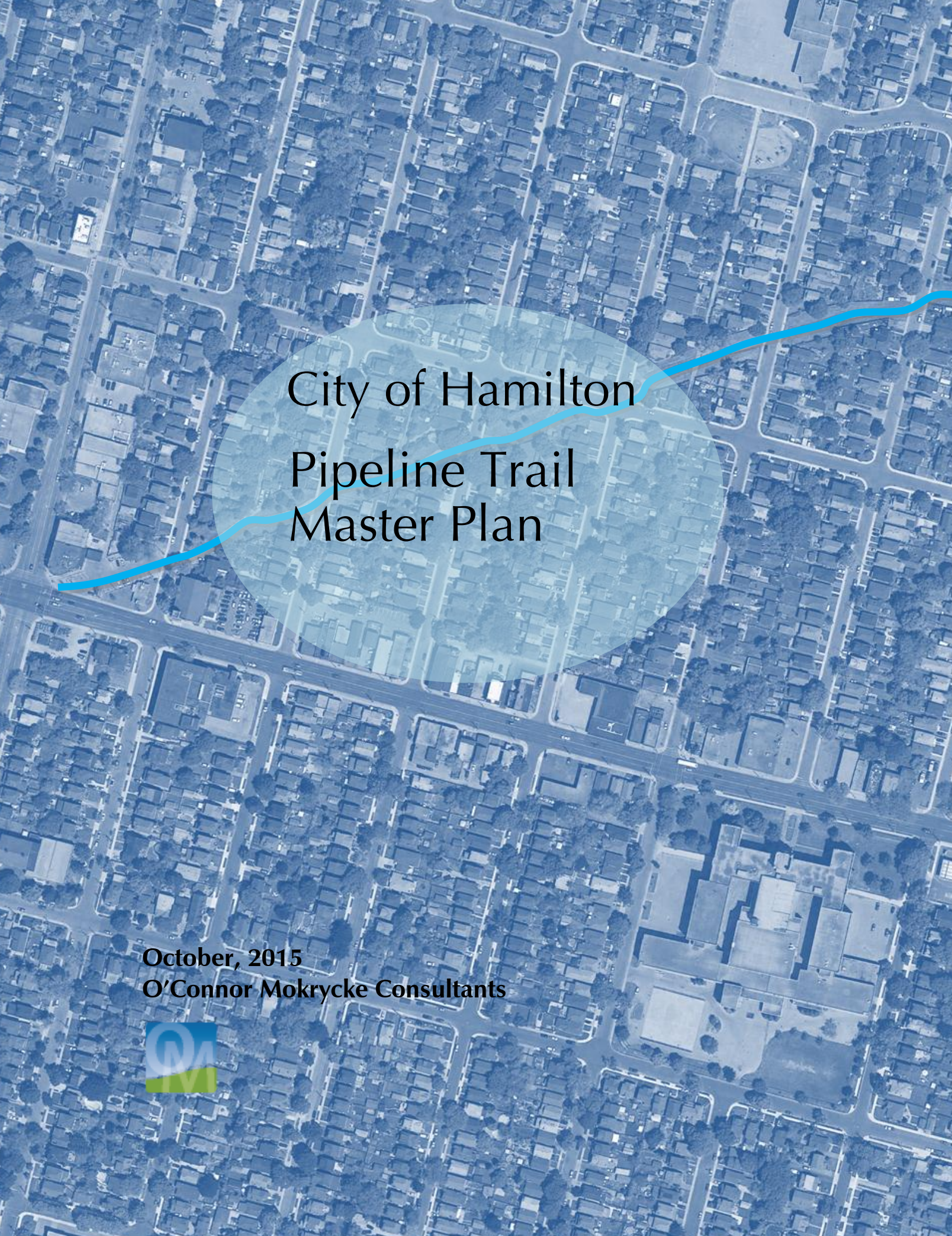

City of Hamilton

Pipeline Trail Master Plan

October, 2015
O'Connor Mokrycke Consultants

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Executive Summary

The Pipeline Trail Master Plan describes the re-creation and enhancement of a corridor that is 6 kilometers in length and 20 meters in width. It was established between 1856 and 1859 to contain the infrastructure conveying water from the Waterworks at Woodward Avenue to a reservoir located at the Niagara escarpment.

Hamilton's industrial areas and surrounding neighbourhoods have a unique history and the Pipeline Trail is intimately connected to it. The intent of the Pipeline Master Plan is to provide guidance toward realizing an urban trail that reflects the spirit, history, and nature of the community where it resides.

The Pipeline Trail Master Plan process began based on the vision of a group of community members with a strong sense of environmental stewardship. In addition to their contributions, input was obtained from City staff. Transportation planning and lighting design sub-consultants provided expertise in the preparation of this Master Plan.

On September 14, 2014 City Council passed a motion to fund a Pipeline Trail Master Plan, to be developed in conjunction with neighbourhood groups and community stakeholders.

The community chose Water Innovation and Infrastructure as the main thematic element of this trail. The following were recognized as needs for the Pipeline Trail: walkability, art, recreation, greening corridor, connections, infrastructure, wayfinding and education.

The Pipeline Trail Master Plan provides a framework for the reconstruction and renovation of existing trail segments, the extension of the trail into undeveloped areas, and possible future linkages from north of Barton Street to the Museum of Steam and Technology site.

Connections to other trail and park systems are important to the Pipeline Trail. They include the Red Hill Valley Trail, the Escarpment Rail Trail, the Waterfront Trail and Gage Park. Infrastructure improvements for these connections are long term and will require detailed examination prior to implementation.

The Master Plan recommends four sites for public art: Main and Ottawa, Kenilworth Avenue, Andrew Warburton Park, and the Museum of Steam and Technology. In addition, interest has been expressed for community art on the Pipeline Trail.

Consideration for existing systems will be taken during the implementation of all future projects, since it is essential that the continued operation and maintenance of the underground water conveyance pipes be preserved.

Acknowledgements

Pipeline Trail Community:

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Anne Vallentin, Ben Babcock, Bev Wagar, Cheryl Morrow, Marcée Groen, Matt Lowe, Roberta Prince, Sean Hurley, Susan Noakes, Tammy Heidbuurt, Tony Lemma, Kenilworth Team Co-team lead

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Crown Point Garden Club, Crown Point Community Planning Team, Homeside Community Planning Team, Indwell, Hamilton Naturalists' Club, Environment Hamilton

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1. Historical Context

1.1 The 19th Century

In the years prior to 1854, the population of Hamilton was approximately 10,000. Without water and sewer systems, diseases such as cholera were serious threats to the health of residents, as well as to the economic health of the city.

A serious outbreak in 1832 was followed by another cholera epidemic in 1854. The decision was made thereafter to build a waterworks powered by steam engines to bring clean water from the lake into the city.

This Waterworks site, now known as the Hamilton Museum of Steam and Technology, is regarded as an example of Canada's early industrial revolution and a Civil and Power Engineering Landmark. The 70 ton pumps located within the facility are the two oldest remaining in Canada.

The water pipe corridor was installed diagonally through the east end to pump water from the Museum site. It changed direction in the vicinity of what is now known as the intersection of Main and Ottawa Streets.

The pipes then turned southward to a reservoir at the escarpment near the Kenilworth Avenue Access, where water was fed by gravity to the city below. The Gore Park Fountain in downtown Hamilton was erected in 1860 to commemorate this unique accomplishment in the history of the city's infrastructure. It coincided with a visit by the Prince of Wales, the first British monarch to visit Canada.

The Hamilton Museum of Steam and Technology is a National Historic Site and a significant feature associated with the Pipeline Trail.

Figure 1: Hamilton Museum of Steam and Technology, City of Hamilton photo, www.museumshamilton.ca

1.2 The 20th Century

The city's east end once consisted of rural land situated partially in the townships of Barton and Saltfleet. In the first decades of the 20th century the steel industry became prominent with the establishment of The Steel Company of Canada in 1910 and Dominion Foundries and Steel in 1912; near the northerly limits of Sherman to Gage Avenues.

Land was needed to accommodate the industrial expansion and accompanying growth of population. The City of Hamilton acquired the lands now known as the east end, during the first half of the

20th century. Former agricultural lands were replaced with today's urban fabric of street grid, housing, and large tracts of industrial properties.

The Pipeline Trail traverses this grid diagonally.

During the second half of the 20th century, portions of the Pipeline Trail were developed as paved pedestrian pathways, primarily in the Crown Point East and Homeside neighbourhoods.

Reference 1: Ch2olera, Hamilton's Forgotten Epidemics, D. Ann Herring and Heather T. Battles

Reference 2: Canada's Historic Places, www.historicplaces.ca, Date Accessed: September 27, 2015

2. City-Wide Context

The Pipeline Trail is located in Ward 4 of the City of Hamilton in a corridor that is approximately 20m wide. Originating at the Museum of Steam and Technology site, the corridor runs diagonally through the neighbourhoods of Parkview West, Normanhurst, Homeside, and Crown Point East.

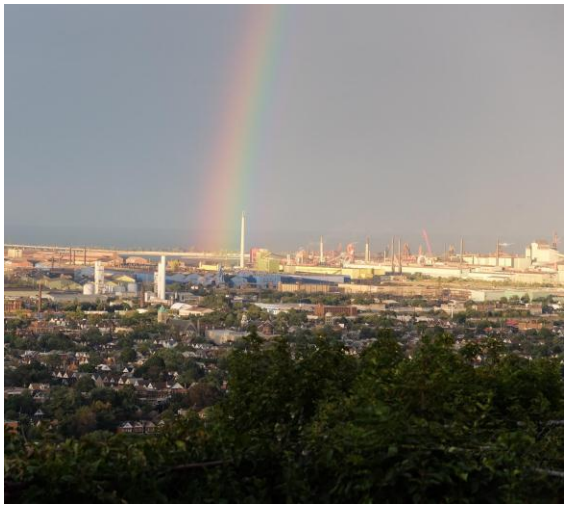


Figure 2: View of study area from escarpment, OMC photo

The western Trail Head is located at the intersection of Main and Ottawa Streets. The eastern Trail Head is located at the Museum of Steam and Technology site on Woodward Avenue.

Both the developed and undeveloped areas of the Pipeline Trail provide neighbourhood connections to schools, parks, playgrounds, and commercial areas.

As the trail becomes fully developed, it has the potential for providing greater connectivity with linkages to the Red Hill Valley Trail, Escarpment Rail Trail, the Waterfront Trail, and parks such as Gage Park and Confederation Park.

3. Existing Conditions

The following existing conditions are based on observations made during field review for the purpose of this Master Plan.

- The developed portions of the trail commence at London Street, slightly north of Main Street and terminate at Strathearne Avenue near Barton Street East.

- Some trail segments provide vehicular access to alleys located at the rear of residential properties. Alley connections should be evaluated since some do not appear to be used by vehicles, as suggested by the presence of bollards and/or vegetation.

Figure 3: Alleys should be evaluated as some do not appear to be in use (vehicles), OMC photo

- Vehicular pavements are generally curbed, with catch basins in some locations placed in the middle of the pedestrian walkways. The deteriorating curbing, paving and catch basins are impediments to accessibility, due to settlement and layout. Existing paved surfaces were implemented many years prior to the development of current accessibility standards. The curved walkways and gently undulating landforms in the most westerly (developed) segments provide a pleasing contrast to the linearity of surrounding streets. As the trail moves eastward, the ground plane becomes flatter. Many of the developed trail segments include raised berms.

Figure 4: Existing paving conditions do not meet current accessibility requirements, OMC photo

Figure 5: Pavements have reached the end of their service life (location Weir and Tragina trail segment), OMC photo

- In some locations residential properties appear to be encroaching on the pipeline corridor, such as at the intersection of Huxley and Roxborough Avenue and at Knox and Mead Avenues. The diagonal configuration of the corridor in relation to the grid pattern of the streets has created situations where private driveways are encroaching on the corridor and therefore impede the implementation of 90 degree street crossings. Examples of this condition can be found at the London, Graham, Houghton, and Wexford crossings.

