CONNECTING BLACK CREEK

Strategic Active Transportation Plan

DECEMBER 2013

RYERSON UNIVERSITY

TORONTO CYCLING THINK & DO TANK

tcat toronto centre for active transportation

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Finally, the Black Creek Studio Team is very grateful to our advisor, **Dr. Shelagh McCartney**, for her advice, motivation and encouragement. Her drive, enthusiasm for the project, and expertise in the field gave us the confidence to approach the project in new and exciting ways.

CONNECTING BLACK CREEK

Strategic Active Transportation Plan

1.0 EXECUTIVE SUMMARY

Figure 1.0.1
Typical built form in Black Creek.

In September 2013, Toronto Cycling Think and Do Tank and the Toronto Centre for Active Transportation (TCAT) commissioned Ryerson University's Graduate Planning Studio to analyze the potential for enhancing active transportation (AT) infrastructure in the Black Creek neighbourhood.

An inner ring suburb of Toronto, the Black Creek neighbourhood presents unique challenges to AT. The team aimed to provide principles and interventions that could be applied to other inner suburban neighbourhoods.

Based on primary research, neighbourhood analysis, and international best practices, the team:

- Developed a strategic active transportation plan (SATP) for the Black Creek neighbourhood; and
- Created a template for planning inner suburban AT

1.1 Benefits of Active Transportation

The City of Toronto and the Province of Ontario both support the development of AT as a desirable mode of travel. AT has the potential to:

- provide low-cost alternatives to motor vehicles
- enhance main streets and locally owned businesses
- provide health benefits through active lifestyles
- alleviate traffic congestion
- complement transit ridership

* **Active transportation:**
Trips made using one or several human-powered modes of transportation. E.g.: walking, cycling, rollerblading, skateboarding[1]

1.2 Approach to the Plan

Figure 1.2.1
The hydro corridor trail crosses Gosford Blvd. near an apartment tower. (3)

Three principles guided the development of the SATP.

1. Access to opportunity

Increase an individual's ability to access employment, education, recreation, commercial uses, and other key amenities by not limiting the modes of transportation that are available to them.

2. Equity in movement and interconnections

Increase an individual's ability to access multi-modal transportation options in order to gain full access to the city.

3. Promoting a healthy and active lifestyle

Increase an individual's access to AT as a means to adopt a healthy and active lifestyle.

1.3 Active Transportation and Toronto's Suburbs

Figure 1.3.1
Toronto's ravines, such as the Humber, Don, and Taylor Creek, have been used for multi-use trail corridors, primarily running north-south. Significant gaps remain, such as between Black Creek and the Humber trail to the south (Figure 2.1.3)

Bringing AT to suburban areas requires different strategies from those that work well downtown. Suburbs were built to accommodate separated land uses: where home, work and community are physically separated and most easily accessed by driving a car. This suburban design legacy presents unique challenges and opportunities for enhancing AT.

Downtown streets often have short blocks with a variety of land uses, creating a welcoming and interesting pedestrian realm that encourages AT. Suburban roads are comparatively difficult to navigate, as they are often curved and organized in long blocks that are geared for vehicle movement. A painted lane on a major road may be enough to give cyclists a feeling of safety in the core; in the inner ring suburbs, traffic speeds may be too high for cyclists to ever feel safe on the road, particularly as beginners.

1.4 Black Creek

Figure 1.4.1
A model of the built form with population density by census tract. Darker blues indicate higher population density.

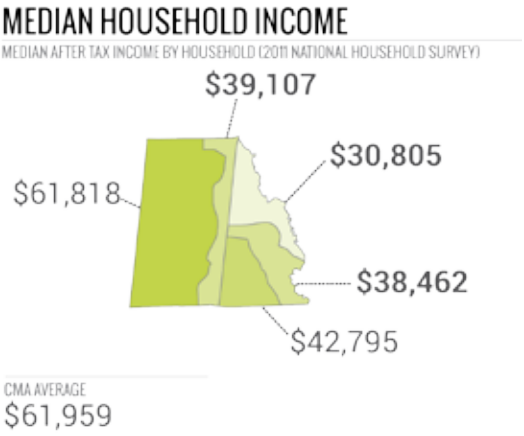


Figure 1.4.2
Median incomes by census tract.

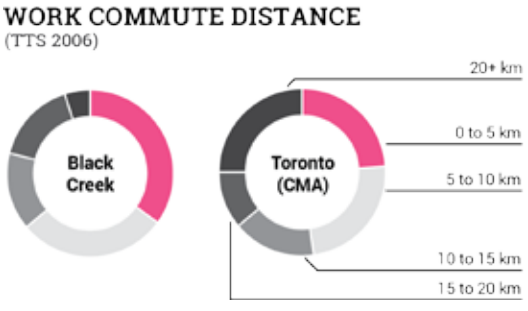


Figure 1.4.3
Commute To Work By Distance

Black Creek is a post-war suburban neighbourhood with a built form characterized by a high clustering of low and medium density housing located along curvilinear streets, a number of modernist towers along arterial streets, and a high proportion of Toronto Community Housing on the outer edges of the neighbourhood.

Many people in Black Creek already walk and use public transit routes. Access to an extensive ravine network and wide streets present opportunities to increase AT connections in the Black Creek neighbourhood. The challenge lies in the details of the suburban built form: disconnected sidewalks, long walking distances, and high speed roads.

The Black Creek community is also forced to reconcile an identity of gun and gang violence, a perception which also is attached to a number of other inner suburban neighbourhoods in Toronto. It has been designated as a priority investment neighbourhood, and while that designation comes with the benefit of targeted public investments, it also comes with the stigma that informs often negative impressions of the neighbourhood.

In reality, Black Creek is a mixture of both middle income and low income individuals and families. Middle income families tend to live in detached dwellings, and low income families tend to live in high rise dwellings and publicly subsidized housing. Black Creek is an arrival neighbourhood, but many newcomers who live in the neighbourhood have been in Canada for more than 10 years . The neighbourhood is multicultural, with African, Caribbean, Middle Eastern, Southeast Asian and Asian residents.

KEY OBSERVATIONS OF BLACK CREEK

- Narrow sidewalks with many pedestrians
- Minimal existing cycling infrastructure
- High speed roads with many cars
- High density towers surrounded by park spaces
- Significant informal walking pathway network
- Finch Hydro corridor as an east-west connection

1.5 Potential Users of Active Transportation

Figure 1.5.1
Travel destination map for children.

Figure 1.5.2
Locations of destinations related to movements of caregivers

Figure 1.5.3
Locations of destinations related to movements of commuters

Based on a demographic analysis of neighbourhood residents, the team developed three profiles of potential users for the SATP: caregivers, children and commuters - called the "Three Cs".

Children

There are a lot of children living in the neighbourhood, with 25% of residents under the age of 15. Key concerns for children include safety, connectivity and proximity to their destinations: schools and community amenities.

Caregivers

There are many woman-led families in the neighbourhood. There are nearly 2 ½ times more female lone parents in Black Creek than in the rest of Toronto. For caregivers, key concerns include safe and direct access to children's destinations as well as linkages to transit and commercial centres.

Commuters

Almost 65% of people in Black Creek commute less than 10 km to work. For commuters to use AT, they need access to quick direct routes, and transit that can bring them to other areas of the city.

- Commercial Hub
- Community/Recreational Facility
- Library
- Major Transit Hub
- Future Transit Hub
- Park
- Daycare
- Elementary School
- Middle School
- Secondary School

1.6 Design Principles

The design principles set out broad themes and a rationale, including specific benefits for target users, for all recommended interventions as part of the SATP.

THEME	DESIGN PRINCIPLE	RATIONALE	TARGET AUDIENCES		
			CHILDREN	CAREGIVERS	COMMUTERS
Safer Streets	**Eyes on the path**	Pathway design follows the principles of Crime Prevention Through Environmental Design (CPTED), and there are minimal obstructions to sightlines. Pathways are lit, allowing travel at night. Pathways travel from node to node, and each node is patronized frequently or supervised ("eyes on the path").	●	●	◑
	Low speeds	Routes are designed for low travel speeds (for both bike and car). The facility is designed for 8-80 and is focused on slow speeds for travel distance. If prevailing speeds are high, traffic calming measures are deployed.	●	●	○
	Low volumes	Route alternatives are available to routes with high volumes of motor vehicles.	●	●	◑
	Maintenance and state-of-good-repair	Trails are cleared of snow and ice in the winter, making year-round travel more feasible. Facilities are in a state of good repair and do not have any hazards due to wear and tear.	●	●	●
Increased connectivity	**Regional connections**	Facilities provide ways to cross arterial roads and ravines and access adjacent neighbourhoods.	○	◑	●
	Direct, non-circuitous routes	The ability to travel along a direct route that supports higher cycling speeds is of increased value for people commuting to work.	○	○	●
	Intermodal (with transit)	Network paths are designed to connect with transit hubs, such as a subway station, to facilitate long distance travel and 'last-mile' connections to transit.	○	◑	●
	Meeting Places	The active transportation network should include opporunities to encourage interaction among community members and enliven the streets for people. Pathway intersections should include activity nodes that provide opporunities for bench seating, gathering places, community gardens, and informal retail. Seating areas spaced every 100 m along a path will be a beneift for seniors.	●	●	○
Enhanced Public Realm and Facilities	**Bike storage and parking**	Facilities are provided that assist bike owners in storing their bikes in an appropriate and secure space at home. Secure and appropriate facilities for bike parking are provided at destinations such as schools, libraries, community centres, places of employment, and retail hubs.	●	●	●
	Complete Street Design	Well-designed sidewalks, multi-use trails, and separated bike lanes provide a safe and attractive route. Facilities should be designed for consistent user expectation along a route, and to be usable by anyone from 8 years old to 80 years old.	●	●	●
	Legible routes	The network paths intersect at regular intervals. Navigation is assisted by trail wayfinding.	●	●	●

○ Weak relationship ◑ Partial relationship ● Strong relationship

1.7 Strategic Active Transportation Plan

The plan lays out priority infrastructure improvements to promote AT by increasing safety, connectivity and enhancing the AT experience.

The plan approaches the neighbourhood by dividing the layout of streets and paths into three levels. These are arterials (in pink), collectors (in green) and pathways (in brown). Intersections of pathway elements are ideal places to invest in improvements to the public realm. These “nodes” are also shown below.

Figure 1.7.1
Overview of road types and pathway types assigned to Black Creek.

Corridor Design

The analysis of the neighbourhood was separated into several corridors, the Jane corridor (Figure 1.7.2), was the most active. The corridor plans show how the project team has designated road and pathway types, as well as some site-specific interventions. For more detail on corridors, see section 7.

There are three major arterials where the majority of the cycle and pedestrian traffic is expected: Jane Street, Finch Avenue and Steeles Avenue. The arterials are designated for major interventions on the right-of-way that will enhance cycle and pedestrian travel. Nodes, designated for more general improvements to the built form that will facilitate AT, are located along the main arterial, Jane Street.

There are several collectors that connect to the arterials and adjacent neighbourhoods. The most prominent collector is Shoreham Drive, which will connect to York University campus and future subway stations. These are typically low traffic areas, so they do not need major interventions to increase safety and connectivity. Collectors will be enhanced with traffic calming, sharrows and bike facilities.

Pathways are the internal connections of the neighbourhood that are already used by pedestrians and cyclists. These pathways need to be formalized and enhanced through better maintenance, lighting and wayfinding.

Finally, the Finch Hydro Corridor represents a unique green ribbon through the neighbourhood, but it is recommended that rest stops, north south connections and increased lighting be utilized to enhance the space.

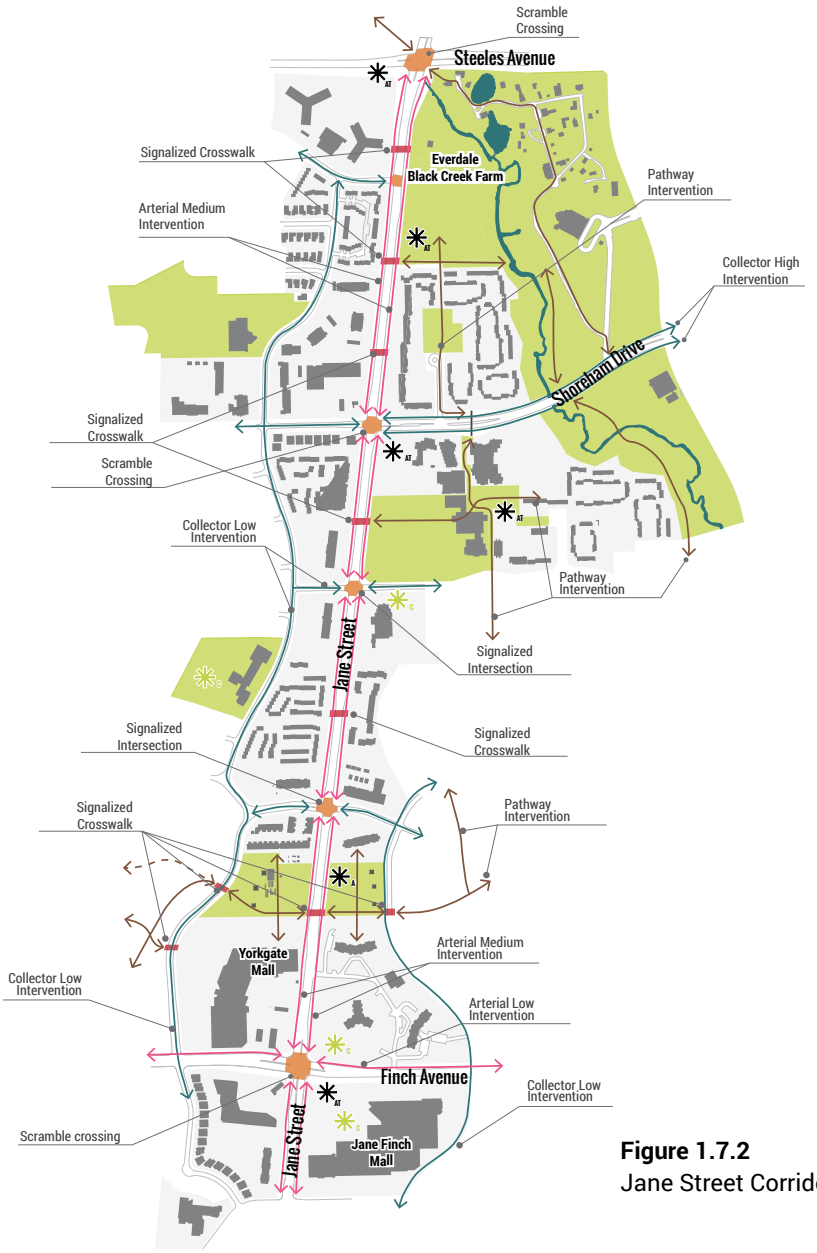
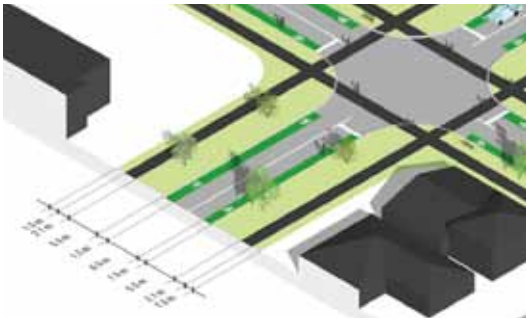


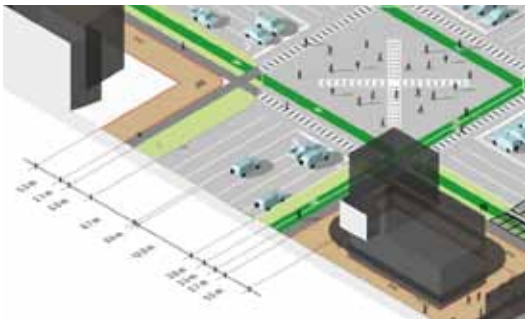
Figure 1.7.2
Jane Street Corridor Plan

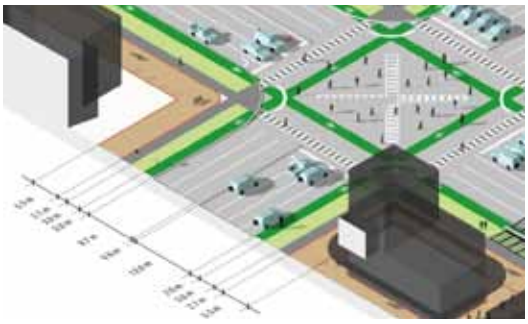
Road and Path Types

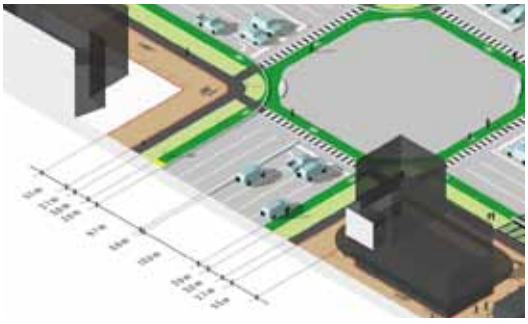
The road and path types defined by the project team are similar to the functional roadway classifications used in traffic engineering, with the exception of multi-use pathways (such as the hydro corridor path). For a more detailed exploration of these types, see section 6.2. The matrix below displays a summary of the recommended low- and high-intervention scenarios for improving safety and convenience for AT users.

	Residential	**Collector**
Low Intervention		
Medium Intervention		
High Intervention		

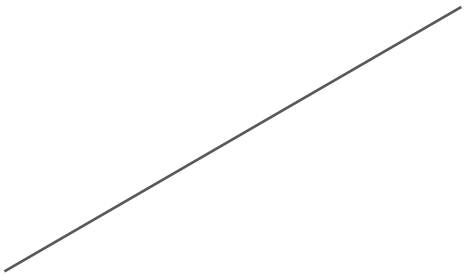
Arterial

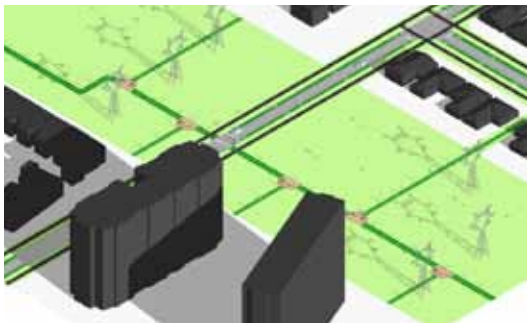


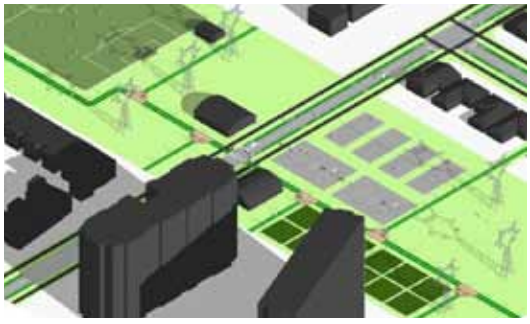




Hydro Corridor Pathway







Node Design

The project team also applied the design principles to certain intersections of roads and road and pathways (what are referred to here as “nodes”) in order to inform site-specific interventions. Nodes are explored in more detail in section 7.

Figure 1.7.3
Black Creek node plan

Figure 1.7.4
Jane/Shoreham node plan

Figure 1.7.5
Finch hydro corridor node plan

Figure 1.7.6
Jane/Finch node plan

1.8 Pedaling Ahead

The socioeconomic composition of Black Creek – and many of Toronto's other inner ring suburbs - reveals concentrations of residents who typically see higher barriers to cycling, such as newcomers and people living below the poverty line.

While the SATP for Black Creek identifies user profiles (children, caregivers, commuters) and adopts infrastructure interventions tied to the needs of these users, programming interventions should ultimately complement this infrastructure to significantly increase the uptake of AT in the neighbourhood.

Programming tailored to suit the needs of the neighbourhood must be in place to help new cyclists learn how the new facilities, and to encourage experienced cyclists to feel more confident moving around.

Programming should be considered even before investment in infrastructure, but the best agents to determine what programs will be the most effective in any neighbourhood are the residents themselves. Accordingly, community members and NGO's (e.g., Toronto Centre for Active Transportation and Toronto Cycling Think and Do Tank) can participate in introducing school programs, bike share and repair hubs, mentoring programs, and specific lobbying targets.

Already the Black Creek neighbourhood has a number of programs already in existance that should be further supported and leveraged to increase demand for better cycling infrastructure in the neighbourhood. They include:

- Active and Safe Routes to School (Toronto Public Health: AT education and programming support for walking school buses or school AT strategies).
- Bicycle-Friendly Business Awards: publicity and exposure within the inner suburban context for infrastructure and programming improvements initiated by the private sector.
- Bicycle User Group – Smart Commute North Toronto-Vaughan & Cycle Toronto North York: local advocacy groups focusing on commuter and recreational cycling.
- CultureLink/Partnership for Integration and Sustainable Transportation: active in Black Creek to provide programming and insight into promoting healthy lifestyles in newcomer neighbourhoods; children's routes to school initiative.

- Investing in Families Initiative (City of Toronto): Integrated access for single parent families in Jane & Finch including recreational and health promotion activities for children
- Walk into Health (Toronto Public Health/Toronto Public Library): walking information and pedometer lending program at the York Woods library.

1.9 Conclusion

Black Creek's built form, high proportion of newcomers, and status as a priority neighbourhood make it a good template for AT in other inner ring suburban neighbourhoods in Toronto. While the Hydro Corridor's presence provides special opportunities for connections with other parts of the city, many of the challenges faced by the area are similar to other suburban areas.

The interventions presented for Black Creek represent the first phase imagined for AT and pedestrian realms. However, no plan can be considered complete without input from the real experts in the neighbourhood - the residents themselves. As such, subsequent phasing has not yet been explored; the community must communicate their vision for the neighbourhood - and this is the vision that must be carried through.

2.0 A TEMPLATE FOR INNER-SUBURBAN ACTIVE TRANSPORTATION

2.1 Connecting the Inner Ring to the Core

Figure 2.1.1
Typical built form in Black Creek.

Figure 2.1.2
Wide expressways, such as Highway 400, divide communities from each other. There are few crossing points for cyclists and pedestrians. The highways create significant barriers.

Many of Toronto's suburbs were built after World War Two, to accommodate newly returning soldiers and their families. In an attempt to create a new environment distinctly different to the urban core, buildings faced away from street fronts, residential streets created a curved, disconnected street network, and retail, usually mixed in with housing and other uses in the downtown, was relegated to malls at major intersections. While in the downtown, public transportation could move people around easily and relatively quickly, private vehicles were the best means of navigating suburban streets[1].

Black Creek combines single family homes – reflecting the suburban dream of detached houses with garages and easy access to a major highway – with a towers-in-the-park style of development. These towers, which are often high density and surrounded by swaths of unanimated green space, provide low-cost housing options for newcomers and low-income Toronto residents.

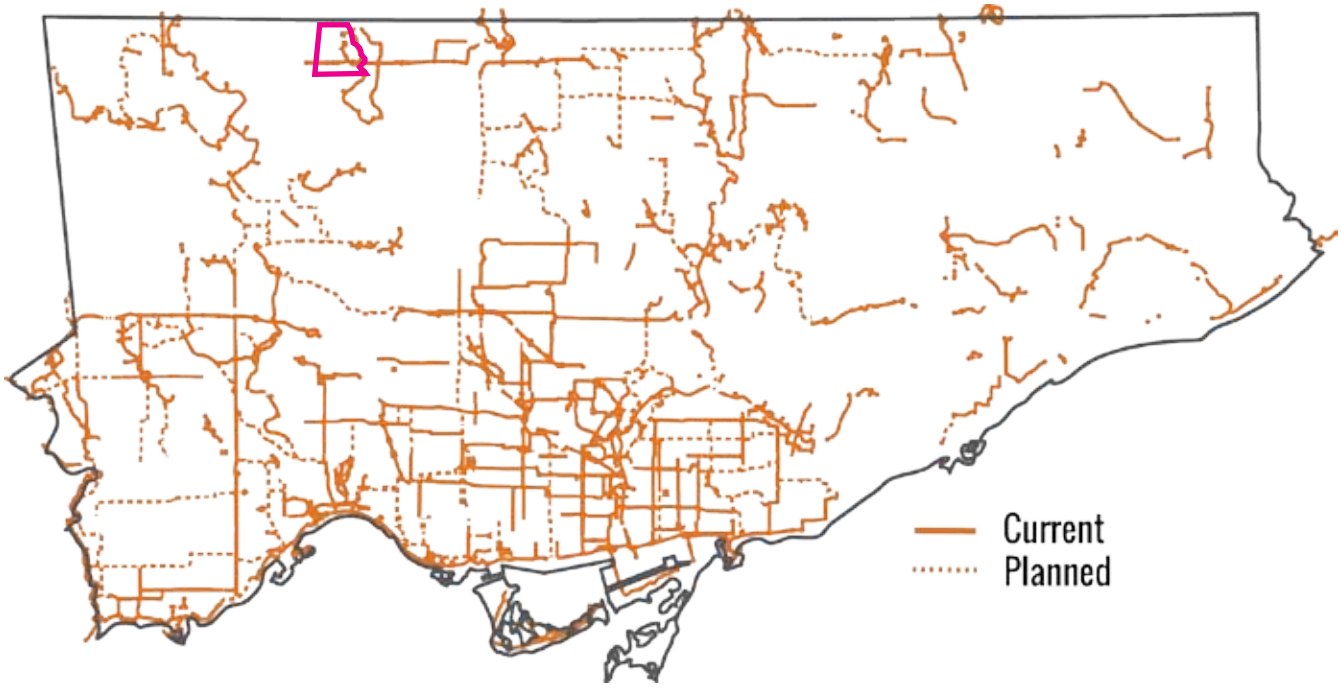


Figure 2.1.3
Map showing the cycling route network in Toronto. Note low network density in suburban perimeter, and Black Creek in particular.

Figure 2.1.4
Toronto's ravines, such as the Humber, Don, and Taylor Creek, have been used for multi-use trail corridors, primarily running north-south. Significant gaps remain, such as between Black Creek and the Humber trail to the south (Figure 2.1.3)

In the fall of 2013, Toronto's Chief Planner held a series of roundtables to discuss the challenges of mobility, social services and built form in the suburbs.[2] Downtown areas have historically received significant investment in active transportation (AT); suburban roads have been built to accommodate commuters who drive, rather than facilitating AT for neighbourhood trips or multi-modal trips to work. As Figure 2.1.3 indicates, even with planned routes in place, Black Creek will not be well-connected to the core, or other areas of the city. Indeed, there are large swaths of inner ring suburban areas which are not currently connected to the rest of the city.

2.2 Active Transportation in the Suburbs

Bringing AT to suburban areas requires different strategies from those that work well downtown. A painted lane on a major road may be enough to give cyclists a feeling of safety in the core; in the inner ring suburbs, however, traffic speeds may be too high for cyclists to ever feel safe on the road, particularly as beginners.

Downtown streets often have short blocks with a variety of land uses, creating a welcoming and interesting pedestrian realm that encourages AT. Suburban roads are often comparatively difficult to navigate, as they are curved and can end in culs-de-sac. The separation of uses in the suburbs means that walking is often less interesting or appealing; strategies are needed to animate the streetscape and encourage people to walk in their neighbourhoods.

A search for cities whose approach to AT in the suburbs was different to Toronto's led to case studies in London, Berlin and Portland.

LONDON

London's network indicates a desire to bring cycle commuters from Outer London to Inner London quickly and efficiently. The city has built several dedicated bicycle-only highways which lead cyclists directly from the suburbs to the core of the city. London's approach gives residents the option to cycle to work, rather than driving or using public transit.

Figure 2.2.1
The cycling route network in London, UK.

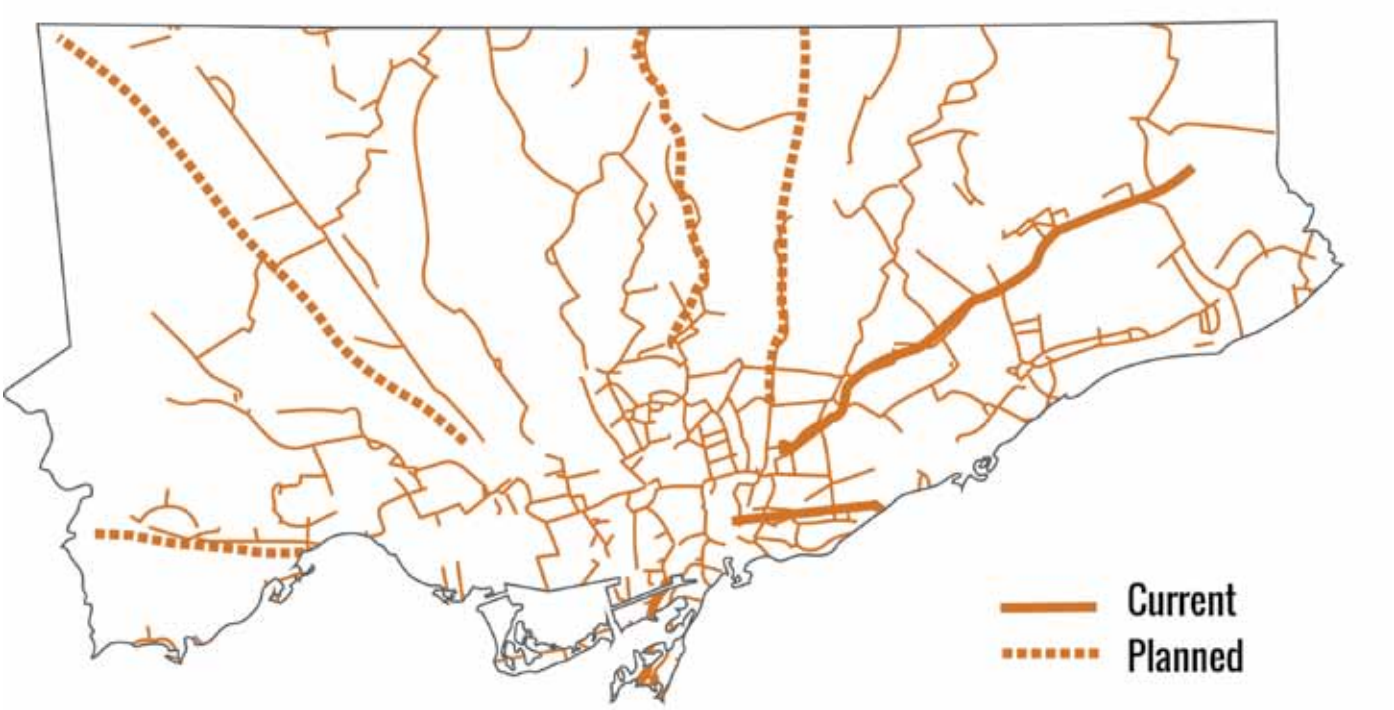


Figure 2.2.2
The London cycling route network superimposed on Toronto. Proposed and existing cycle super-highways are highlighted, showing a pattern for suburban-core connections. The London network has been rotated for best fit.

BERLIN

Berlin has capitalized on an injection of funds for the 2006 FIFA World Cup to intensify its cycling network, both in the downtown and in the suburbs. The city has car-free cycle highways, similar to London's, but has also populated its inner ring suburbs with a secondary network, easing travel within those neighbourhoods. This means commuters can access the downtown core easily, and suburban residents wishing to make short trips in their neighbourhood have the infrastructure to do so.

Figure 2.2.3
The cycling route network in Berlin, Germany.

Figure 2.2.4
The Berlin cycling route network superimposed on Toronto. Network stresses radial connections between suburbs and core, along with circumferential connections (suburb to suburb). The Berlin network has been rotated for best fit.

PORTLAND

Portland is widely recognized for having excellent cycling and AT facilities in the core of the city. Recently, they have started to turn their attention to bringing cycling and AT networks in the inner ring suburbs. The 2012 East Portland plan aims to bring AT into a low-income inner suburban neighbourhood of the city. The plan will use a combination of strategies, such as widening sidewalks, off-road bicycle lanes, and wayfinding, to encourage AT in the neighbourhood.

Figure 2.2.5
The cycling route network in Portland, Oregon.

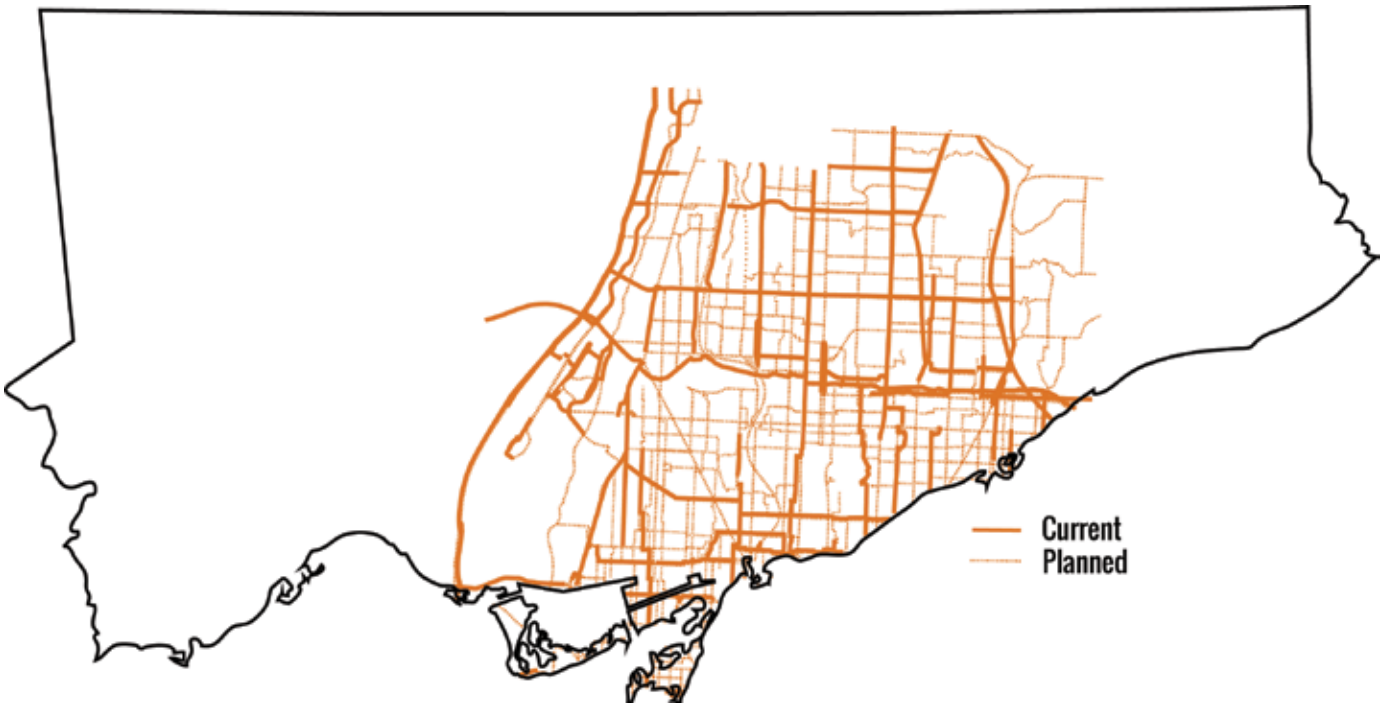


Figure 2.2.6
The Portland cycling route network superimposed on Toronto. The network design stresses a grid system, made up of bikeways, bike lanes, and multi-use trails.

* London, Berlin and Portland have invested heavily in improving AT infrastructure in their suburbs. However, infrastructure alone will not automatically cause an increase in cycling or walking. Each city has supplemented this infrastructure with investments in programming designed to educate new cyclists in particular, ensuring that they feel safe and confident moving through their neighbourhood and into the downtown area.

