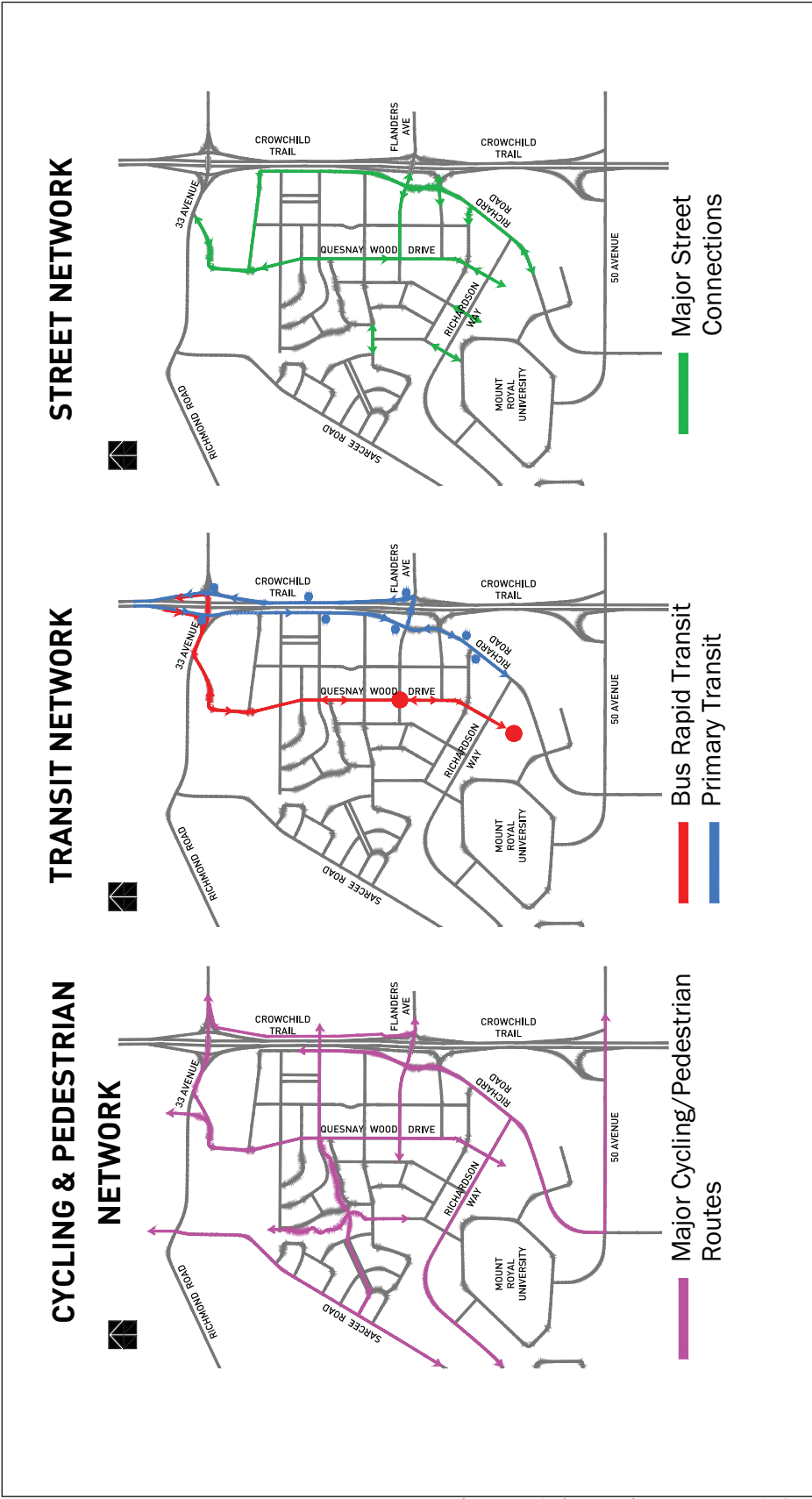


Figure ES-6 3D Visualization – Driver's Eye View of NB Entrance Ramp Crosswalk



Figure ES-7 3D Visualization – Pedestrian Level View from Northeast Bus Stop

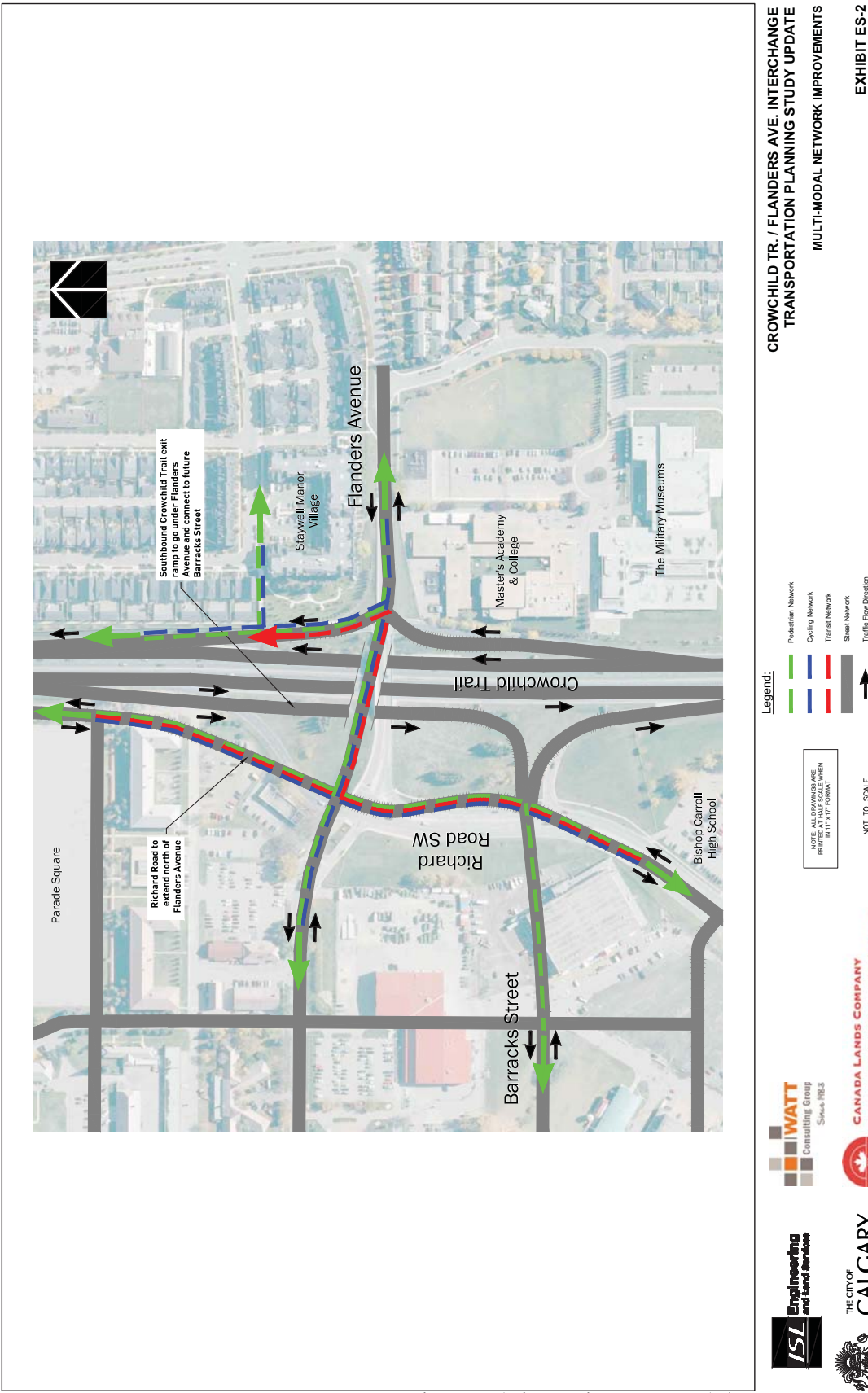
Crowchild Trail and Flanders Avenue SW
Interchange Transportation Planning Study
Update - Executive Summary



CROWCHILD TR. / FLANDERS AVE. INTERCHANGE
TRANSPORTATION PLANNING STUDY UPDATE
PROPOSED NETWORKS
EXHIBIT ES-1



Crowchild Trail and Flanders Avenue SW
Interchange Transportation Planning Study
Update - Executive Summary