- The Trail and corridor appear to narrow in some segments due to fence encroachments from adjacent residential properties.

- Pedestrian walkways are approximately 2.2m in width, with variation throughout the developed areas of the trail. Vehicular pavements are approximately 3.0m in width. Some segments have bollards (that require replacement) at pathway entrances particularly in the trail segments east of Kenilworth Avenue.

- Based on field observations, pavements appear to have reached the end of their service life.

Figure 6: Example of bollards requiring replacement (location Fairfield to Paling trail segment), OMC photo

- A review of the base mapping provided by the City for the purpose of this Master Plan, suggests that the buried water pipes appear to be located on the north side of the corridor for the developed segments of the Trail. Confirmation will be required prior to detailed design. A number of the developed trail segments are devoid of vegetation other than turf grass, while others contain coniferous and deciduous trees. Some trees that were planted in the corridor thirty to forty years ago do not display a canopy size that might be expected. In some locations, trees that appear in the base mapping do not exist.

- The trail departs from the corridor and joins the street system in a number of locations, creating difficulties with orientation on the part of trail users. Some examples are: Roxborough Avenue at the Kenilworth Avenue Fire Station, at Cannon Street where it meets Britannia near the entrance to Andrew Warburton Park, and east of Strathearne Avenue (at Mahony Park) where the Trail enters industrial lands.

- Pedestrian access between Mahony Park and the closest trail segment is via Mahony Avenue and Parkdale Avenue to Brampton Street.

- The pipeline corridor crosses Brampton Street between Parkdale and Woodward Avenues, where it emerges as an undeveloped trail characterized by a ground cover of turf grass, with trees present in some segments. At Grace Avenue, the trail once again enters industrial property that is fenced and inaccessible to the public. Pedestrians currently reach the end of the trail, or eastern Trail Head (at the Museum of Steam and Technology) either through Leaside Park to Woodward Avenue or from Glow Avenue to Woodward. In both instances pedestrians are required to leave the trail to continue along the street system.

Various industrial, commercial, and residential properties have long standing agreements with the City of Hamilton, and in these areas the corridor has been utilized for parking, loading docks, vehicular circulation, driveways, fencing, and gardens.

A thorough review of agreements and properties is required by the City during detailed design stages.

4. Vision

Community stakeholder aspirations for this trail are timely and significant. They are expressed in the following vision statement:

"Hamilton's Pipeline Trail will be a leader in environmental stewardship. The Pipeline Trail will encourage various recreational activities, like walking and cycling and offer safe, visible connections to other urban trails, parks and commercial corridors. The trail should run the length of the pipeline, from Main St. E to Woodward Ave, with marked connections to parks and urban trails at the escarpment and waterfront."

Figure 7: Pipeline Trail Hamilton logo

The Pipeline Trail offers tremendous potential toward greening of its constituent neighbourhoods through the addition of pockets of a variety of plants and subsequent pollinator habitat. There is potential for helping to reduce the effects of storm events through the incorporation of principles of Low Impact Development (LID).

The environmental stewardship practised by the community will assist in the provision of the following:

- the desire to increase the amount of plant material by utilizing Pipeline lands and thereby strengthening the natural environment
- community gardens as a method of social connectivity and increase in biodiversity
- the creation of linkages to larger natural systems as a method of physical connectivity
- the creation of a stronger sense of place in the neighbourhood
- the provision of places of rest, play, learning, and beauty,
- the improvement of connections to neighbourhood facilities.

- support for recreational activities through increased opportunities for active transportation.

The Vision for the Pipeline Trail reflects contemporary attitudes toward healthy communities by connecting urban populations to the natural environment through environmental stewardship.

The Pipeline Trail Vision supports the City of Hamilton's Vision:

"To be the best place in Canada to raise a child, promote innovation, engage citizens and provide diverse economic opportunities."

5. Community Wish List

The major themes for the Master Plan as identified by community and staff were presented at the May 15, 2015 public consultation and are illustrated in Figure 8.

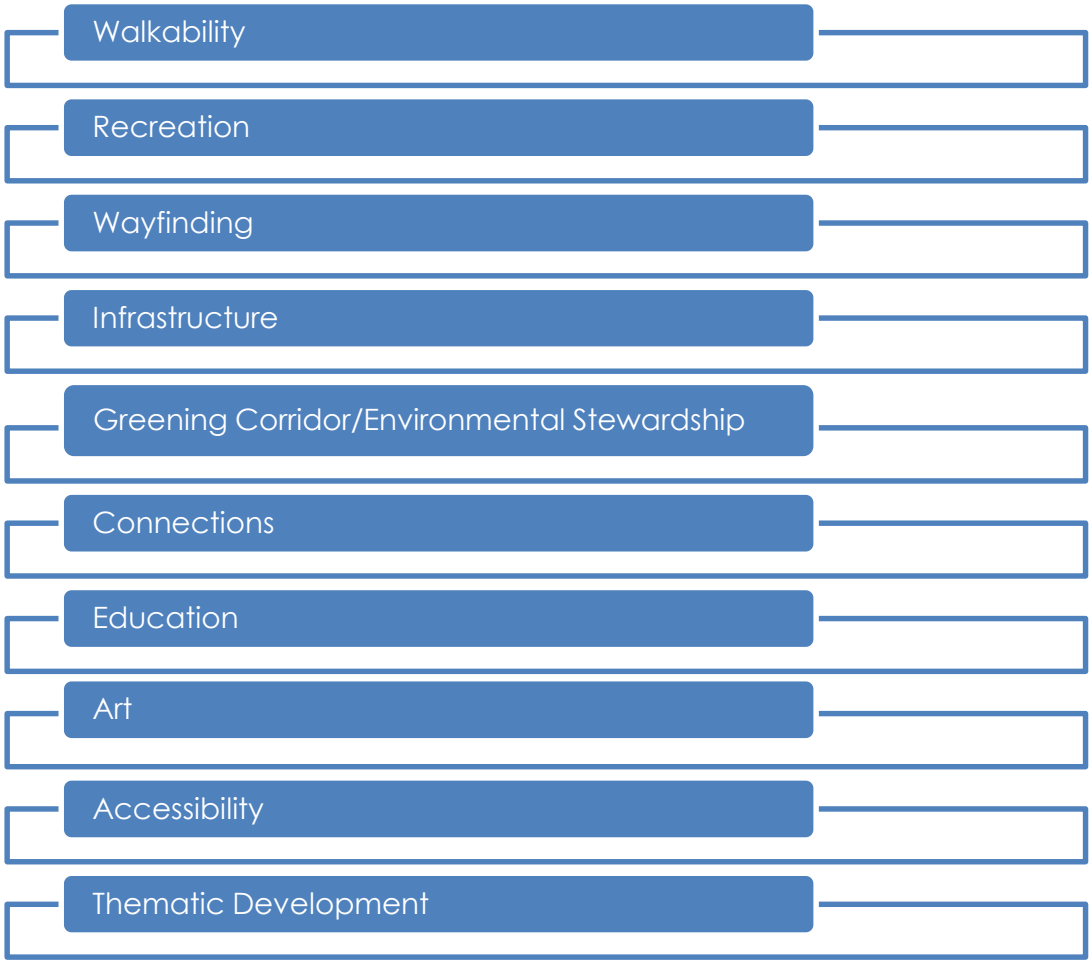


Figure 8: Community Comment Themes

5.1 Walkability

Walkability is a measure by which pedestrians can move easily and safely through the urban environment. Walkability contributes to urban quality of life, health, sustainability, and increased social interaction. An important goal for the Pipeline Trail is to increase this activity. Community members have stated a preference for continuous travel along the trail. In a number of locations this is not possible and trail users must use municipal sidewalks between trail segments.

5.2 Recreation

In addition to strolling and walking, the Pipeline Trail provides additional opportunities for recreational pursuits such as fitness stations and cycling. Community gardens provide the opportunity for residents to work together in a healthy activity.

5.3 Wayfinding

Orientation and wayfinding are important features of the Master Plan. For the most part, trail segments pass through the street grid of residential neighbourhoods diagonally, creating a lack of orientation at mid-block crossing points. Street identification particularly at these areas is an important element to be incorporated into the wayfinding system.

The Master Plan proposes trail markers at each segment, mapping at various locations along the route, and directional signage to community facilities. Wayfinding elements will be included at both ends of the trail and will provide indicators to other City features along its length. Members of the community have requested that neighbourhood identity be included on either the street identification signage or other wayfinding elements.

5.4 Infrastructure

The original trail was designed as a pedestrian pathway, and does not appear to have been intended to accommodate cycling. Current City of Hamilton mapping identifies it as a walking/hiking route. Comments from the cycling community indicate a desire to have the Trail recognized as a cycling route.

At a minimum, by transitioning the Trail from pedestrian to multi-use, the paved surfaces will require an increased width.

Hamilton's Active Transportation Benchmarking Program has studied pedestrian and cycling activity on the Pipeline Trail during the past three data collection terms. Counters were installed at various locations on the trail. The information can be used to improve conditions along the Pipeline Trail in areas that are frequently used. Table 1 illustrates the data count summary for the Pipeline Trail.

Pipeline Trail Location	Daily Average	Year
East of Fairfield	130	Fall 2013 - Summer 2014
East of Houghton	128	Fall 2013 - Summer 2014
East of London	165	Fall 2013 - Summer 2014
Near Ottawa Street	313	Fall 2012 - Summer 2013
Near Ottawa Street	353	Fall 2011 - Summer 2012

Table 1: Count Data Summary
Date Accessed: October 13, 2015

Further information can be accessed online. As a result of this Master Plan study, additional locations are being considered.

5.5 Greening Corridor & Environmental Stewardship

Hamilton's downtown areas have historically been characterized by a generous coverage of canopy trees. This was somewhat less evident in the east end and industrial areas. Existing trees on city streets that were planted a century ago are reaching the end of their lifespans. Public lands such as the pipeline corridor present a tremendous opportunity to increase biomass in urban areas. The City's Forestry Section has strategies in place to increase the urban tree canopy that may be appropriate here. Drawing from a species list of over forty choices of native and non-native trees, Forestry strives to provide diversity, ensures that trees are suitable for their locations, and seeks to reduce the loss of canopy due to disease and insect damage.

5.6 Connections

This important feature of the Master Plan has many facets: from transit, to other trail systems such as the Red Hill and Escarpment trails, to commercial and public facilities, and parks throughout the entire trail.

Improved connectivity will link a number of facilities and systems, including the connecting of neighbourhoods.

5.7 Education

Community members identified the importance of telling stories along the trail. Some ideas were the development of the Waterworks, the water cycle, and neighbourhood history.

The Master Plan presents opportunities for interpretive signage describing the history of the pipeline and the Museum of Steam & Technology. It also presents opportunities for descriptions of nearby facilities, natural systems, and the history and development of surrounding neighbourhoods.

5.8 Art

Public art is included in the Master Plan to assist with creation of a sense of place, to celebrate and express the Pipeline Trail as a community resource, and to increase aesthetic interest. The theme chosen by the community for public art is Water Innovation and Infrastructure. Interest was expressed for community art and for the inclusion of local artists.

5.9 Accessibility

The Trail requires improvements to pedestrian pavements in keeping with current accessibility standards. A pedestrian system which is usable by people of all ages and abilities is a primary goal. Within the trail, delineation of pedestrian space where it is shared with vehicles is an important requirement. Some trail segments cross municipal streets at angles, share driveway entrances, or are missing drop ramps. Improvements to the pedestrian circulation system will benefit all trail users.

5.10 Thematic Development

The theme of Water Innovation and Infrastructure was chosen by community participants as the overriding image for public art and other elements along the Pipeline.

There are many possibilities for celebration of this theme such as: incorporation of permanent and temporary art installations, colour, ground elements, and creation of a distinctive logo for the trail.

Low Impact Development (LID) and attention to rain events through such measures as permeable pavement, rain gardens, and bioswales along the trail reinforce the story of the water cycle.

The Waterworks of 1859 drew clean water from the lake. LID and associated interpretive materials can demonstrate how water is returned to the lake in a celebration of the water cycle.