Walking school buses, adult-supervised bicycle trips to elementary schools, and employer incentive programs are all designed to encourage suburban residents to start walking or bicycling in their neighbourhood. This is an important lesson; **cities must encourage and educate suburban residents in using new infrastructure if they wish to see an increase in AT**.

2.3 Urban to Suburban Context

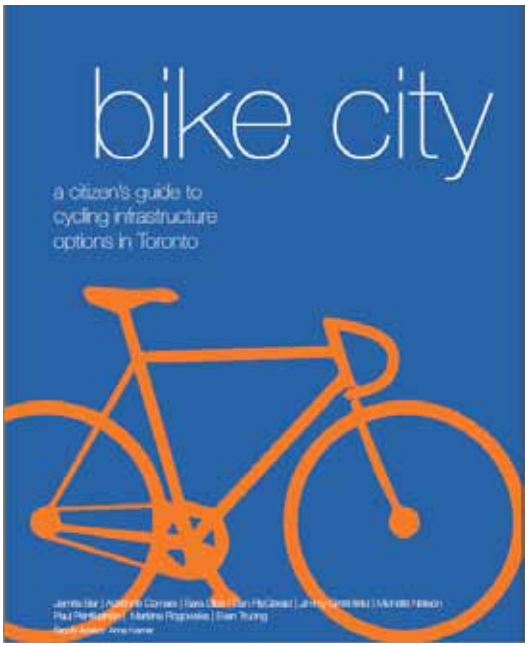


Figure 2.3.1
Bike City

In 2012, a Ryerson graduate planning studio group produced a report called *Bike City*. The document analyzed road types in Toronto, and recommended a hierarchy of interventions that would enable AT for these types.[3] *Bike City*'s mandate focused on core and mid-town typologies. While their analysis was in-depth, other street types within the city of Toronto, particularly those typical of inner ring suburbs, were not included. Although downtown has historically received the majority of funding for AT,[4] the health, economic and community benefits of cycling and walking should also be facilitated in the inner ring suburbs.

Suburban built form and separation of uses present unique challenges to AT, which must be met with equally unique solutions. The suburbs have been overwhelmingly designed for the car, but as neighbourhoods change, their uses can also change. The strategic active transportation plan (SATP) for Black Creek is designed to open the door to that conversation in Toronto.

Accordingly, as part of the SATP, four new typologies tailored to the specific built form of inner ring suburbs were developped. Specifications were also developped for three levels of intensity for different applications and levels of implementation (i.e., low, medium, and high). They include:

- Residential Streets
- Collector Streets
- Major/Minor Arterial Streets
- Hydro Corridors/Internal Pathways

References

1. City of Toronto. *The Shape of the Suburbs*, Toronto, 2013.
2. *ibid*.
3. Bar, J. et al. *Bike City*, Toronto, 2012.
4. EcoPlan International. *Active Transportation in Canada*. Ottawa, 2011.

3.0 PROJECT OVERVIEW

The central objectives of the project are to develop a strategic active transportation plan (SATP) for the Black Creek neighbourhood and to develop a planning template for inner suburban active transportation (AT).

3.1 Key Tasks

A project mandate and three principles guided our work and provided direction for the project (see sidebar below). In order to fulfill the mandate and adhere to the principles, specific tasks were identified:

- Review and build upon the *Bike City* report
- Gather baseline conditions on the social and physical infrastructure in Black Creek
- Analyze existing travel patterns in the neighbourhood
- Assess the potential of the Finch Hydro Corridor as a primary thoroughfare
- Review best practices from other cities to enhance AT within inner-ring suburbs
- Formulate recommendations to enhance AT in the neighbourhood

Mandate
To identify key interventions to enhance connectivity and increase AT within the Black Creek neighbourhood.

Principles

1. Access to opportunity
Increase an individual's ability to access employment, education, recreation, commercial uses, and other key amenities by not limiting the mode of transportation that is available to them.

2. Equity in movement and interconnections
Increase an individual's ability to access multi-modal transportation in order to gain full access to the city.

3. Promoting a healthy and active lifestyle
Increase an individual's access to AT to promote healthy and active lifestyles.

Active Transportation:
Trips made using one or several human-powered modes of transportation. E.g.: walking, cycling, rollerblading, skateboarding[1]

Inner ring suburb:
Neighborhoods located in the peripheral areas of the city and typically designed as suburban enclaves for a burgeoning population after the second World War. Typical built form in these areas is a contrast of low-density bungalows, designed for families, and tall apartment towers. A car-centric design has resulted in some common characteristics of these neighbourhoods, including:

- Curvilinear residential streets
- Wide rights-of-ways on arterials
- Little pedestrian and cycling infrastructure within the right-of-way
- Deep setbacks
- Separation of commercial and residential uses: few mixed-use buildings with commercial space animating the ground floor and poor proximity between residential and commercial areas
- Large separations between buildings
- Inter-neighbourhood connectivity limited to larger arterials and collectors

Desire Lines:

Visible dirt paths worn into vegetation or grass created by pedestrian use of the space. Often used as shortcuts.

Limitations

The project has been limited by the availability of secondary data and the collection of primary data:

- The origin-destination data provided from Transportation Tomorrow Survey (TTS) is from 2006 and limited to home phone surveys, excluding many demographic categories.
- There was limited engagement with stakeholders to establish travel behaviours, barriers to AT uptake and the potential to leverage policies, funds and programming to support AT in the neighbourhood.
- No community consultations could be conducted, limiting qualitative data collection on residents' experience. This limited the following: origin and destination points, refining the demographic data, identifying patterns in barriers to using active modes of transportation, and what would enable residents to participate in AT.
- There was limited secondary data available on the movements of residents in the neighbourhood.

Given the scope of this project and the limitations, there are opportunities for further research:

- Community programming to encourage AT
- Stakeholder engagement and community consultations to assess neighbourhood needs and opportunities
- Conducting cost-benefit analysis of interventions
- Phasing interventions to maximize infrastructure and target specific populations

These are explored in further detail in Section 8.0: Recommendations for Future Active Transportation Planning in the Inner Suburbs.

3.2 Black Creek: A Case Study in Inner-Suburban Active Transportation

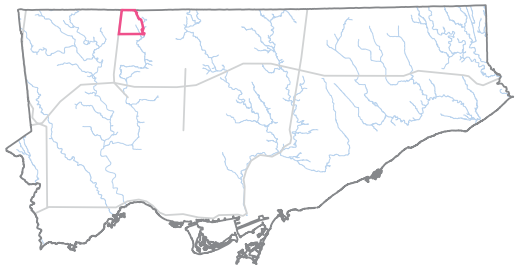


Figure 3.2.1
The location of the Black Creek neighbourhood within Toronto

OVERVIEW OF THE NEIGHBOURHOOD

From our on-site visits and spatial analysis, we observed that Black Creek is a diverse and physically fragmented neighbourhood. As a postwar suburban neighbourhood, Black Creek relies on arterial roads and access to major highways to move people to and from the neighbourhood. Interior circulation is facilitated by a traditional suburban curvilinear street network and a network of internal pathways.

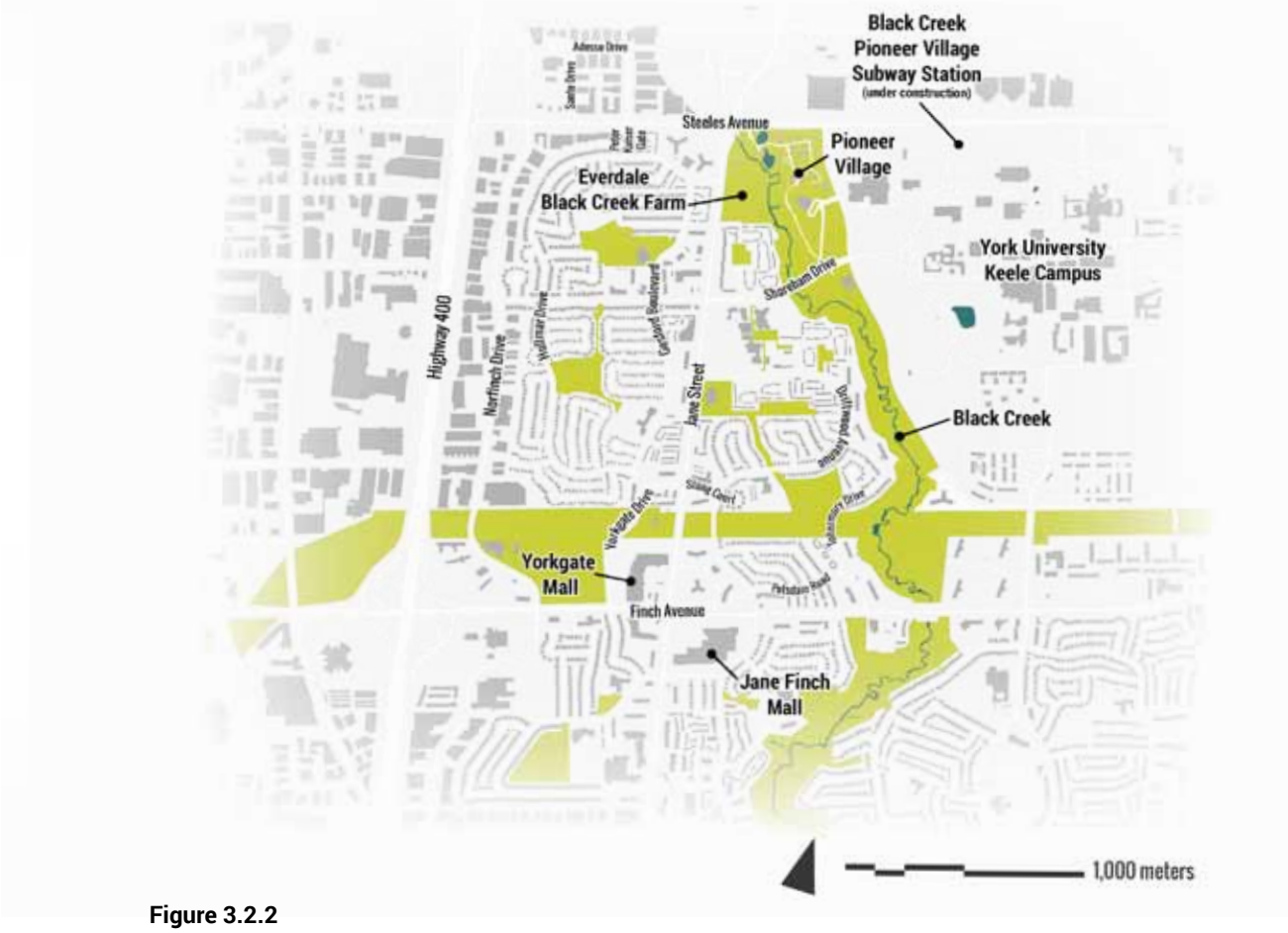


Figure 3.2.2
Overview map of Black Creek.

Figure 3.2.3
The hydro corridor trail crosses Gosford Dr. near an apartment tower. (3)

Figure 3.2.4
The landscape of the hydro corridor trail, with towers in the background. (4)

Figure 3.2.5
Long crossing distances (Jane and Steeles). (5)

Figure 3.2.6
Off-road paths run between streets, providing shortcut opportunities. Adjacent properties face away from these paths. (6)

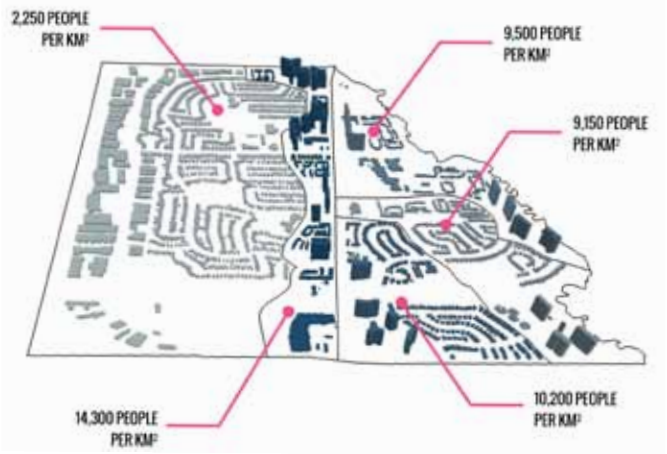


Figure 3.2.7
A model of the built form with population density by census tract. Darker blues indicate higher population density.

A major challenge to the uptake of active modes of transportation lies in Black Creek's suburban built form. Disconnected sidewalks, long walking distances, limited nighttime lighting and winter maintenance of pathways, as well as wide, high speed roads make environments intimidating to pedestrians and cyclists. As well, a lack of infrastructure such as bike lanes, pedestrian crossings or separated areas make safety issues a major barrier to AT uptake by residents.[2]

Despite a hostile built form, residents already engage in behaviours involving AT: many people walk, cycle or use public transit.

* The Finch Hydro Corridor presents a key opportunity to connect Black Creek through AT.

  A multi-use recreational trail runs from the terminus in the western quadrant of the neighbourhood (Norfinch Dr.) to adjacent neighbourhoods to the east. It connects to the Finch subway station at Yonge St., presenting an opportunity for connections to other neighbourhoods in the city.

Figure 3.2.8
A section of the Finch hydro corridor without a paved multi-use trail. Desire lines indicate demand for a formalized path. (7)

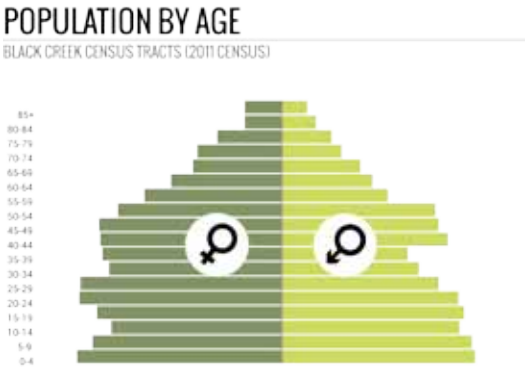


Figure 3.2.9
Population pyramid, Black Creek.

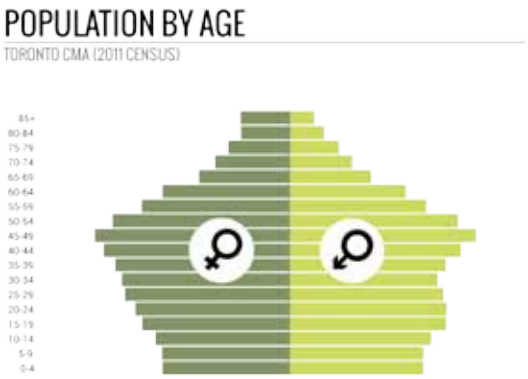


Figure 3.2.10
Population pyramid, comparison to CMA.

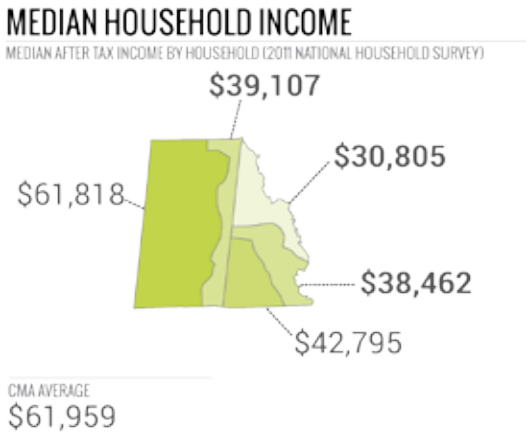


Figure 3.2.11
Median incomes by census tract.

BLACK CREEK IS A NEIGHBOURHOOD OF FAMILIES

Families are of diverse sizes and types, though there is a large proportion of lone parent households in Black Creek, particularly ones comprised of multiple children, in comparison to Toronto's average. Nearly a quarter of residents are children and youth under the age of 15.

Middle income families tend to live in detached dwellings, and low income families tend to live in high rise dwellings and Toronto Community housing which is publicly subsidized.

The SATP highlights the importance of this large family demographic by segmenting target populations comprised of caregivers and children. Easy and safe intra-neighbourhood connections between dense residential areas and their destinations can encourage non-car travel for a significant number of potential users.

BLACK CREEK IS AN ARRIVAL NEIGHBOURHOOD

Black Creek is culturally diverse and a hub for newcomers - though nearly three quarters of newcomers have been settled in the neighbourhood for more than ten years. Like many other arrival neighbourhoods, Black Creek has a wealth of settlement services. It is one of Toronto's 17 Local Immigration Partnership neighbourhoods, which means that special services are in place to support newcomers.

While the demographics of the neighbourhood have evolved, the built form has remained static: a post-war suburb designed around car travel and the separation of residential areas from amenities and services. As a result, many of the arrival neighbourhoods that share Black Creek's inner-suburban form experience common barriers in the physical design, zoning and transportation network that can isolate residents both physically and socially.

Developing affordable, healthy and convenient transportation options in arrival neighbourhoods such as Black Creek can ease some of the challenges associated with settlement.

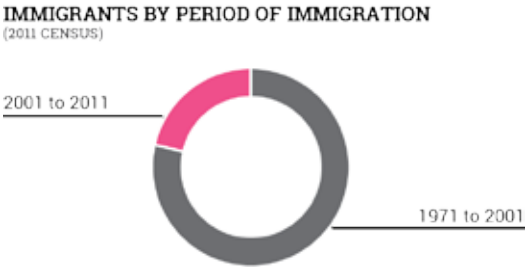


Figure 3.2.12
Immigrants by period of immigration.

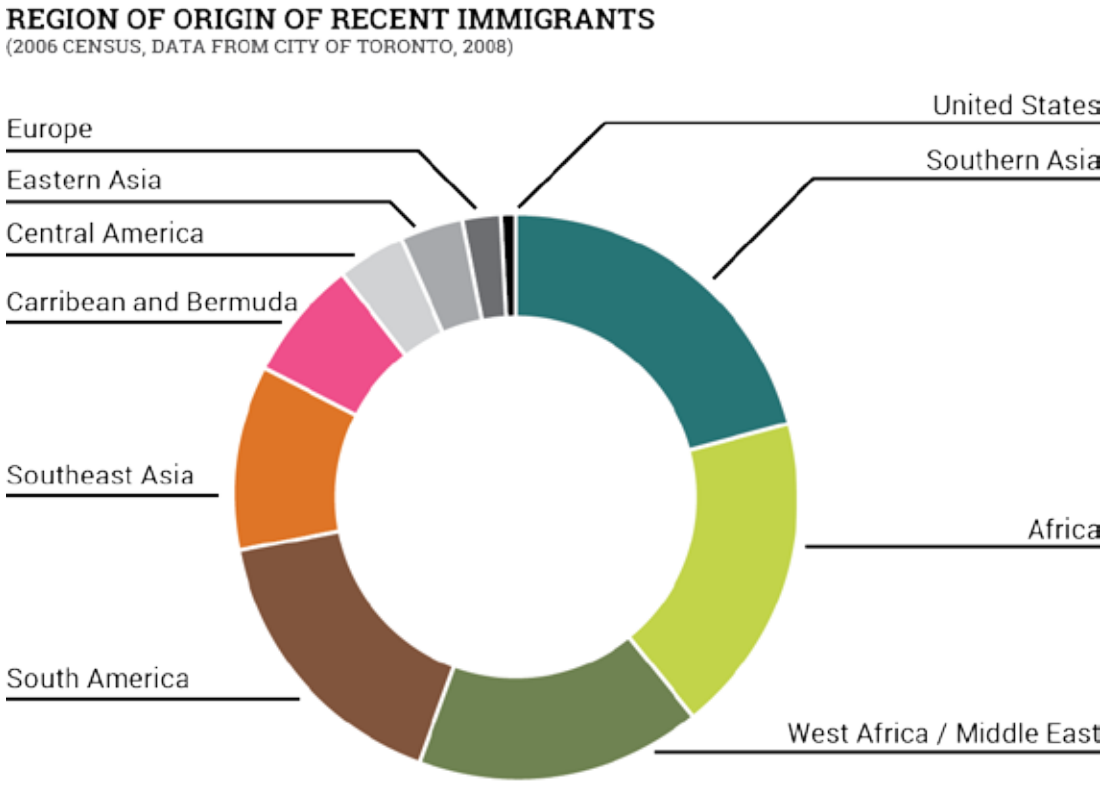


Figure 3.2.13
Region of origin of recent immigrants (arrived 1995 to 2005)

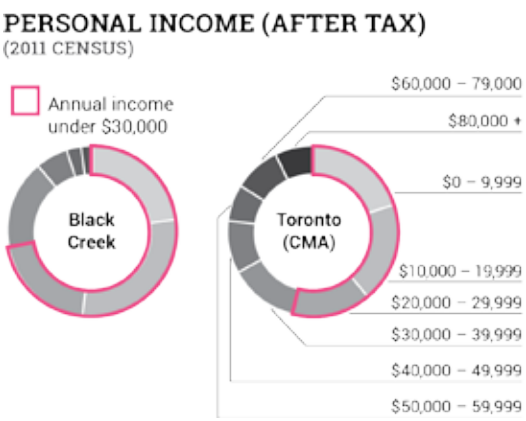


Figure 3.2.14
Personal after tax income

BLACK CREEK IS A PRIORITY NEIGHBOURHOOD

Many people who live in Black Creek have a low income.

One of Toronto's 13 priority areas, Jane-Finch encircles the Black Creek neighbourhood, and while this designation attracts targeted investments for services and community infrastructure, it also creates stigma. A sensationalist image of gun violence and social disorder haunts Black Creek and similar low-income inner-suburban neighbourhoods in Toronto.

Compounding this issue is the fact that poverty in Black Creek is concentrated in areas dominated by isolated apartment towers and publicly subsidized housing. Black Creek's streets and pathways are poorly serviced by lighting; the neighbourhood is also limited in animated spaces and other amenities that can make pathways and public spaces feel more welcoming. Residents and community stakeholders cite the lack of these amenities as a major barrier to perceptions of safety in walking and cycling in the neighbourhood, particularly at night.[9]

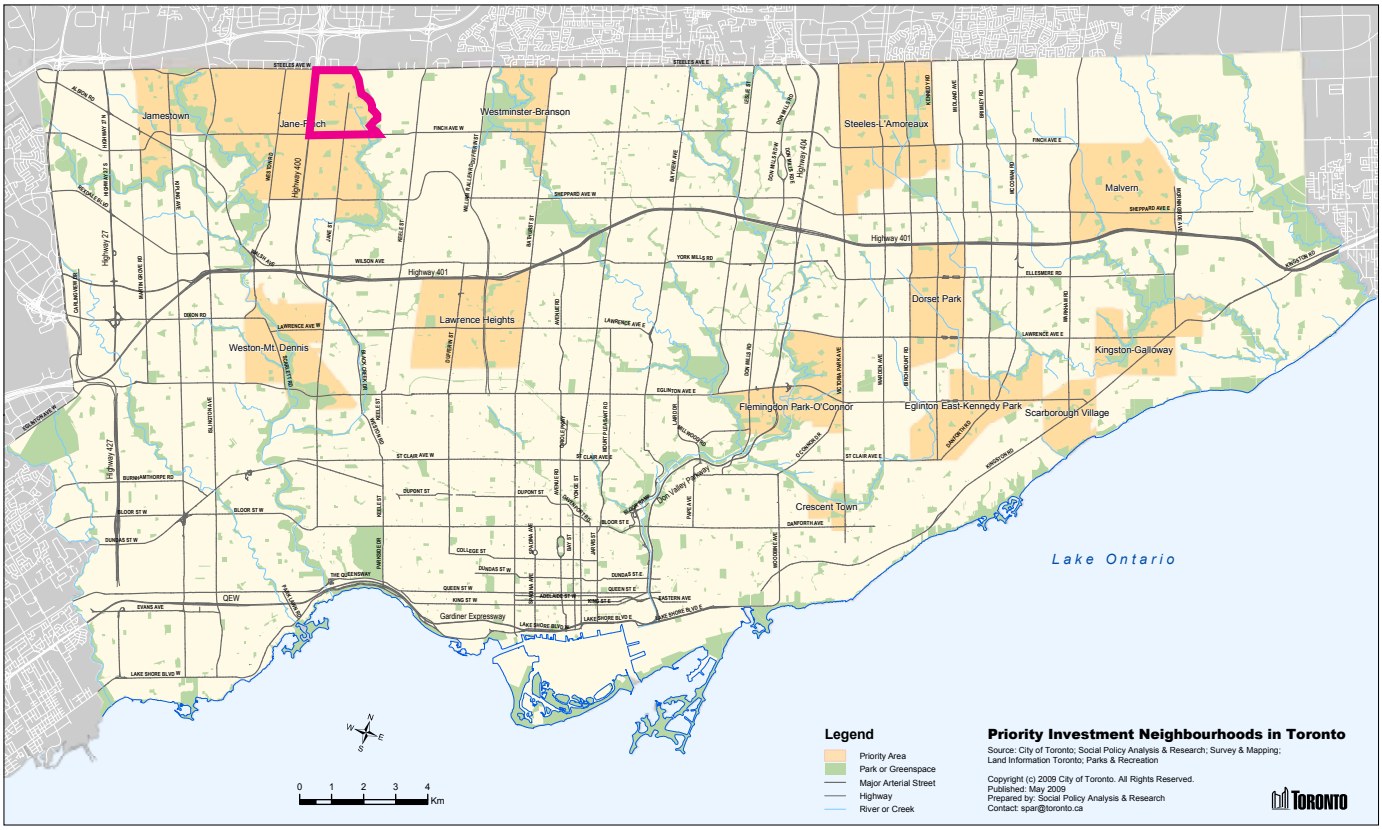


Figure 3.2.15
Locations of current priority investment neighbourhoods[8] with Black Creek highlighted.

The socio-economic profile of the neighbourhood indicates a high potential for impact in supporting affordable and healthy options for transportation. Residents have the right to move within the neighbourhood to access community amenities and outside of the neighbourhood to access employment opportunities. The potential savings associated with reducing car and transit costs are shown in Figure 3.2.20.

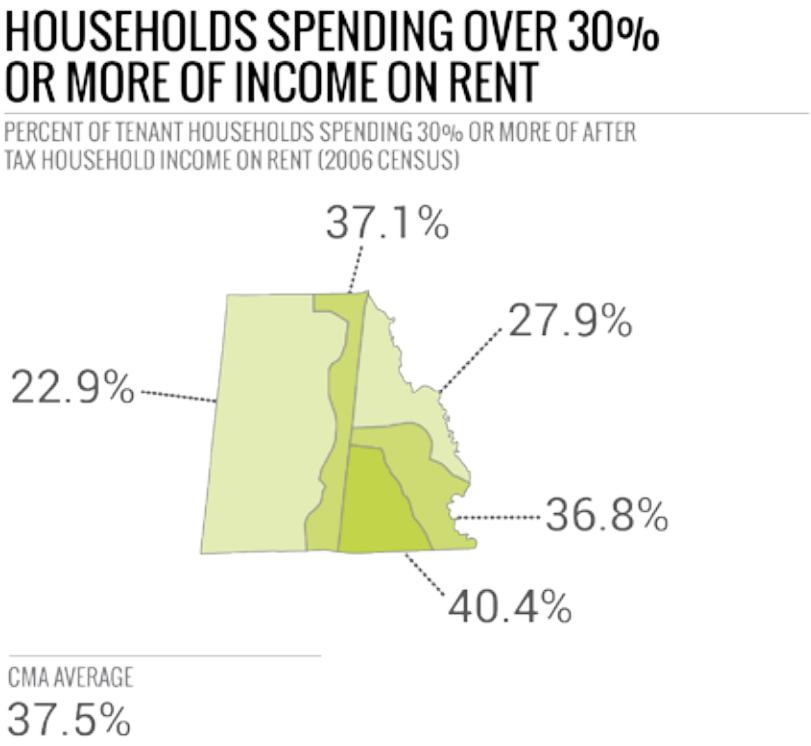


Figure 3.2.16
Spatial distribution by census tract of households spending more than 30 percent of household income on rent.

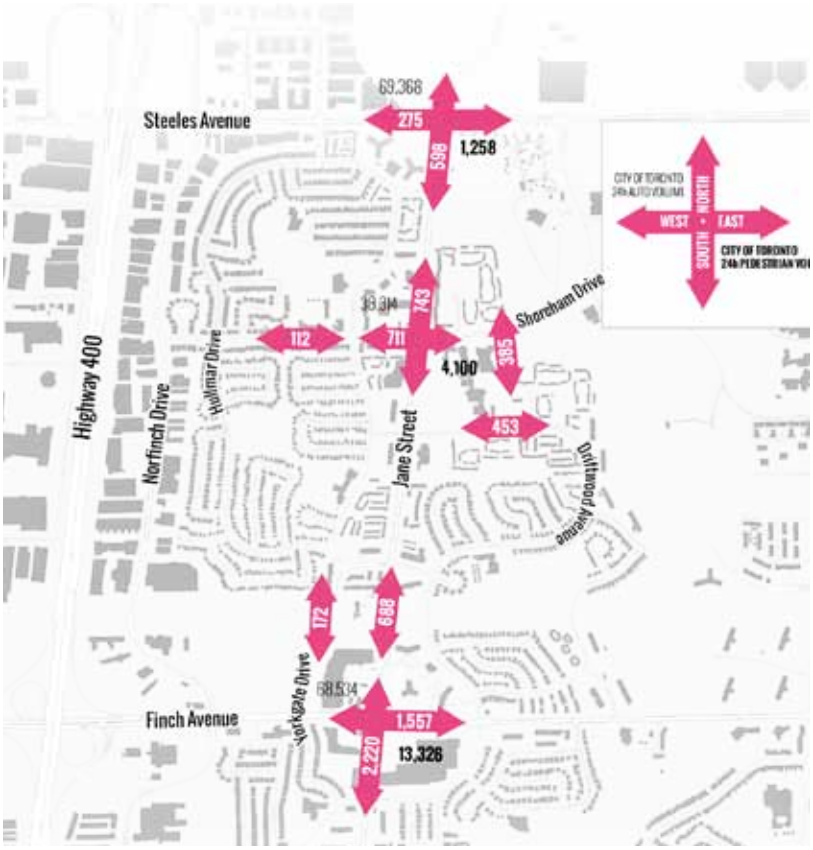


Figure 3.2.17
Weekday pedestrian count results, 3 – 6 pm

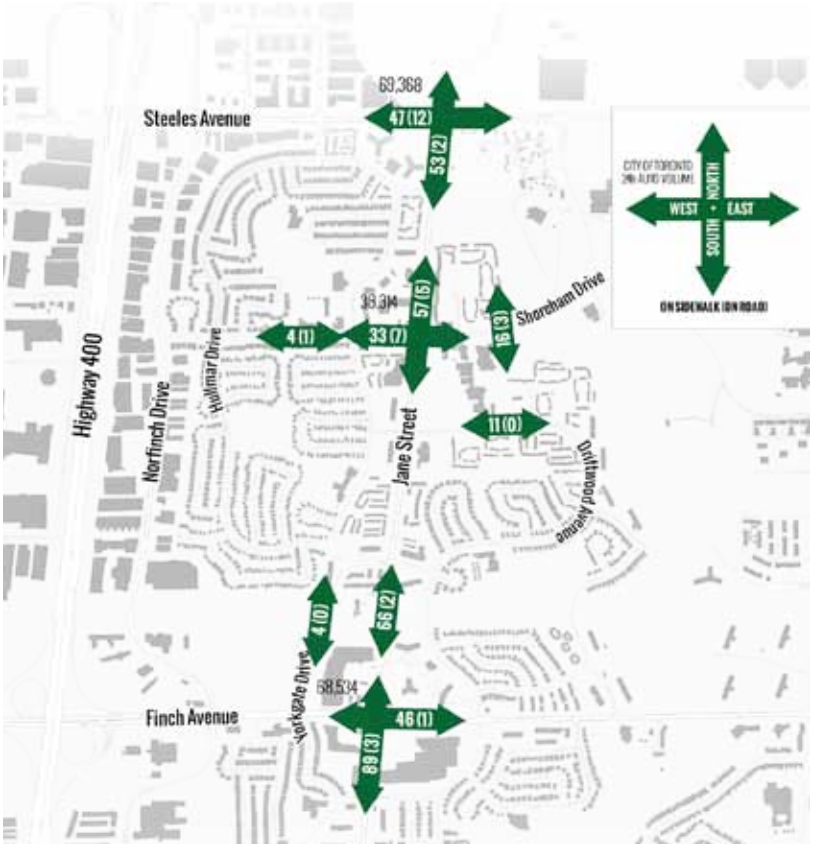


Figure 3.2.18
Weekday bicycle count results, 3 – 6 pm

ACTIVE TRANSPORTATION BEHAVIOURS IN BLACK CREEK

One of the above-mentioned challenges of bringing AT to an inner ring suburb is reconciling fears of safety on roads with poor AT infrastructure and the isolating effect of inner suburban built form.

Despite this, Black Creek residents use AT in surprisingly high numbers; this is particularly true in key transit nodes where Jane intersects with Finch and Steeles. Pedestrian counts for these key areas, and in locations near employment and institutional nodes show a high number of pedestrians – comparable to intersections in downtown and midtown Toronto.

Figure 3.2.19
Located outside the downtown core, the intersection of Yonge and Sheppard provides a very friendly streetscape for AT, with mixed uses, street frontage and wide sidewalks.[9]

However, cyclists are few and far between, and are almost exclusively riding on sidewalks. Sharing an already narrow space reveals the potential for conflict, which is one of the reasons people feel unsafe using AT to navigate the neighbourhood.[11]

Trips to work and school by bicycle in Black Creek are so few as to be considered statistically insignificant; far more people walk, take public transit or drive. However, the proportion of car-free households indicates the potential for an increase in AT.

The challenges associated with settlement and caregiving are compounded by the socio-economic challenges of the neighbourhood, revealing a need to support residents of Black Creek in the pursuit of active and healthy lifestyles and improved connections to jobs, school and community services.

FINANCIAL BENEFITS OF ACTIVE TRANSPORTATION

To calculate potential financial benefits for households who choose cycling over car travel to commute to work, we explored the existing literature to establish average travelling costs for each mode of transportation (Figure 3.2.20).

Regular sedan	51.53 cents/km (12)
Bicycle	6 cents/km (13)
Public transit	Subsidized Metropass: $1272 (annual) Adult Metropass: $1602 (annual) (14)

Figure 3.2.20
Average travel cost assessment

Given these variables and work destinations within 5 km - typical of those assessed in Black Creek - households with:

Two or more cars
A family can save about $1400 annually by eliminating one car (assuming that the second car is just used for work-related travel). These savings could be increased if cycle commuting is factored in as well.

One car
Families comprised of a single parent with three children can save about $3000 annually if everyone bikes to work/school and other recreational facilities around the neighbourhood.

No car
Can save about $1400 per person annually by biking to work instead of buying a Metropass.

HEALTH BENEFITS

In addition to the financial benefits of AT, a large volume of literature outlines associated health care savings resulting from reduced automobile traffic and air pollution.

An average commuter in Toronto CMA spends about 29 minutes using car and 49 minutes using public transportation while traveling to work. In both cases, traffic congestion plays a major role.[15] The majority of the Black Creek residents' trips to work are shorter than 5 km, compared to trips ranging from 5 to 20 km for most Toronto CMA survey respondents (Figure 4.3.2).[16] Commute times for car owners in Black Creek are likely to be long, despite the short distances traveled.

In terms of public health, the risks of sedentary lifestyles include chronic diseases and death. Estimates from 2006 show that walking and cycling prevented nearly 120 deaths and saved $240 million to $638 million in health care costs in Toronto alone. However, AT mode share is still low in Toronto, and levels of physical activity are nearly three times lower in the suburbs. Physical inactivity alone is directly associated with $1.6 billion in annual health care costs in Canada, or nearly 1.5%.[17] From a public health perspective, walking and cycling for practical daily travel is considered key to raising physical activity levels.[18] Each additional 10% increase in physical activity in Canada would translate to annual direct health care savings of up to $150 million.[18]

By adopting active travel behaviours for shorter trips, Black Creek residents would not gain only financial savings but also substantial reductions in time spent commuting, as well as the associated health benefits due to increased level of physical activity.