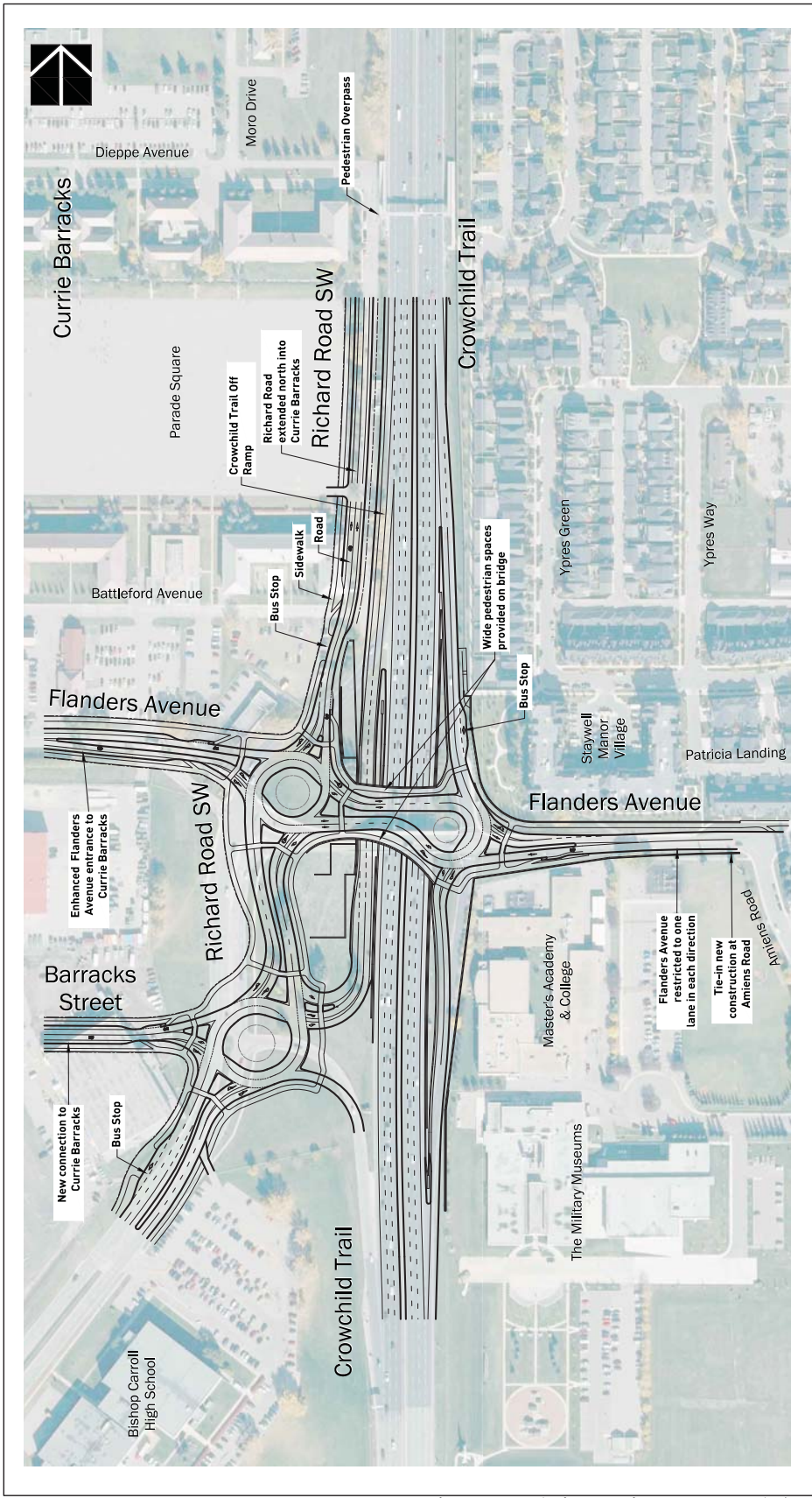
Legend:

- Existing minor storm system
- New minor storm system for proposed Custer Barnside development
- Proposed Flanders Interchange minor storm system
- Proposed treatment structure
- Proposed storm water pond

NOTE: ALL DRAWINGS ARE
PRINTED AT HALF SCALE WHEN
IN 11" x 17" FORMAT



Crowchild Trail and Flanders Avenue SW Interchange Transportation Planning Study Update - Executive Summary