6. Process

6.1 Community Participation

Led by the Pipeline Trail Planning Team of the Crown Neighbourhood group, the Pipeline Trail Master Plan process began with community members desiring community improvement and development through environmental stewardship.

On September 14, 2014 Councillor Merulla passed a motion at the General Issues Committee (GIC) to fund the development of a Pipeline Trail Master Plan, funded equally from the Wards 3 and 4 Area Rating budgets. Landscape Architectural Services was authorized to hire a consultant to assist staff in developing the Master Plan in conjunction with neighbourhood groups and community stakeholders.

The first public engagement meeting took place on February 21, 2015 with a community bus tour of the Pipeline corridor. It was a valuable opportunity to experience the Pipeline Trail during winter conditions and heavy snow. Three additional Public Information Centre (PIC) events were held on May 14, June 25, and September 19, to present and discuss the development of the Master Plan.

City staff and the Pipeline Trail Planning Team used a variety of methods to reach out to the public. Methods included mailing letters to residents, distributing flyers to trail users on the Pipeline Trail and door-to-door solicitation. The Pipeline Trail Master Plan project website was regularly updated, the City of Hamilton Twitter Account and Pipeline Trail Facebook page advertised meeting dates and the process. Staff attended Ward 4 – East Hamilton Town Hall Meetings and all Ward 4 constituents received meeting minutes electronically and by mail.

The following is a summary of key public events that took place during the development of the Master Plan:

September 17, 2014

City of Hamilton General Issues Committee (GIC)

February 21, 2015

Community Bus Tour

May 14, 2015

PIC #1 - 6:30 - 8:30 pm - Dr. John M. Perkins Centre

June 25, 2015

PIC #2 - 6:30 - 8:30 pm - Dr. John M. Perkins Centre

September 19, 2015

PIC #3 - 2:00 - 4:00 pm - Museum of Steam & Technology, Free Family Event

Figure 9: Bus Tour, Sean Hurley photos and PIC, 2015, City of Hamilton photo

7. Safety

7.1 Traffic Studies

The Pipeline Trail is unique in the city. The pipeline corridor was created prior to the development of its surrounding neighbourhoods and consequently many of the street crossings do not conform to current safety standards. Traffic studies were performed by the Traffic Consultant, CIMA+ as part of the master planning process. Pedestrian safety was of primary importance, particularly at the numerous street crossings. Refer to Appendix 1 for CIMA+'s recommended treatments.

A thorough safety audit of the entire length of the trail with emphasis on existing intersections and conflict points was conducted, commencing from the westerly terminus of the trail near London Street North.

To conduct this review the study area was divided into homogeneous sections and risks associated with each section were identified. The proposed trail should consider:

- Clear sight lines at intersections and conflict points between vehicles, pedestrians and cyclists;
- Visibility so that the existence of the Pipeline Trail is apparent and that drivers are aware of the presence of other roadway users sharing the right-of-way;
- Appropriate use of signage for bicycles, pedestrians and vehicles as per the Ontario Traffic Manual (OTM) Books 5, 15 and 18.

Based on the results of this review an explicit set of treatments were proposed for consideration:

- Use of a typical uncontrolled street crossing in all areas where the trail crosses a local road;
- Elimination and/or relocation of parking spaces near the trail crossings;
- Provision of a specific set of pedestrian crossing treatments at the following locations:
  - Dunsmure Road & Province Avenue as well as Mead Avenue and Knox Avenue;
  - Roxborough Avenue and Huxley Avenue to Crosthwaite Avenue;
  - Cannon Street East from Garside Avenue to Barons Avenue;
  - Barton Street, Parkdale Avenue and Woodward Avenue

7.2 Lighting Study

Although lighting is present on the Trail on a limited basis, it is not continuous and is of older technology. The development of the Pipeline Trail presents the opportunity to provide energy efficient LED lighting at appropriate spacing continuously along the trail.

The lighting consultant (exp) considered options for lighting of the trail, including solar powered lights. They prepared

schematic lighting concepts for four trail segments, which were extrapolated along the length of the trail. The conclusion was that the Trail is somewhat unique as a public open space; and that detailed design should provide appropriate levels of illumination, and not allow light trespass onto neighbouring residential properties.

A conventional lighting system was recommended vs. solar powered. The lighting report is included in this document as Appendix 2.

7.3 Railway Crossings

This Master Plan included a preliminary investigation of pedestrian crossings over railroad tracks: specifically at Lawrence Road (from the Escarpment Trail) and at Parkdale Avenue. In both locations it was determined that the land area required for stairs and accessible ramps was not available. A recent elevated crossing that was constructed in a nearby community (Milton, Ontario) was used as a case study. Refer to Appendix 3a.

The crossing concepts generated discussion among community members with respect to their feasibility and necessity, with opinions both for and against dedicating funding particularly if crossings similar to the Milton example are considered. Preliminary costing of these elevated crossings is estimated at approximately three to four million dollars per crossing.

Should the City wish to pursue the provision of crossings over railway lines, it will require a multi-disciplinary study in order to determine feasibility with respect to technical, safety and environmental issues, and consideration of alternatives.

7.4 CPTED (Crime Prevention Through Environmental Design)

In the majority of the developed segments of the trail, there are views into the space from adjacent streets. Visual surveillance, the "eyes on the street" is an important CPTED principle that must be kept in mind throughout future detailed design and construction of new features. Once the trail segments are completed and improved, its continuous use will be beneficial in this regard.

Rest stops are proposed to be located close to municipal roadways and sidewalks rather than in the centre of trail segments. This is intended to discourage loitering and undesirable after-dark activities.

Plant materials should be selected with growth habits that are above eye level (such as in the case of shade trees) or below hip height (low shrubs or herbaceous materials) so that clear sight lines can be maintained. Any plant materials located within 3.0m of a sidewalk/trail crossing should be no higher than 0.6m. Effective lighting of the walkway is particularly important during the winter months.

Should trail segments be allowed to naturalize, the edges at pathways should be mowed to a width of approximately 1.0m from edge of pavement.

7.5 Health

Low slopes in swales are encouraged for temporary water detention in rain gardens and bioswales; however, they must not create standing water.

Standing water in bioswales and rain gardens is not permitted due to concerns regarding breeding of insect pests, and in accordance with Hamilton's Standing Water By-law 03-173. This would be addressed through the detailed design process. When designing rain gardens and bioswales in all trail segments, care must be taken to ensure that appropriate slopes and drainage are incorporated into the design.

8. Connections

8.1 Connections to Other Trails & Transportation Network

a. Escarpment Rail Trail

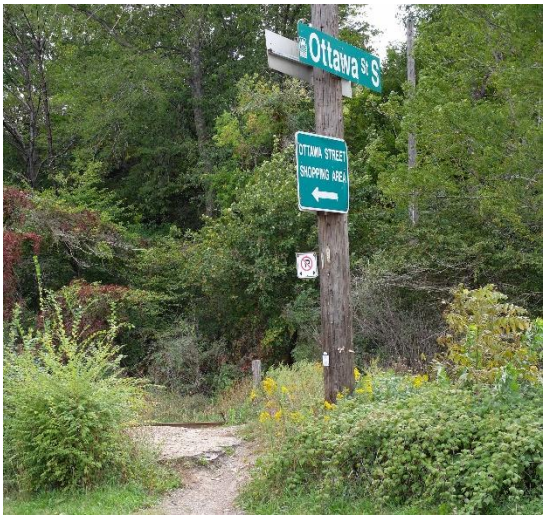


Figure 10: View of Trail from Lawrence Road, OMC photo

The existing Rail Trail connection near the intersection of Ottawa Street South and Lawrence Road appears to have been created by trail users. It is a narrow packed earth path that descends from the Escarpment Rail Trail from two directions, terminating at a single path that leads to the railway tracks. The connection was reviewed during dry conditions; however, given the tendency toward clay soils in the area, it is assumed that during wet conditions the paths are slippery due to steep grades and soil conditions. Cyclists and pedestrians then move northward to traverse the tracks that run parallel to Lawrence Road. The tracks do not have crossing arms or warning signals. Another packed earth trail leads to Lawrence Road at Ottawa Street South. This is a logical connection to the Pipeline Trail since it follows the pipeline corridor, and connects to the bicycle lanes on Lawrence Road.

Figure 11: View toward rail crossing, across tracks, looking south, OMC photo

Figure 12: View of Trail entrance south of tracks, OMC photo

Figure 13: View looking N toward Lawrence Rd. from trail connection, OMC photo

In the short term, trail improvements and signage at the Rail Trail connection at Lawrence Road would improve connectivity and possibly safety; however, there are liability and accessibility concerns for the City of Hamilton should it formalize this connection since the crossing leads across the tracks.

An alternate existing route was discussed at the September 19, 2015 community meeting with attendees who indicated that the lower segment of the Kimberley

Figure 14: Kimberley Avenue, OMC photo

Avenue escarpment stairs was an alternative route from the Escarpment Trail. This location leads to a roadway without bicycle lanes and only sidewalks on the north side of Kimberley Avenue. It does not directly connect to the Pipeline Trail and is not recommended as a long-term trail connection for these reasons.

Figure 15: Rail Trail Connection

The Escarpment Rail Trail connection to the Pipeline Trail is a desirable link between the natural escarpment areas and the Pipeline, to the waterfront beyond. Two options were discussed during community meetings:

1. Improvement to the existing connection across railway tracks
2. Provision of an elevated crossing over the tracks

The detailed investigation for a significant crossing of this nature is beyond the scope of this Master Plan. A full study would be required in order to fully explore feasibility, examine alternatives, costing and the required approvals for each of these options.

b. Red Hill Valley Trail and Waterfront Trail

Currently there is no direct trail connection to the Red Hill Valley Trail from the Pipeline Trail. Ideally, a connection would be made at the eastern Trail Head at the Museum of Steam and Technology site. A connection to the Red Hill Valley Trail would provide a direct trail linkage to the Lake Ontario Waterfront Trail. There are security concerns at this location due to the necessity of traversing the water treatment plant property. Currently, the closest Red Hill Valley Trail connection is at the eastern end of Brampton Street. Wayfinding signage at the Pipeline Trail/Brampton Street crossing is

proposed to create this connection in the short term, until a time in the future when a physical connection between the two trails might be realized. The Recreation Trails Master Plan has identified this need and the connection will be studied for feasibility through a separate process. It should be noted that staff at the Museum of Steam and Technology are undertaking a master planning strategy for site restoration in keeping with the site's history. Coordination of these efforts would strengthen all related initiatives.

Figure 16: Red Hill Way Trail Connection

Figure 17: Waterfront Trail Connection

c. Connections to the On-street Cycling Network

The Hamilton Trails Master Plan (2007) proposes a bicycle route, as a signed on-street facility, on Maple Avenue which would provide a connection between Gage Park and the Pipeline Trail, with a suitable crossing of Main Street (i.e. a signalized crossing).

There are no existing dedicated bicycle facilities that are directly connected to the current alignment of the Pipeline Trail. The City plans to create bike lanes on Cannon Street in Fall, 2015 which will intersect the Pipeline Trail. Within the next few years, these bike lanes are planned to be extended easterly along Britannia Avenue / Melvin Avenue to the Red Hill Valley Trail.

Woodward Avenue has bicycle lanes on both sides of the street. Sidewalks are located on both sides, from the pipeline corridor to the QEW on ramp north of the Museum. A traffic signal at that location assists pedestrians crossing to the west side of Woodward Avenue where the sidewalk continues to the Beach Boulevard underpass. There is a traffic signal at this location that assists pedestrians crossing Woodward. The sidewalk continues through the underpass on the north side. The City plans to complete the missing segment of bike lanes through this underpass (~50m) in the next few years (Shifting Gears 2009).

In order to facilitate the connections between near-by and/or proposed bicycle facilities the following improvements are proposed for further consideration:

1. A shared roadway with sharrows along Roxborough Avenue between Huxley Avenue and Crosthwaite Avenue; and along Crosthwaite Avenue between Roxborough Avenue and the Pipeline Trail to cross Kenilworth Avenue.