From a policy perspective, AT is key to keeping spiralling health care costs under control and reduce preventable diseases and deaths. Reducing the use of automobiles would yield further public health benefits by diminishing air and noise pollution and the overall risk of injury and death due to traffic collisions.[19]

References

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3. Reeder, Black Creek Streetscape, 2013.
4. Reeder, Black Creek Hydro Trail, 2013.
5. Reeder, Jane and Finch, 2013.
6. Reeder, Black Creek TCHC Housing, 2013.
7. Reeder, Black Creek Hydro Trail II, 2013.
8. City of Toronto, "Priority Investment Neighbourhoods", 2009
9. TCAT, 2013.
10. Figure 3.2.19 Yonge and Sheppard photo
11. TCAT, 2013.
12. Canadian Automobile Association 2013, Driving Costs 2013, Ottawa, 2013.
13. Litman & Doherty, Transportation Cost and Benefit Analysis II – Vehicle Costs, Victoria, 2013.
14. Toronto Transit Commission 2013, 2013 Fare Schedule, Toronto, 2013.
15. Statistics Canada 2010, *Mode of transportation and average commuting time to get to work in Montréal, Toronto and Vancouver census metropolitan areas*, Ottawa, 2011.
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17. City of Toronto Public Health 2012, *Road To Health: Improving Walking and Cycling In Toronto*, Toronto, 2012.
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19. City of Toronto Public Health, 2012.

4.0 WHO ARE WE PLANNING FOR?

Based on a demographic analysis of neighbourhood residents, we developed three profiles of potential users for the Strategic Active Transportation Plan (SATP): caregivers, children and commuters - called the “Three Cs”.

* Data was compiled from the 2006 Census of Canada, the 2011 Census of Canada, and the 2006 Transportation Tomorrow Survey (TTS). The 2011 TTS was not yet available at the time of writing. Transposing 2006 data on to a 2013 analysis may result in inaccurate interpretations due to fluctuations in population and demographic characteristics. For example, travel behaviour and patterns may have shifted since 2006. With regard to census data, data from areas where there are significant numbers of marginalized populations of low income people or recent immigrants are known to occasionally result in higher than usual undercounts.

4.1 Children

The age distribution of the neighbourhood indicates that nearly a quarter of Black Creek's residents are under the age of 15 (Figure 4.1.1), marking a large number of current and future potential cyclists.[1]

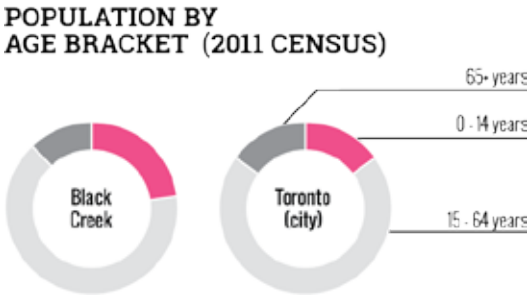

Figure 4.1.1
Population by age bracket

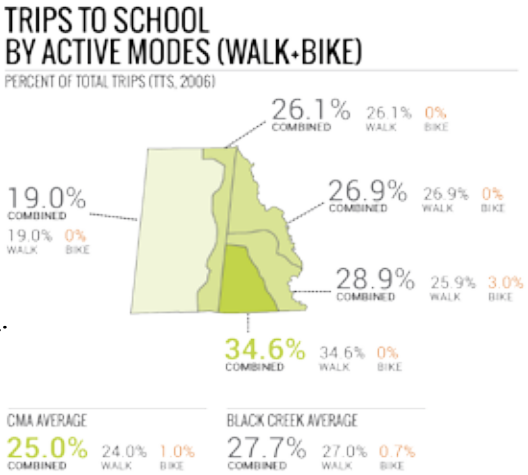

Figure 4.1.2
Trips to school by walking or cycling.

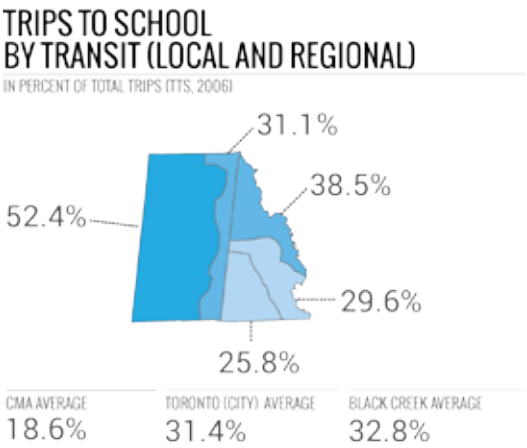

Figure 4.1.3
Trips to school by walking or cycling.

ACTIVE TRANSPORTATION UPTAKE

Our observations from on-site visits included children making use of active transportation (AT) facilities such as sidewalks and multi-use paths. They appeared to be traveling to and from school and playgrounds. A slightly higher proportion of children in Black Creek walk to school than the Toronto CMA average, but fewer cycle.

CHILDREN IN LOW INCOME HOUSEHOLDS

The incidence of low income families in the neighbourhood as seen in Figure 4.1.4 points to a high need for affordable options to move between school and residential areas, and between community amenities and parks. The distribution of schools across the neighbourhood indicates a clustering around Shoreham and Jane, requiring east-west as well as north-south connections. The York Woods public library serving the neighbourhood is disconnected from the residential area by Finch Ave., a busy arterial road.

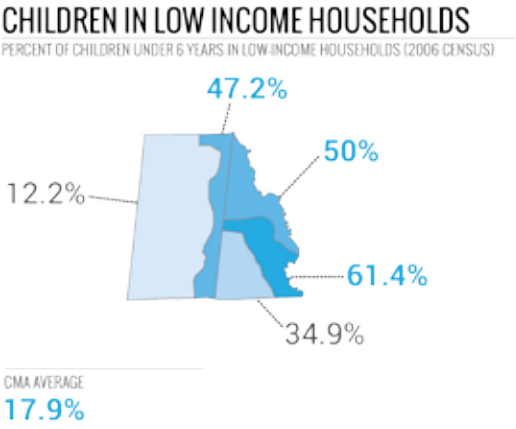

Figure 4.1.4
Incidence of children in low income households.

Figure 4.1.5
Travel destination map for children.

4.2 Caregivers

With the high number of children in the neighbourhood, the project team investigated family composition in Black Creek to understand who the caregivers were. The presence and socioeconomic profile of Black Creek's female lone parents became apparent.

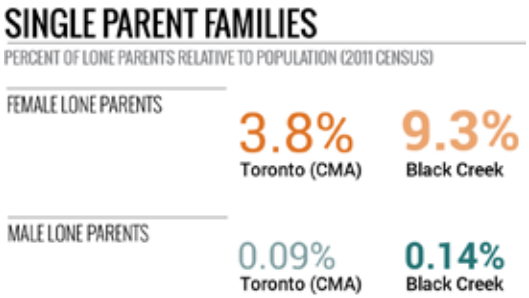

Figure 4.2.1
Single parent familes, Black Creek compared to CMA

FEMALE LONE PARENTS

There is a significantly higher proportion of single parents in Black Creek than in the Toronto Census Metropolitan Area (CMA). Of these single parent households, most households are headed by females (Figure 4.2.1), and the number of children being cared for by that parent is much higher than the Toronto CMA average: 25 percent of female lone parent families in Black Creek have 3 or more children, compared to 13 percent in the CMA (Figure 4.2.2).

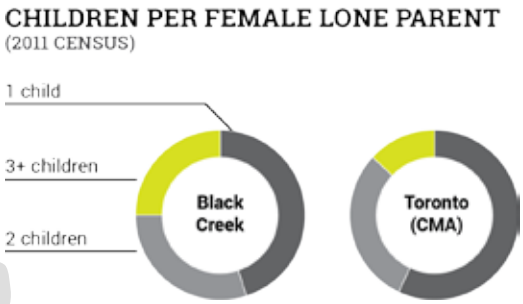

Figure 4.2.2
Children per female lone parent, Black Creek compared to CMA

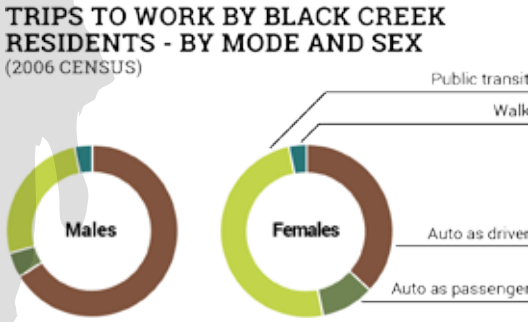

Figure 4.2.3
Mode share by sex

The incidence of low incomes in female lone parent families is also notably higher than the CMA average. The geographic concentration of female lone parent families with low incomes is shown in Figure 4.2.4. In census tracts east of Jane, the proportion of female lone parent families that are low income is as high as 66.7 percent, compared to the CMA average of 35.4 percent.

Identified destinations for female lone parents were scattered around the neighbourhood (Figure 4.2.5) with some clustering around the Shoreham and Jane and Finch and Jane intersections. Destinations were determined to be public and private facilities that would provide for daily needs as well as services. These included, schools and daycares, community centres and libraries, but also commercial retail (grocery stores and potential places of employment) and transit nodes (connections to places of employment outside Black Creek).

It was noted that research indicates women tend to prefer chaining trips together, if possible.[2] Trip-chaining refers to the practice of going to multiple destinations in one trip (e.g., dropping children off at daycare, doing grocery shopping, and then going to work). If caregivers are going to be able to use AT to trip-chain, it is vital that these destination points should be linked together as part of the network.

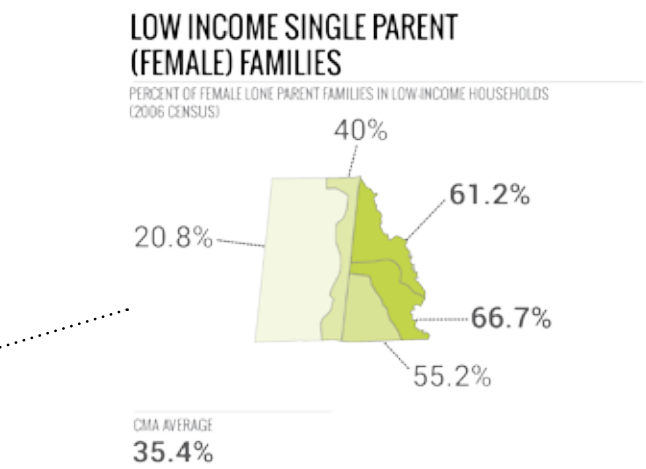

Figure 4.2.4
Spatial distribution of low income female lone parent families

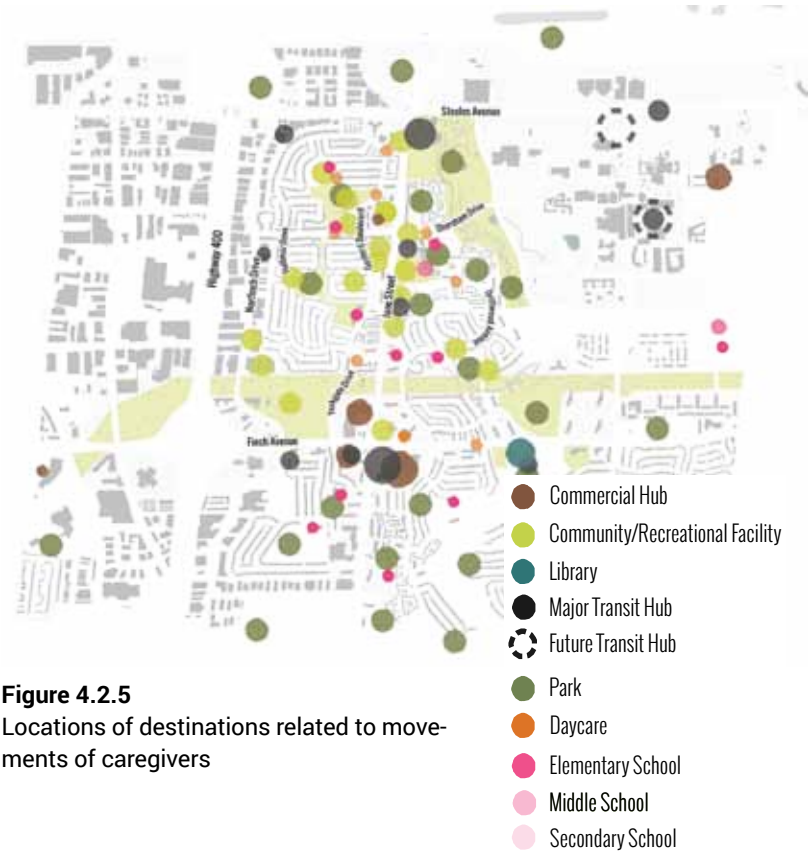

Figure 4.2.5
Locations of destinations related to movements of caregivers

4.3 Commuters

In addition to noticing a high number of children and female lone parents in the neighbourhood, the project team explored commuting behaviour of adult residents. We concluded that a large segment of commuters has the potential to bike to work or mode share AT with public transit.

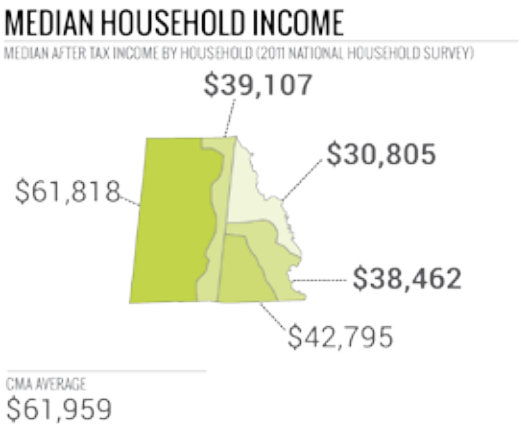

Figure 4.3.1
Median household income after tax

POPULATION DENSITY AND INCOME DISTRIBUTION

To better plan for commuter trips, it is critical to interpret how spatial distribution of the population and socioeconomic characteristics impact neighbourhood residents' travel needs. Overlapping population density with income and car ownership data, we noticed that households living in the census tracts along both sides of the Jane Street corridor have low median household income and relatively low car ownership rates (Figure 4.3.1). Data shows that median household income and car ownership rates for the low density area west of Jane Street are more similar to that of the CMA average. These indicators point to a concentration of low-income adults living in areas with high rise towers or in publicly subsidized housing who would benefit from more affordable modes of transportation for their daily travel needs.

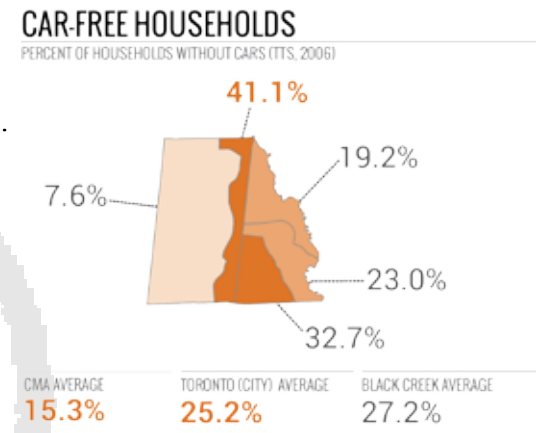

Figure 4.3.2
Children per female lone parent, Black Creek compared to CMA

HOW FAR COMMUTERS TRAVEL

By mapping the Transportation Tomorrow Survey data (TTS 2006), we found that Black Creek residents travel to work destinations located locally, in adjacent neighbourhoods, and across the region (Figure 4.3.4). Commuting distances reported in the TTS survey are shown in Figure 4.3.5. Although some people reported working as far as Oshawa and Newmarket, the proportion of trips longer than 20 km is much smaller than that of the CMA. Most residents work in the vicinity of the neighbourhood, which is about 10 percent higher than the CMA average. This might be due to industrial land uses surrounding the neighbourhood. Based on the number of trips reported in the survey, Figure 4.3.4 identifies some of the major destinations that exist within 5 km of the geographical centre of the neighbourhood. About 20 percent of the total trips shorter than 5 km appear to be made to the Weston Industrial in the west and the Alness Industrial in the east. York University, Petrolia Industrial, Fenmar Industrial, and Vaughn Edgeley were amongst the other employment locations that fall within 5 km radius from the centre of the neighbourhood. Notably, about 7 to 8 percent of the surveyed residents reported working in the Downtown Toronto (Figure 4.3.4).

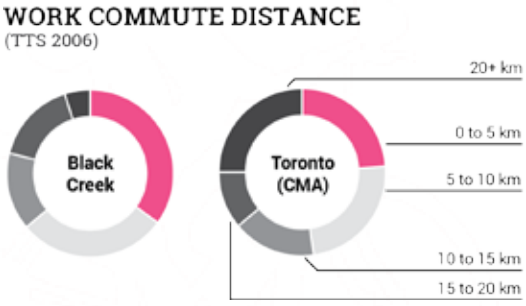

Figure 4.3.5
Commute To Work By Distance

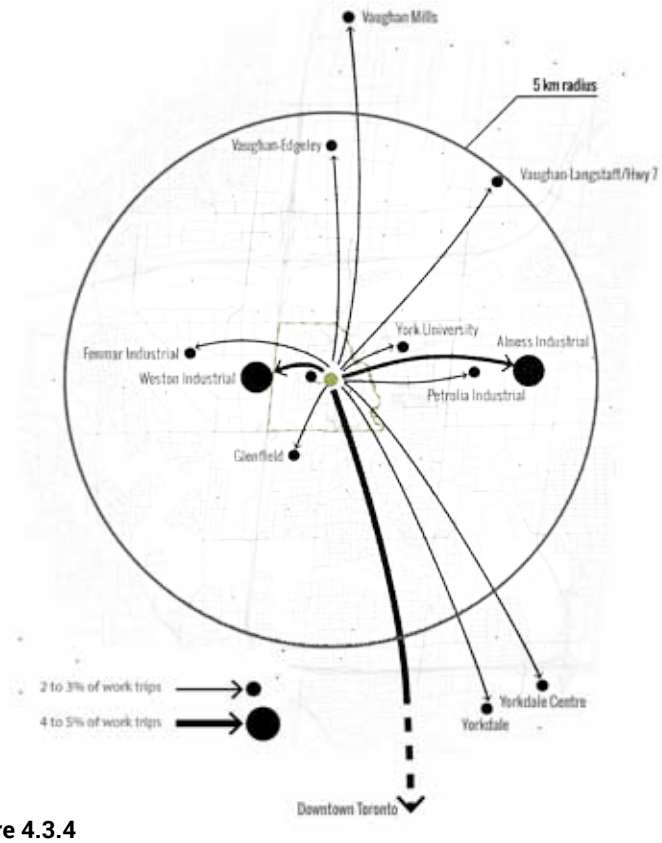

Figure 4.3.4
Percent of trips to work by location

HOW COMMUTERS TRAVEL

From our analysis of the TTS 2006 data, we learned that the majority of Black Creek residents exhibit sustainable travel behaviour. Survey participants living in high density areas, who have low median household income, and low rates of car ownership, are the ones who rely heavily on walking and transit (see Figure 4.3.6). Presence of adequate public transit along the arterial roads has resulted in higher than CMA average for transit mode share (see Figure 4.3.7).

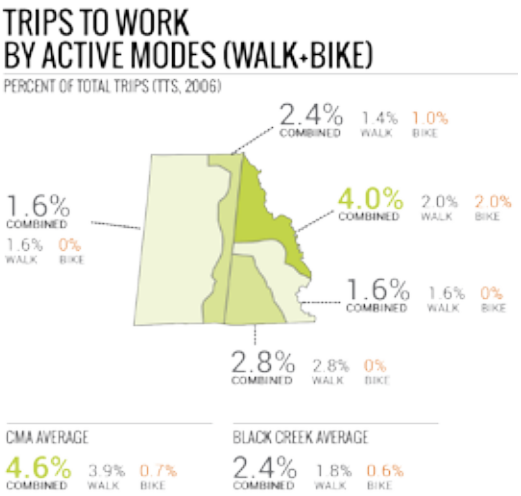

Figure 4.3.6
Trips to work by active mode

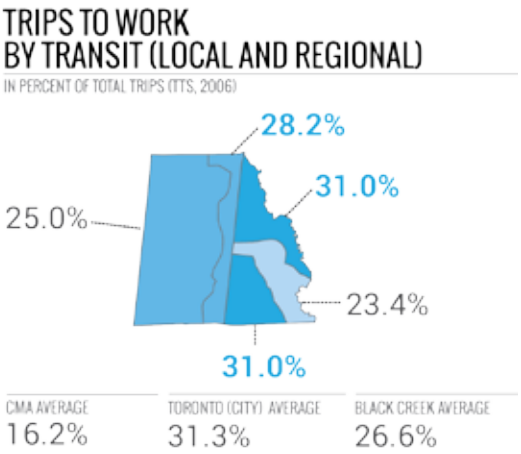

Figure 4.3.7
Trips to work by public transit

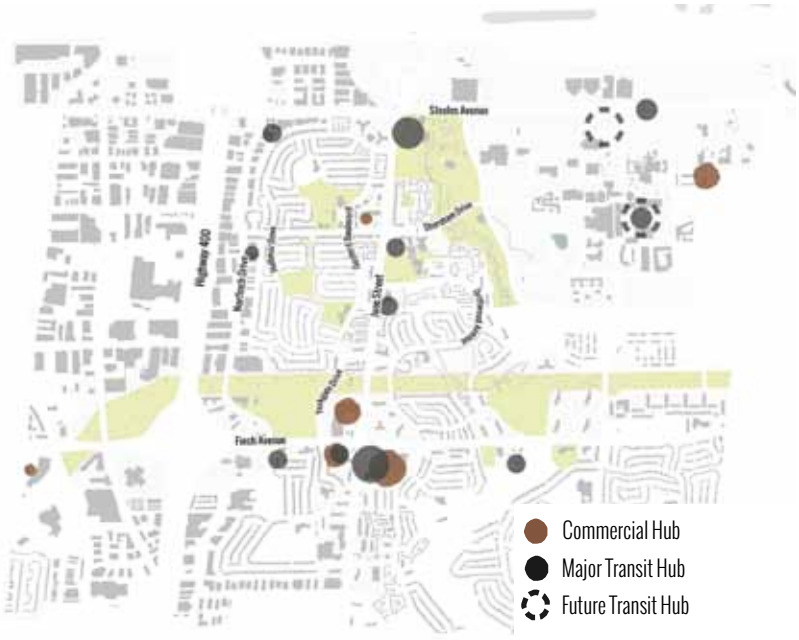

Figure 4.3.8
Locations of destinations related to movements of commuters

TAKE AWAYS

- A high proportion of commuters with low socioeconomic status is concentrated in the high rise towers and mid rise Toronto Community Housing located along both sides of Jane Street and in the north east corner of the neighbourhood.
- A high proportion of commuters work within 5 km of the neighbourhood. Two of the most popular employment destinations are located just east and west of the neighbourhood.
- Many commuters already exhibit sustainable travel behavior with higher than CMA average rates of AT. However, fast speed and traffic congestion on arterial roads present safety hazards to the commuters, who may not have a choice but to walk, transit, or bike to their destinations, given low incomes.
- The high level of commuters with low socioeconomic status means there is an opportunity to promote AT, reduce auto-use, and foster economic development in the neighbourhood. Distance is one of the factors that influences mode choice, and since most of the work-related trips in Black Creek are below 5 km, these commuters might choose to bike to work if adequate infrastructure is made available. Commuters making trips to downtown Toronto could use mode switching – they could ride their bikes to a transit hub and switch to public transit to get to the downtown.

References

1. Cycling Think and Do Tank, Literature Matrix on Behaviour Change, 2012.

2. Savan, B. Mapping Cycling Behaviour in Toronto., 2013.

5.0 WHERE ARE WE PLANNING?

Black Creek is a post-war suburban neighbourhood with a built form characterized by clusters of low and medium density housing located along curvilinear streets, a number of modernist towers along arterial streets, and a high proportion of Toronto Community Housing on to the outer edges of the neighbourhood.

The neighbourhood was designed to facilitate driving, consequently, there has been little attention or investment paid towards active transportation (AT). Navigating the neighbourhood as a pedestrian or cyclist is possible, yet due to the unfriendly environment many residents chose to drive or take public transit. While visiting the neighbourhood, we noticed a number of impediments to AT usage, which included:

- Residential streets that curve, twist, and lead to dead ends
- Arterials with high volumes and high traffic speeds, with few signalized crossings
- Parking lots on street corners, and little protection from motorists
- High density towers surrounded by park spaces with great potential
- Narrow, underlit, and neglected pathways that are often unseen or unwelcoming
- Very little cycling infrastructure along corridors

* A discussion of the transportation realm in Toronto should include background in the types of facilities and design principles which standardize it. See Appendix C for a summary of streetscape types, the streetscape master plan, and roadway classifications.

Notwithstanding the condition of the built form and infrastructure, we were surprised to witness that AT is very much alive within the Black Creek neighbourhood. The streets are bustling with a staggering number of pedestrians and cyclists along sidewalks. Buses and transit stops are filled to the brim with commuters looking to complete their day-to-day errands. In some areas, public art has begun to animate building facades, showing that there is a very well-established sense of pride and ownership within the neighbourhood.

More recently the City has invested a substantial amount of resources in introducing a multi-use pathway along the Finch Hydro corridor, which runs through the neighbourhood and provides significant opportunities for increased connectivity within and outside the neighbourhood. This should be considered as the catalyst for a greater focus on the introduction, enhancements, and investments within the AT realm.

This section details the current physical conditions of the Black Creek neighbourhood, and assesses what future plans the City of Toronto has for its continued evolution.

5.1 Counting Active Transportation

To add to background research, we completed primary research in the form of counting. Although the City periodically conducts vehicle and pedestrian counts in the area, there were no counts made for the number of cyclists.

Using a standardized counting methodology (see Appendix D: Counting Methodology), pedestrian and cycling counts were taken along key intersections and destinations within the neighbourhood (Figure 5.1.1).

Our observations demonstrated that a considerable number of pedestrians and cyclists travel along Jane Street, a major arterial spine within the neighbourhood. Compared with other major urban intersections within the city, roughly the same number of people walk through the Jane Street and Finch Avenue intersection every day as at Bloor and Brunswick, Spadina and Nassau, and Yonge and Sheppard (Figure 5.1.2).

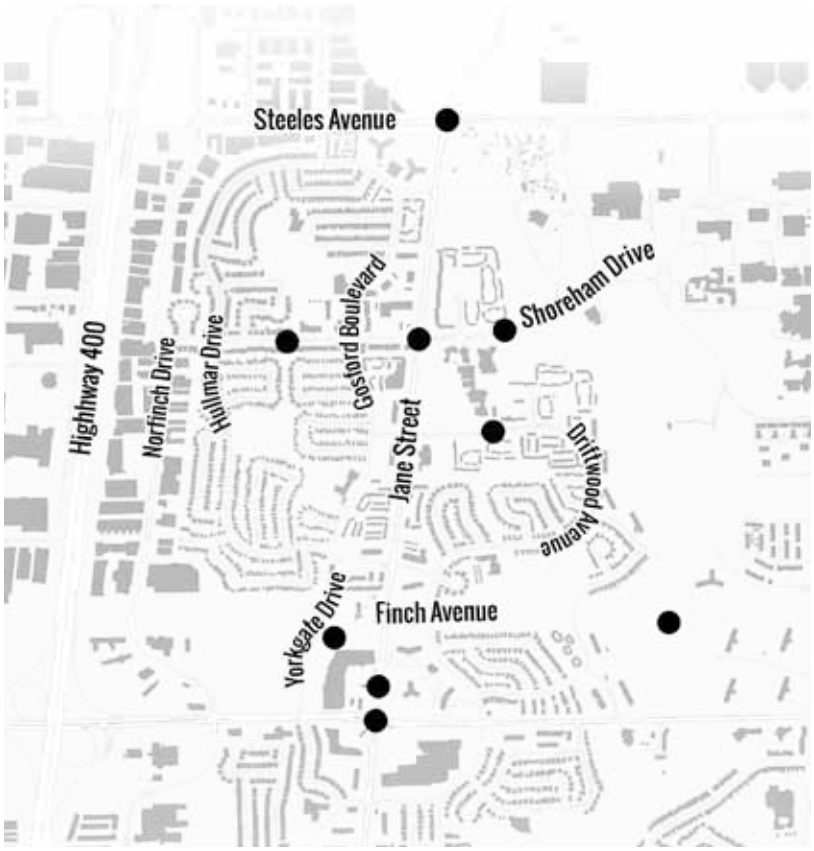

Figure 5.1.1
Black Creek pedestrian and cycling count locations

The first two comparisons are downtown intersections in the heart of some of the most walkable and active neighbourhoods in the city: the Annex and Chinatown/Kensington Market.

The final comparison, Yonge and Sheppard, is distant from the core yet still has a welcoming AT realm. With the presence of planters, a combination of commercial and residential uses, and wide sidewalks, it is quite an enjoyable place to visit and experience.

NORTH-SOUTH ROAD	EAST-WEST ROAD	24 HOUR PEDESTRIAN VOLUME[1]	24 HOUR VEHICLE VOLUME[2]	YEAR OF CITY COUNT
Yonge	Eglinton	81,480	47,084	2011
Bay	Bloor	48,492	41,092	2009
Spadina	Nassau	13,692	23,122	2007
Brunswick	Bloor	13360	19322	2009
Markham	Ellesmere	13272	67926	2011
Yonge	Sheppard	12,930	79,404	2010
Kipling	Finch	8,038	51,110	2011

Figure 5.1.2
Comparative Counts

NORTH-SOUTH ROAD	EAST-WEST ROAD	24 HOUR PEDESTRIAN VOLUME[3]	24 HOUR VEHICLE VOLUME[4]	YEAR OF CITY COUNT	3 HOUR PEDESTRIAN COUNT	3 HOUR BIKE COUNT
Driftwood	Finch	4404	38,528	2010		
Jane	Shoreham	4100	38,314	2011	1454	90
Jane	Finch	13,326	68,534	2009	3777	135
Jane	Steeles W	1258	69,316	2010	873	100
Jane	Driftwood	1728	27,098	2008		
Norfinch	Steeles W	380	57,340	2010		
Norfinch	Finch	2576	77,602	2009		

Figure 5.1.3
Comparative Counts - Black Creek intersections

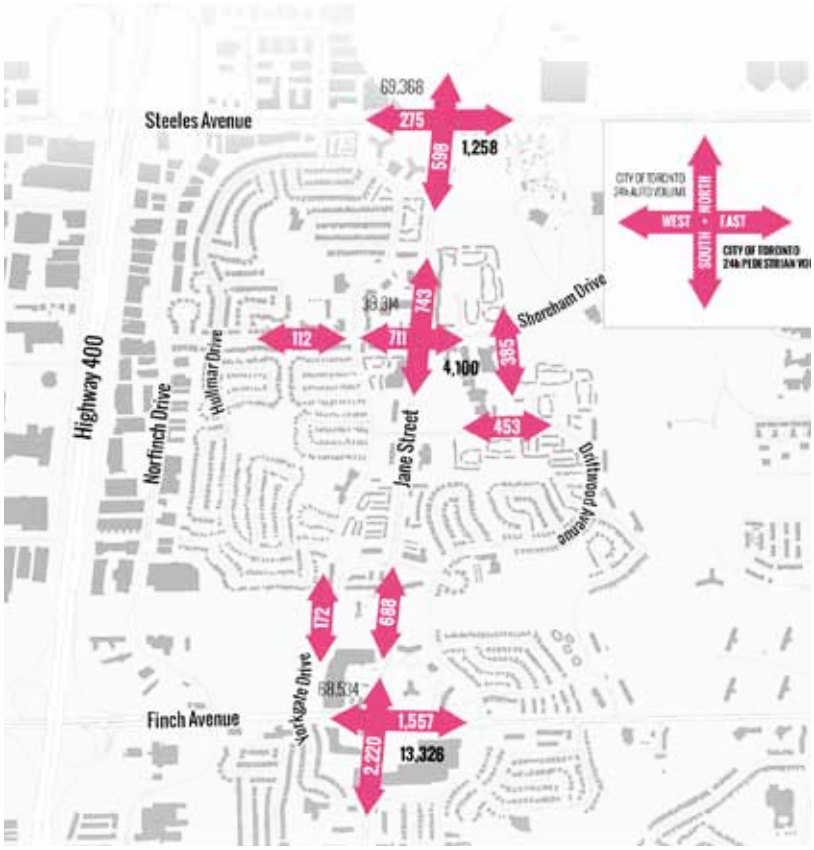

Figure 5.1.4
Weekday pedestrian count results, 3 – 6 pm

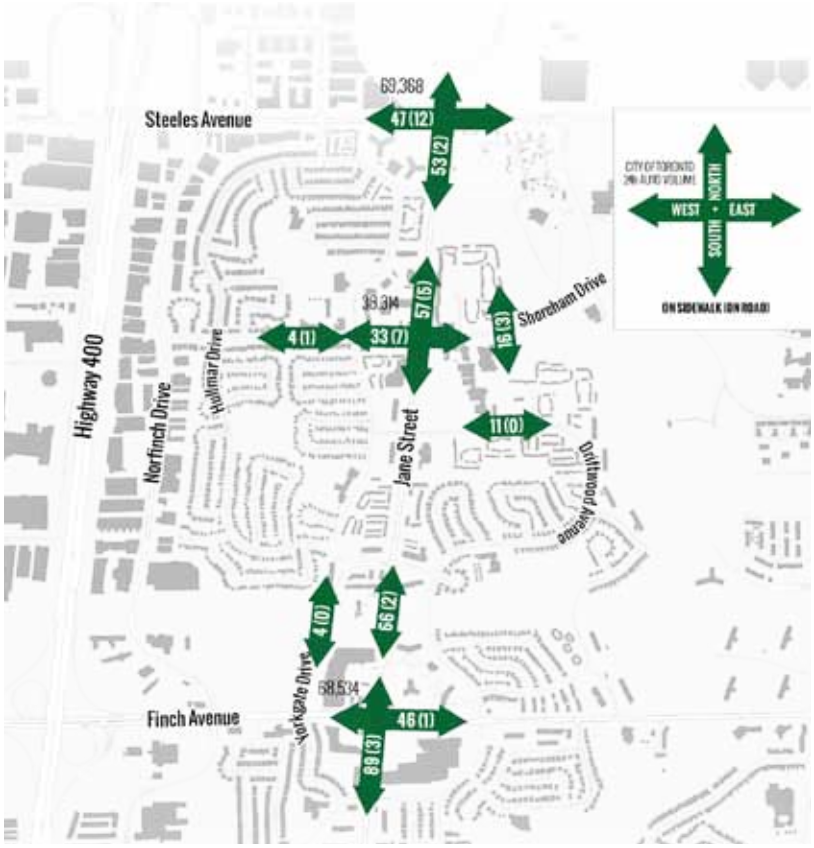

Figure 5.1.5
Weekday bicycle count results, 3 – 6 pm

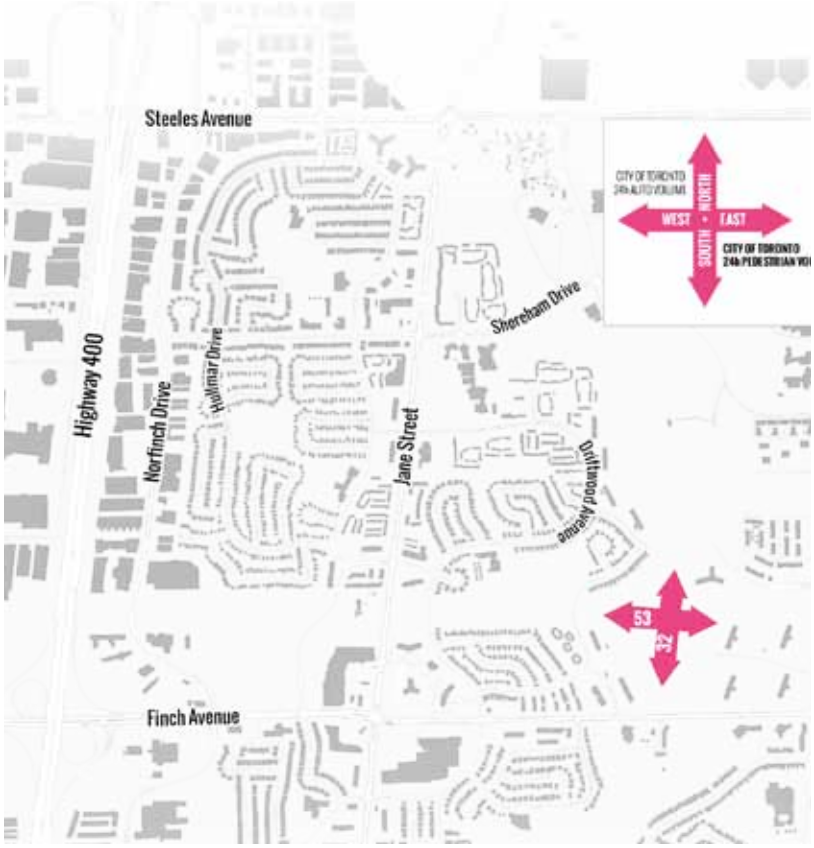

Figure 5.1.6
Weekend pedestrian count results, 1 – 5 pm

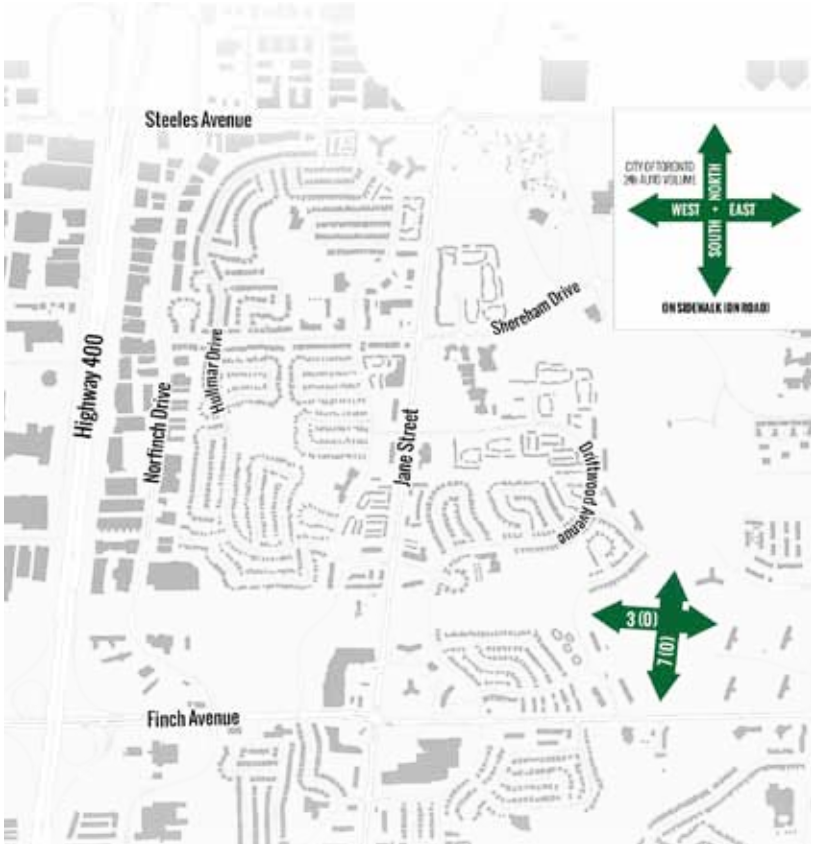

Figure 5.1.7
Weekend bicycle count results, 1 – 5 pm

Our findings confirmed the following:

- The pedestrian realm is quite animated in Black Creek
- A considerable number of students walk to and from school
- Many parents dropping kids off at school in their cars
- Very few observed cyclists were children
- Cyclists are a minority of AT users counted
- Most cyclists are male and rode on the sidewalk
- Cyclists observed on the road were most often found on Shoreham Drive, travelling to and from the York University area
- Bus stops along Jane Street generate a large amount of pedestrian activity

These findings reinforced our initial observations that AT is common in Black Creek. What is needed is not exclusively a behavioural shift in mode types, but improvements to the experience of using active forms of transportation.