CROWCHILD TR. / FLANDERS AVE. INTERCHANGE
TRANSPORTATION PLANNING STUDY UPDATE

RECOMMENDED PLAN

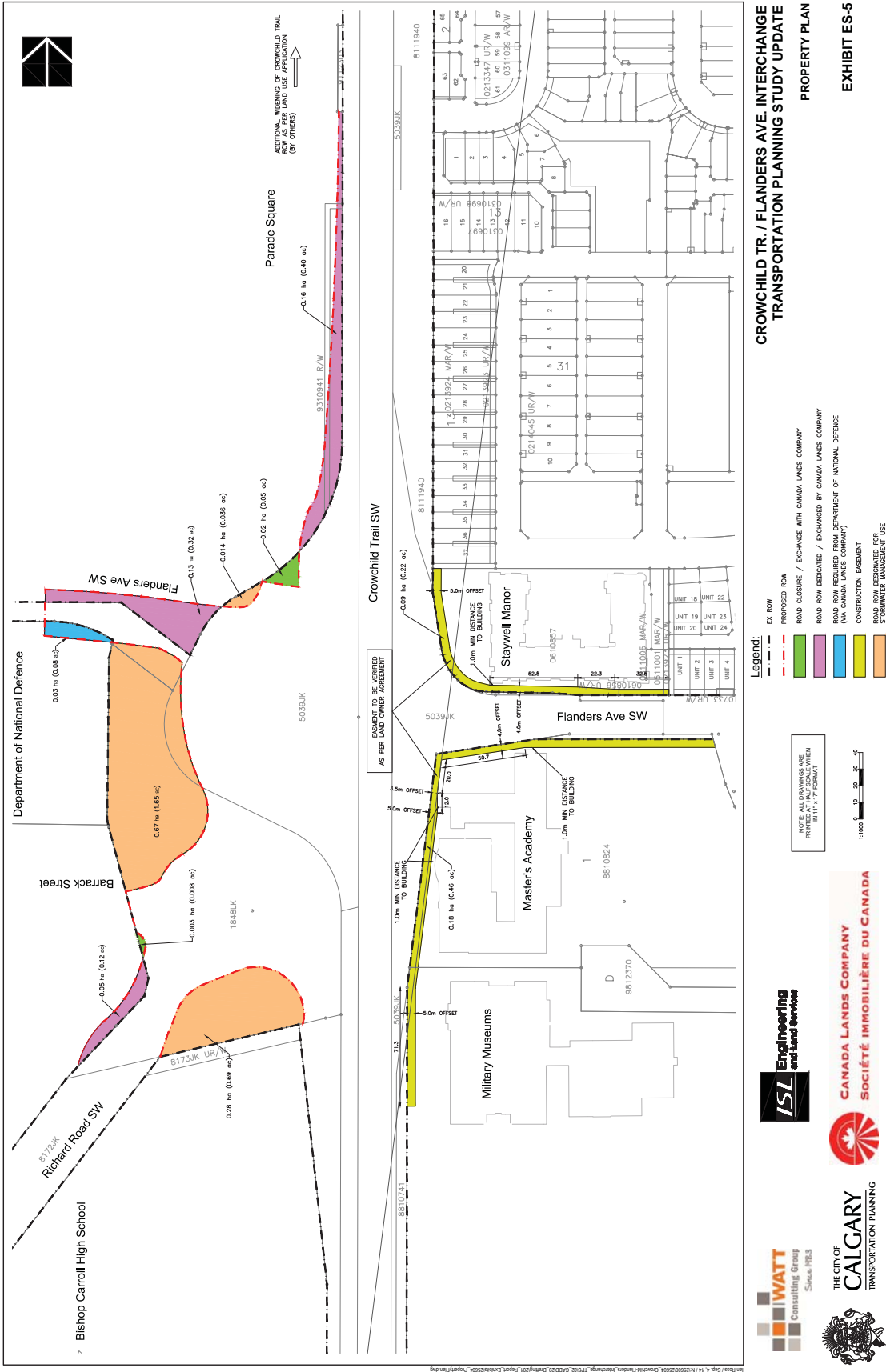
EXHIBIT ES-4

NOTE: ALL DRAWINGS ARE
PROPOSED AND SHOWN
IN A 1:10000 SCALE
UNLESS OTHERWISE
NOTED

NOT TO SCALE



Crowchild Trail and Flanders Avenue SW
Interchange Transportation Planning Study
Update - Executive Summary



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TRANSPORTATION PLANNING STUDY UPDATE
PROPERTY PLAN
EXHIBIT ES-5