The term "sharrow" is an abbreviation of "shared lane bicycle marking". Sharrows are used to remind motorists and cyclists that the lane is shared. They are used on streets without dedicated bicycle lanes.

Figure 18: Sharrow, City of Hamilton photo

The Hamilton Recreational Trails Master Plan (2007) indicates a future multi-use trail linking Barton Street with Lawrence Road, and is located in the centre of the hydro corridor at Strathearne Avenue. This route will cross the Pipeline Trail near the intersection of Barton Street. The cycling route follows Shelby Avenue between the Pipeline Trail alignment and Melvin Avenue.

With respect to the extension of the existing Pipeline Trail alignment north of Barton Street East, the following segments of bicycle facilities were proposed for potential implementation in a short term scenario:

A. Melvin Avenue between Shelby and Walter Avenue

B. Walter Avenue between Melvin Avenue and Mahony Park including an existing signalized crossing of Barton Street
C. Mahony Park Trails
D. Adeline Avenue between Mahony Park and Mahony Avenue
E. A signed bicycle route along Mahoney Avenue between Adeline Avenue and Parkdale Avenue North;
F. A signed bicycle route along Parkdale Avenue North, from Mahoney Avenue to Brampton Street;
G. A signed bicycle route along Brampton Street from Parkdale Avenue North to east of Burgess Avenue;
H. A signed bicycle route along Glow Avenue from Tate Avenue to the existing bicycle lanes at Woodward Avenue.

Under a long term scenario involving additional property acquisition and access to private properties the following segments of bicycle facilities were proposed for further consideration:

1. A connection with the existing bicycle lanes at Woodward Avenue and the eastern limits of the proposed trail extension.

d. Transit Connections

The Pipeline Trail intersects seven HSR bus routes, including two routes on Main Street. Light Trail Transit (LRT) is planned for Main Street with a station at the Main Street East/ Ottawa Street North intersection.

8.2 Connections with Neighbourhood Features

Various locations on the trail were reviewed during this study based on their character, areas context, and community activities that occur in them:

a. Nodes

For the purpose of this Master Plan, crossing points between the Trail and other corridors or neighbourhood features are considered to be candidate sites for nodes:

i. Main & Ottawa. This location is the Trail Head at the western limit.
ii. Kenilworth Avenue near Roxborough
iii. Andrew Warburton Park, Britannia/Cannon Street East entrance
iv. Strathearne Avenue and Barton Avenue
v. Brampton Street and Burgess Avenue
vi. Museum of Steam and Technology

b. Parks

There are several parks that are either directly connected to the Pipeline Trail or are within a short walking distance. The Pipeline contributes to connectivity to nearby parks, as well as walkability in the neighbourhood. Parks located on or near the Pipeline Trail provide opportunities for rest stops and other amenities.

Connectivity between Gage Park and the Pipeline Trail is important to the community. Pedestrians can access Gage Park by walking west on Main

Street from the western Trail Head. The on-road cycling connection is along Maple Avenue.

Parks located on the Pipeline Trail: include A. M. Cunningham Parkette, Andrew Warburton Memorial Park, Mahony Park, and Brampton Park.

Parks within a short walking distance include Gage Park, Delta Park, The Honourable Bob Mackenzie Park, Fairfield Park, Montgomery Park, Glow Park, Woodward Park and Leaside Park.

Confederation Park is a major destination that can be accessed through the Waterfront Trail and Red Hill Valley Trail systems with connections from the Pipeline Trail.

c. Commercial Areas

The primary commercial areas are on Ottawa Street North, Kenilworth Avenue North, Main Street East and Barton Street.

The Pipeline Trail connects with Ottawa Street at the south end, a short walk to the commercial district to the north.

A description of the significance of the relationship between the Trail and Kenilworth Avenue and the Kenilworth-Barton commercial area can be found on page 34.

The Trail connects directly with Barton Street farther east near Strathearne Avenue, where it continues eastward along the municipal sidewalk.

d. Schools

A number of elementary schools are located within a short walking distance of the Pipeline Trail: Queen Mary, Memorial, W. H. Ballard, A. M. Cunningham and St. John the Baptist.

The Pipeline Trail facilitates walking in neighbourhoods and in some cases provides shorter travel distances between home and school. It is a pleasant alternate route (away from traffic).

e. Tourism

The Hamilton Museum of Steam and Technology is a National Historic Site. This location is the Trail Head at the eastern limit.

The Waterfront Trail and Confederation Park are popular destinations for cyclists and pedestrians, as well as out of town visitors arriving by vehicle. The addition of mapping that references the Pipeline Trail at these locations would assist with connectivity, for visitors to Hamilton in particular.

f. Alleys

Some alleys crossing the Trail are paved and appear to be in use; while some unpaved alleys give the appearance that they are rarely used due to the overgrowth of vegetation. There is potential for a formal alley connection between the Pipeline Trail and The Honourable Bob Mackenzie Park and Queen Mary School. Roxborough Avenue, which bisects the park and school sites has been closed to vehicular traffic. This supports walkability in the neighbourhood and benefits residents accessing the school and park from the south. A formal alley connection from the Pipeline Trail to The Honourable Bob Mackenzie Park requires further study.

Alley connections throughout the entire Pipeline Trail area have not been explored; however, they may be of interest for future consideration.

Appendix 4 lists potential alley connections to the Pipeline Trail.

9. Design Guidelines & Recommendations

9.1 Urban Nodes / Streetscaping

a. Ottawa Street Trail Head (western Trail Head) (Refer to Drawing L1)

This site is located at the intersection of Main and Ottawa Streets. This location is significant as it is known to the community as the entrance to the trail. It is the location of an existing bus stop and a future Light Rail Transit (LRT) stop, and has good visibility from adjacent roads. This location is a destination and a decision point for trail users reaching the trail head. Wayfinding elements will illustrate connections from the trail head to the Escarpment Rail Trail and to Gage Park.

This Master Plan proposes that the Trail Head and adjacent trail segments be enhanced to reflect a shared pedestrian/vehicular access immediately north of Main Street.

Design recommendations include:

- Enhancement and possible expansion of seating at the transit stop
- The addition of canopy trees
- Removal of the existing overhead billboard
- Replacement of existing guard rails with decorative metal rail fencing in keeping with the Pipeline Trail theme of Water Innovation and Infrastructure
- Public art installation
- Wayfinding in the form of trail orientation mapping and identification of western Trail Head
- Poured in place concrete paving to delineate Trail and alert users of the space that it is shared. Implementation of Artistic ground elements (such as painted markings) leading eastward toward Trail
- Re-design of existing parking lot
- Engagement of adjacent business owners to coordinate pedestrian access, screening, and possible aesthetic improvements to adjacent properties
- Upgraded site furniture, with the potential for thematic elements
- Inclusion of a Sobi bicycle station at this location through a process that is separate from this Master Plan.

b. Kenilworth Avenue to Crosthwaite Avenue (Refer to Drawing L3)

This node is a key component of the public realm, identified by the Barton-Kenilworth Commercial Corridors Study. It is significant to the community for a number of reasons. The Pipeline Trail Parade has originated at this location for

the past two years. It is regarded as a hub, with proximity to Kenilworth Avenue business areas, and a nearby play area (Huxley and Roxborough). The Kenilworth Library is south of Roxborough on the west side of Kenilworth.

This Urban Node represents the border between the Homeside and Crown Point neighbourhoods, and is the location of an outdoor community book exchange kiosk.

The traffic consultants (CIMA+) have recommended an east-west pedestrian crossing at the intersection of Roxborough Avenue and Kenilworth Avenue North.

From this crossing location trail users would progress north along the sidewalk on Kenilworth Avenue to the open space adjacent to the Tim Hortons restaurant.

Trail users have expressed an interest in crossing Kenilworth Avenue directly opposite the open space adjacent to the Tim Hortons restaurant.

This option presents an opportunity to improve both sides of Kenilworth Avenue and provide a stronger visual connection to the Trail. City staff are investigating a safe option that is suited to all users, in conjunction with the Kenilworth Avenue Complete Street study which deals with improvements to the public realm and transportation.

From this segment, there are clear views to the fire station looking west and to Andrew Warburton Memorial Park on Britannia Avenue.

The eastern end of this Trail segment with frontage onto Crosthwaite Avenue, is the site of a future community initiative which may include a community garden: A Garden of Useful Delights, as proposed by Crown Point Garden Club.

A public art installation is proposed near the western end of this trail segment, as well as bicycle racks, and a rest area with tables and chairs, and benches near the community garden.

The book sharing kiosk at the alley entrance should be preserved.

A Sobi bicycle station was requested by the community to be located within this trail segment.

c. Britannia Street Entrance – Andrew Warburton Memorial Park (Refer to Drawing L4)

This node is significant to the neighbourhood as it is the place where the trail leaves the municipal street and re-enters the pipeline corridor that bisects the park. The Homeside Planning Team has been involved with the Adopt-a-Park program. The Andrew Warburton Memorial Park is recognized as a park redevelopment project for Landscape Architectural Services.

The public realm in this area requires improvements with respect to tree canopy, amenity and aesthetics.

The median west of the park entrance currently includes a large advertisement billboard, sidewalks, and a bus stop.

Figure 19: Median west of park, OMC photo

The pedestrian access to the park requires upgrading with respect to pavements and site features that have reached the end of their service life.

There is an opportunity at this entrance to expand the Trail's visibility, and contribute to an improved streetscape along Britannia through the use of various design elements that suggest transition from street to park. This entrance will benefit from improved sight lines, planting, upgraded lighting and seating similar to that suggested for the other Urban Nodes.

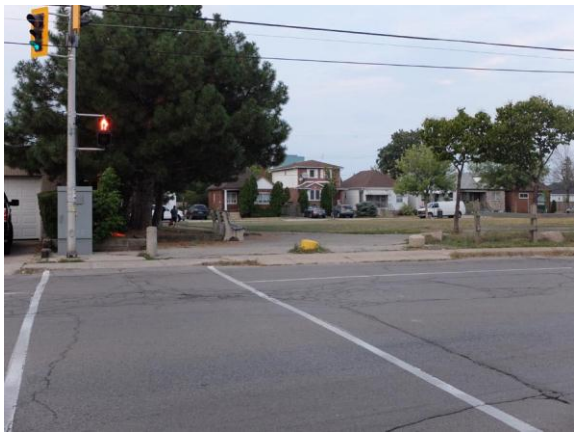


Figure 20: View of pedestrian access to be upgraded at Andrew Warburton Park entrance, looking north from Britannia, OMC photo

Design recommendations include:

- Re-design of the pedestrian access through the use of upgraded site furnishings, wayfinding elements and new pavements to create a park entrance and transition space
- Addition of planting similar to horticultural installations found in other areas of the city, such as in medians or roadside planting
- Improvements to seating at bus stop
- Addition of trail orientation mapping at park entrance consistent with wayfinding recommendations in this report
- Removal of billboard on median and replacement with large canopy trees
- Widening and improvement to pedestrian walkways on median
- Incorporation of similar materials at park entrance and median to provide visual coherence to streetscape and on-street trail segment
- Incorporation of a major public art installation

d. Strathearne Avenue and Barton Street Area (Refer to Drawing L5)

This trail segment is located between Paling Avenue and Strathearne Avenue. It is significant to the community because it is the location where the existing developed areas of the Pipeline Trail meet industrial lands. Located immediately north of the (Paling-Strathearne) trail segment is Indwell's social housing facility to the east, and Little Bethel Church to the west near Paling.

There is potential for a rest stop on the trail segment at its approximate mid-point, near the entrance to the Indwell building.

By expanding pedestrian circulation space at Indwell's main entrance, a larger public space can be achieved

along the Trail. This is an exception to the design recommendation for rest stops to be located near street frontages. The presence of surrounding residential buildings suggests good visual surveillance of this space.

Design recommendations include:

- Increased deciduous tree planting, distinctive pavements, upgraded benches, and supplementary lighting.
- Removal of asphalt parking and guard rails on the north side of the trail corridor near Strathearne, and replacement with soft landscaped areas. If parking at this area is to remain, the guard rails would be replaced with thematic barriers similar to those proposed at the western Trail Head.