5.2 Pathway Network

Important components of the AT realm are bike lanes and pathways, which increase connectivity in the neighbourhood. These pathways provide children with a safe alternative to using roads for AT. Both the City of Toronto's 2001 Bike Plan and the Bikeway Network – 2011 Update utilize existing pathways to create a cycling network. The 2001 Bike Plan focused on implementing a 1000 km bike network, which would increase connectivity between neighbourhoods located in both the inner-ring suburbs and the core of the city.[5]

This would have meant greater connectivity in the Black Creek neighbourhood; the 2001 Plan proposed signed cycle routes on Norfinch Drive and Murray Ross Parkway as well as off-road cycle routes on Steeles Avenue and the Finch Hydro Corridor.[6] Greater connectivity between Black Creek and the rest of the city would have occurred through an increase in cycle routes outside of the neighbourhood. The 2001 Bike Plan was replaced with the Bikeway Network – 2011 Update, which focuses primarily on off-road trails. In the Black Creek neighbourhood there is a proposed extension of the Finch Hydro Corridor West of Jane Street, stopping at Highway 400.[7] No other cycling infrastructure is proposed.[8]

Figure 5.2.1
Proposed additions to the bikeway network from the 2001 Bike Plan

While the 2001 Bike Plan was more ambitious is allocating street space to bicycle infrastructure than the Bikeway Network 2011 Update, neither plan addressed the potential of connecting the pathways in Black Creek. The mix of paths that exist in the neighbourhood provide good connectivity and an opportunity to increase AT by offering an alternative to roadways. However, in their current state, many of the pathways are not welcoming to children or caregivers. There are safety concerns due to lack of lighting along the pathways and poor maintenance of the infrastructure. Incorporating pathways into a plan could increase connectivity in many inner ring suburbs in Toronto, and ensuring the pathways are safe for potential users is critical.

Figure 5.2.2
Proposed trail improvements in the Bikeway Network 2011 Update

The existing pathways in Black Creek are comprised of public pathways, private pathways, formal paths, and desire paths. All of these combine to provide good connectivity throughout the neighbourhood, although the amount of use among the different paths varies. Formalizing the pathways and making them open to the public will enhance connectivity in the neighbourhood and provide an alternative to the road for commuters, caregivers, and children.

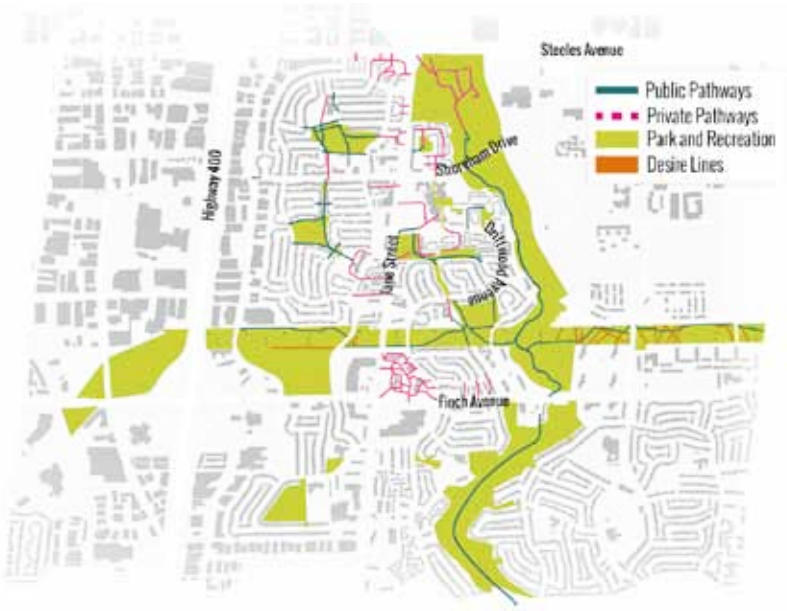

Figure 5.2.3
Existing pathway network

5.3 Land Use Classifications and Characteristics

The land uses in the Black Creek neighbourhood are part of the social, automotive, and AT realm because of their impact on the way residents interact with the neighbourhood. For instance, land uses impact where people go, how people move across property, and what people do in their neighbourhood. This is critical for caregivers who trip chain and commuters who need to get to transit or their place of work.

Black Creek has a diversity of land uses including residential, commercial, institutional, employment, and parks. However, these uses are separated, which can require multiple trips to be undertaken by residents. The creation of Residential Apartment Commercial (RAC) zoning will allow for lower order retail uses at street level. In Black Creek, RAC zoning means a potential to start mixing commercial and residential uses on the same parcel of land. The creation of RAC is an opportunity to start introducing new commercial uses along the street edge, especially along Jane Street where the adjacent lots are mostly comprised of apartment towers. Each land use contributes to the community in a unique way and uses should be mixed to enhance the social, automotive, and AT realms.

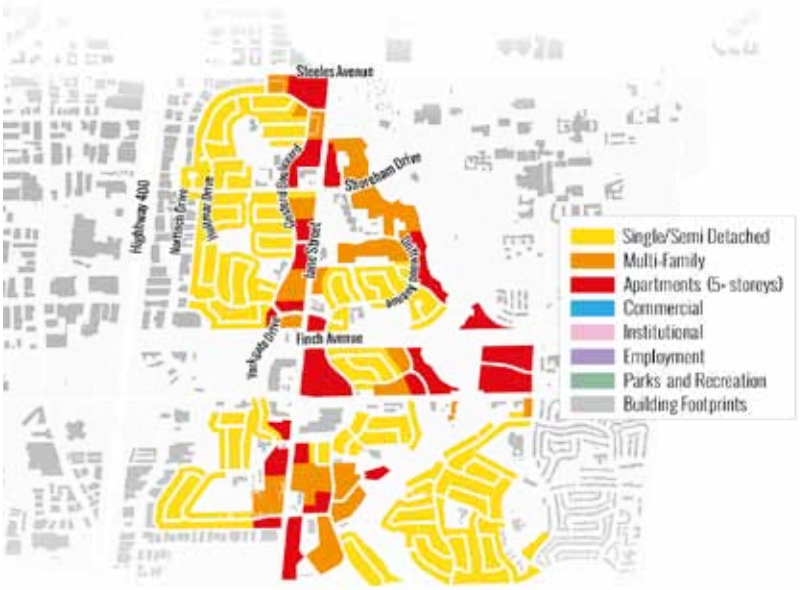

Figure 5.3.1
Residential land uses

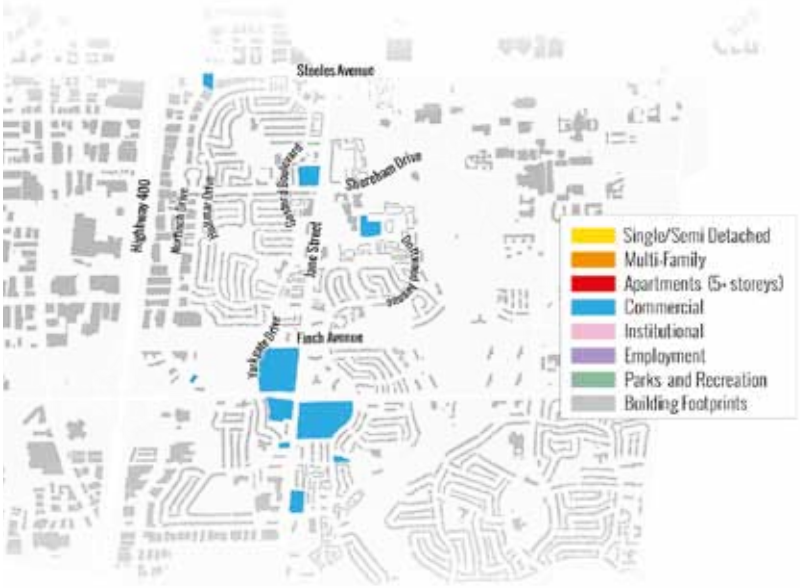

Figure 5.3.2
Commercial land uses

RESIDENTIAL LAND USE

Residential land uses in the area vary from low and medium density to high density. The low density residential areas are primarily located west of Jane Street and consist of single family homes and duplexes. Comparatively, the medium density residential areas are primarily located along, and to the east of, Jane Street. This area consists of townhomes which constitute a mix of rental properties, housing co-ops, and Toronto Community Housing. Black Creek also has high density apartment towers, located primarily along Jane Street and Finch Avenue. The residential land uses are representative of inner-ring suburbs; buildings are on large parcels with deep setbacks from the road.

COMMERCIAL LAND USE

Commercial land uses are located around specific nodes in the community and are an important factor when considering the needs of caregivers. The main node is at the intersection of Jane and Finch, where the Jane Finch Mall and Yorkgate Mall are located. Both commercial centres also function as community hubs in the neighbourhood. Each mall has a grocery store as their anchor store and various independent stores as well as fast food outlets. The other commercial nodes have a range of services, from dentists to pharmacies to grocery stores.

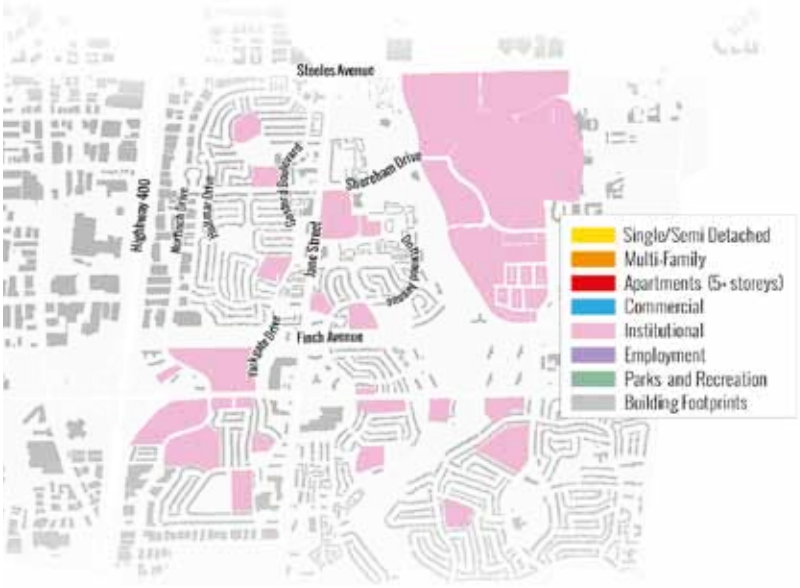

Figure 5.3.3
Institutional land uses

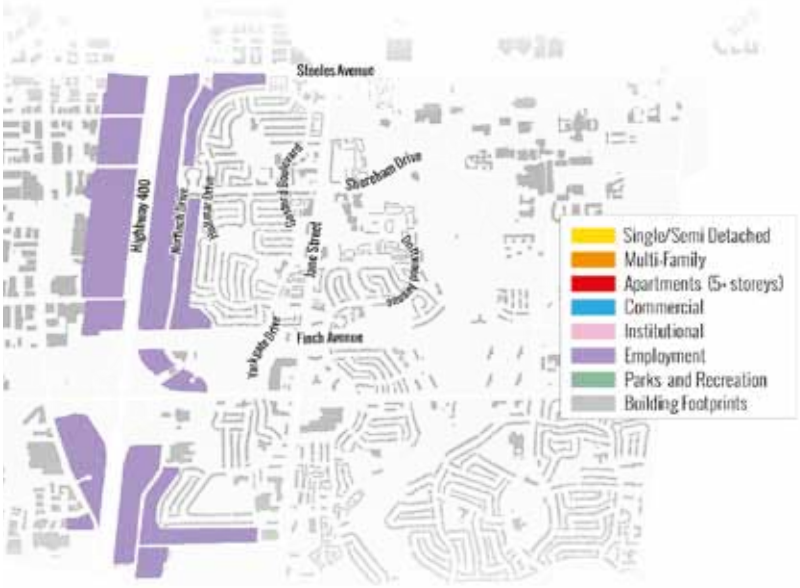

Figure 5.3.4
Designated employment lands

INSTITUTIONAL LAND USE

Institutional lands in Black Creek constitute a major land use. York University is a major institution that borders the neighbourhood to the east. There are also community centres, recreational uses and a public library that are located throughout the neighbourhood.

EMPLOYMENT LAND USE

Employment land uses in the Black Creek neighbourhood are located along the Norfinch Avenue corridor and provide employment for residents. This area is important to consider when looking to target AT among commuters. The community is also surrounded by employment uses nearby, such as those located north in Vaughan and west across Highway 400.

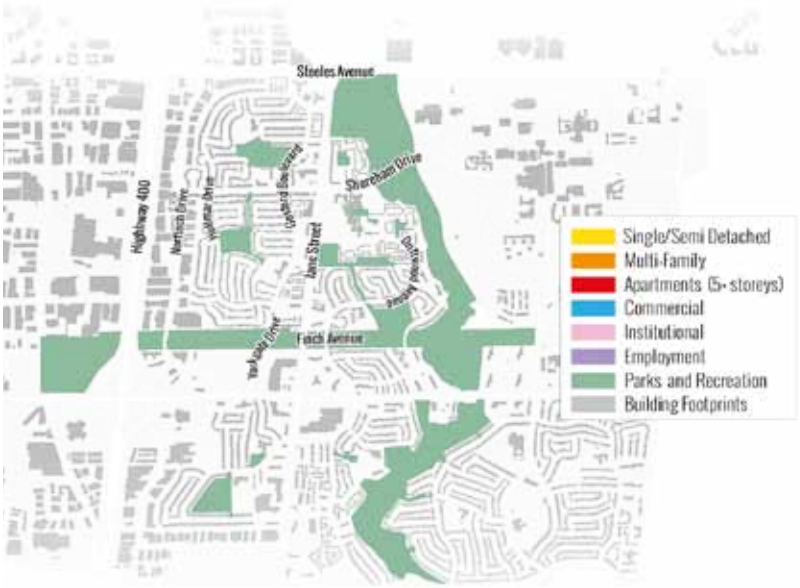

Figure 5.3.5
Parks and recreation land uses

PARKS AND RECREATION LAND USE

The Black Creek neighbourhood has a significant amount of parkland. The parkland ranges from natural areas such as the Black Creek ravine to open green spaces in the Finch Hydro Corridor. There are also smaller parks that have recreational space for sports and jungle gyms for youth. The parkland in the neighbourhood also provides pathways that wind through Black Creek and offer residents more choices for their routes.

5.4 Service Areas

To measure connectivity to various destinations, a pathway network analysis was conducted using GIS software. Network pathways were geocoded according to geospatial data, Google streetview, and our on-site visits. Using the pathways (roads, sidewalks, and multi-use trails) the furthest range a person could get from a particular destination was determined. The resulting shape of this "range" provides a glimpse into how the characteristics of the transportation network (made up of path segments and intersection nodes) affects travel time. For school trips, a reasonable range of 500 m was assumed for elementary students, along with a 5 minute bike ride. 1500 m was assumed reasonable for walking or cycling to the nearest secondary school. A 10 minute bicycle ride was assumed reasonable for cycling to a commercial node.

Figure 5.4.1
500 m walking and biking range to two sample elementary schools

TRIPS TO SCHOOL

There are numerous elementary schools and one secondary school that serve the Black Creek neighbourhood. The safe connectivity of residences to these schools is vital for both caregivers and children in the uptake of AT. The elementary schools fall within the community and are well connected by both roads and pathways. There is one secondary school which is located outside Black Creek, south of the neighbourhood boundary. In order to access this school, students must cross Finch Avenue – this presents a safety barrier as it is a major arterial.

Figure 5.4.2
1500 m walk and bike range to a sample secondary school

TRIPS TO COMMERCIAL NODES

Ease of connection to commercial land uses in Black Creek varies depending on the mode of travel. The location and connectivity of commercial centres matters greatly to caregivers, who need to trip chain. The walking connectivity map highlights how concentrated the commercial areas are and the lack of connectivity to these areas from the rest of the neighbourhood. Figure 5.4.4 shows much greater connectivity throughout the neighbourhood for cyclists but also highlights the barrier of Highway 400.

Employment land uses in the Black Creek neighbourhood highlight similar connectivity to the commercial land uses. Employment areas are important because they are destinations for commuter populations. The walking connectivity map shows how concentrated the employment uses are and the low degree of connectivity along Norfinch Drive. In comparison, cycling connectivity covers a large swath of land, including the whole of Black Creek. Despite this excellent connectivity, it is clear that like commercial uses, Highway 400 acts a barrier to greater connectivity.

Figure 5.4.3
10 minute bike range to two sample commercial business

5.5 Overview Maps: Roadway Types, Streetscape, Bike Paths, Land Use

In order to implement AT in the Black Creek neighbourhood, constraints and opportunities were identified. The constraints and opportunities can be grouped into three main areas: roadway types and streetscapes, pathways and AT, and land uses. While there are many barriers to implementing AT in Black Creek, the same features that act as constraints can offer unique opportunities. For example, the suburban built form that characterizes Black Creek offers both constraints and opportunities.

LAND USES

Constraints

- Connecting to other employment areas outside the neighbourhood is a challenge due to Highway 400 and major arterial roads
- Large setbacks from the road result in an unfriendly public realm
- Separated land uses require residents to make multiple trips
- Large parking lots on commercial lands are hostile towards AT

Opportunities

- RAC zoning has the opportunity to introduce commercial uses on apartment tower lands
- Parking lots offer space to enhance the public realm by adding more commercial buildings or public space.

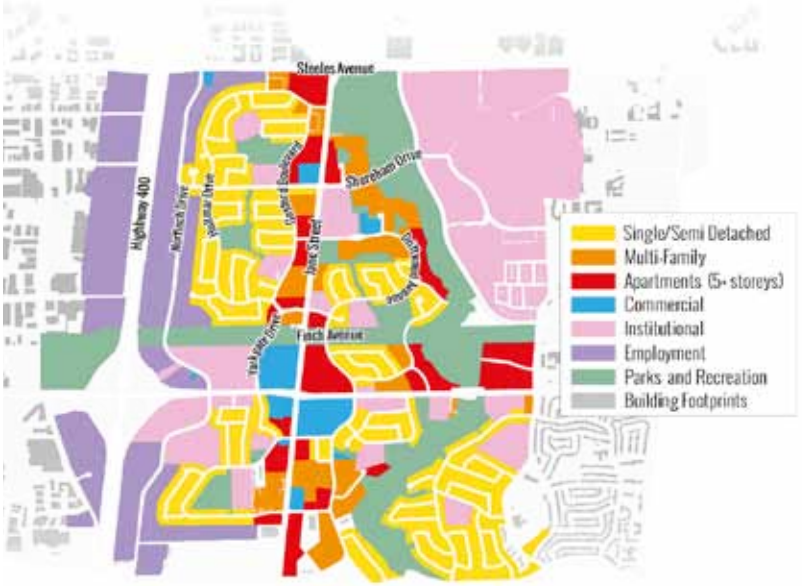

Figure 5.5.1
Land uses

LAND USES

Constraints

- Connecting to other employment areas outside the neighbourhood is a challenge due to Highway 400 and major arterial roads
- Large setbacks from the road result in an unfriendly public realm
- Separated land uses require residents to make multiple trips
- Large parking lots on commercial lands are hostile towards AT

Opportunities

- RAC zoning has the opportunity to introduce commercial uses on apartment tower lands
- Parking lots offer space to enhance the public realm by adding more commercial buildings or public space.

STREETSCAPE AND STREET CLASSIFICATIONS

Constraints

- High traffic volumes, traveling at high speeds through the neighbourhood
- Poor road conditions and insufficient sidewalk space creates poor conditions for AT
- Curvilinear road pattern makes connectivity a challenge
- Large intersections and highway ramps create high conflict zones between AT users and automobiles

Opportunities

- Wide roads can accommodate multi-modal transportation, including bike lanes or rapid transit
- High connectivity throughout the neighbourhood allows side roads to be utilized
- Wide boulevards along roads such as Jane Street can accommodate multi-use trails
- Traffic calming mechanisms can slow down traffic on all road types in the neighbourhood

Figure 5.5.2
Streetscape and street classifications

Figure 5.5.3
Pathways for AT improvements within street rights-of-way

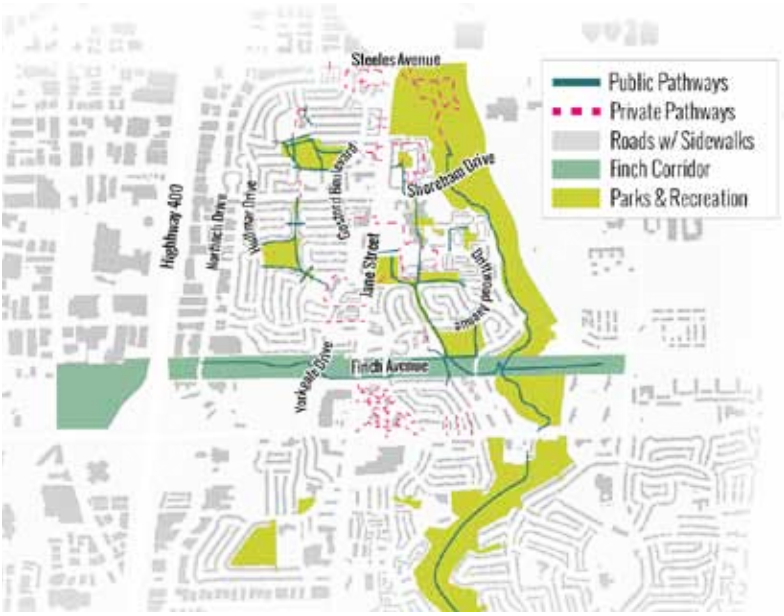

Figure 5.5.4
Pathways for off-road AT improvements

PATHWAYS AND ACTIVE TRANSPORTATION

Constraints

- Private pathways run through key areas, such as the Pioneer Village and Toronto Community Housing and act as a barrier to connectivity
- Broken connectivity and confused crossings between pathways results in a segmented network
- Black Creek Ravine has steep hills that are difficult to navigate when entering or exiting the area
- Some pathways have not been maintained regularly and are in poor condition

Opportunities

- Formalize pathways throughout the neighbourhood to create a network
- Overpass bridge over Highway 400 would connect the Finch Hydro Corridor trail
- Increase lighting and maintenance of pathways to increase safety
- Formalize desire lines throughout the neighbourhood to increase connectivity

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1. City of Toronto. “Pedestrian and Vehicle Volumes.” 2012.
2. *ibid.*
3. *ibid*.
4. *ibid*.
5. City of Toronto (2001). City of Toronto BIke Plan. Retrieved from http://www1.toronto.ca/staticfiles/City%20Of%20Toronto/Transportation%20Services/Cycling/Files/pdf/B/bike_plan_full.pdf
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8. *ibid*.

6.0 TAILORING THE PLAN

The next step of the project attempts to take the results of our demographic profiling and analysis of the existing built form and active transportation (AT) network, and begin to shape several "building blocks" integral to the recommended plan. This section examines the tools used to link social factors to travel behaviour. It then suggests changes to the built form that aid in shiting travel behaviour.

6.1 Social Ecology Model for Mode Choice Relating to Design Principles

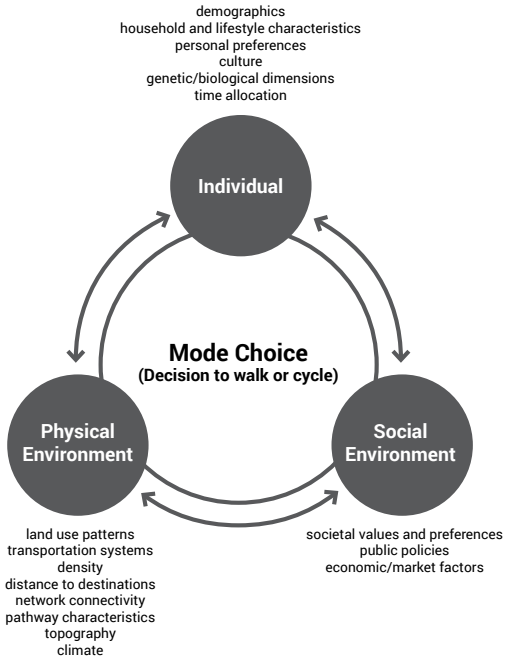


Figure 6.1.1
Social ecology model for mode choice

Migration by residents and employers towards low density suburban locations has increased travel distances over the last half century. This has made the private vehicle the most practical and convenient mode of transportation, as seen through the modal splits in the suburban context.[1]

Suburban residents may face a multitude of barriers to adopting AT, necessitating a combination of interventions. These barriers include psychological, economic, social and physical. Identifying which barriers are involved, and using a specific approach to promote behaviour change can generate better results.[2]

Studies have historically focused on specific components of mode choice, such as built form. The social-ecological model, is an integrated approach that analyzes mode choice from a variety of factors.[3,4,5,6] For example, this approach illustrates that transportation, land use and physical activity all influence each other.[6] Some socio-ecological studies have sought to segment the population (known as "target segmentation"), to identify the different barriers faced by distinct parts of the population.[7]

Target segmentation is a useful approach. It was used by Transport for London to analyze all trips in London, then eliminate those that were too far for someone to cycle. Transport for London then concentrated on the shorter distance trips and created programs that would persuade those most likely to cycle to start.[8]

We also performed a market segmentation, but with an emphasis on social equity. When identifying profiles for targeted behaviour change, it was the groups which were most vulnerable with the largest potential gains. (See Section 4.0)

Most of the trips made within Black Creek are either walkable or cycleable in distance. This means that barriers to AT are less likely to be based on distance, and more likely influenced by other factors. Due to the lack of primary research done in the Black Creek Community, we have inferred that these other barriers would be similar in places with similar circumstances and demographics.

It is hard to isolate children's preferences, as the majority of mode choice research revolves around adults.[9] However, because children are subject to their parents' care and judgement regarding what conditions are safe to walk or cycle, the research on adult preferences may indicate what choices are being made by children and why. Distance from home is the biggest factor in the decision to allow a child to cycle or walk to school.[10,11]

Due to the close proximity of origins and destinations within Black Creek, there may be more significant factors involved in this neighbourhood. McMillan notes the importance of built form, but also emphasizes the accessibility of infrastructure, as well as quality, and connectivity of available infrastructure.[12] This is echoed by the findings from multiple studies which examined surveys of attitudes and behaviours.[13,14]

Commuters tend to change their mode choices based on the existence or scope of facilities, connected infrastructure and safe routes.[15,16,17]

The interventions suggested for Black Creek will revolve around the following themes: Safer Streets, Increased Connectivity, and Enhanced Public Realm and Facilities. These were selected because they would have the greatest impact on the targets we have identified.

6.2 Active City

In Section 4.0, the question of 'Who Moves in Black Creek?' was answered with a detailed examination of survey and census data, and led to the creation of three profiles for the Black Creek neighbourhood: Children, Caregivers and Commuters.

Section 5.0 answered the question of 'Where Are We Planning?' by analyzing the physical features of the street and the built form that connects the neighbourhood. It is important to note the diverse responsibilities of the various departments of the City of Toronto – departments which oversee the public realm, making the road a safe, accessible, interesting place to be, and providing transportation corridors for all users.

The 2012 Ryerson student's *Bike City* report focused on road typologies in the downtown and midtown areas of Toronto. Inner ring suburban road types were beyond the mandate and scope of Bike City. When studying the road types and the built form in Black Creek, it became clear that other road types should be included.

As a result, three new road classes have been prepared, which emphasize the key differences between inner ring suburbs and the core: higher-speed traffic on wider roads, curvilinear street patterns, and built form designed to accommodate the car. These three new classes will be shown with three levels of interventions, which are designed to accommodate AT.

The three classes, and three levels of interventions represent our response to common types of roads in the inner ring. The proposed interventions are supported by our study of the demographic profiles, as well as the literature on behaviour change, outlined in Section 6.1.

The following typologies could be used as a template for other inner ring suburbs seeking to engage and motivate children, caregivers, and commuters to move more actively.

RESIDENTIAL STREETS

Residential streets in a suburban context tend to create a curved street network, independent from the grid created by major roads. These roads have lower volume and lower speeds, along with fewer people using sidewalks for walking or cycling. Housing, schools, parks and community centres can be found on these roads, and as such, have many destinations for the children and caregivers profiles.

TYPE	ELEMENT	DETAILS	COMMENTS
Roadway Dimensions	**Right-of-way width**	20.0 m	
	Street width	8.0 – 9.0 m	Room on the shoulder to accommodate lower order cycling infrastructure
	Boulevard width	5.0 – 6.0 m	Ample room along the boulevard to accommodate cycling infrastructure
Built Form	**Setbacks**	7.0 – 15.0 m	
	Building heights	4.0 – 6.0 m	
	Sidewalks	1.5 m	
Land Uses	**Residential**	Yes	Low to Medium density
	Institutional	Yes	Schools, daycares, community centres
	Parks	Yes	Local parks, school sites
	Commercial	No	
	Industrial/Employment	No	
Other	**Traffic flows**	Low	Low volume, local traffic only
	Posted speed limit	40 km/h	

Figure 6.2.1
Residential street characteristics

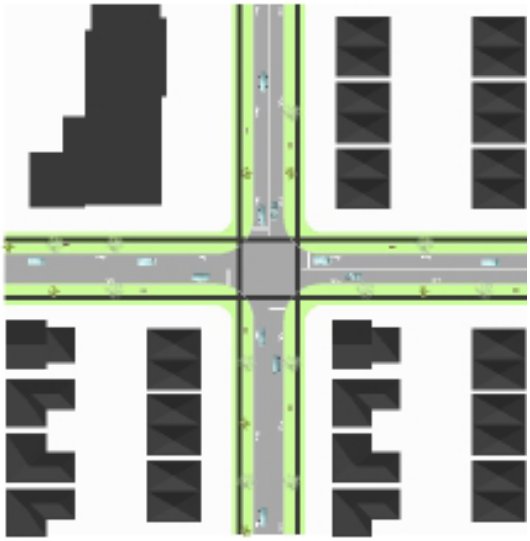


Figure 6.2.2
Residential low intervention plan

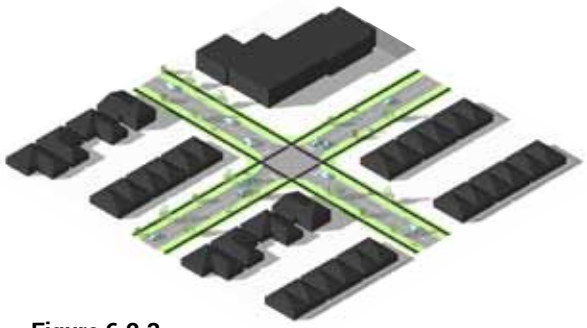


Figure 6.2.3
Residential low intervention axonometric

RESIDENTIAL LOW INTERVENTION

Streetscaping Interventions

- Introduce additional lighting - near bus stops, institutional uses, and parks
- Plant additional street trees along boulevards
- Provide signage with directions to key paths and connector routes, such as bus stops

Pedestrian Interventions

- Widen sidewalks from 1.5 m to 2.1 m.
- Provide additional seating and resting areas - at bus stops, institutional areas, and parks.

Cycling Interventions

- Introduce sharrows on road shoulder - particularly connecting public service institutions.
- Provide bicycle storage/racks near institutional uses, parks, and transit stops.

Traffic Calming Interventions

- Drop traffic speeds to 30 km/h near institutional areas, and park crossings
- Introduce textured crossings at busy intersections

Figure 6.2.4
Residential low intervention section

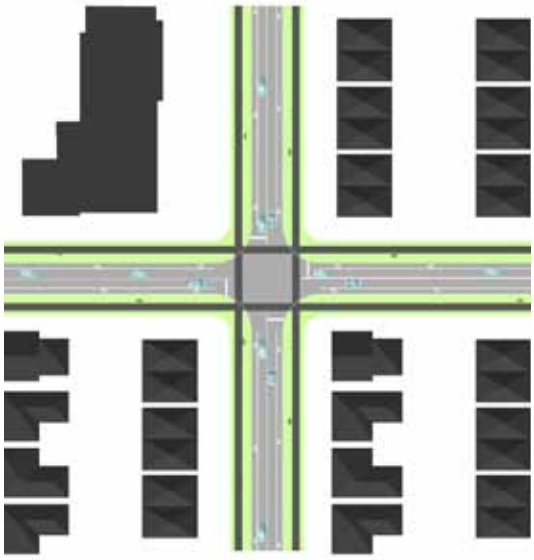


Figure 6.2.5
Residential medium intervention plan

RESIDENTIAL MEDIUM INTERVENTION

Additional Cycling Interventions

- Introduce a painted bike lanes along shoulders (both sides) - priority should be given to routes leading to schools, community centres, and day care centres.
- Introduce additional traffic calming interventions
- Explore separating bike lanes from automobile lanes with textured rumble strips, which give an immediate tactile warning if crossed by a vehicle

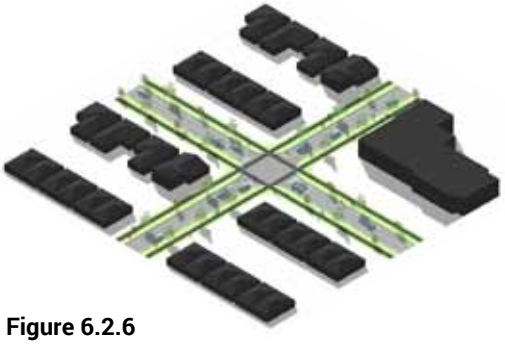


Figure 6.2.6
Residential medium intervention axonometric

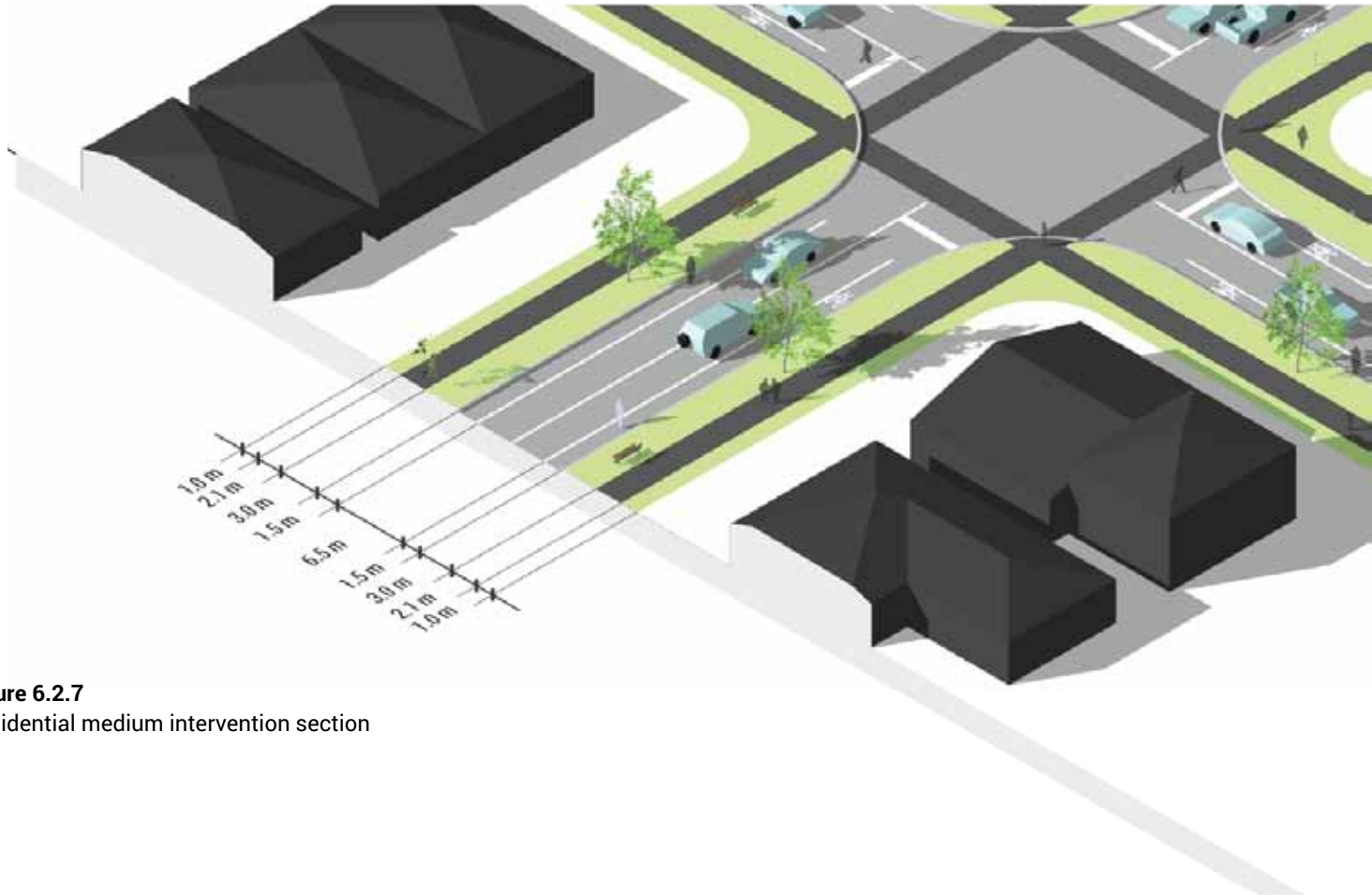


Figure 6.2.7
Residential medium intervention section

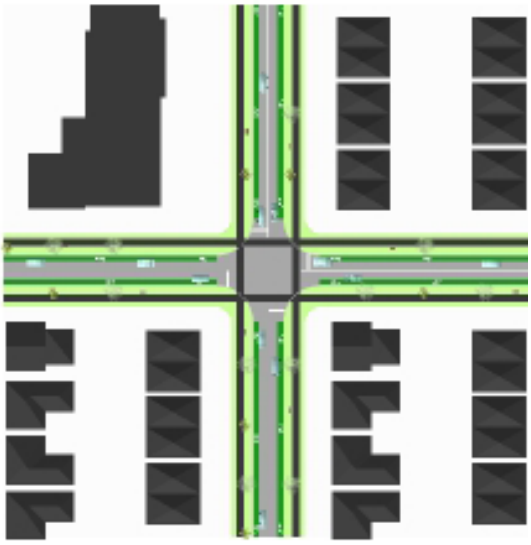


Figure 6.2.8
Residential high intervention plan

RESIDENTIAL HIGH INTERVENTION

Additional Cycling Interventions

- Introduce coloured bike lanes along shoulder (both sides) - priority should be given on routes leading to schools, community centres, and day care centres.
- Provide bicycle storage/racks near institutional uses, parks, and transit stops

Additional Traffic Calming Interventions

- Separate same-grade road uses with textured rumble strips, for tactile feedback.
- Introduce textured or raised crossings at controlled intersections, and other crossings

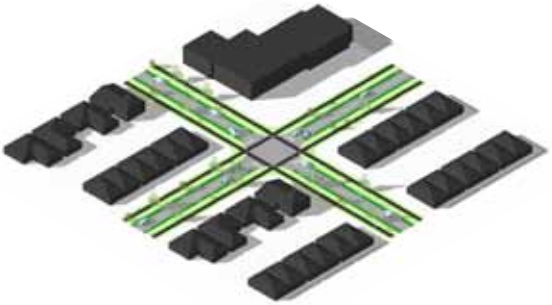


Figure 6.2.9
Residential high intervention axonometric

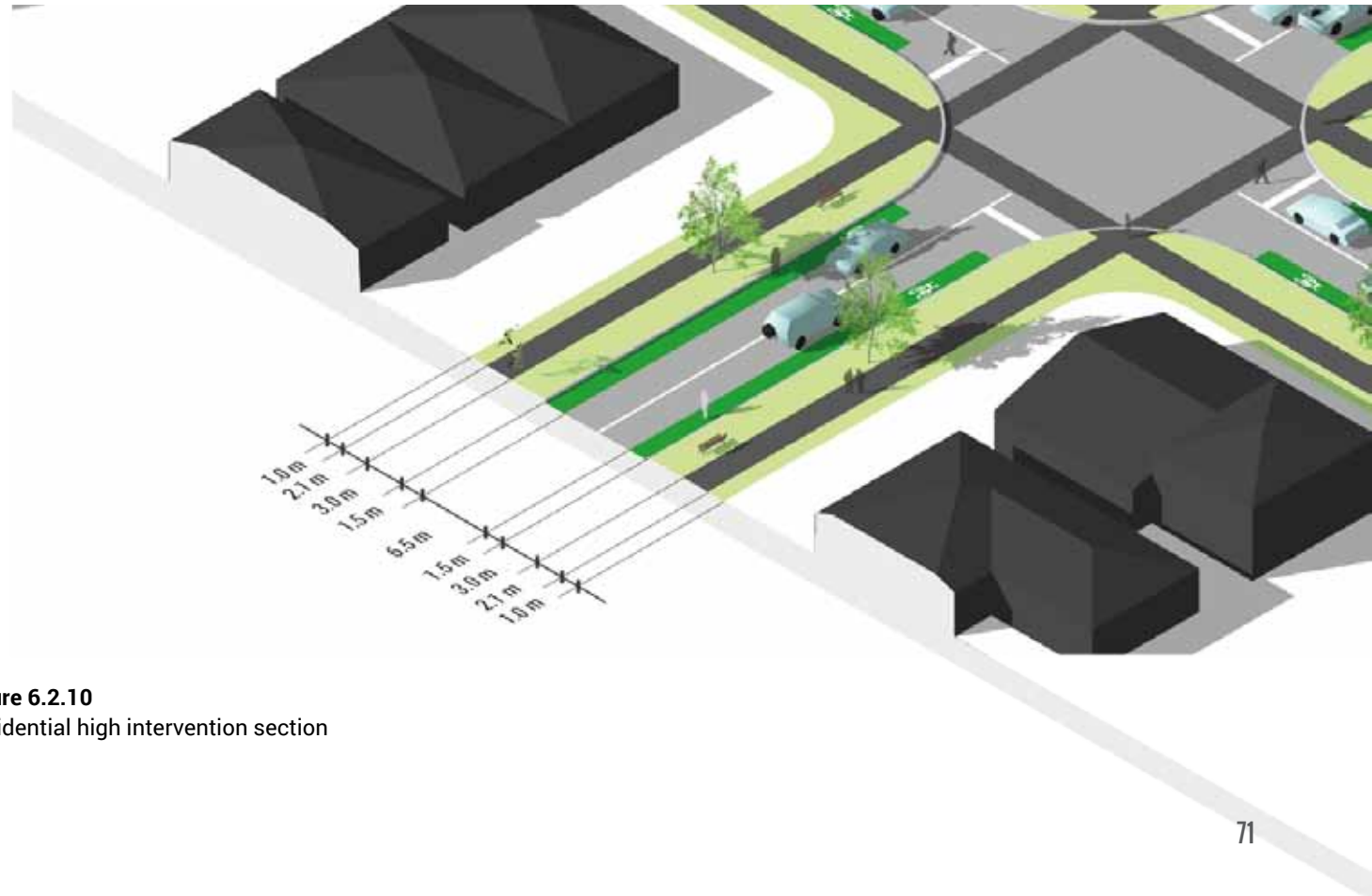


Figure 6.2.10
Residential high intervention section

COLLECTOR STREETS

Collector streets often connect between residential streets and major roads. They handle higher volume and speed of traffic, and often lead to employment or institutional uses. Due to the high level of use, intersections with collector roads have the potential for conflict between different users. Collector streets have similar uses to residential streets, but can also accommodate light commercial uses, and larger institutions - this means they can be key connectors for commuters.

TYPE	ELEMENT	DETAILS	COMMENTS
Roadway Dimensions	**Right-of-way width**	20.0 – 30.0 m	
	Street width	8.0 – 21.0 m	Room on the shoulder to accommodate lower order cycling infrastructure
	Boulevard width	5.0 – 8.0 m	Ample room along the boulevard to accommodate cycling infrastructure
Built Form	**Setbacks**	6.0 - 8.0 (low density residential) 15.0 - 30.0 m (medium density residential and institutional	Majority of housing has a setback between 6.0 – 8.0 m, medium density and institutional uses can range between 15.0 – 30.0 m on average
	Building heights	4.0 – 8.0 m (low-medium density residential, and institutional uses 1 – 2 storeys) 18.0 – 45.0 m (high density towers 8 – 18 storeys)	Semi-detached homes, single family dwellings, schools
	Sidewalks	1.5 m	Located on both sides of the street
Land Uses	**Residential**	Yes	Low to medium density
	Institutional	Yes	Schools, daycares, community centres, large educational institutions
	Parks	Yes	Local parks, school sites
	Commercial	Yes	Convenience commercial retail
	Industrial/Employment	No	
Other	**Traffic flows**	Low – medium	Collector road classification
	Posted speed limit	40 km/h	

Figure 6.2.11
Collector street characteristics

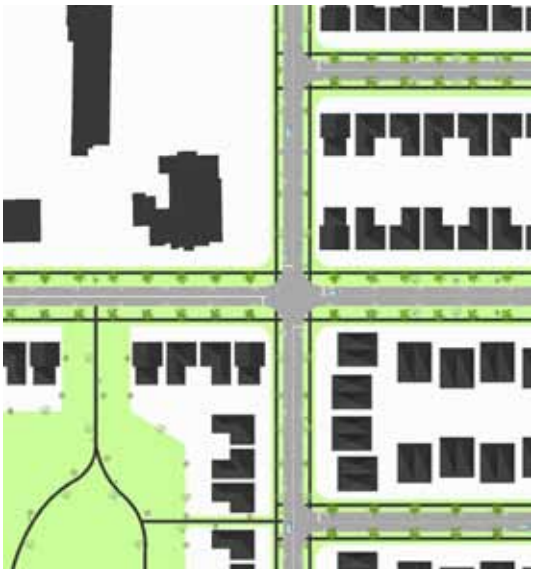


Figure 6.2.12
Collector low intervention plan

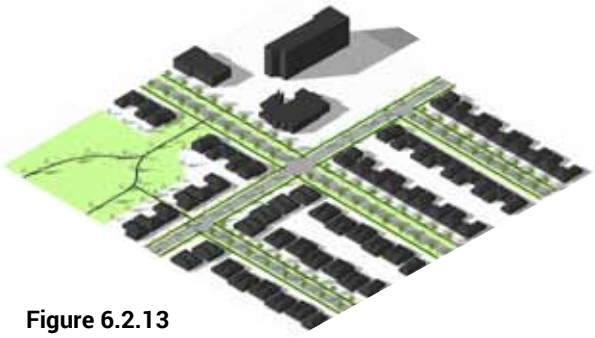


Figure 6.2.13
Collector low intervention axonometric

COLLECTOR LOW INTERVENTION

Streetscaping Interventions

- Introduce additional lighting – near bus stops, institutional uses, and parks.
- Plant additional street trees along boulevards.
- Provide signage with directions to key paths and connector routes, such as bus stops.

Pedestrian Interventions

- Widen sidewalks from 1.5m to 2.1 m
- Provide additional seating and resting areas - at bus stops, institutional areas, and parks.

Cycling Interventions

- Introduce sharrows along shoulder (both sides) - priority should be given to routes leading to schools, community centres, and day care centres.
- Provide bicycle storage/racks near institutional uses, parks, and transit stops

Traffic Calming Interventions

- Drop traffic speeds to 30 km/h near institutional areas, and park crossings
- Explore separating sharrow spaces from automobile lanes with textured rumble strips in areas of higher traffic volumes, where if crossed, an immediate tactile warning is felt
- Introduce textured or raised crossings at controlled intersections, school crossings, and park crossings

Figure 6.2.14
Collector low intervention section

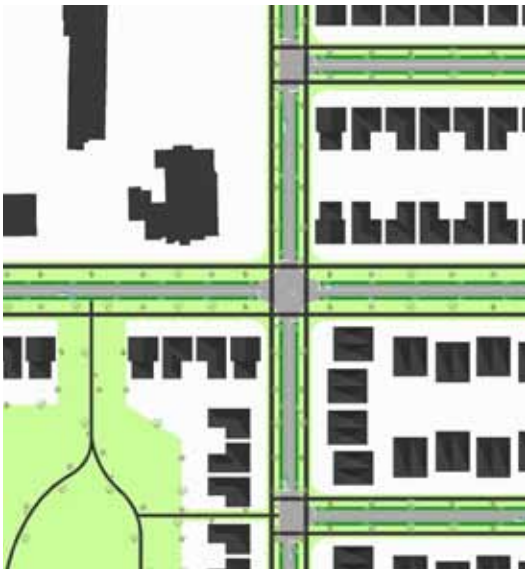


Figure 6.2.15
Collector medium intervention plan

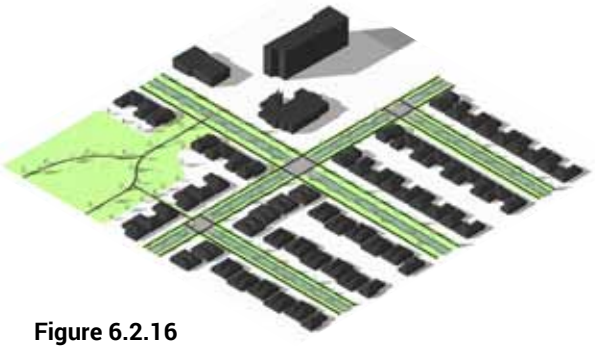


Figure 6.2.16
Collector medium intervention axonometric

COLLECTOR MEDIUM INTERVENTION

Additional Streetscaping Interventions

- Introduce planters along medians

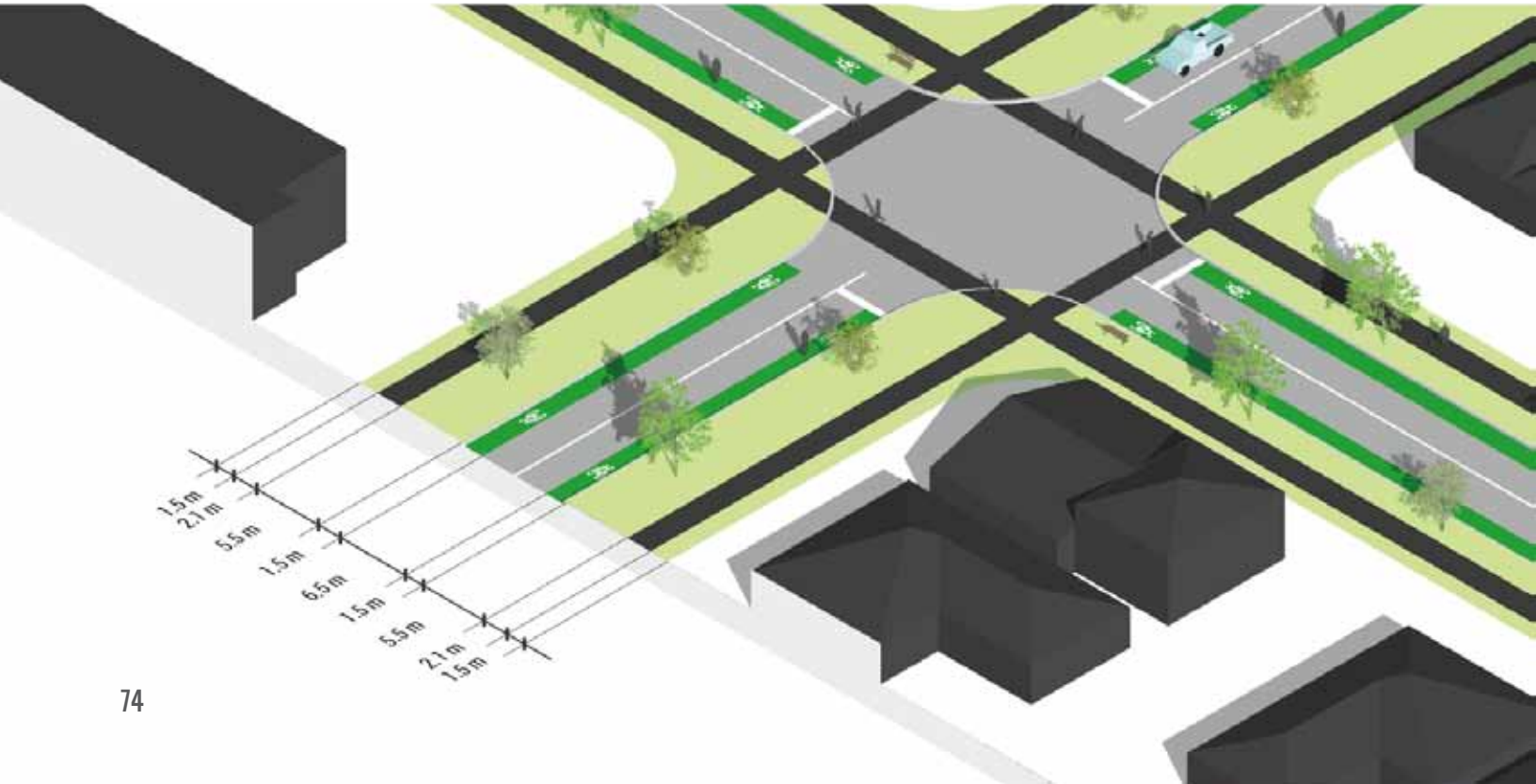
Additional Cycling Interventions

- Replace Sharrows with painted bike lanes
- Introduce coloured bike lanes along shoulders of routes along higher traffic areas connecting to minor and major arterials

Additional Traffic Calming Interventions

- Consider separating bike facility from road with rumble strips for tactile feedback.
- Introduce speed humps in areas near major crossings to further reduce traffic speeds
- Introduce signalized crosswalks near institutional uses, parks, and commercial nodes.

Figure 6.2.17
Collector medium intervention section



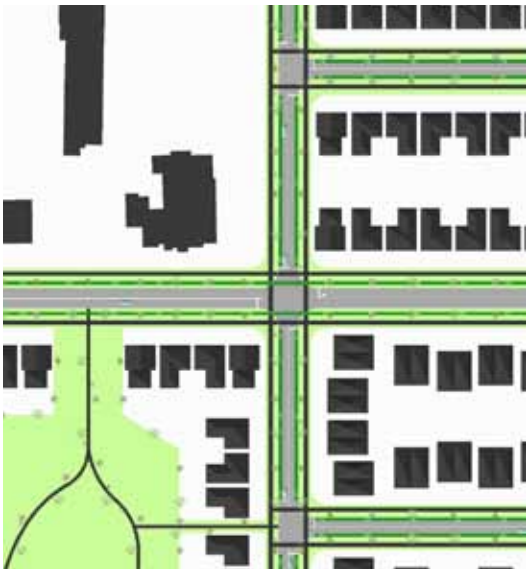


Figure 6.2.18
Collector high intervention plan

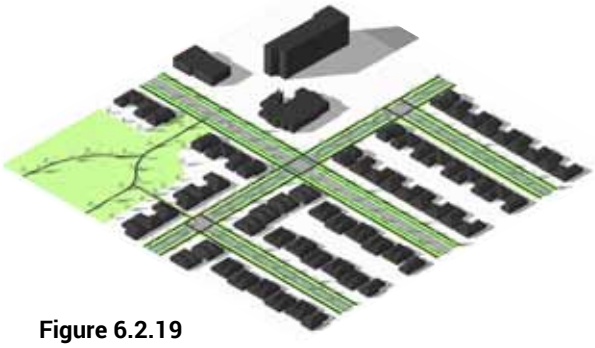
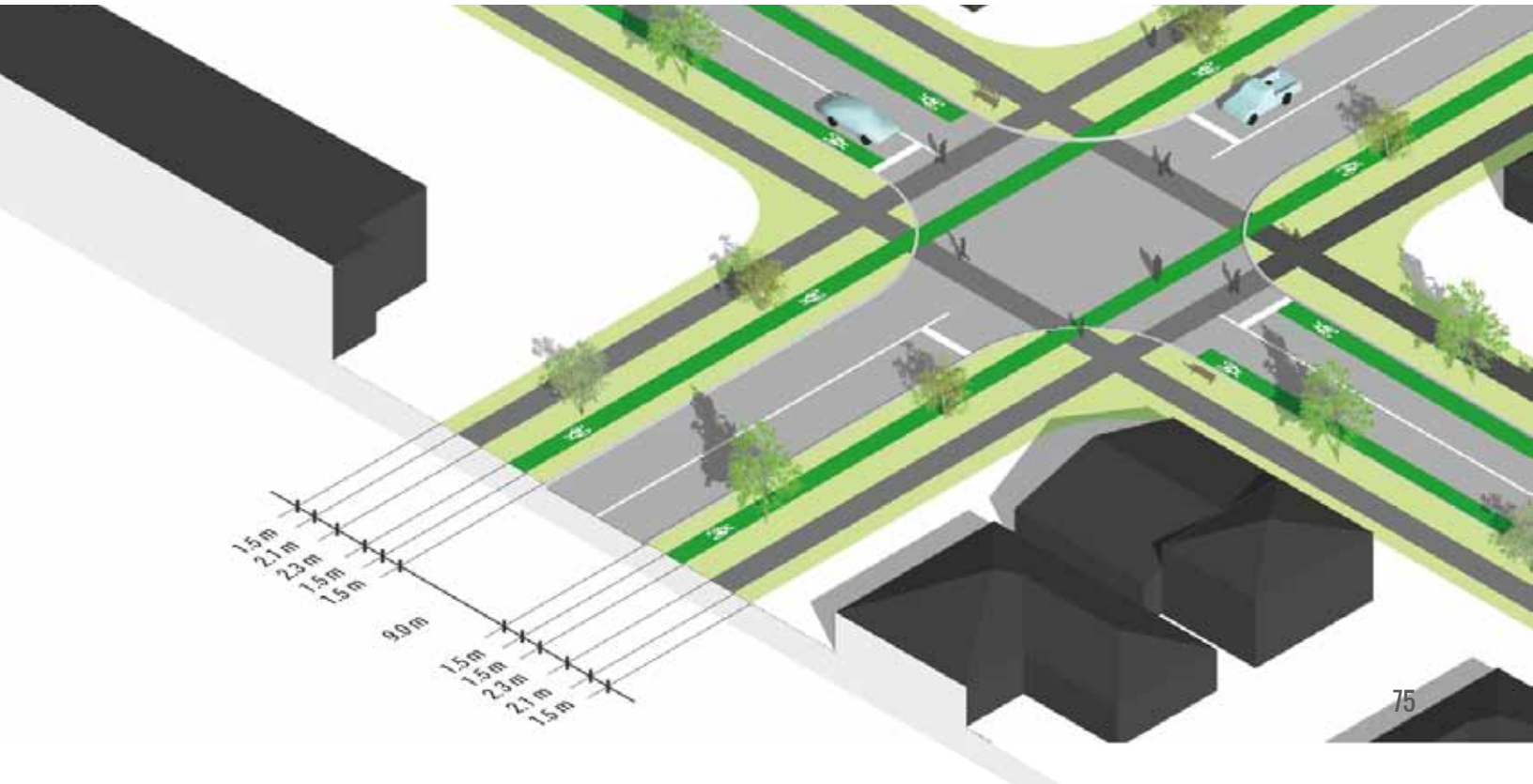


Figure 6.2.19
Collector high intervention axonometric

Figure 6.2.20
Collector high intervention section



COLLECTOR HIGH INTERVENTION

Additional Cycling Interventions

- Introduce a grade separated bike lane on the boulevard of the right of way, between the road and the sidewalk.

ARTERIAL STREETS

Arterial roads in the suburbs are quite different to those in the downtown or midtown of Toronto. They see higher speeds, higher volumes, and often lead to major highways or institutional uses. Arterial roads seldom have parking, and there are infrequent pedestrian crossings or traffic lights. High density towers are often located on these streets, which can create safety concerns for children and caregivers who need to cross the street.

TYPE	ELEMENT	DETAILS	COMMENTS
Roadway Dimensions	**Right-of-way width**	26.0 – 28.0 m (minor) 36.0 – 40.0 m (major)	
	Street width	13.0 – 15.0 m (minor) 15.0 – 30.0 m (major)	For major arterials, intersection widths are nearly double the corridor widths due to the presence of left and right turning lanes.
	Boulevard width	6.0 – 12.1 m (minor) 5.0 – 12.1 m (major)	Ample room along the boulevard to accommodate cycling infrastructure
Built Form	**Setbacks**	20.0 – 75.0 (residential) 15.0 – 75.0 m (commercial) 9.0 – 100.0 m (industrial)	Large setbacks along arterial roads. Opportunity for infill uses along the street's edge
	Building heights	6.0 – 8.0 m (medium density residential, and institutional uses 1-2 storeys) 18.0 – 85.0 m (high density towers 8-34 storeys)	
	Sidewalks	1.5 m – 2.5 m	Located on both sides of the street. The majority of sidewalks are 1.5 m wide.
Land Uses	**Residential**	Yes	Medium to high density
	Institutional	Yes	Schools, daycares, community centres, library, large educational institutions
	Parks	Yes	Local parks, school sites, hydro corridor
	Commercial	Yes	Convenience commercial retail, other retail, restaurant, services
	Industrial/Employment	Yes	Light industrial
Other	**Traffic flows**	High	Minor and major arterial road classifications
	Posted speed limit	40 – 60 km/h	Design encourages travel at speeds higher posted limits

Figure 6.2.21
Collector street characteristics

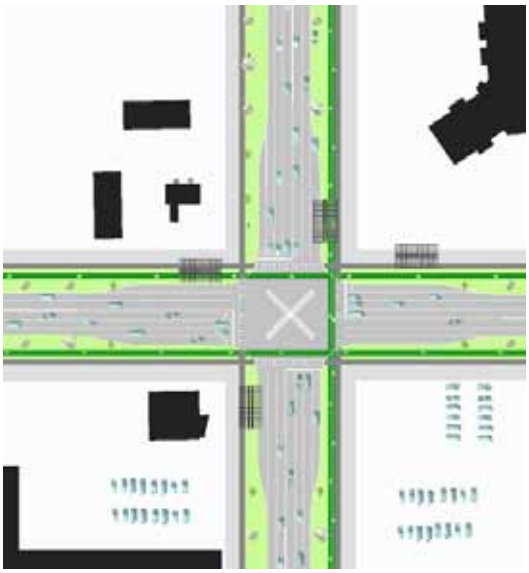


Figure 6.2.22
Arterial low intervention plan

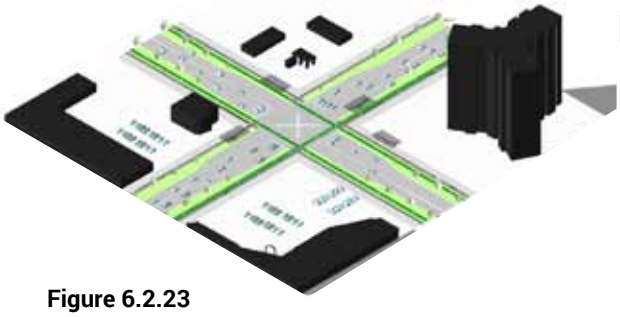


Figure 6.2.23
Arterial low intervention axonometric

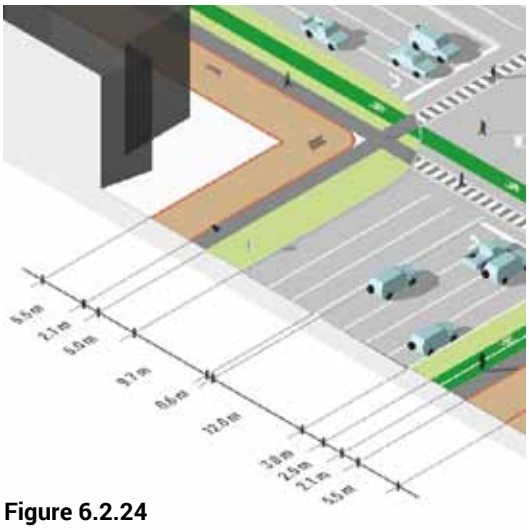


Figure 6.2.24
Arterial low intervention section

ARTERIAL LOW INTERVENTION

Streetscaping Interventions

- Where the road corridor is between 5.0 - 10.0m in width, unused spaces in these areas can adopt temporary retail uses, as permitted under the City of Toronto's Residential Apartment Commercial (RAC) Zoning by-law. Larger additional space should be set aside for future intensification if these are successful.
- Introduce additional lighting along primary pedestrian and cyclist routes
- Plant additional street trees along boulevards
- Place planters on medians
- Provide signage and other wayfinding tools providing directions to key paths and connector routes within and outside of the neighbourhood - bus stops are an example of central and accessible location for a community map.

Pedestrian Interventions

- Widen sidewalks along corridors from 1.5 – 2.1 m
- Widen sidewalks along intersections from 2.5 – 6.0 m
- Provide additional seating and resting areas - near bus stops, institutional areas, the hydro corridor, and park entrances
- Formalize additional connections through private properties where pathways exist, and where feasible

Cycling Interventions

- Introduce a grade separated 2-way bike lane along the boulevard of the right of way, between the road and the sidewalk - ensure that appropriate separations are provided between pedestrians and cyclists
- Intersection crossings should be clearly marked with coloured paint to indicate to drivers and pedestrians they are entering into the cyclist's pathway
- Provide signage indicating potential conflicts with pedestrians at pedestrian crossings, intersections, and transit stops
- Provide bicycle storage/racks near institutional uses, parks, commercial nodes, and major transit nodes

Traffic Calming Interventions

- Introduce textured or raised crossings at controlled intersections, school crossings, and park crossings
- Clearly mark pedestrian and cycling paths along commercial parking lots with painted, textured, or raised crossings
- Introduce signalized crosswalks near institutional uses, parks, and commercial nodes.