For the Brampton Street and Burgess Avenue node refer to 9.11 u) on page 57. For the Museum of Steam and Technology site refer to 9.11 z) on page 58.

9.2 Planting

The introduction of additional plant material along the trail will contribute to the quality of experience and contribute to wayfinding. It is recommended that native tree species be introduced wherever possible. Community plantings are intended to focus on pollinator and edible gardens.

The first community garden, Pollinator Paradise, was installed in June 2015 in the trail segment between Edgemont Street North and Park Row North, as an initiative that was led, designed and implemented by volunteers.

Figure 21: Pollinator Paradise, OMC photo

Figure 22: Pollinator Paradise, OMC photo

Community members indicated that container planting would be desirable in the industrial areas where in-ground installations are not feasible. This concept would be developed further during detailed design.

Tree planting is expected to be undertaken by City of Hamilton Forestry staff. It is recommended that trees be utilized as trail indicators, particularly at trail crossings where the continuity of plant species will support wayfinding and identification of the Trail. As an example, two or three of the forty species of trees supplied by Forestry might be selected for the ends of the Trail segments.

Alternatively, individual trail segments or groups of trail segments may be identified by tree species along their

length. The Kenilworth to Crosthwaite node and western Trail Head may include trees that are distinct from adjoining trail segments.

The (tree) planting design for the Trail would be developed during the detailed design process.

The hydro corridor on Brampton Street extends from Strathearne to Woodward Avenue, crossing the Trail near Burgess Street. The ground cover is presently mown turf grass. The corridor presents an opportunity to replace the turf grass with meadow planting supportive of pollinator species. During detailed design, plant materials must be specified that will not block sight lines, particularly at vehicular crossings. In these locations, grasses and wildflowers should be selected that are no taller than 0.6m, for a distance of approximately 5.0m from edge of pavement. The location of all proposed planting will be subject to locates, confirmation of pipe location, and traffic requirements as part of the detailed design process.

9.3 Wayfinding

Wayfinding is commonly defined as a consistent set of elements to provide locational information and directions to travellers, assisting them to "find their way" in unfamiliar environments.

The City of Hamilton is currently implementing a wayfinding system within the Downtown area. Future phases of the project will expand the system throughout the entire City. The current wayfinding project consists of three sign types: vehicular signs, pedestrian kiosks, and municipal parking signs.

Staff recommend that the general style of the wayfinding signage be consistent for other sign types (such as trails), in order to create a unified family of signs.

Figure 23: City of Hamilton Wayfinding, City of Hamilton photo

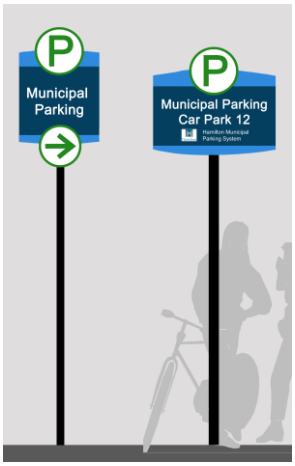


Figure 24: Sign concept from Wayfinding project, City of Hamilton photo

The theme of Water Innovation and Infrastructure has been selected for the Pipeline Trail by the community. It is important that in the future development of wayfinding elements for the trail, thematic references will be considered and incorporated.

Wayfinding elements would consist of the following:

A. Trail Markers to include street names consistent with City of Hamilton signage and wayfinding system.

Trail markers would be located (generally one per segment) at the northeast side. This will also be a logical location for street markers, particularly where the trail segment crosses residential streets mid-block. The City of Hamilton has developed an urban braille system that includes street names etched into sidewalks at intersections. This might be considered by staff as an alternative to street names on trail markers. It will be necessary to include trail markers for orientation along municipal sidewalks where the Trail departs from the corridor and through parks where the trail blends into park space.

B. Directional Markers:

These would consist of indicators of direction and distance for nearby facilities, similar to the wayfinding system being developed for the Downtown area. Directional markers indicating the Pipeline Trail might also be considered on City streets or other trail systems.

C. Maps:

One per kilometer of trail length with design consistent with Trail and Directional markers, including Trail Heads. The exact spacing and number of maps would be determined during detailed design in conjunction with the development of the wayfinding system.

D. Distance markers

Markers would be in the form of ground markings at intervals to be determined at the time of detailed design.

Residents have requested that the City consider interim strategies for navigation through the Trail until recommendations are ready to be implemented.

9.4 Traffic and Street Modifications

These modifications are primarily:

- Signage and pavement markings to alert drivers in adjacent roadways
- Stop signs for cyclists and pedestrians (in accordance with City of Hamilton standard for trail crossings)

At all locations in which the existing and/or future alignment of Pipeline Trail intersects with local roads with either controlled or uncontrolled crossings, the typical design may consider the following recommendations:

- Curb extensions when adequate roadway width is available.

Often referred to as "bump-outs", curb extensions are a traffic-calming technique that controls vehicles and provides shorter crossing distances for pedestrians

- Provision of adequate sight lines for motorists and pedestrians in accordance with Federal, Provincial, and Municipal Design Standards, to be reviewed during detailed design. The Transportation consultants identified a number of crossings where on-street parking is impacting visibility. Recommendations for parking restrictions are summarized in Table 2, page 46 of this report.
- Design and implementation of crossings based on Federal, Provincial, and Municipal standards for signage, pavement markings, and traffic control;

- Assessment with respect to illumination requirements for night-time visibility;
- Assessment with respect to improvements to geometric design for trail crossing alignment, if necessary;
- Review of property roadway signage for all roadway users (pedestrians, cyclists and motorists) as schematically presented in Figure 25.

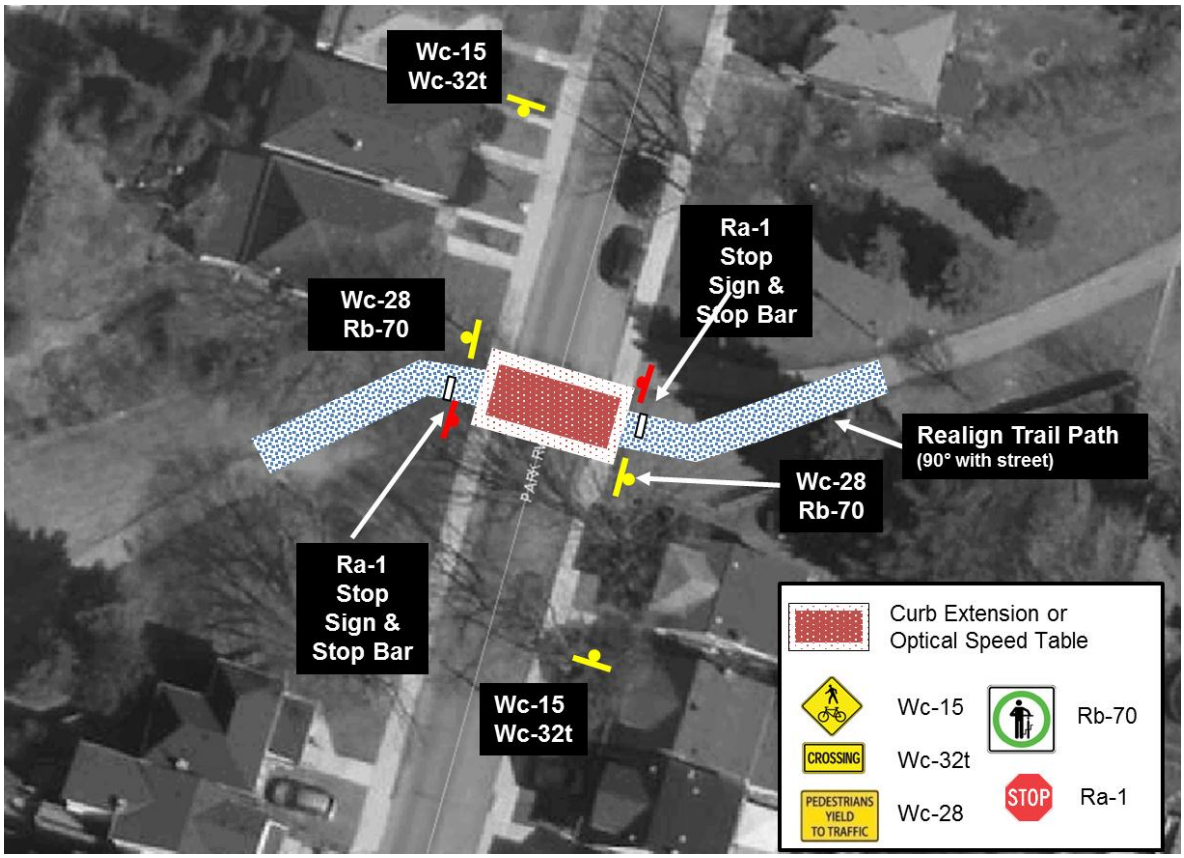


Figure 25: Typical Uncontrolled Street Crossing (CIMA+)

9.5 Public Art

The overall Trail theme of Water Innovation and Infrastructure will form the basis for the Call to Artists for each of the sites. The inclusion of public art will follow the City of Hamilton's Public Art process, which involves an open competition. All interested artists are invited to submit their concepts and all submissions are posted online for purposes of public commentary. Public comments are reviewed and taken into consideration by a jury composed of staff and community stakeholders.

Four sites have been proposed for Public Art along the Pipeline Trail:

1. The western Trail Head, which is located immediately adjacent to the intersection of Ottawa and Main Streets. A highly visible piece identifying the trail will be located along the street frontage of Main Street, immediately east of Ottawa. In addition, ground elements are intended to provide directional interest as trail users begin their journey eastward. The public art installation at this location is estimated to have a value of $150,000

2. Urban node at Kenilworth Avenue. The inclusion of public art along the Kenilworth Avenue frontage is supportive of the Barton and Kenilworth Commercial Corridors study. This study describes the necessity for improvements to connections to parks and green space, and improvements to the public realm along Kenilworth Avenue. The public art piece at this location is estimated to have a value of $75,000

3. Entrance to Andrew Warburton Park. A large public art installation will mark the location where the trail leaves the public road and returns to the pipeline corridor. The public art installation at this location is estimated to have a value of $250,000

4. The Pipeline Trail will end at the Museum of Steam and Technology. In order to embrace the thematic connection of the trail and this location, Public Art is recommended at this site. It is estimated that the piece would have a value of $150,000

The following image indicates proposed Public Art locations, with the circles signifying the relative costs. All four locations have been incorporated into the Public Art Master Plan.

Figure 26: Public Art Sites

Figure 27: Painted Boxes, www.auckland-west.co.nz/?s=Dan Mills, Date Accessed: May 4, 2015

Figure 28: Garden Fence Ornaments, www.novagiovanni.com/garden-fence-decorations.html, Date Accessed: May 4, 2015

Other art components are classified as Community Art. They include thematic ground plane elements that will assist with Wayfinding and treatment of vertical elements such as utility boxes and fencing. The wooden fences that are found at boundaries between the pipeline and residential properties are privately owned, and as such, are of varying materials and states of repair.

A pilot project whereby selected areas or fence panels would be subject to artistic treatments was suggested during the planning process and generally found to be favourable among community participants. Specific locations have not been identified in the Master Plan, since this project would be community driven and maintained.

Community members would select locations with approval by City of Hamilton. They have expressed a desire for the inclusion of local artists.

Figure 29: Public Art Project, Philadelphia, celebrating stormwater. www.planphilly.com/eyesonthestreet, Date Accessed: July 2015

9.6 Low Impact Development

Low Impact Development (LID) is a storm water management strategy, and can be small scaled and site specific. It is intended to reduce runoff and pollutants entering our watersheds while contributing to ground water recharge.

In keeping with their vision for environmental stewardship, community stakeholders have expressed support for LID along the Trail.