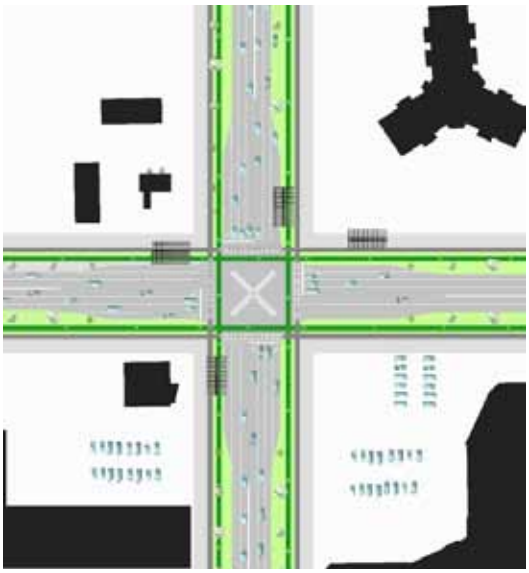


Figure 6.2.25
Arterial medium intervention plan

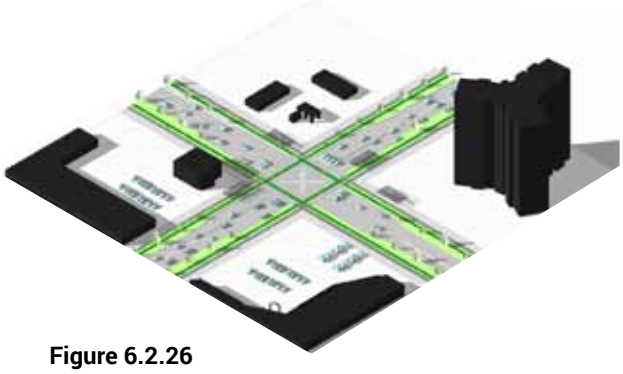


Figure 6.2.26
Arterial medium intervention axonometric

ARTERIAL MEDIUM INTERVENTION

Additional Cycling Interventions

- Introduce a grade separated one-way bike lane along the boulevard on both sides of the right of way, between the road and the sidewalk – ensure that separations are provided between pedestrians and cyclists where necessary

Additional Traffic Calming Interventions

- Limit traffic speeds to 40 km/h when crossing an area with high residential densities.
- Disallow right hand turns on reds for drivers and cyclists

Additional Pedestrian Interventions

- Introduce pedestrian scramble to facilitate diagonal crossings

Figure 6.2.27
Arterial medium intervention section

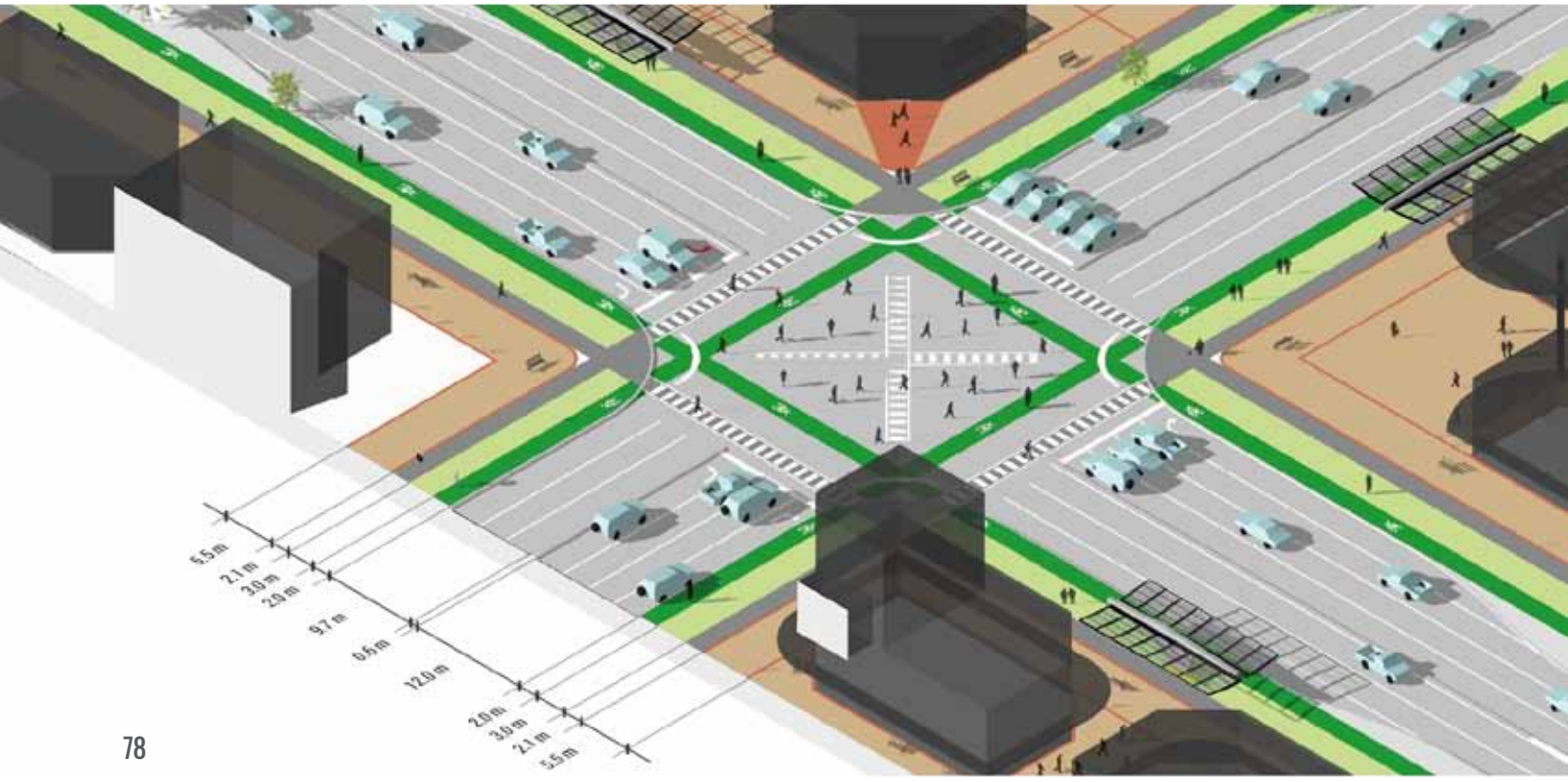


Figure 6.2.28
Arterial high intervention plan

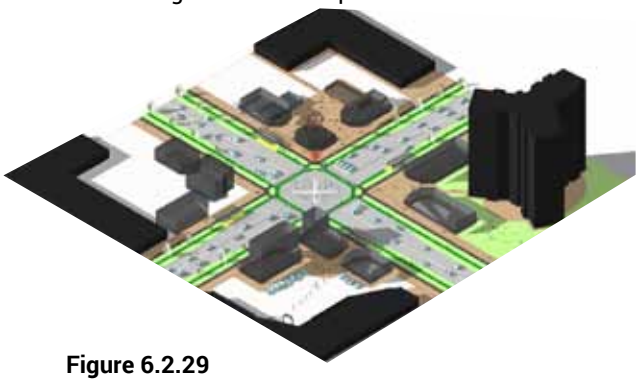


Figure 6.2.29
Arterial high intervention axonometric

ARTERIAL HIGH INTERVENTION

Additional Streetscaping Interventions

- Introduce areas for public art along the street edge

Additional Pedestrian Interventions

- Formalize additional connections through private properties where pathways exist, and where feasible

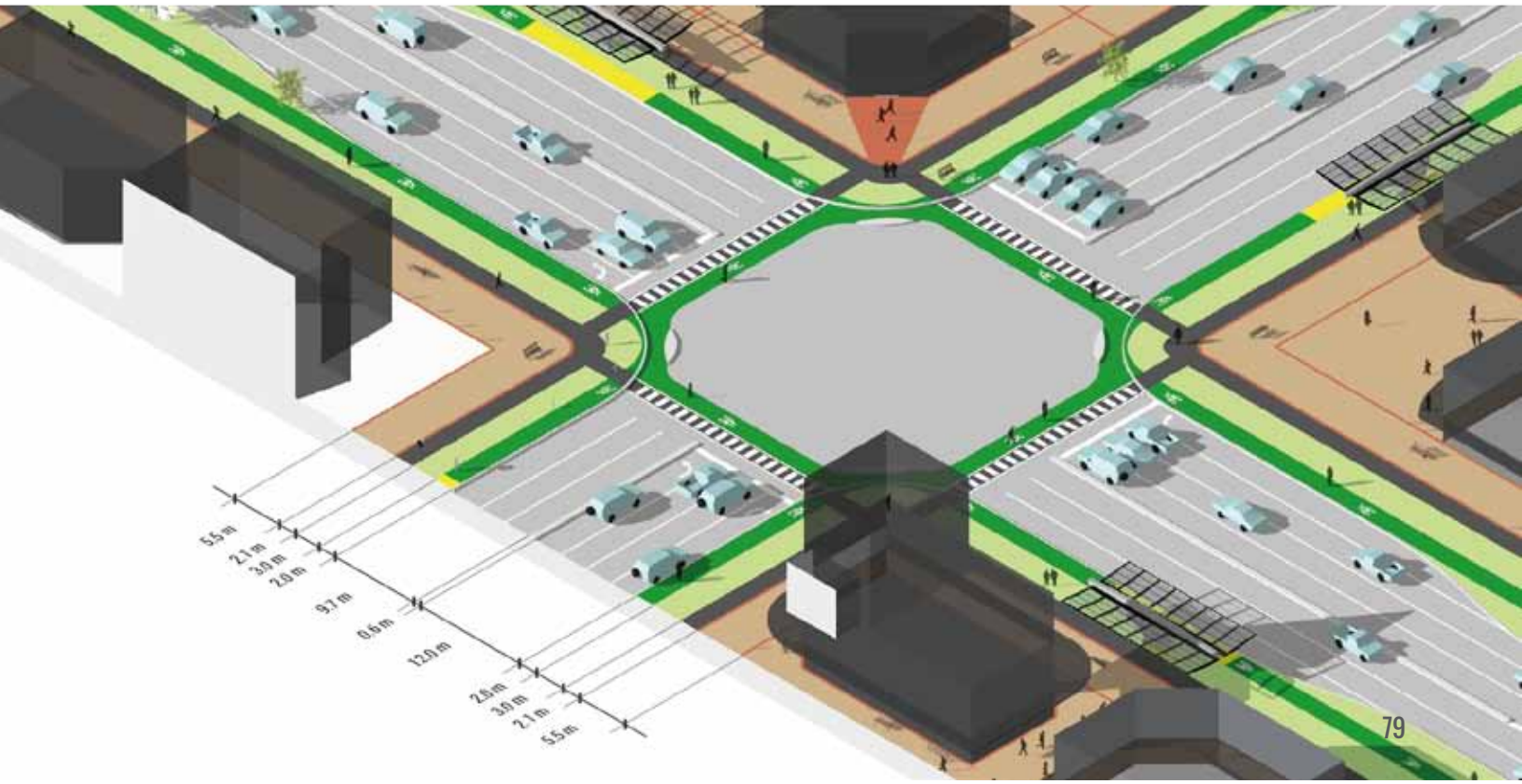
Additional Cycling Interventions

- Intersection design could reflect European standards, with dedicated space for cyclist crossings and protected waiting areas for left turns

Additional Traffic Calming Interventions

- Limit traffic speeds to 40 km/h when crossing an area with high residential densities
- Consider introducing a bus dedicated lane along arterials with high residential densities
- Disallow right hand turns on reds for drivers and cyclists

Figure 6.2.30
Arterial high intervention section



HYDRO CORRIDORS/INTERNAL PATHWAYS

The Hydro Corridor and internal pathways typology was included because each serves as important connectors both within and between suburban neighbourhoods in Toronto that bypass a number of potential conflicts with automobiles. The Hydro Corridor reaches from Finch subway station to Highway 400, providing opportunities for connections to other areas of the city.

Hydro corridors differ slightly from internal pathways; the former is characterized by one formalized, paved, central path with little north-south connections, while the latter is often well established and well connected, with pathways going in multiple directions to multiple destinations. On the Hydro Corridor, residents make up for lack of connectivity by forging their own network – visible dirt paths leading from adjacent areas to the formalized, paved path are found in many places along the Hydro Corridor.

TYPE	ELEMENT	DETAILS	COMMENTS
Roadway Dimensions	**Right-of-way width**	-	-
	Street width	-	-
	Boulevard width	-	-
Built Form	**Setbacks**	0 – 120.0 m	Pathways are often located central or adjacent to property borders, making setback distances difficult to measure.
	Building heights	6.0 – 8.0 m (medium density residential, and institutional uses 1-2 storeys) 18.0 – 85.0 m (high density towers 8-34 storeys)	The hydro corridor traverses a number of areas encountering a number of different uses. Internal pathways are present in parks, residential areas, and institutional uses.
	Sidewalks	1.5 m – 3.5 m	Most pathways average 3.0 m in width, where their condition can range from poor to excellent. The Hydro Corridor trail is classified as a bi-directional multi-use path.
Land Uses	**Residential**	Yes	Low to high density
	Institutional	Yes	Schools
	Parks	Yes	Local parks, school sites
	Commercial	Yes	Convenience commercial retail, restaurant
	Industrial/Employment	Yes	Light industrial
Other	**Traffic flows**	Low	Non-motorized with exception of maintenance vehicles
	Posted speed limit	20 km/h	

Figure 6.2.31: Collector street characteristics

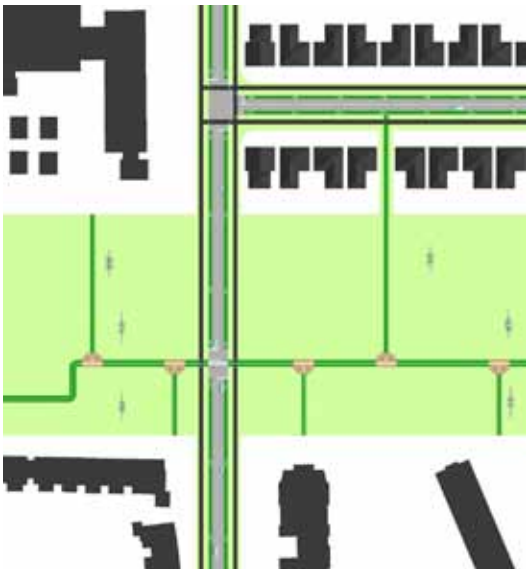


Figure 6.2.32
Hydro corridor low intervention plan

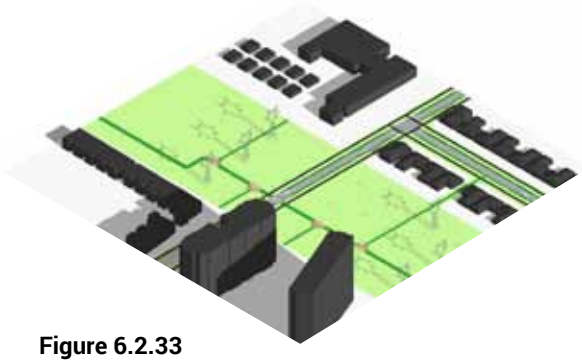


Figure 6.2.33
Hydro corridor low intervention axonometric

Figure 6.2.34
Ground level view

HYDRO CORRIDOR/PATHWAY IMMEDIATE INTERVENTION

Streetscaping Interventions

- Introduce pedestrian level lighting along the pathway
- Introduce planters along or near rest areas
- Provide signage and other wayfinding tools providing directions to key paths and connector routes within and outside of the neighbourhood - rest areas and intersection with public roads are an example of central and accessible location for a community map
- Introduce recreational and/or community programs (e.g., soccer field, community gardens, etc.)

Pedestrian and Cycling Interventions

- Resurface or renovate pathway surfaces to new where necessary, and indicate whether the path is multi-use and shared between cyclists and pedestrians
- Provide resting areas with seating at a minimum of 500 m intervals along the path where there are concentrations of residential, institutional, and commercial uses.
- Provide bicycle storage/racks near rest areas and pathway intersections that lead to institutional uses, parks, commercial nodes, and transit stops

Traffic Calming Interventions

- Introduce textured crossings at intersections between pathways and rest areas for cyclists to reduce their speed
- Introduce signalized crosswalks where the hydro corridor intersects an automotive throughway (e.g., residential/collector street, highway on/off ramp, etc.). Ensure that crosswalk surface is raised, textured, or coloured to alert drivers of potential crossings (i.e., different surface applications will depend on the volume of traffic).

Figure 6.2.35
Ground level view of trail/street crossing

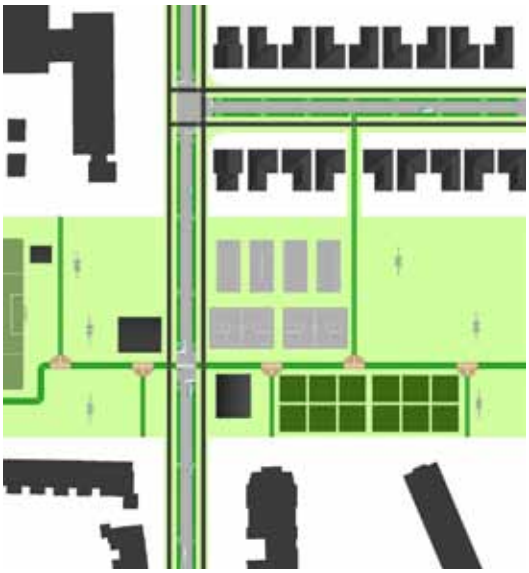


Figure 6.2.36
Hydro corridor high intervention plan

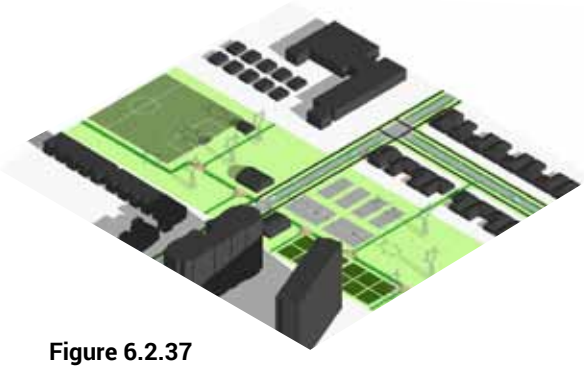


Figure 6.2.37
Hydro corridor high intervention axonometric

HYDRO CORRIDOR/PATHWAY HIGH INTERVENTION

Additional Streetscaping Interventions

- Introduce permanent structures along the hydro corridor pathway that house low intensity commercial uses, to ensure there is a presence on the corridor during all hours. These can also be located where the corridor meets other road crossings, namely arterial roads.

Additional Pedestrian and Cycling Interventions

- Introduce an elevated multi-use bridge where corridors cross major highway infrastructure (inclusive of ramps)

Figure 6.2.38
Hydro corridor high intervention view

Figure 6.2.39
Ground level view

Figure 6.2.40
Ground level view

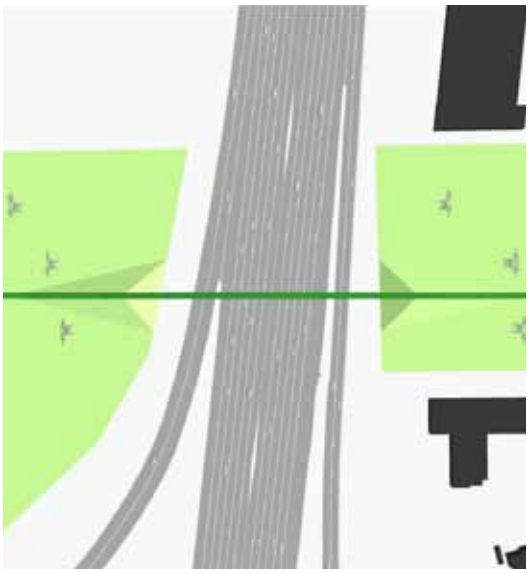


Figure 6.2.41
Hydro corridor high intervention plan (crossing)

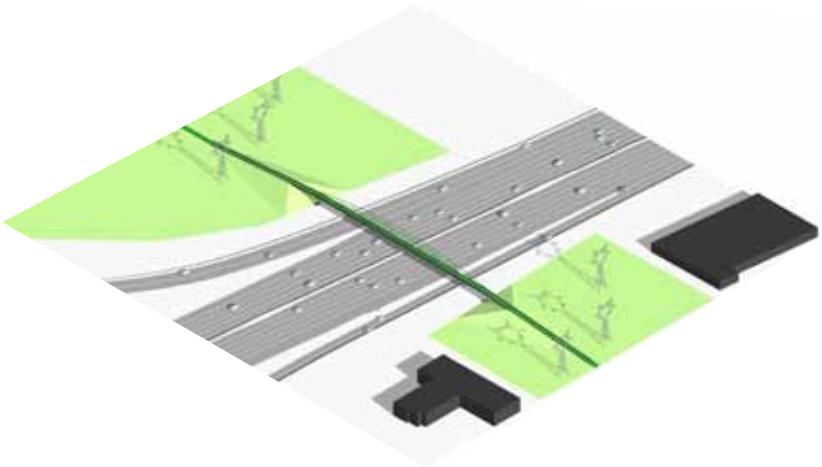


Figure 6.2.42
Hydro corridor high intervention axonometric (crossing)

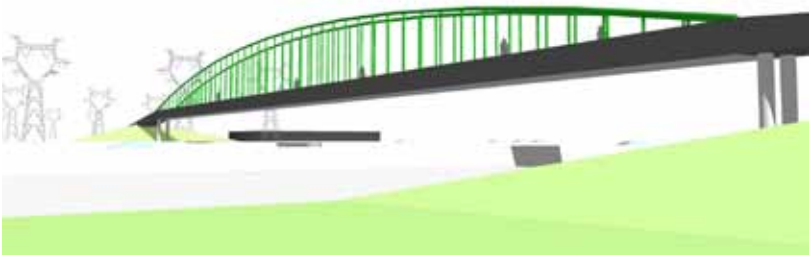


Figure 6.2.43
View of crossing

Figure 6.2.45
Ground level view

Figure 6.2.44
View of crossing

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7.0 RECOMMENDED NETWORK AND INTERVENTIONS

Our recommendations are comprised of two components:

- A network of new and strengthened pathways.
- Site specific interventions (nodes).

7.1 Review of Key Concepts

The development of the plan was based on our analysis of demographic data, the development of three social profiles, and the review of existing conditions and travel behaviours. This data was used to populate the social ecology model for mode choice (see Figure 7.1.1).

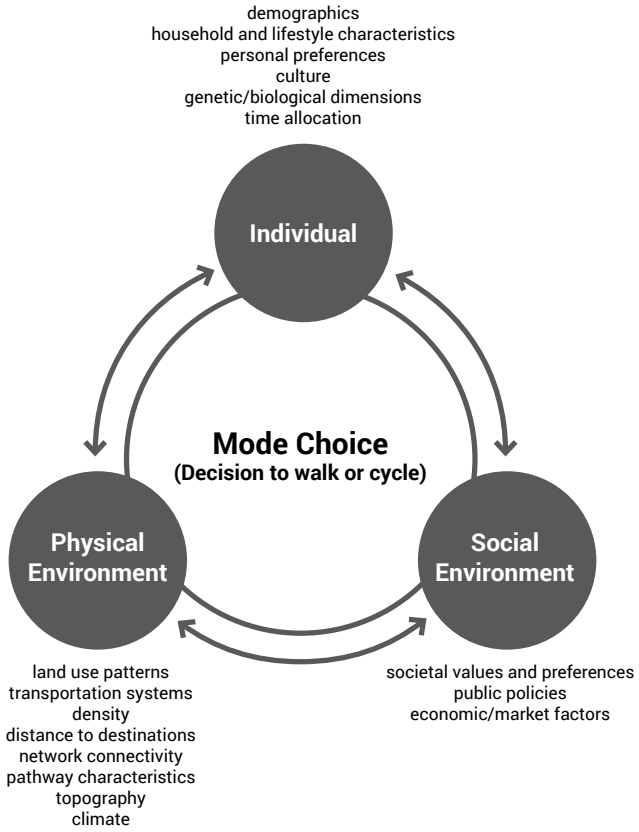


Figure 7.1.1: Social ecology model for mode choice

SUMMARY OF DESIGN PRINCIPLES

Using our survey of literature in active transportation (AT) infrastructure design best practice, as well as our demographic profiling, a list of design principles was produced. These design principles help guide the evaluation and selection of various proposals for physical changes to the built environment.

THEME	DESIGN PRINCIPLE	RATIONALE
Safer Streets	**Eyes on the path**	Pathway design follows the principles of Crime Prevention Through Environmental Design (CPTED), and there are minimal obstructions to sightlines. Pathways are lit, allowing travel at night. Pathways travel from node to node, and each node is patronized frequently or supervised ("eyes on the path").
	Low speeds	Routes are designed for low travel speeds (for both bike and car). The facility is designed for 8-80 and is focused on slow speeds for travel distance. If prevailing speeds are high, traffic calming measures are deployed.
	Low volumes	Route alternatives are available to routes with high volumes of motor vehicles.
	Maintenance and state-of-good-repair	Trails are cleared of snow and ice in the winter, making year-round travel more feasible. Facilities are in a state of good repair and do not have any hazards due to wear and tear.
Increased connectivity	**Regional connections**	Facilities provide ways to cross arterials roads and ravines and access adjacent neighbourhoods.
	Direct, non-circuitous routes	The ability to travel along a direct route that supports higher cycling speeds is of increased value for people commuting to work.
	Intermodal (with transit)	Network paths are designed to connect with transit hubs, such as a subway station, to facilitate long distance travel and 'last-mile' connections to transit.
	Meeting Places	The active transportation network should include opporunities to encourage interaction among community members and enliven the streets for people. Pathway intersections should include activity nodes that provide opporunities for bench seating, gathering places, community gardens, and informal retail. Seating areas spaced every 100 m along a path will be a benefit for seniors.
Enhanced Public Realm and Facilities	**Bike storage and parking**	Facilities are provided that assist bike owners in storing their bikes in an appropriate and secure space at home. Secure and appropriate facilities for bike parking are provided at destinations such as schools, libraries, community centres, places of employment, and retail hubs.
	Complete Street Design	Well-designed sidewalks, multi-use trails, and separated bike lanes provide a safe and attractive route. Facilities should be designed for consistent user expectation along a route, and to be usable by anyone from 8 years old to 80 years old.
	Legible routes	The network paths intersect at regular intervals. Navigation is assisted by trail wayfinding.

Figure 7.1.2: Summary of design principles

SUMMARY OF SOCIAL PROFILES

The demographic sketches from Section 4 provide a set of target audiences to guide the design process. The "Three Cs" (children, caregivers, commuters) each have a set of common or unique characteristics which help to arrive at key design considerations that help assist in evaluating design proposals.

CHILDREN	CAREGIVERS	COMMUTERS
Compared to the Toronto CMA, Black Creek is "younger" neighbourhood, with a higher proportion of residents aged 0 – 15 years.	Compared to the Toronto CMA, there is a far higher proportion of families with single parents. This is particularly true for families with a lone female parent.	The median household income tends to the lower than the CMA average. An increase in active transportation use by commuters could play a large part in reducing household costs.
Children are already walking to school. Complete streets and traffic calming may increase cycling uptake.	Lone female parents in Black Creek care for more children than the average for female lone parents across the CMA.	The incidence of households with no cars is higher than the CMA average. Transit mode share matches the city average and is double the CMA average. Mode share of active modes is slightly lower than CMA average, presenting an opportunity to increase walking and cycling to work.
The incidence of children in low income family situations is considerably higher than the Toronto CMA average.	There is a correlation between female lone parent families and the incidence of low income households. An increase in active transportation use by these female lone parents could play a large part in reducing household costs.	A significant proportion of work trips are made within a 5 km radius of Black Creek, a reasonable cycling distance. Work trips longer than 5 km could be intermodal in nature, if a bike-to-transit transfer is facilitated at the two new subways stations near Black Creek.
Key design considerations: safety, connectivity and proximity to destinations (schools and community amenities)	**Key design considerations:** safe and direct access to children's destinations, links to retail and services, links to transit.	**Key design considerations:** access to quick direct routes, links to transit.

Figure 7.1.3: Summary of social profiles

ALIGNMENT OF DESIGN PRINCIPLES

The project team met to brainstorm how the key design considerations could be attached to a series of design principles. With our background literature review in mind, as well as a view to reasonableness and common sense, relevant design principles were attached to each of the three social profiles.

CHILDREN	CAREGIVERS	COMMUTERS
Eyes on the path	Eyes on the path	Eyes on the path *
Low speeds	Low speeds	Low volumes *
Low volumes	Low volumes	Maintenance and state-of-good-repair
Maintenance and state-of-good-repair	Maintenance and state-of-good-repair	Regional connections
Meeting places	Regional connections *	Direct, non-circuitous routes
Bike storage and parking	Intermodal (with transit) *	Intermodal (with transit)
Complete street design	Meeting places	Bike storage and parking
Legible routes	Bike storage and parking	Complete street design
	Complete street design	Legible routes
	Legible routes	

* Partial relationship

Figure 7.1.4: Alignment of design principles

DESIGN PRINCIPLE MATRIX

THEME	DESIGN PRINCIPLE	RATIONALE	TARGET AUDIENCES		
			CHILDREN	CAREGIVERS	COMMUTERS
Safer Streets	**Eyes on the path**	Pathway design follows the principles of Crime Prevention Through Environmental Design (CPTED), and there are minimal obstructions to sightlines. Pathways are lit, allowing travel at night. Pathways travel from node to node, and each node is patronized frequently or supervised ("eyes on the path").	●	●	◑
	Low speeds	Routes are designed for low travel speeds (for both bike and car). The facility is designed for 8-80 and is focused on slow speeds for travel distance. If prevailing speeds are high, traffic calming measures are deployed.	●	●	○
	Low volumes	Route alternatives are available to routes with high volumes of motor vehicles.	●	●	◑
	Maintenance and state-of-good-repair	Trails are cleared of snow and ice in the winter, making year-round travel more feasible. Facilities are in a state of good repair and do not have any hazards due to wear and tear.	●	●	●
Increased connectivity	**Regional connections**	Facilities provide ways to cross arterials roads and ravines and access adjacent neighbourhoods.	○	◑	●
	Direct, non-circuitous routes	The ability to travel along a direct route that supports higher cycling speeds is of increased value for people commuting to work.	○	○	●
	Intermodal (with transit)	Network paths are designed to connect with transit hubs, such as a subway station, to facilitate long distance travel and 'last-mile' connections to transit.	○	◑	●
	Meeting Places	The active transportation network should include opporunities to encourage interaction among community members and enliven the streets for people. Pathway intersections should include activity nodes that provide opporunities for bench seating, gathering places, community gardens, and informal retail. Seating areas spaced every 100 m along a path will be a beneift for seniors.	●	●	○
Enhanced Public Realm and Facilities	**Bike storage and parking**	Facilities are provided that assist bike owners in storing their bikes in an appropriate and secure space at home. Secure and appropriate facilities for bike parking are provided at destinations such as schools, libraries, community centres, places of employment, and retail hubs.	●	●	●
	Complete Street Design	Well-designed sidewalks, multi-use trails, and separated bike lanes provide a safe and attractive route. Facilities should be designed for consistent user expectation along a route, and to be usable by anyone from 8 years old to 80 years old.	●	●	●
	Legible routes	The network paths intersect at regular intervals. Navigation is assisted by trail wayfinding.	●	●	●

○ Weak relationship ◑ Partial relationship ● Strong relationship

Figure 7.1.5: Full design principle matrix

7.2 The Plan

The plan lays out priority infrastructure improvements to promote AT by increasing safety, connectivity and enhancing the AT experience.

The plan approaches the neighbourhood by dividing the layout of streets and paths into three levels. These are arterials (in pink), collectors (in green) and pathways (in brown). Intersections of pathway elements are ideal places to invest in improvements to the public realm. These "nodes" are also shown below.

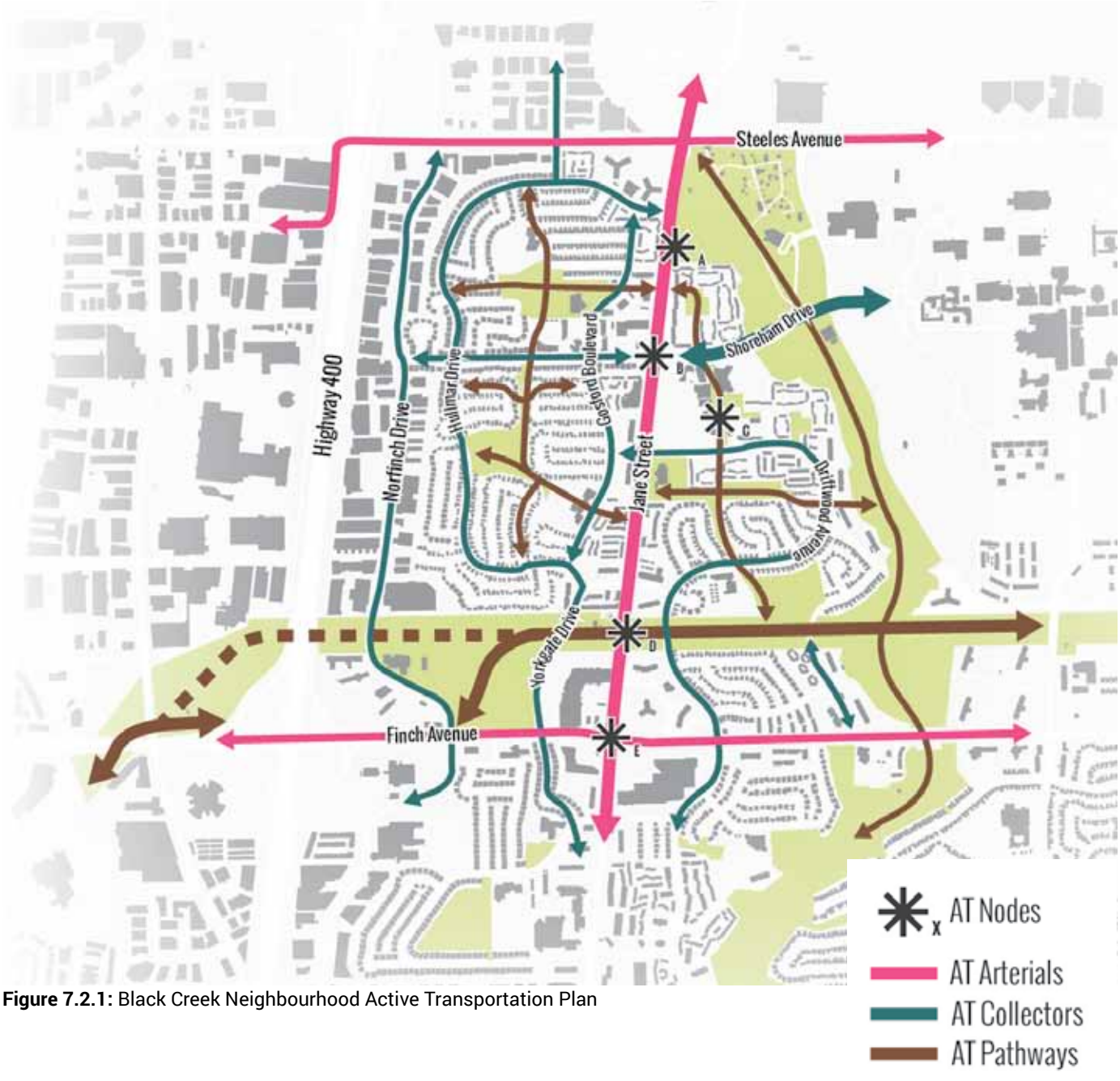


Figure 7.2.1: Black Creek Neighbourhood Active Transportation Plan

7.3 Corridor Segments

This section consists of detailed description of corridor and node interventions proposed.

Figure 7.3.1: Ground level view of Jane St.– example of low intervention

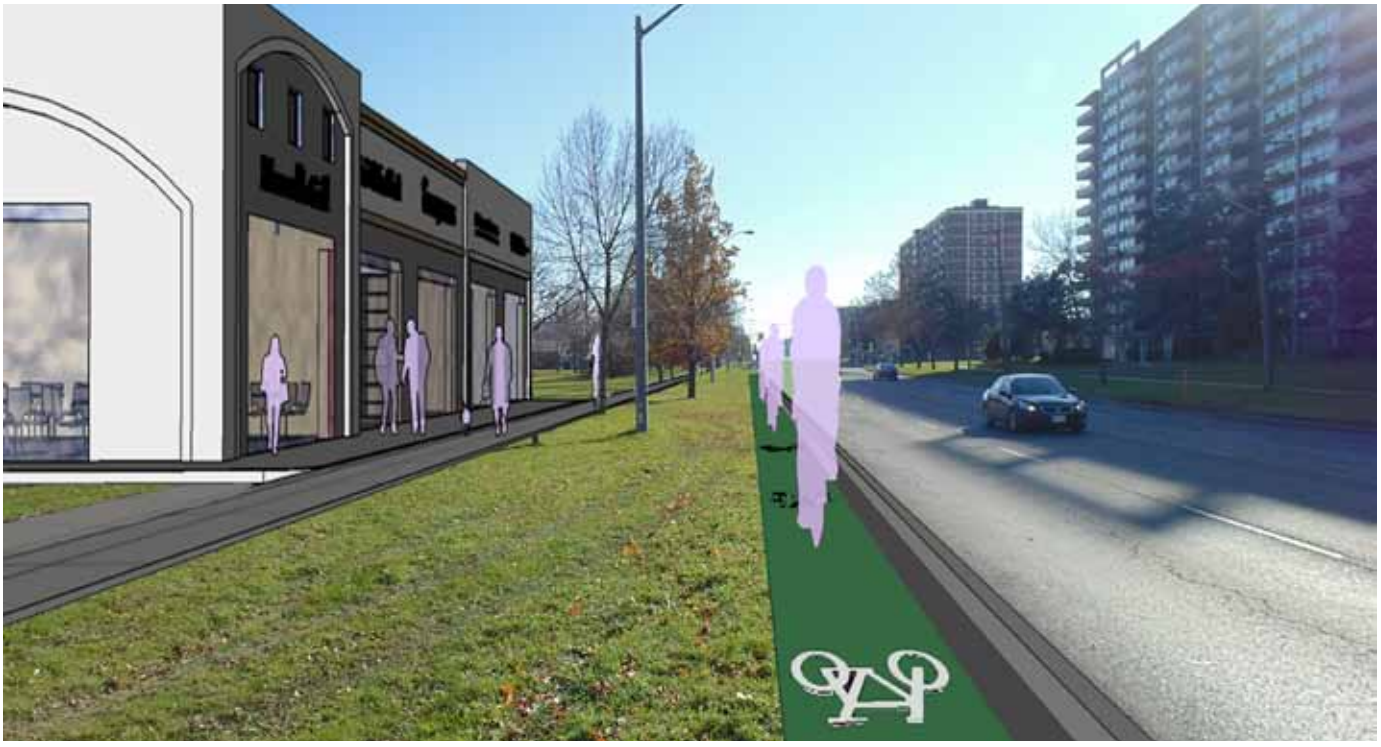


Figure 7.3.2: Ground level view of Jane St. – example of high intervention

JANE STREET CORRIDOR

The medium arterial intervention was applied along the entire Jane St. corridor to introduce:

- A separated cycling realm (from both vehicles and pedestrians)
- Improvements to major intersection design to make cyclists and pedestrians more visible to motorists.
- Addition of signalized pedestrian crosswalks where distances between crossings exceeded 250 m and where major east-west connector paths were present.
- Textured crossing

A number of activity nodes in the under used frontage and public realm along Jane St. to increase street side activity and make the AT experience more pleasant. Such nodes may include:

- Interim commercial retail uses
- Programmed and unprogrammed public spaces
- Rest areas with seating with shade
- Cycling facilities (bike parking, air pump, space for community bike kitchen program, wayfinding maps)

DESIGN PRINCIPLES CHECK-IN

- ✓ **Eyes on the path**
- ✓ **Low speeds**
- ✓ **Maintenance and state-of-good-repair**
- ✓ **Regional connections**
- ✓ **Direct, non-circuitous routes**
- ✓ **Meeting Places**
- ✓ **Bike storage and parking**
- ✓ **Complete street design**
- ✓ **Legible routes**

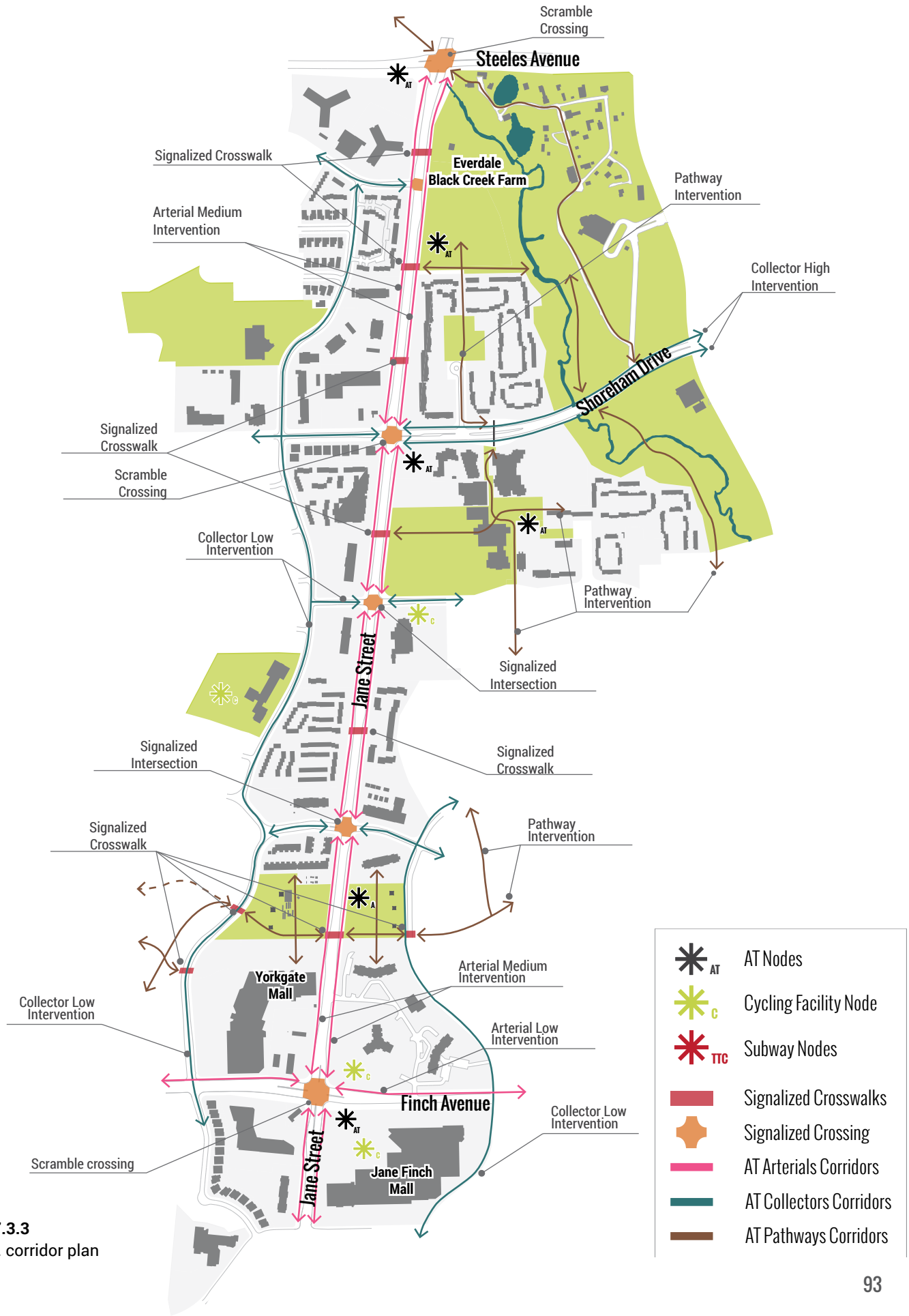


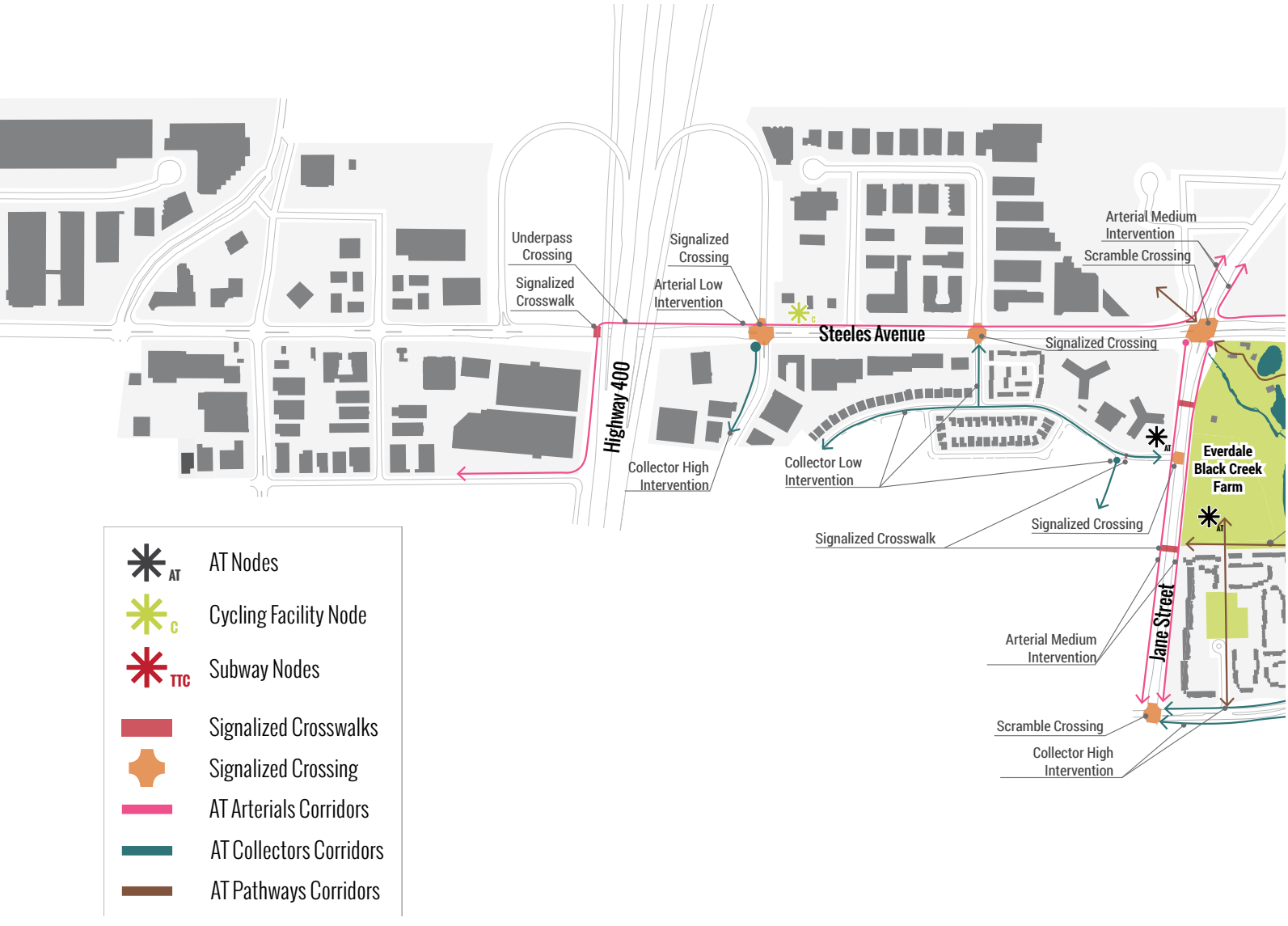
Figure 7.3.3
Jane St. corridor plan

STEELES AVENUE CORRIDOR

The low arterial intervention was applied along the entire Steeles Ave.

Along the north side:

- A formal bidirectional separated bike lane
- A safe and accessible connection to employment areas east and west of Black Creek, as well as future subway stations
- Improvements to major intersection design to make cyclists and pedestrians more visible to motorists.
- Addition of signalized pedestrian crosswalks where distances between crossings exceeded 250 m and where major east-west connector paths were present.
- Textured crossing
- Provides a connection and improved cycling journey to retail services of north side of Steeles Ave.



DESIGN PRINCIPLES CHECK-IN

- ✓ **Eyes on the path**
- ✓ **Maintenance and state-of-good-repair**
- ✓ **Regional connections**
- ✓ **Direct, non-circuitous routes**
- ✓ **Intermodal (with transit)**
- ✓ **Meeting Places**
- ✓ **Bike storage and parking**
- ✓ **Complete street design**
- ✓ **Legible routes**

BLACK CREEK FARM NODE

- Opportunity for off-road multi-use trail connections across Black Creek to Pioneer Village
- A better "front door" for the Everdale Black Creek farm
- Space for pop-up reatil activities and public realm improvements

Figure 7.3.4
Black Creek node plan

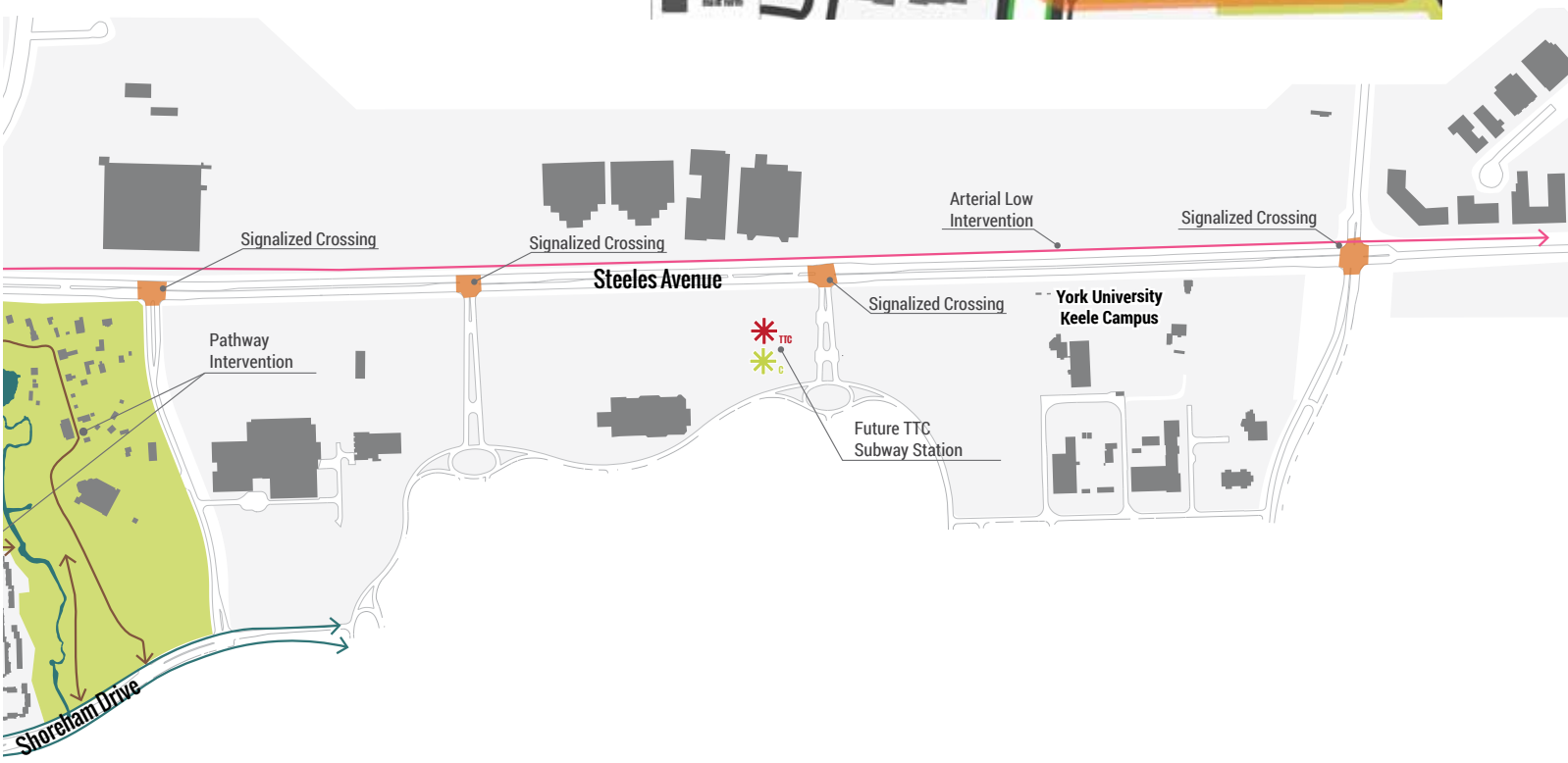


Figure 7.3.5
Steeles Ave. corridor plan

SHOREHAM DRIVE CORRIDOR

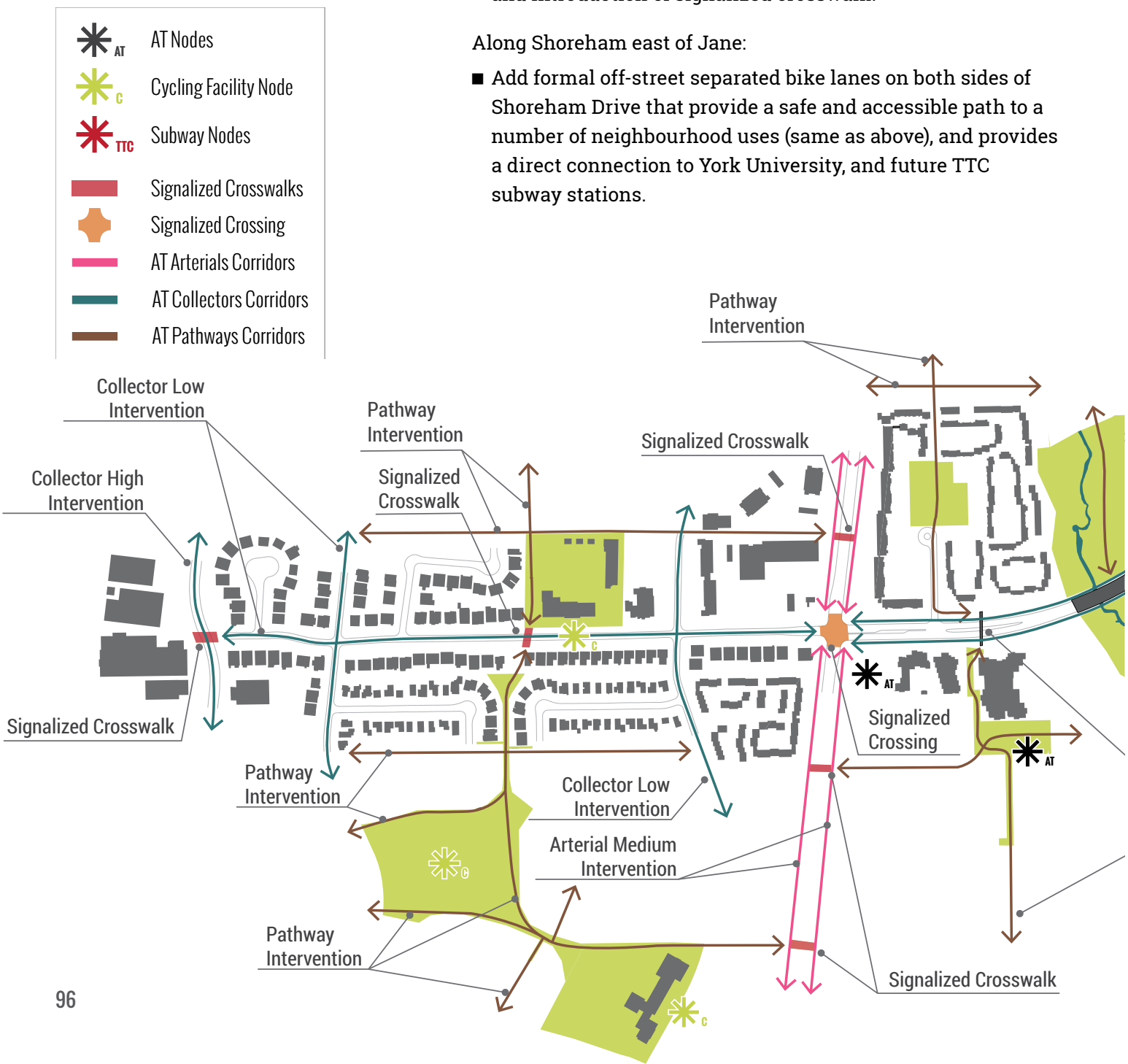
A combination of a Collector low and Collector high interventions is proposed for Shoreham Drive.

Along Shoreham west of Jane:

- Add formal on-street painted bike lanes which provide a safe and accessible path to residential uses, institutional uses, parks, and internal pathways.
- Improvements to internal pathway network by adding lighting and re-surfacing pathways.
- Formal connection to Norfinch, a major employment hub, and introduction of signalized crosswalk.

Along Shoreham east of Jane:

- Add formal off-street separated bike lanes on both sides of Shoreham Drive that provide a safe and accessible path to a number of neighbourhood uses (same as above), and provides a direct connection to York University, and future TTC subway stations.



DESIGN PRINCIPLES CHECK-IN

- ✓ **Eyes on the path**
- ✓ **Low speeds**
- ✓ **Low volumes**
- ✓ **Maintenance and state-of-good-repair**
- ✓ **Regional connections**
- ✓ **Direct, non-circuitous routes**
- ✓ **Intermodal (with transit)**
- ✓ **Meeting Places**
- ✓ **Bike storage and parking**
- ✓ **Complete street design**
- ✓ **Legible routes**

JANE AND SHOREHAM COMMUNITY NODE

- Enhance the quality and safety of internal pathways within the node which connects to a number of schools
- Provide programmed and unprogrammed space for activities within the node
- Introduce a number of streetside and internal interim and permanent uses to activate the space, and maintain a presence.

Figure 7.3.6
Jane/Shoreham node plan

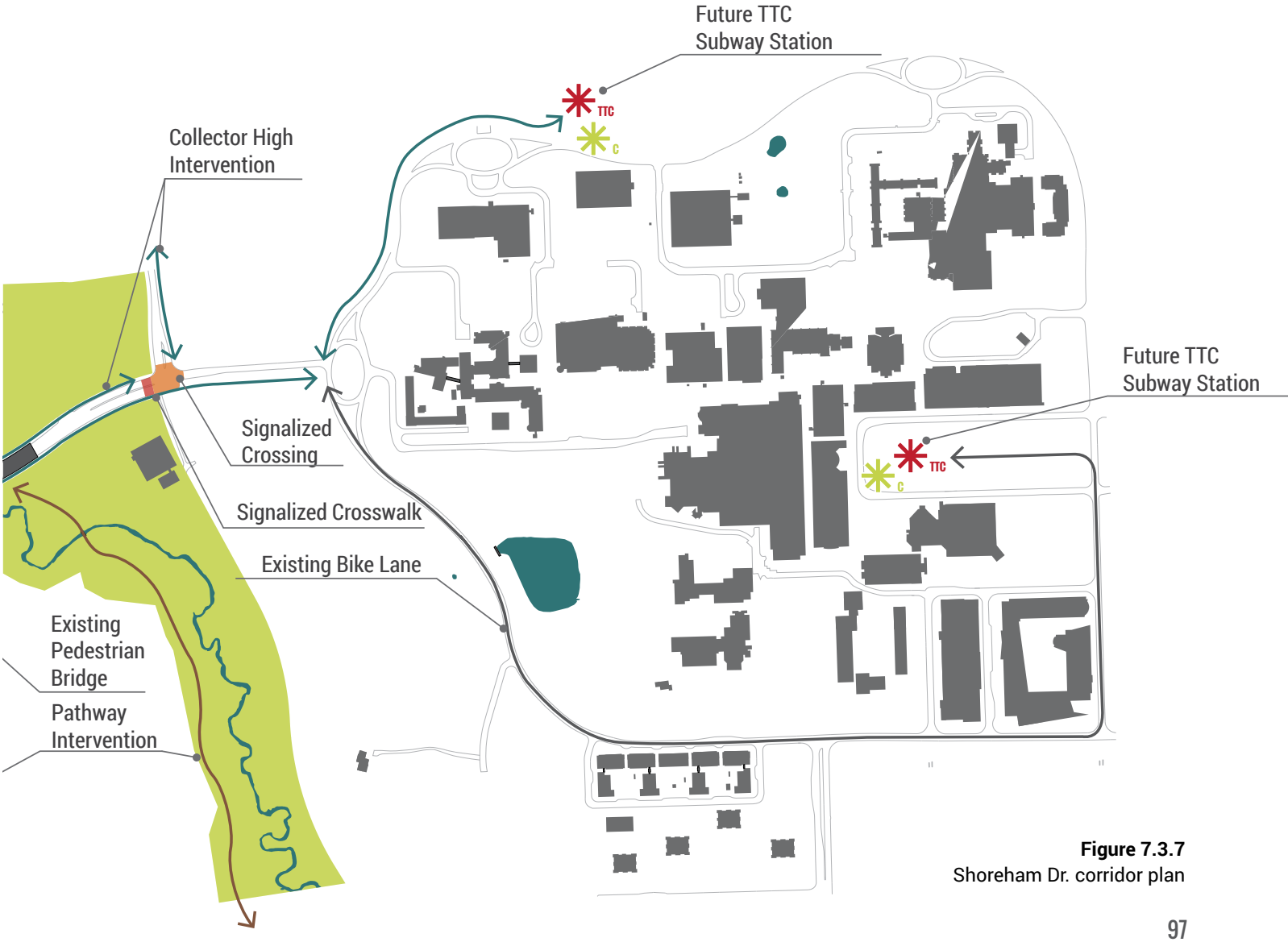


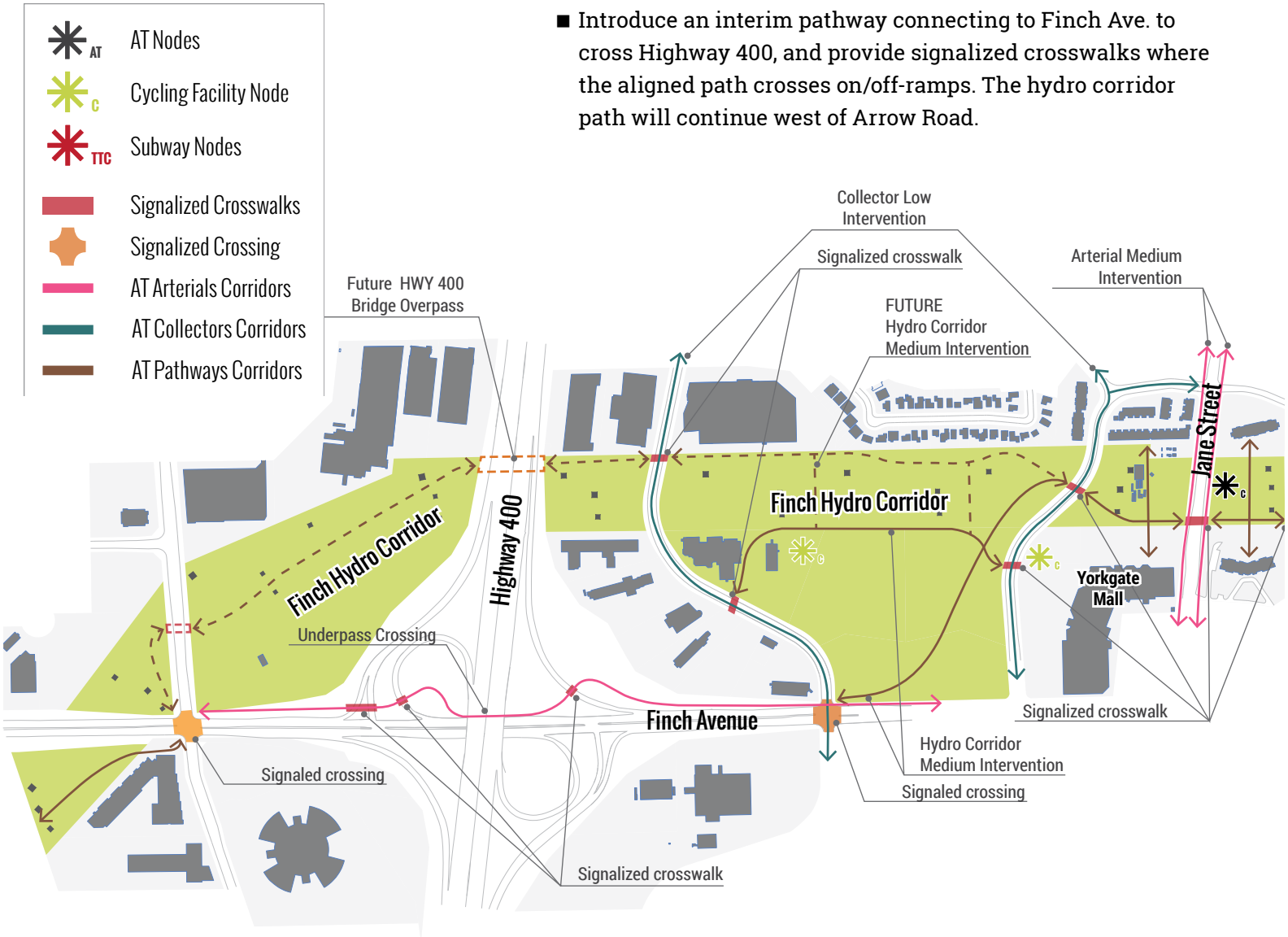
Figure 7.3.7
Shoreham Dr. corridor plan

FINCH HYDRO CORRIDOR

The hydro corridor medium intervention was applied along the Finch Hydro Corridor from Keele Street to Weston Road.

Along the existing Hydro Corridor:

- Additional north-south connectors are to be formalized (using existing desire lines as guides) to enhance connectivity withing and outside the neighbourhood
- A number of rest areas are to be provided along the corridor at 500 m intervals that provide seating, shelter, wayfinding maps, and cycling facilities
- Introduce pedestrian scale lighting along the pathway
- Where the hydro corridor crosses roadways, introduce signalized and texturized crossings
- Introduce an interim pathway connecting to Finch Ave. to cross Highway 400, and provide signalized crosswalks where the aligned path crosses on/off-ramps. The hydro corridor path will continue west of Arrow Road.



DESIGN PRINCIPLES CHECK-IN

- ✓ **Eyes on the path**
- ✓ **Maintenance and state-of-good-repair**
- ✓ **Regional connections**
- ✓ **Direct, non-circuitous routes**
- ✓ **Intermodal (with transit)**
- ✓ **Meeting Places**
- ✓ **Bike storage and parking**
- ✓ **Legible routes**

FINCH HYDRO CORRIDOR NODE

- Activate and improve the public realm fronting onto Jane Street by introducing temporary/modular commercial uses (food trucks, popup commercial) and additional recreational facilities.
- Showcase the corridor by making the entrance to the hydro corridor a prominent gateway feature to the Black Creek Neighbourhood.

Figure 7.3.8
Finch hydro corridor node plan

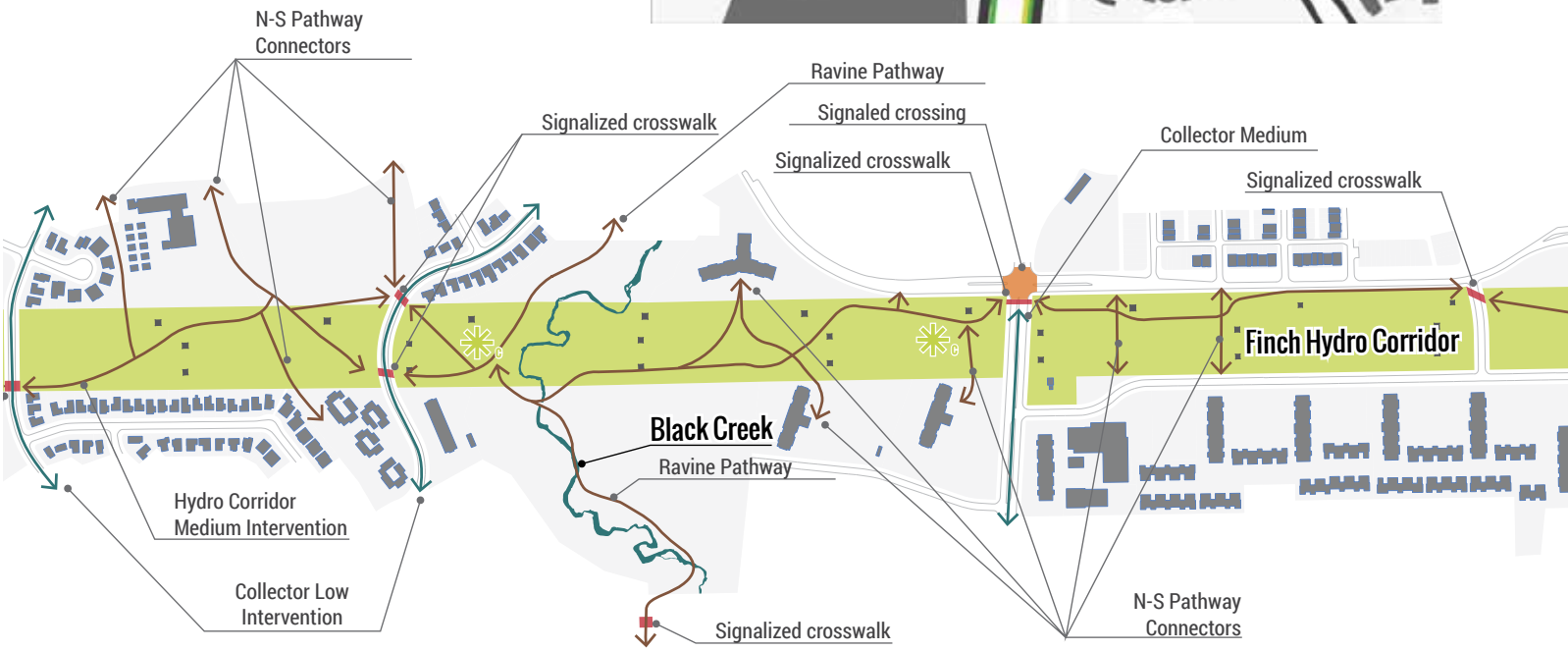


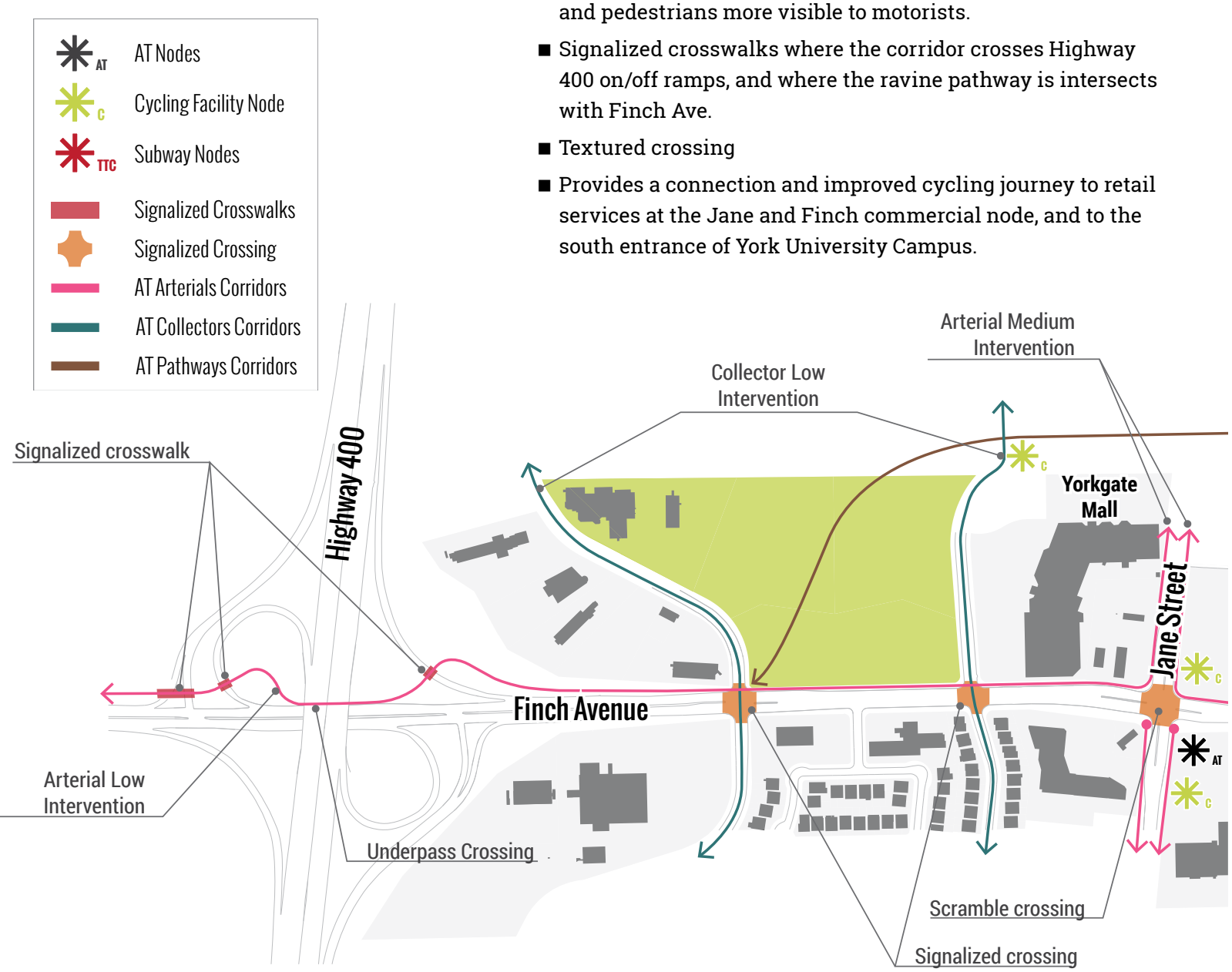
Figure 7.3.9
Finch hydro corridor plan

FINCH AVENUE CORRIDOR

The low arterial intervention was applied along Finch Ave, from Arrow Road to immediately west of Sentinel Rd..