Many techniques are available, and some that may be suitable for sections of the Pipeline Trail include: bioswales, rain gardens, soakaway pits, permeable pavements, and perforated pipes. The implementation of LID techniques is dependent on many factors, including type of soil, surrounding drainage patterns, and in the case of urban areas in particular – proximity to buildings.

It is important to note that re-grading may be required in the existing developed segments should they be chosen for LID. Existing berms were constructed with the intent of providing topographical interest and possibly, increased soil depths for tree planting. LID requires a different type of landform, in the form of depressions or swales that can temporarily store rain water until it can move downward through the soil. Re-grading the berms would provide a larger surface area for water detainment.

Clay soils are commonly found throughout the Hamilton area, and when heavy clay soils are present, LID practice includes subdrains with connections to drainage structures such as catch basins. LID practice requires soil testing, in order to determine constraints.

The following trail segments were observed to have existing catch basins that may be evaluated and used for LID during detailed design:

- London Street to Edgemont Street North
- Edgemont Street North to Park Row
- Park Row to Province Street North
- Province Street to Graham Avenue North
- Graham Avenue North to Houghton Street North
- Rear of Kenilworth Avenue Fire Station
- Kenilworth Avenue to Crosthwaite (existing parking area) and at Crosthwaite
- Crosthwaite Avenue to Garside Avenue North
- Tragina Avenue North to Weir Street North
- Weir Street North to Fairfield Avenue North
- Fairfield to Paling Avenue
- Paling Avenue to Strathearne Avenue

The undeveloped segments of the trail north of Brampton Street do not appear to have catch basins. Should LID techniques be implemented in these sections in future, careful evaluation of each site in accordance with best practices for LID will provide guidance during detailed design.

Bioswales and rain gardens may contain varying landscape treatments, such as herbaceous plant species, turf or even stone. At a minimum, turf bioswales would provide a low maintenance ground cover. Alternatively, community gardeners may undertake to create rain gardens or bioswales with native and ornamental and non-invasive perennials. This Master Plan also suggests that should specific trail segments be allowed to

naturalize, this treatment would support LID.

Should industrial properties that are currently inaccessible become available in future; there is an opportunity for LID in the form of bioswales (of varying design), permeable pavements, and suitable planting of native woody and herbaceous species along the corridor. There may be opportunities to decrease runoff from parking areas, using similar techniques as seen in the examples following:

Figure 30: Raingardens and permeable pavement, Kortright Centre, September 2015, OMC photo

Figure 31: Landscape Sustainability: Stormwater blog, Billy Rhyne, www.rhynelandscape.com, Date Accessed: June 5, 2015

Figure 32: Government projects, Bioretention and Flume, Professional Engineering, www.pe-wi.com, Date Accessed: June 5, 2015

9.7 Shared Pedestrian and Vehicular Space

A number of trail segments are shared with vehicles, primarily due to alley access at the rear of residential properties. Located throughout the developed portions of the trail, these shared segments will require attention during the detailed design stage. Two segments – the western Trail Head at Ottawa and Main, and the trail segment through the rear of the Kenilworth Avenue Fire Station are shared with parking areas.

It is recommended that the trail width be increased to 3.0m. This is the standard width for City of Hamilton park pathways. The Ministry of Transportation recently released (March 2014) a Bikeways Design Manual to "inform and provide guidance to designers regarding the design of cycling facilities". Although the Manual's focus is on recommendations for cycling facilities within or crossing provincial highway right-of-ways, it indicates a suggested minimum (3.0m) and desired lane widths (4.0m) for off-road multi-use trails similar in form and function to that of the Pipeline Trail.

A similar set of dimensions is also recommended as part of Ontario Traffic Manual (OTM) Book 18 for Two-Way in Boulevard Shared Use Paths.

Parking restrictions at trail/road crossings:

In order to allocate adequate space for the proposed pedestrian and cycling crossing treatments, as well as accommodate sight lines for motorists and pedestrians, the required realignment of parking presented in Table 2 should be considered:

Location	Parking Reduction	Required Realignment	Notes
London Street N	None	None	Relocate illumination pole (west side)
Edgemont Street N	4 west side† 3 east side†	Major	Requires encroachment onto private property
Park Row N	3 east side	Minor	
Graham Avenue N	4 west side	Minor	
Houghton Avenue N	3 west side† 2 east side†	Moderate	May require use of parking area of #93 to realign path
Wexford Avenue N	2 west side† 2 east side†	Moderate	May require use of parking area of #105 and/ or #88(?) to realign path
Tragina Avenue N	None	None	
Weir Street N	None	Minor	
Fairfield Avenue	3-4 east side	Minor	Close off south path on west side
Paling Avenue	2 west side† 1 east side†	Minor	Close off south path on west side

†*These locations require only "partial" parking reduction due to parking being restricted only during certain periods of the year and/or month*

Table 2: Realignment of Parking

The above chart indicates a reduction of approximately 30 parking spaces in the Crown Point East and Homeside Neighbourhoods.

Alley Crossings in Trail Segments:

Recommendations for alley crossings for these segments include changing trail alignments to avoid pedestrians walking across drainage structures, installing heavy duty pavements in the crossing areas to reduce future pavement settlement, and ensuring that crossings are barrier-free.

Consideration may be given to alternative ways of signalling to drivers, such as through the use of natural boulders or other upright elements versus curbing to delineate vehicular pavements. This would need to be evaluated during the detailed design stage. Although the introduction of natural materials (such as boulders) was seen to be beneficial and in keeping with the Master Plan Vision; there were concerns expressed with respect to maintenance, snow clearing, and the possibility of loitering.

Figure 33: Example of Alley crossing, OMC photo

Proximity to Residential Properties:

The existing pathway generally is intended to be in the centre of the 20m wide corridor and the gentle meanders provide a pleasant walking experience. From Main Street to Barton Street, the underground pipes are generally located on the north side of the corridor. Positioning the Trail slightly north of centre would allow for new tree planting that is clear of the underground pipe infrastructure. This would be subject to investigations during detailed design.

9.8 Site Furnishings and Amenities

Generally, rest stops will be located near street crossings, to promote visibility and to discourage loitering after dark. Recommendations are that the city's park benches be placed in rest stop locations, with the exception of the Urban Nodes where upgraded site furnishings in keeping with the design, materials, and theming of streetscape would be selected. It is intended that each node reference the overall Trail theme, while including unique elements that identify it along the Trail. During community consultation sessions, the idea of donated memorial benches was proposed. These locations would be neighbourhood specific and would require coordination with other design features.

Drinking fountains are proposed to be located approximately one kilometer apart, with a total of five along the Trail. Drinking fountains should provide for accessibility, and include water bottle refilling spigots, and pet facilities at ground level. If these happen to be in proximity of the gardens, an additional spigot for watering the gardens was requested.

During detailed design, it will be necessary to review future garden initiatives with community volunteers, with respect to provision of water for gardening activities. The Pollinator garden installed in June 2015 is a candidate site, as well as the

Crosthwaite Avenue site for the Garden of Useful Delights.

9.9 Waste

Concerns regarding waste and illegal dumping have been expressed by residents. Existing portions of the Pipeline Trail are currently being maintained and waste is being collected by city staff. City-wide recycling is currently not an option for parks and trails but is being investigated.

Public education is an important component with respect to the use of recycling bins in parks and trails. In the City of Hamilton, only parks that have on-site full time staff provide recycling options to residents. A team of by-law staff are reviewing the issue of illegal dumping on the Pipeline Trail. As an interim solution staff will investigate areas of the trail that are prone to illegal dumping and will install signage or additional receptacles as necessary. There has been success with Adopt-A-Park program in keeping other City of Hamilton parks litter-free.

It is anticipated that as development of the Pipeline Trail progresses waste and illegal dumping will be reduced when members of the public observe that the trail is being cared for by staff and community trail stewards.

Trail users have requested dog waste receptacles and waste and recycling bins that are more aesthetically pleasing and/or include thematic elements, to be placed on the Pipeline Trail. During detailed design and based on available capital and operation budget, consideration will be made to this request.

9.10 Lighting

Three lighting concepts were explored by the Electrical Consultant. They were standard City of Hamilton park fixtures, solar powered LED, and conventional LED. The design recommendation was conventional LED as the most cost-effective and efficient.

Due to the proximity of residential properties, the standard park lighting fixture was not preferred, as it is intended for a wider light distribution.

The conventional LED fixture has a narrower light distribution and is Dark Sky compliant.

Refer to Appendix 2 for the complete Lighting Report.

9.11 Trail Segments

General Design Recommendations:

Re-grading of existing berms will be required for all segments which are proposed to have LID elements such as rain gardens or bioswales. At the time of detailed design, re-grading will enable the development of appropriate slopes and flatter areas for temporary water storage. Trail segments with existing catch basins have been identified as candidate sites for Low Impact Development since bioswales are not intended to store storm water, only to slow it down before it enters the municipal system.

A review was undertaken of all trail/street crossings for optimization of 90 degree orientation. It was determined that this is not feasible in all locations. Therefore, each crossing will require evaluation at the time of detailed design.

a) Main Street East to London Street North (Refer to Drawing L1)

Refer to Urban Node No. 9.1.a (Ottawa Street Trail Head, page 34) for design recommendations for this segment.

b) London Street North to Edgemont Street North (Refer to Drawing L1)

The trail entrance on the east side of London Street North requires review at the detailed design stage. The entrance is unusually wide and reads as a vehicular entrance that provides for alley access. There is no differentiation between public and private space at this location, due to the presence of a private driveway immediately to the south and adjacent to the vehicular access for the alley. Realignment of the trail entrance northward is difficult at this location since it will skew the alignment between this entrance and the trail segment on the west side of London Street.

It would be beneficial to create a pedestrian access to the north, to serve trail users entering from London Street, however it will not address the alignment issue.

This segment includes an alley crossing.

Design recommendations include:
- natural boulders, curbing or other vertical elements to delineate vehicular space at alley crossing
- additional tree planting along south side of trail
- removal of parking spaces on both sides of Edgemont Street North
- implementation of LID techniques as facilitated by the presence of an existing catch basin

c) Edgemont Street North to Park Row North (Refer to Drawing L1)

This segment is the location of the first community garden known as Pollinator Paradise, installed in June 2015.

Design recommendations include:
- realignment of the trail toward the north where possible, to facilitate tree planting south of the trail, with the exception of the community garden space
- review of 90 degree street crossing at Park Row North
- realignment of pedestrian trail away from existing catch basin at vehicular/pedestrian crossing
- implementation of LID techniques as facilitated by the presence of an existing catch basin

d) Park Row North to Province Street North (Refer to Drawing L1)

This segment includes pedestrian access points on three streets: Park Row, Province, and Dunsmure. The Trail briefly leaves the corridor at the intersection, re-joining it on the east side of Province Street. Street crossing is 90 degrees through the intersection.
Design recommendations include:
- planting at all street entrances should community gardeners be able to install and maintain them
- bench/rest stop location to be determined after consultation with nearby residents
- community art initiative – artistic treatment of traffic box to reflect Pipeline Trail theme of Water Innovation and Infrastructure
- pedestrian improvements to the crossing with natural boulders, curbs or other vertical elements to delineate vehicular space at alley crossing

- implementation of LID techniques as facilitated by the presence of two existing catch basins
- street tree planting along Dunsmure road allowance
- at the detailed design stage, consideration should be given to providing pedestrian access only from Dunsmure, since it appears that the alley is not used. Consultation with the affected homeowners would need to occur prior to restriction of vehicles
- parking restrictions are recommended on the east side of Park Row, north of the Trail.

e) Province Street North to Graham Avenue North (Refer to Drawing L1)

This is one of the shorter trail segments, however, it is significant as it provides for a potential pedestrian link between The Honourable Bob Mackenzie Park, (formerly known as Crown Point East Park) and Queen Mary School, through the alley. This segment includes an alley crossing that is not curbed. There is little or no vegetation in this segment.

Design recommendations include:
- pedestrian improvements at the crossing with natural boulders, curbs or other vertical elements to delineate vehicular space
- implementation of LID techniques such as permeable pavements, bioswales and raingardens as facilitated by the presence of an existing catch basin
- tree planting in accordance with overall planting recommendations
- planting at the large turf-covered triangle on the northeast corner of Dunsmure and Province, should community gardeners be able to install and maintain them. Planting should not exceed a mature height of 0.6m
- the addition of a large flat rock at this location would provide interest as well as an informal rest stop
- parking restrictions are recommended on the west side of Graham Avenue, north of the Trail

f) Graham Avenue North to Houghton Avenue North (Refer to Drawing L2)

This segment is devoid of vegetation, with the exception of turf grass.

Design recommendations include:
- realignment of the trail toward the north where possible, to facilitate tree planting south of the trail
- to facilitate a 90 degree street crossing at Graham Avenue North
- parking restrictions are recommended on both sides of Houghton Avenue, north and south of the Trail
- implementation of LID techniques as facilitated by the presence of an existing catch basin

g) Houghton Avenue North to Wexford Avenue North (Refer to Drawing L2)

A 90 degree street crossing at Houghton Avenue is not achievable due to the configuration of adjacent private driveways. This trail segment is completely devoid of vegetation, with the exception of turf grass.

Although there is no apparent vehicular access in this segment, parked vehicles and equipment were observed on the north side of the trail corridor.

Design recommendations include:
- realignment of the trail toward the north where possible to allow sufficient space for tree planting south of the trail

(based on the location of the underground infrastructure. This requirement pertains to all trail segments.)
- parking restrictions are recommended on Wexford Avenue on both north and south sides of the Trail
    - review of apparent vehicular access into this segment

h) Wexford Avenue North to Huxley Avenue North (Refer to Drawing L2)

This Trail segment includes A. M. Cunningham Parkette, and vehicular access to garages at the rear of residential properties. It is devoid of trees with the exception of one young tree in the Roxborough Avenue road allowance. A 90 degree street crossing at Wexford Avenue North is not achievable due to the configuration of adjacent private driveways.

This segment of the Trail would greatly benefit from additional tree planting, since there is no provision for shade in this area. It is necessary that children in outdoor play areas have access to shade.

The existing play equipment area is visually prominent due to the configuration of the surrounding roads. Consideration should be given to upgrading the chain link fencing at this location to ornamental metal.

The community had requested the addition of a swing at this location.

Design recommendations include:
- realignment of the trail toward the north where possible, to facilitate tree planting south of the trail
- investigation of a swing that will fit into the available space
- benches oriented toward the play space
- improvements to the southwest corner of the intersection of Roxborough and Huxley to include shade trees, seating, and site furnishings
- consideration for a future community garden in the area along the Huxley road allowance shown below

Figure 34: View looking west from Roxborough Avenue, OMC photo

Figure 35: View of street frontage on Roxborough Avenue, OMC photo

i) Kenilworth Avenue North to Crosthwaite Avenue North (Refer to Drawing L3)

Refer to Urban Node No. 9.1.b, page 34 for design recommendations for this section.

The eastern end of this segment is the site of a proposed community garden – The Garden of Useful Delights. The presence of two catch basins near Crosthwaite Avenue makes this segment an ideal candidate site for implementation of LID techniques such as permeable pavements and bioswales.

j) Huxley Avenue North to Kenilworth Avenue North (Refer to Drawing L3)

This segment of the trail follows Roxborough Avenue. A safe crossing at the west end of the driveway entrance to the fire station is required, in addition to wayfinding elements to direct trail users toward the north side of the Fire Station Parking lot. This location is preferred by Fire Station staff due to the movement of emergency vehicles entering and leaving the site and site specific circulation.

Should this connection be pursued, the recommendations for the Fire Station parking lot would be similar to those at Main and Ottawa Streets, with respect to enhanced pavement, thematic elements, parking lot re-design and artistic ground elements.

k) Crosthwaite Avenue North to Garside Avenue North (Refer to Drawing L3)

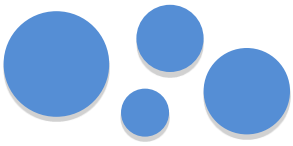
Design recommendations include:

- realignment of the trail toward the north where possible to allow sufficient space for tree planting south of the trail based on location of underground infrastructure
- planting of canopy trees along Cannon Street frontage
- inclusion of wayfinding elements at both ends of this segment of the Trail (since it leaves the corridor at this location and continues along Cannon Street, leaving a gap in the trail connection).
- implementation of LID techniques as facilitated by the presence of an existing catch basin north of the existing Trail
- development of the southwest corner of the intersection of Garside Avenue and Cannon Street East to include shade trees, seating, and site furnishings
- consideration for design, installation and maintenance by city staff for a planting bed (similar to that found in other areas of the city, in medians or roadsides) along the Cannon Street frontage, as shown in Figure 36 below:

Figure 36: View of intersection looking east, OMC photo

l) Garside Avenue North to Barons Avenue North and Andrew Warburton Memorial Park (Refer to Drawing L4)

Design recommendations include: wayfinding elements from the intersection of Garside Avenue and Cannon Street to the crosswalk south of the Andrew Warburton Memorial Park entrance (the trail has a gap at this location, and the connection is via the municipal sidewalk).



Refer to Section 9.1.d, page 36 for additional design recommendations for this area.

m) Andrew Warburton Memorial Park at Tragina Avenue North and Cope Street, Allan Avenue (Refer to Drawing L4)

In addition to the improvements indicated along the Britannia Street frontage of Andrew Warburton Park, it is noted that the Trail corridor touches the intersection of Allan Avenue and Cope Street, on the north side of the park. Wayfinding elements and a rest stop are proposed at this location. Wayfinding elements are recommended through the park to help trail users easily locate the trail.

It is recommended that future park redevelopment initiatives consider the Pipeline Trail as an important feature to be integrated into any park improvements or re-design.

n) Tragina Avenue North to Weir Street North (Refer to Drawing L5)

The corridor widens at this location. This provides opportunities for additional tree planting and a re-assessment of vehicular requirements. Clear views into the space suggest that a rest stop/bench and drinking fountain might be feasible at the eastern end of the segment.

Design recommendations include:
- replacement of asphalt pavement at the northeast end of the Trail segment with tree planting after detailed review of the adjacent alley and after consultation with affected residents
- tree planting along south side of trail
- pedestrian and vehicular surfaces are clearly defined in this segment through the use of curbs on the vehicular areas
- replacement pavements should continue this practice provided that pedestrian crossings are accessible and prioritized.
- drinking fountain to be installed
- bench to be placed near drinking fountain
- implementation of LID techniques as facilitated by the presence of existing catch basins

o) Weir Street North to Fairfield Avenue (Refer to Drawing L5)

In this segment of the trail, the underground pipes are indicated to be approximately in the centre of the corridor. No major trail realignment is proposed, although this might be re-visited at the time of detailed design when locates will be available

Design recommendations include:
- realignment of the trail to improve the crossing at Weir Street North
- tree planting where feasible
- implementation of LID techniques as facilitated by the presence of existing catch basins

p) Fairfield Avenue North to Paling Avenue (Refer to Drawing L6)

Design recommendations include:
- tree planting
- new bollards to be installed in configurations that are suitable for cyclists as well as pedestrians
- bollards in pathways should be of high visual contract, preferably a colour which will differentiate them from the surrounding grey coloured pavements. Consideration should be given to new bollards (in all locations on the Trail,

where required) that provide a colourful contrast and reflect the overall theme of the Trail

Figure 37: Paling Avenue, OMC photo

- parking restrictions are recommended on Fairfield Avenue, east side, south of the trail crossing
- implementation of LID techniques as facilitated by the presence of existing catch basins

q) Paling Avenue to Strathearne Avenue to Shelby/Barton Streets (Refer to Drawing L6)

Refer to Urban Node 9.1.c. (page 35) for design recommendations for this area.

There is an existing pathway (packed earth created by pedestrian traffic) from the trail crossing at Strathearne Avenue through the hydro easement, where pedestrians exit slightly north of the Shelby and Barton Street intersection. The Pipeline corridor crosses through the southeast corner of the intersection; however, the trail is inaccessible since this portion is occupied by the parking area for the commercial property at that location.

Cyclists are diverted along the cycling route on Melvin Avenue, where they may turn northward toward Mahoney Park. There is an existing traffic signal at the intersection of Barton Street East and Walter Avenue North that facilitates crossing of Barton Street by cyclists.

At the Shelby Avenue & Barton Street intersection the Pipeline corridor crosses Barton Street diagonally and enters industrial properties. These properties are inaccessible to the public. Therefore the Trail route has been indicated from Shelby Avenue, along the municipal sidewalk on the south side of Barton Street, a distance of approximately three blocks. A traffic signal at Walter Avenue North facilitates crossing Barton Street to the entrance to Mahony Park for both pedestrians and cyclists.

Additional design recommendations include:

- parking restrictions on Paling Avenue on the both sides, south of the Trail crossing
- implementation of LID techniques as facilitated by the presence of existing catch basins

r) Barton Street through Mahony Park (Refer to Drawing L8)

The pipeline corridor is located immediately north of Mahony Park's property line through an industrial property.

Although a route has been considered for the trail within the park immediately south of the property line, it would involve traversing the warning track of the northern ball field. There are concerns with respect to sight lines and personal safety should trail users be in the park at times when it is sparsely populated or not in use. The principles of Crime Prevention Through Environmental Design (CPTED) do not recognize lighting in remote areas as a solution for personal

safety issues. The recommendation for the trail in the short term, would be its continuation along the southern end of Mahoney Park.

There are locked gates at the east end of the park and the pavement is signed as a designated fire route.

The existing park entrance does not contribute positively to the streetscape.

Design recommendations include:

- Provision of a pedestrian connection at the southeast corner of Mahoney Park to facilitate accessible passage safely through the parking lot toward Adeline Avenue

Figure 38: Potential pedestrian access at south end of the park, OMC photo

- provide streetscape improvements and seating at the park entrance at Barton Street
- provide tree planting along the Barton Street frontage and west side of Adeline Avenue
- consider upgrading fencing along Barton Street from chain link fencing to ornamental metal fencing

There is a worn pathway created by pedestrians travelling between the intersection of Adeline Avenue and Mahoney Avenue and the field house at Barton Street where there are openings in the chain link fence. There is no recommendation to formalize this pathway as it traverses the southeast ball field.

s) Mahony Park to Parkdale Avenue & Parkdale Avenue to Burgess Street (Refer to Drawing L9)

This segment reverts to the street system since the Pipeline corridor in this location is through inaccessible industrial lands. Therefore, a short term solution is proposed. The Master Plan recognizes that rerouting does not take away from the significance of the trail. From the intersection of Mahony Avenue and Adeline Avenue the trail turns east along Mahony Avenue and then northward along Parkdale Avenue. At Brampton Street the trail turns eastward toward the intersection of Brampton Street and Burgess Avenue.

Although there is a physical link through the industrial property immediately north of the railroad tracks on Parkdale Avenue; it is not recommended in the short-term that this be considered for trail use.

All industrial properties along the corridor share the same issue: that of existing agreements that preclude public access. The long term Vision may be realized in future when land uses/agreements might change.

Although it is not gated, the presence of loading docks and large trucks moving through this space preclude it as a safe route for pedestrians and cyclists. A lack of visual surveillance and good sight lines is a concern. The provision of pedestrian lighting in this area would be difficult for the operation of the paved area as a loading area.

Therefore, it is recommended that the trail follow the municipal street system along Parkdale Avenue and Brampton Street to the intersection of Brampton Street and Burgess Avenue.

Design recommendations include:
- wayfinding elements along municipal sidewalks
- pedestrian activated signal at Brampton and Burgess

Figure 39: Industrial Route, Google Earth photo

t) Rail crossing at Parkdale Avenue (Refer to Drawing L10)

On a preliminary basis, the feasibility of an elevated pedestrian crossing at the railway tracks was investigated at the request of community members. A recently constructed crossing along a trail in Milton Ontario was used as a precedent project. It was determined that at this time there is insufficient space for this type of crossing. A brief description of the Milton Pedestrian Bridge is found in Appendix 3a. The required detailed investigation for a significant crossing of this type is beyond the scope of this Master Plan. Should this be desired in future, a detailed study would be required in order to fully explore its feasibility and examine alternatives.