Along the north side:

- A formal bidirectional separated bike lane
- A safe and accessible connection to employment areas east and west of Black Creek, as well as allowance for future Finch West LRT.
- Improvements to major intersection design to make cyclists and pedestrians more visible to motorists.
- Signalized crosswalks where the corridor crosses Highway 400 on/off ramps, and where the ravine pathway is intersects with Finch Ave.
- Textured crossing
- Provides a connection and improved cycling journey to retail services at the Jane and Finch commercial node, and to the south entrance of York University Campus.



DESIGN PRINCIPLES CHECK-IN

- ✓ **Eyes on the path**
- ✓ **Maintenance and state-of-good-repair**
- ✓ **Regional connections**
- ✓ **Direct, non-circuitous routes**
- ✓ **Intermodal (with transit)**
- ✓ **Meeting Places**
- ✓ **Bike storage and parking**
- ✓ **Complete street design**
- ✓ **Legible routes**

JANE AND FINCH COMMERCIAL NODE

- Activate and improve the public realm fronting onto the Jane and Finch intersection by introducing temporary/modular commercial uses (food trucks, popup commercial)
- Make the intersection a prominent gateway to the Black Creek Neighbourhood
- Introduce formalized pedestrian pathways crossing large parking lots, and appropriate traffic calming measures.
- Provide resting areas with seating and shelter

Figure 7.3.10
Jane/Finch node plan

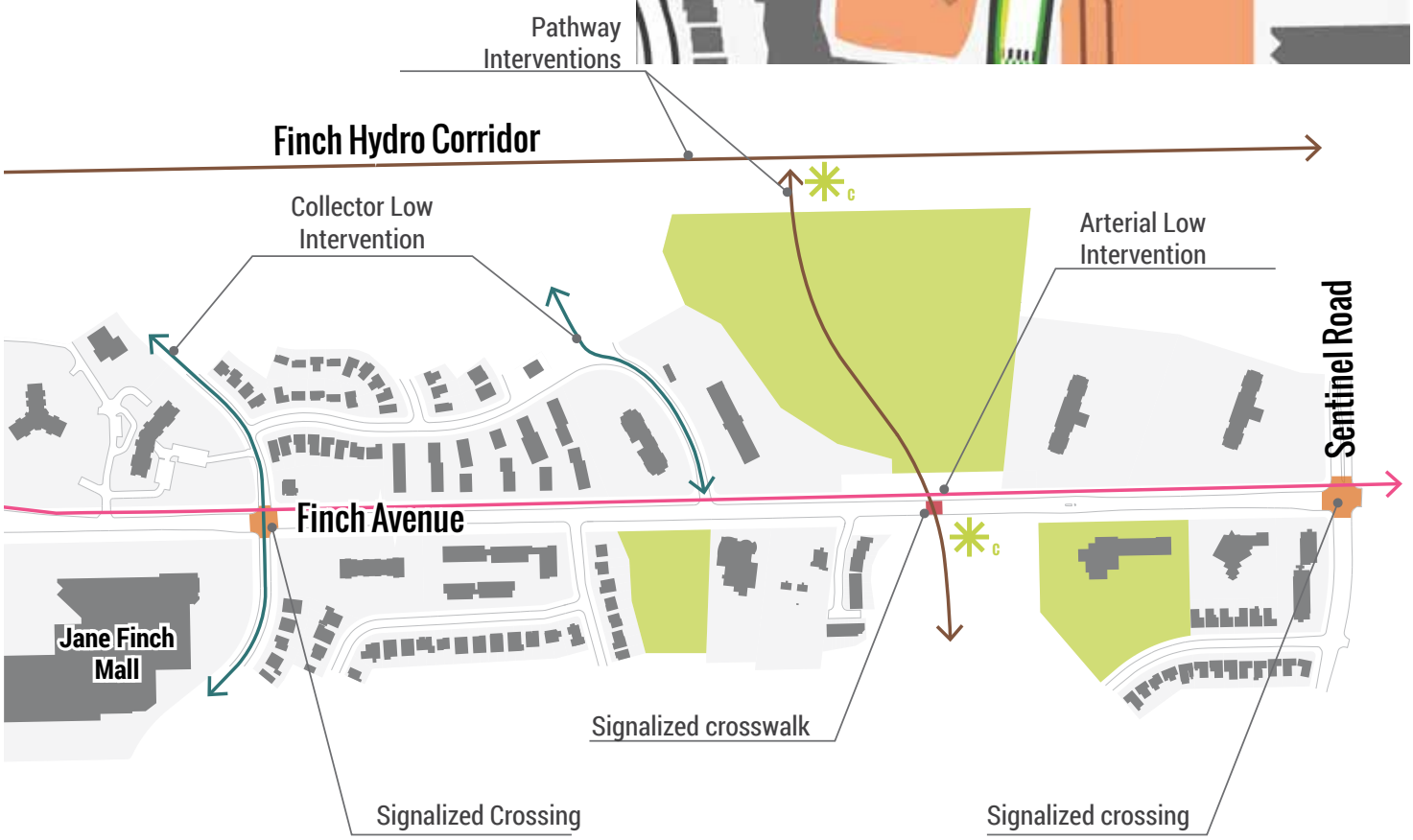


Figure 7.3.11
Finch Ave. corridor plan

8.0 PEDALING AHEAD: RECOMMENDATIONS FOR FUTURE ACTIVE TRANSPORTATION PLANNING IN THE INNER RING SUBURBS

Cycling research indicates that increasing the proportion of trips people make with active modes of transportation requires targeting behaviour change.[1,2,3] Making investments in infrastructure that improves the conditions for active transportation (AT) is necessary, but not sufficient to actually increase the uptake of cycling and walking. A few of the ways that programs have addressed the economic, social and psychological barriers people face in adopting active lifestyles, include:

- Support for bicycle maintenance and safety
- Culturally appropriate education about active lifestyles
- Programs developing active routes to school for children.

Figure 8.0.1
A crossride

Programming tailored to suit the needs of the neighbourhood must be in place to help new cyclists learn how the new facilities, and to encourage experienced cyclists to feel more confident moving around. London, Portland and Chicago are prime examples of cities who have supplemented new infrastructure with thoughtful programming. Programming should be considered even before investment in infrastructure, but the best agents to determine what programs will be the most effective in any neighbourhood are the residents themselves.

BEST PRACTICES FOR PROGRAMMING

The **East Portland** plan has programming in place to encourage uptake of cycling in the suburbs. The City has worked with employers to start bike-to-work programming, as well as with the school board to start safe routes to school programs for elementary students.[4] While the program is quite new, the combination of infrastructure and programming will strengthen its chances of increasing AT.

London has been working to increase cycling in the suburbs for several years. The City has produced plans calling for cycle infrastructure such as parking, storage and repairs in suburban locations, as well as encouraging cycling to ease pressure on London's rush-hour traffic.[5] The City is working with the boroughs in Outer London to plan for higher density dwellings, and green spaces to facilitate cycling trips.

Chicago has been focusing on programming to increase uptake in cycling. Their Bikes on Trains Program by Metra Train, started in 2013, allows passengers to carry their bikes on trains going into the downtown core.[6] This program allows commuters from the suburbs to incorporate some AT into their journey to work.

The socioeconomic composition of Black Creek – and many of Toronto's other inner ring suburbs – reveals concentrations of residents who typically see higher barriers to cycling, such as newcomers and people living below the poverty line.

While the strategic active transportation plan (SATP) for Black Creek uses a market segmentation or targeting strategy that identifies user profiles (children, caregivers, commuters) and adopts infrastructure interventions tied to the needs of these users, programming interventions should ultimately complement this infrastructure to significantly increase the uptake of AT in the neighbourhood.

The following are programs already in place in the Black Creek neighbourhood. These programs should be supported and leveraged to create demand for better cycling infrastructure in the neighbourhood.

- Active and Safe Routes to School (Toronto Public Health: AT education and programming support for walking school buses or school AT strategies).[7]
- Bicycle-Friendly Business Awards: publicity and exposure within the inner suburban context for infrastructure and programming improvements initiated by the private sector.[8]
- Bicycle User Group – Smart Commute North Toronto-Vaughan & Cycle Toronto North York: local advocacy groups focusing on commuter and recreational cycling.[9]
- CultureLink/Partnership for Integration and Sustainable Transportation: active in Black Creek to provide programming and insight into promoting healthy lifestyles in newcomer neighbourhoods; children's routes to school initiative[10]
- Investing in Families Initiative (City of Toronto): Integrated access for single parent families in Jane & Finch including recreational and health promotion activities for children[11]
- Walk into Health (Toronto Public Health/Toronto Public Library): walking information and pedometer lending program at the York Woods library.[13]

8.1 Recommended Next Steps

1. Community consultation and engagement

This will allow neighbourhood residents the opportunity to give input on:

- Overall network plan
- Origin and destination points and types of trip
- Barriers to AT
- Preferred phasing options

Community consultations must take into account the high number of newcomers and single parents in the neighbourhood; the timing and languages used for the consultation process should be inclusive and provide opportunities for suggestions from a wide range of residents.

Community consultation will aid in articulating the social, economic and cultural barriers to AT within Black Creek itself that compound physical barriers to AT connections.

Proponent: Transportation Planning, City of Toronto; community or AT organizations

2. Key stakeholders

Key stakeholders in the neighbourhood, such as social service providers, community groups, and schools should be consulted to get a full picture of the programming already available in Black Creek.

This is essential in order to forge meaningful partnerships that encourage AT, and to ensure targeted, thoughtful programming that does not duplicate what is already in place.

Preliminary investigation into the Black Creek neighbourhood has revealed potential partners and programs, as shown in the text box.

Proponent: Social Development Finance & Administration, City of Toronto; Parks Forestry & Recreation, City of Toronto; community or AT organizations

Figure 8.1.1
Community centre on Driftwood Avenue

3. Funding Options

In order for the SATP to move forward, funding options must be established. Preliminary research suggests the following possible avenues:

- Residential Apartment Commercial (RAC) zoning
- Provincial funds allocated for the Finch Hydro Corridor

Proponent: City Planning, City of Toronto; Social Development Finance and Administration, City of Toronto; Metrolinx

4. Avenue Study

In order to animate the streetscape in Black Creek, an Avenue study on Jane Street may help to guide development, ensuring that any future development is geared towards a welcoming pedestrian realm, mixture of uses, and space for cyclists.

Proponent: City Planning, City of Toronto

Black Creek's built form, high proportion of newcomers, and status as a priority neighbourhood makes it a good template for AT in other inner ring suburban neighbourhoods in Toronto. While the Hydro Corridor's presence provides special opportunities for connections with other parts of the city, many of the challenges faced by the area are similar to other suburban areas.

The interventions presented for Black Creek represent the first phase imagined for AT and pedestrian realms. However, no plan can be considered complete without input from the real experts in the neighbourhood – the residents themselves. As such, subsequent phasing has not yet been explored; the community must communicate their vision for the neighbourhood - and this is the vision that must be carried through.

References

1. Cohlmeyer, *Cycling Adoption Toolkit*, 2011.
2. Ledsham et. al., *Mapping Cycling Behaviour in Toronto*, 2013.
3. Cycling Think and Do Tank, *Literature Matrix on Behaviour Change*, n.d.
4. City of Portland. *East Portland in Motion*, Portland, 2012.
5. City of London. *Delivering the Benefits of Cycling in Outer London*, London, 2010.
6. Metra Rail. *Bikes on Trains*, Chicago, 2013.
7. Green Communities Canada. *School Travel Planning*, 2013.
8. City of Toronto, *Bicycle Friendly Business Awards*, 2013.
9. City of Toronto, *BUGs in Toronto,* 2013.
10. Cycle Toronto, *The Partnership for Integration and Sustainable Transportation*, 2013.
11. Province of Ontario, *Every One Plays*, n.d.
12. Toronto Public Health. *Walk Into Health*, 2013

APDX A POLICY CONTEXT

The strategic active transportation plan (SATP) for the Black Creek community is strengthened by existing policies that aim to promote and increase cycling and walking in Toronto. Policies from both the City of Toronto and the Province of Ontario provide a vision for increased active transportation (AT).

The City of Toronto promotes AT through its Official Plan and specific strategies for both walking and cycling within the City.

The Provincial Policy Statement sets broad goals for building healthy and active communities, while the Province further promotes AT through Metrolinx's The Big Move plan and its recently released cycling strategy.

The SATP aligns with, and builds upon, these policies. It also provides an application of these policies at a neighbourhood level.

Figure A.1 lists relevant policies that guide AT in Toronto. It lists the policy, the year it was enacted, and the authority, along with any relevant sections and/or notes.

	DOCUMENT	YEAR	AUTHORITY	RELEVANT POLICIES
1	**Bikeway Trails Implementation Plan**[1]	2012	City of Toronto	77 km of new bike trails recommended, including a priority to extend the Finch Hydro Corridor Trail to Scarborough and North York.
2	**City of Toronto Official Plan**[2]	2006	City of Toronto	Promotes walking and cycling throughout. Section 2.2 – Structuring Growth in the City: Integrating Land Use and Transportation specifically addressing active transportation (AT).
3	**Growth Plan for the Greater Golden Horseshoe**[3]	2006	Province of Ontario	Section 2.2.2 – Managing Growth Section 3 – Infrastructure to Support Growth
4	**Healthy Toronto by Design Reports – Toronto Public Health**[4]	2012	City of Toronto (Toronto Public Health)	Connects promotion of AT with health and environmental benefits.
5	**Ontario's Cycling Strategy**[5]	2013	Province of Ontario	20 year plan to increase and promote cycling as a viable means of transportation across Ontario
6	**Provincial Policy Statement**[6]	2005	Province of Ontario	Section 1.5.1 – Healthy, active communities should be promoted by: a) Planning public streets, spaces and facilities to be safe, meet the needs of pedestrians, and facilitate pedestrian and non-motorized movement, including but not limited to, walking and cycling ...
7	**The Big Move**[7]	2008	Province of Ontario (Metrolinx)	Goals: A, C, G and H promote walking and cycling for all people. Up to $20 million per year to support AT infrastructure. AT should be promoted for all trips less than 5 km to work or school.
8	**Toronto Bike Plan**[8]	2001	City of Toronto	Sets 2 goals for the City of Toronto: 1. Double the number of cycle trips and 2. Reduce cycling collisions by increased infrastructure, safety and programming.
9	**Tower Renewal**[10]	2009	City of Toronto	Promotes high quality walking infrastructure at a city level.
10	**Toronto Walking Strategy**[9]	2008	City of Toronto	Intensification of lands and neighbourhoods around Toronto's towers, including improved pedestrian realms.
11	**Urban Design Streetscape Manual**[11]	2020	City of Toronto	Pedestrian-focused design guidelines for sidewalk and boulevard improvements on Toronto's road network.
12	**York University Secondary Plan**[12]	2009	City of Toronto	Promotes walking and cycling as critical parts of the future vision for York University. Section 3.9.2 - Cycling and Walking

Figure A.1
Active Transportation Policies – Local and Provincial

References

1. City of Toronto, *Bikeway Trails Implementation Plan*, 2012.
2. City of Toronto, *Official Plan*, 2006.
3. Province of Ontario, *Growth Plan for the Greater Golden Horseshoe*, 2006.
4. City of Toronto, *Toronto Public Health, Healthy Toronto by Design Reports*, Toronto Public Health, 2012.
5. Province of Ontario, *Ontario's Cycling Strategy*, 2013.
6. Province of Ontario, *Provincial Policy Statement*, 2013.
7. Province of Ontario/Metrolinx, *The Big Move*, 2008.
8. City of Toronto, *Toronto Bike Plan*, 2001.
9. City of Toronto, *Toronto Walking Strategy*, 2009.
10. City of Toronto, *Tower Renewal*, 2008.
11. City of Toronto, *Urban Design Streetscape Manual*, 2020.
12. City of Toronto, *York University Secondary Plan*, 2009.

APDX B

METHODOLOGY - DEVELOPING ACTIVE TRANSPORTATION PLANS FOR INNER RING SUBURBS

Using a range of methods from research to design phases, the Black Creek Studio team endeavoured to select methodologies that would allow the development of the Black Creek strategic active transportation plan (SATP) to become an adaptable template for active transportation (AT) planning in other inner ring suburbs.

The following outlines the process which the Black Creek Studio team took when developing the SATP. The development of the SATP followed 5 steps: site-specific research, comparative research, primary data, analysis, and development.

B.1 Site-Specific Research

Black Creek is located in the inner suburbs of Toronto. The boundaries of study were established based on demographic and social characteristics as well as geographic features including built form and travel boundaries (Hwy 400, Black Creek Ravine, major east-west transportation arterials on Steeles and Finch).

Relevant statistical data to analyse demographics, transportation behaviours and built form was collected from Statistics Canada, the City of Toronto and other relevant databases.

Development of Black Creek is influenced by several provincial and local policies. To understand this context, existing built form and future development prospects were explored through relevant plans and policies.

Community stakeholders were researched to establish potential partners in walking and cycling promotion and outreach, with an emphasis on underserved populations.

The results of a community survey analyzing perceptions of safety for cycling in Black Creek were considered in the development of target populations and in designing appropriate interventions.

B.2 Comparative Research

Case studies of cycling planning were conducted on a number of cities: Portland and Chicago (USA), London (UK), Berlin (Germany), Mississauga, and Toronto. Cities' cycling networks were mapped, scaled and overlaid on Toronto to analyze the relative connectivity value for inner ring suburbs.

Case studies explored the following:

- The current status of cycling facilities
- Approaches to inner suburban connections
- Integration of cycling facilities into other modal choices (bus, rail, etc)
- Funding strategies
- Programming success
- Approaches to increasing cycle mode share in low-income neighbourhoods

B.3 Collection of Primary Data

Initial site visits familiarized the team with the built form and the general uses in the neighbourhood.

Lynchian mapping provided an initial look at "hard" edges to bound the study area, key nodes of activity, pathways, and the division of the neighbourhood into different districts based on built form.

Observations around mobility patterns, including AT, were recorded and used to select AT counting locations.

Counts were conducted along Jane street (the spine of the neighbourhood), other nodal intersections, and along the recreational Finch Hydro corridor on two occasions. Counting methodology is located in Appendix D.

Photography of all major transportation nodes, built form, surface conditions, connectivity issues and user behaviour was used to compile a photobank of over 700 images.

B.4 Analysis

SELECTION OF TARGET POPULATION

Analysis of secondary census and travel data revealed patterns in active transport mode users which allowed us to create three basic profiles - children, caregivers and commuters. These profiles were substantiated by the count data collected during the site visits.

Research relating to behaviour change and market segmentation was compiled and analyzed in light of these categories, informing the development of the design principles outlined in Section 6.1.

Assumed destinations for target populations were developed by mapping licensed daycares, libraries, commercial nodes, schools, and large transit hubs.

Limitations: due to constraints on primary research data collection, the group was not able to develop more granular neighbourhood-level data on travel origins and destinations, barriers to AT uptake, and demographics beyond assumed gender and age, but these items would enhance future AT plans.

NEIGHBOURHOOD NETWORK MAPPING

Road typologies for an inner-suburban context were determined by mapping Black Creek's boulevard widths and comparing this to City of Toronto streetscape guidelines and road classifications.

Informal pathways assessed through observation were incorporated into the network.

Built form was mapped and assessed for its impact on AT connectivity, proximity between multiple uses and facilitation of the pedestrian or cyclist experience.

Mobility constraints and opportunity areas were identified along corridors and in major nodes.

B.5 Development – Strategic Interventions and Planning

Analysis of mapping data and counting observations identified primary corridors and major nodes.

Target populations informed the development of design principles applied to each corridor and nodal development.

Long term visioning that took into account transformations in the built form developed the long-range vision of AT in Black Creek portrayed through 3D modeling of nodes built out of existing neighbourhood files.

Recommendations for a strategic implementation of the SATP were established and developed.

APDX C STREETSCAPE AND ROADWAY CLASSIFICATION

C.1 Introduction to Streetscape Analysis

The physical realm of active transportation (AT) is not limited to built infrastructure such as the sidewalk, intersections and pathways. Instead, it relies heavily on a successful and synergetic relationship between the built form of the social activity realm abutting the street (e.g., storefronts, public spaces, uses, and streetscaping treatments) and the automotive realm (e.g., roadways and parking lots). Each component plays a significant role in predicting the behaviours of AT users. To create a successful AT realm, components cannot be considered in isolation, as each is key to determining what physical interventions will work.

The City of Toronto manages these three realms in depart-

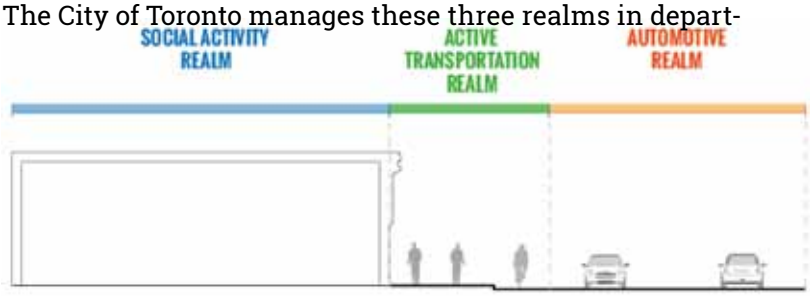


Figure C.1.1
Street Realm Components and Silos

REALMS	CITY DEPARTMENT
Social Activity	Planning Urban Design Social Development Finance & Administration Economic Development & Culture
Active Transportation	Parks, Forestry & Recreation Transportation Services
Automotive	Transportation Services Engineering

Figure C.1.2
City of Toronto departments and realms

mental silos, making coordination between components difficult. This often presents challenges and missed opportunities in enhancing streets and/or pathways within the city's neighbourhoods. The assessment of Black Creek's current infrastructure and possible future interventions observed each realm in light of how each might contribute to AT in the neighbourhood. Replicating this type of assessment will support the development of AT in other inner suburban neighbourhoods.

C.2 Toronto's Streetscape Master Plan

The City of Toronto's Streetscape Manual[1] classifies roads as Main Streets or Green Streets. Additional subclasses provide further detail on current and proposed street level activities. The manual also provides specifications on streetscaping elements, like benches, bicycle locks and lighting, that should be introduced to further enhance the pedestrian and cyclist experience.

Black Creek's current streetscaping standards are typical of suburban built form that gives dominance to vehicles. Given the existing built form, there are many opportunities to introduce new uses closer to the street and increase street furniture to enhance the AT experience.

Figure C.2.1
Designations under the streetscape master plan

Figure C.2.2
Black Creek emerging main street (Jane and Finch) (Google Streetview: www.google.ca/maps)

Figure C.2.3
Black Creek emerging main street (Jane St.)

Figure C.2.4
Emerging main street example[2]

Figure C.2.5
Black Creek scenic street (Steeles Ave.)

Figure C.2.6
Scenic street example[3]

Main Streets are designed to activate the street. Commercial and residential uses are designed to be close to the street, and sit close together to create a continuous and active façade. This enhances the relationship pedestrians and cyclists have to the built form on the street, creating a more enjoyable experience while traveling. A higher concentration of transit infrastructure is also present along main streets.

Black Creek does not currently have an established main street within its boundaries, as many of the buildings are located quite a distance from the street. This makes walking or cycling along the street less interesting and appealing. The Streetscape Manual does, however, identify the intersection of Jane Street and Finch Avenue, and Steeles Ave west of Jane St, as an emerging main street, which indicates future intensification, and strengthening of retail outlets along the corridor. Jane St and Finch Ave has also been designated as an Avenue Study Area, indicating positive changes to come.

Green Streets are adjacent to natural areas, public parks and open spaces – a number of these features are present in Black Creek. Its residential and commercial uses are integrated with the natural environments and further enhanced with extensive street tree planting, open space corridors, and views into naturalized areas. For the pedestrian and cyclist, they are meant to provide a more scenic experience. The Streetscape Manual identifies a number of scenic streets and intermediate streets within the boundaries of the Black Creek neighbourhood.

Within the green street category, scenic streets are meant to remain naturalized corridors that have a direct relationship with natural features within the neighbourhood. For example, Steeles Avenue West of Jane St provides direct views and connections to the ravine system, as well as wide and expansive boulevards that are currently well-landscaped with street trees. This corridor is also the site of a number of current and future transit nodes.

Figure C.2.7
Black Creek intermediate street (Jane)

Figure C.2.8
Intermediate street example[4]

Intermediate streets are a middle ground between main streets and scenic streets, featuring more residential buildings, and occasionally mixed-use buildings, such as Jane Street north of Yorkgate Blvd. These streets are typically suburban in nature, with large setbacks from the street, providing key opportunities for intensification, and potential re-classification to an emerging main street. Intermediate streets also have a higher concentration of parks, schools, residential towers, and are typically well-serviced by transit.

THE STREETSCAPE IN BLACK CREEK - FOCUS ON JANE STREET

Jane Street is classified both as an emerging main street (main street class) and intermediate street (green street class). Our observations show that Jane Street:

- Is the primary north-south AT spine of the neighbourhood, connecting a number of key activity and destination nodes.
- Is a major automotive arterial, and is not pedestrian/cyclist friendly.
- Has the highest concentration of Black Creek residents per square kilometre.
- Has a number of underdeveloped lots that front onto it - these are key opportunities for infill development, street-level activities, and improved pathway connections

These findings highlight the importance of Jane Street to the community, as a transportation corridor and as a place of residence. Jane Street has the potential to be developed to have an active street frontage, making it more pedestrian – (and cyclist) friendly. This area should be targeted for extensive interventions, as they could affect the high number of daily users who walk or cycle on the street. Interventions on Jane Street will significantly increase the overall safety of the most travelled road in the community.

Figure C.2.9
Overview of Black Creek built form

C.3 Roadway Classifications

The City of Toronto's road classification system was established to ensure that specific road types were designed, used, and developed over time in accordance with their purpose.[5] The goal is to maximize the efficiency of both traffic operations and road safety.[6] The system categorizes all streets in the City of Toronto into five groups, according to what type of service they provide, and the volume of traffic they are expected to accommodate.[7]

Figure C.3.1
Functional classifications of roadways

Black Creek is a neighbourhood designed primarily for the car. Its physical design and engineering are therefore aimed at enhancing the ease and speed of travel for the automobile. This is not conducive to AT, and can pose a direct safety concern for children, caregivers, and commuters moving throughout the neighbourhood.

AT can be improved in the area by reducing traffic speeds where possible, through the introduction of traffic calming measures or re-designating a road to a lower-order road class (e.g., changing from minor arterial class to collector class).

	LOCAL	COLLECTOR	MINOR ARTERIAL	MAJOR ARTERIAL
Purpose	Provide access to property	Provide access to property and traffic movement	Traffic movement	Traffic movement
Daily vehicles	< 2,500	2,500 - 8,000	8,000 - 20,000	> 20,000
Traffic speed (km/h)	30 - 40	40 - 60	40 - 60	50 - 60
Bus routes	Generally none	< 1,500 pph (passengers per hour)	1,500 - 5,000 pph	> 5,000 pph
Cyclists	Special facilities required	Special facilities required	Special facilities required	Special facilities required
Sidewalks	At least one side	Both sides	Both sides	Both sides
Winter Maintenance	Low	Medium	High	High

Figure C.3.2
Toronto road classification statistics[8]

References

1. City of Toronto, *Streetscape Manual*, 2013.
2. *ibid*.
3. *ibid*.
4. *ibid*.
5. City of Toronto, *Road classification system*, 2013.
6. *ibid*.
7. *ibid*.
8. *ibid*.

APDX D COUNTING METHODOLOGY

D.1 Synthesis of Best Practice

Modern traffic counting methods, including counts of pedestrians and cyclists, are most often conducted using automated equipment, such as counting strips, pneumatic tubes, induction sensors, video capture, and infrared sensors. Manual counting using observation and counting calculators is, in some ways, the most accurate, as automated methods require calibration (adjusting results to incorporate multi-axle vehicles, etc.) which involve some statistical assumptions. Further, equipment could malfunction or be tampered with, which could affect results with or without the researcher's knowledge. Equipment can also be vandalized or stolen. On the other hand, manual counts have been shown to have error margins around 1.5 percent.[1,2] They have also been evaluated to be 9 to 15 percent less accurate than video-based counts.[3] Further, the common practice of taking a sample period observation (afternoon peak hours) due to practical reasons, and extrapolating that data for a 24-hour profile has been found to produce significant inaccuracies.[4]

Manual counts are time consuming and infrequently used by public agencies. They rely on a considerable level of training, skill, and experience on the part of the counters.[5] This project team does not have the available time or access to such training, and this may affect the reliability of results. Due to an inability to access and use automated counting equipment, best practices for counting methods focus on photographic and observational counts. The advantage to manual counts is that they allow for increased detail of observations, such as sex, age, how someone is using the infrastructure, etc.

More robust personal travel surveys can garner detailed information, such as destination, frequency of trip, opinions on personal safety, etc., however the project team did not have ethical clearance to conduct a survey with residents.[6] We used counting methods instead.

Spot counts, cordon counts, and screen lines are the common types of measurement. Spot counts are often conducted at intersections or a stretch of path previously designated by the researchers. With cordon counts, all access points into and out of a study area are observed for traffic entering and leaving. Screenlines involve counting at access points along a path to determine the traffic passing over the imaginary line.[7] The project team did not have sufficient resources or capacity to conduct cordon or screenline counts and instead conducted spot counts.

General notes on planning counts

- Select popular paths near activity centres
- Select known or suspected conflict areas or areas with high accident rates
- Briefly note characteristics of selected locations. GIS or statistics may be used. Suggested characteristics include:
  - street functional classification
  - presence of a bus line
  - presence of a bicycle facility or walking facility
  - various land use and socio-demographic characteristics[8]
- Conduct count during predicted busiest part of the day (typically during afternoon peak hours)
- Avoid counting on Mondays or Fridays for weekday counts.
- Avoid counting in weather that is generally considered unpleasant for cyclists and pedestrians (uncomfortably cold or hot, heavy precipitation, icy, etc.)
- Observer should note any break in attention due to technical issue or other reason.
- Pedestrian/cyclist age range and gender can be recorded.
- Clickers are useful to assist in manual counts. At every 10 or 15 minute interval, the value on the clicker is committed to tally sheet.
- Approximately one thousand cyclists should be counted to reach statistical significance.[9]

Photographic method for cyclist counts

- Ensure camera's time stamping feature and metadata recording is active
- Use a tripod and do not use a flash.
- Pre-define exact counting locations, and take photos from those locations throughout duration of count.

- Count the same person again if they reappear again.
- Take one photo per cyclist, even if multiple cyclists pass simultaneously.[10]

Counting Method Used for this Project

- Count locations were chosen based on predicted or pre-observed traffic levels and the three behaviour change profiles set out in section 4.
- Attributes recorded were set out (Figure D-1).
- Two counters where assigned to each location. At least one person at each location had a smartphone with correct time, or a watch set to an accurate time.
- One counter counted pedestrians and cyclists crossing intersections east and west, the other counter counts north to south. People who cross one way and then the other, were counted twice. Tallies are added to the recording sheet.
- Qualitative notes were taken if possible, such as conflicts with vehicles, approximate occurrence of jaywalking, where people tend to be going (ex: into nearby shopping mall), cyclists riding on sidewalk. Cyclists riding on the road were included as a counting attribute, as it is far more common to see cyclists riding on sidewalks in this area. If a third counter is present, they can record the qualitative data/observations, and assist in tracking time intervals.
- Tallies were transferred to recording sheet every ten minutes, on the minute.
- A note was prepared for members of the public who may question what counters were doing.

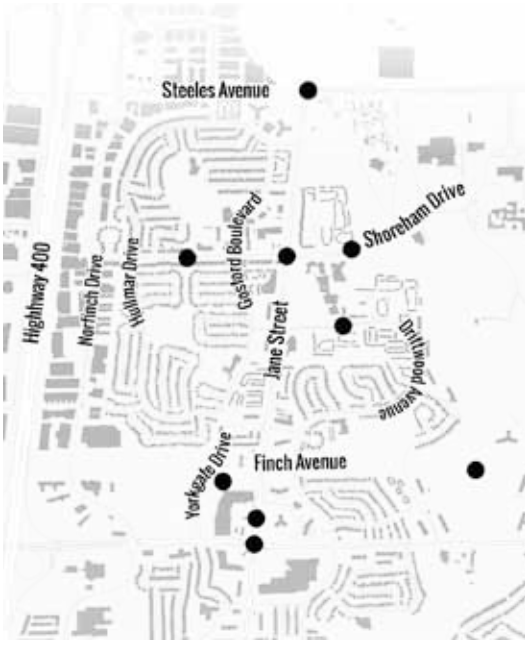


Figure D.1
Black Creek pedestrian and cycling count locations

The first round of counts was conducted on Thursday, Oct. 10, 2013 from 3 to 6 pm to capture the busiest part of the day, include children heading home from school, commuters heading home from work, and general leisure and business traffic. The locations were:

- Jane and Finch intersection
- Jane and Shoreham intersection
- Jane and Steeles intersection

The second round was conducted on Thursday, Nov. 14, 2013 from 3 to 6 pm. The locations were:

- Approach bridge to schools east of Jane on Shoreham
- Driftwood Ave. and Driftwood Place
- Hullmar Park pathway and Shoreham (by St. Augustine School)
- Hydro corridor trail north of Yorkgate Mall

The third round was conducted on Saturday, Nov. 16, 2013 from 1 to 5 pm. This series was aimed at capturing leisure oriented activity in the hydro corridor. The location was:

- Hydro corridor trail at playground southeast of Driftwood Public School

Children in strollers were counted as pedestrians.

No attempt was made to extrapolate results across a 24-hour period as extrapolation has been found to be inaccurate.

Counting Record

Date: Location: Direction:

Weather: Counter:

				THESE MAY COUNT IN MORE THAN ONE COLUMN (ex: male child on sidewalk)				
	PED - Child/Youth	PED - Working Age	PED - Senior	CYC - Male Child/Youth	CYC - Adult Male	CYC - Female Child/Youth	CYC - Female Adult	CYC - Sidewalk
15:10:00								
15:20:00								
15:30:00								
15:40:00								
15:50:00								
16:00:00								
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17:20:00								
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18:00:00								

Other Observations:

Figure D.2
Counting sheet

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