The following trail segments, from Brampton Street to Grace Avenue, referred to as "undeveloped segments" exhibit a soft, natural quality that differs from other segments of the Trail.

Retention of the unmanicured appearance of these segments versus the manicured turf found farther west on the Trail is an issue that will need to be carefully explored at the time of detailed design with nearby residents and other trail users. While some may support a naturalized approach, others have expressed the sentiment that the lands are not cared for and maintenance levels do not match those found in other neighbourhoods associated with the pipeline corridor.

Design recommendations for these segments also include compacted granular or permeable pavement in recognition of the Vision of environmental stewardship and the theme of water. This concept will also require careful review with nearby residents, trail users, and city staff with respect to future maintenance and accessibility issues.

Winter maintenance of porous or granular pavements is a consideration. Currently, the existing trail segments between London Street and Strathearne are paved with asphalt. They are cleared of snow by City staff during the winter months.

These segments are ideal locations for LID practices to be determined during detailed design.

u) Brampton Street and Burgess Avenue to Knox and Mead Avenues (Refer to Drawing L12)

The presence of mature trees both on the trail and at the adjacent Brampton Street Park contribute to the soft natural quality of this segment. Of significance to the Parkview West neighbourhood is that the corridor currently provides access to local stores and bus stops and marks the point where industrial lands end and residential properties begin.

Design recommendations include:
- asphalt, permeable or fine granular pavement, 3.0m in width
- re-grading or raising pathway as necessary to correct drainage and addition of catch basins as determined during detailed design
- 1.0m mowing strip adjacent to pathway if area is allowed to naturalize.
- pruning of selected trees to improve sight lines
- removal of dead trees
- additional tree planting
- rest stop with paving and seating at the south east corner of the intersection of Brampton and Burgess

v) Knox Avenue to Tate Avenue (Refer to Drawing L13)

At the intersection of Knox and Mead, the trail briefly joins the municipal sidewalk to facilitate 90 degree crossings, as the trail returns to the corridor and continues eastward toward Glow Avenue.

Design recommendations include:
- Asphalt, permeable or fine granular pavement, 3.0m in width
- re-grading or raising pathway as necessary to correct drainage, and addition of catch basins
- 1.0m mowing strip adjacent to pathway if area is allowed to naturalize
- pruning of selected trees to improve sight lines
- removal of dead trees
- tree planting on the southeast side where feasible to strengthen existing tree canopy.

w) Glow and Tate to Dunn Avenue; and Tate Avenue to Dunn Avenue (Refer to Drawing L13)

This is a short segment of Trail with good sight lines. At the southeast corner of the intersection of Tate and Glow Avenues, the Pipeline corridor crossing provides an opportunity for a seating area/rest stop. There are bus stops in the near vicinity, and surrounding residences. The design concept for this corner is to pave as little as possible in order to enhance and increase the existing tree canopy and soft landscaped areas in this location.

Design recommendations include:
- concrete pavement at corner sufficient for accommodation of site furnishings
- tree planting
- pruning and care of existing trees
- benches (a member of the community has inquired about donating a memorial bench at this location).

Figure 40: View toward seating area location, OMC photo

x) Dunn Avenue to Grace Avenue (Refer to Drawing L13)

This segment is the final undeveloped portion of the Pipeline Trail. It terminates at Grace Avenue at an industrial property that is currently inaccessible to the public. There are two existing off-trail linkages at this time: northward along Dunn Avenue to Leaside Park and returning to Woodward Avenue, or eastward along Glow Avenue, north on the west side of Woodward Avenue to the existing unsignalized pedestrian crossing. Various options were offered by community members with respect to connectivity through the industrial properties along Woodward Avenue. Detailed design will determine the most appropriate alignment for the pathway with close consultation with the neighbourhood.

Design recommendations include:

- tree planting
- asphalt, permeable or fine granular pavement, 3.0m in width
- 1.0m mowing strip adjacent to pathway if area is allowed to naturalize

y) Grace Avenue to Woodward Avenue (future) (Refer to Drawing L13)

In future if access is established through the industrial property east of Grace Avenue a new crossing would be implemented at the point where the corridor crosses Woodward Avenue.

The existing Woodward Avenue pedestrian crossing would be moved south, with a pedestrian activated signal. The location for this crossing appears in Appendix 1, (report by CIMA+).

Figure 41: Woodward Avenue, existing pedestrian crossing

z) Museum of Steam and Technology (Refer to Drawings L15 and L16)

The Museum site is a major destination on the Pipeline Trail. Facilities include a picnic area, parking, and washrooms that are open in conjunction with Museum hours of operation. It is the only location on the Trail with public washrooms.

Museum staff have identified a restoration plan that is being developed for their site and have participated in discussions regarding this Master Plan. There is potential for partnering with them to further discuss site elements that would enhance both their site and the Pipeline Trail. Community members have

expressed interest in "telling the story of the Waterworks of 1859 along the trail" and requested consideration for having elements referencing the Pipeline Trail, such as public art, wayfinding elements and mapping, included in the Museum site restoration plan.

The immediate area surrounding the Museum site provides for connectivity to other trail systems, such as the Red Hill Valley Trails and QEW Pedestrian Crossing (the Red Bridge), the Waterfront Trail toward the north, and the multi-use along Woodward Avenue near the Waste Water Treatment Plant.

A coordinated approach between the Pipeline Trail development and the Museum site restoration work has potential to enhance tourism in Hamilton.

10. Community Initiatives to Date

Community gardening initiatives commenced with the planting of the first garden, called Pollinator Paradise, on the trail section between Edgemont and Park Row with a focus on native plant materials. A small triangular area at Edgemont, near the sidewalk has also been planted with mixed ornamental and native species.

A second garden has been planned at the eastern end of the trail segment between Kenilworth and Crosthwaite Avenues. This garden is called the Garden of Useful Delights.

Community gardens are valuable opportunities for education. This is particularly relevant with respect to younger gardeners or community members who would like to learn how to garden. A mentoring program would be beneficial for the long term continuation of community gardening on the Pipeline Trail.

Figure 42: Community Planting, June 2015 "Pollinator Paradise", photo provided by Pipeline Trail group

The Pipeline Trail Planning team meets monthly and together with other residents coordinates different initiatives. The following are some of the highlights:

2014

- Jane's Walk (May 3 and 4)
- Pipeline Trail Parade (September 20)

2015

- Jane's Walk (May 2 and 3)
- Garbage Pick-Up Days (May 1)
- Garden Planting - 100 in 1 Day Festival (June 6)
- Pipeline Trail Parade (September 26)

Figure 43: Pipeline Trail Parade 2015, City of Hamilton photos

For the past two years, the Pipeline Trail Planning team and the community have celebrated the essence of the Trail at a parade in September. The parade starts at the Urban Node on Kenilworth Avenue for greetings, and then proceeds along the trail to Ottawa Street. Celebrations include home baked treats and music. It is a festive event, with some participants attending in costume.

11. Implementation Strategies

A – Short Term 2016 - 2021
B – Medium Term
C – Long Term

Walkability

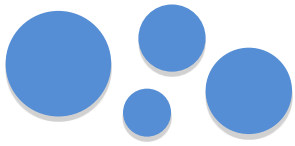
- **A:** Design and implement paved trail surfaces Brampton Street to Grace Avenue
- **A:** Conduct an inventory. Re-design and replace existing trail walkways. Trail walkways need to be made safe and accessible throughout entire length. Establish a standard width, material layout. *Commence replacements with worst cases first*
- **C:** Investigate opportunities for industrial trail (Orlick); Grace Avenue to Woodward and PXO; Parkdale to Brampton segment (Parkdale to Rennie is loading dock facility)

Infrastructure

- **A:** Remove billboard sign and investigate opportunities to replace with trees, benches and wider sidewalks at Cannon/Britannia intersection
- **A:** Investigate opportunity to paint utility box at Province and Dunsmure
- **A:** Investigate and design trail pavement replacements (ongoing) (see Walkability section)
- **A:** Investigate and implement new site furniture
- **B:** Investigate opportunities to improve bus stop/shelter. Coordinate with HSR and Road projects
- **B:** Investigate and implement replacement lighting
- **B:** Install drop curb ramps throughout 6.0km length where required as part of component segments to AODA/City of Hamilton Accessibility Standards

Connections

- **A:** Investigate trail entrance on London Street toward a re-design that includes a dedicated pedestrian entry
- **A:** Investigate Pipeline crossing of Kenilworth. *The project will pursue a crossing through detailed design (once the Kenilworth Avenue classification is determined in conjunction with other City initiatives).*
- **A**: Investigate and design urban node at Kenilworth Avenue – Tim Horton's. Crossing at Fire Station. (under staff review)
- **A:** Investigate opportunities for segment between Paling & Strathearne to create a node near Indwell site
- **B:** Investigate and design pedestrian connection at Mahony Park/east side
- **B:** Investigate and design appropriate pedestrian crossing at Parkdale tracks pending funding and legal requirements
- **B:** Investigate connection to the Red Hill Valley trail through the vicinity of the Museum of Steam &Technology (pending investigation of security



requirements & coordination with Water/Wastewater facility upgrades)
- **B:** Investigate and design connection from Escarpment Rail Trail to Lawrence Road
- **B:** Improve alley entries to the trail

Planting/Greening Corridor
- **A:** Investigate opportunities for pollinator garden at Brampton Street medians from Strathearne to Woodward
- **A:** Investigate opportunities for planting areas London-Edgemont / identified community initiative
- **A:** Find opportunities for planting – trees, shrubs, perennial wildflowers

Park Improvements
- **A:** Investigate and design features / environmental art (i.e. mounds as artistic landscapes)
- **A:** Investigate and design shade elements at A.M. Cunningham Parkette
- **B:** Investigate and design new entrances at Andy Warburton & Mahony Parks (all street frontages)

Wayfinding
- **A:** Investigate and design cost-effective ground markings to identify the trail, particularly where it diverges from the actual pipeline location (art in public places), possibly in conjunction with re-paving
- **A:** Investigate and design permanent vertical wayfinding elements
- **B:** Implement trail signage pending outcome of City Wayfinding Study

Public Art
- **A:** Determine opportunities for public art
- **A:** Explore permanent art pieces
- **B:** Implement public art

All the elements identified through the process are subject to capital budget funding and Council approval. A cost estimate was completed for all **A** items which resulted in an approximate total of $3,000,000 for construction and $500,000 for design.

Appendices

1. CIMA Recommended Treatments
2. exp Lighting Report
3. Precedent Projects
    a. The Canadian Pacific Railway Pedestrian Bridge
    b. Urban Trail Examples
4. Future Considerations

Reference Documents

1. City of Hamilton's Lower City Wayfinding – Phase 1
2. Barton-Kenilworth Avenue Commercial Corridor Study
3. Hamilton Recreational Trails Master Plan (2007)
4. Hamilton Public Art Master Plan
5. Hamilton Cycling Master Plan
6. Ch2olera, Hamilton's Forgotten Epidemics, D. Ann Herring and Heather T. Battles, ISBN 978-0-9782417-4-2
7. Socioeconomic Impact of Revitalizing the Pipeline Trail in The Crown Point Neighbourhood: Community Dissemination Report, Emily Fuller et al, November 28, 2014, McMaster University project
8. Crown Point Walkability Action Plan Report, Kendra Machin et al, March, 2012, McMaster University project
9. Accessibility for Ontarians with Disabilities Act, 2005
10. City of Hamilton Barrier-Free Design Guidelines, 2006
11. City of Hamilton Active Transportation Benchmarking Program
12. City of Hamilton, Shifting Gears, 2009
13. Hamilton's First Pumphouse, Hamilton Museum of Steam and Technology
14. Canada's Historic Places, www.historicplaces.ca
15. Hamilton's Active Transportation Benching Program, www.hamilton.ca/mapping-business-reporting/activity-reports/active-transportation-benchmarking-program