



Central Transit Corridor (CTC) Monitoring Program
Kitchener-Cambridge-Waterloo

MONITORING CHANGE IN THE CTC 2016 REPORT



Region of Waterloo

ACKNOWLEDGMENTS

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1 Background

1.1 Summary

The Region of Waterloo has recognized the importance of monitoring change in the Central Transit Corridor (CTC) over time in order to understand the changing nature of the social, economic and environmental characteristics of the corridor. The CTC monitoring program is a multi-year project to monitor the corridor from the baseline year of 2011 until at least 2021, after ION has been constructed, opened for service, and is functioning within the community. A total of 16 baseline indicators were chosen, as well as themed indicators, for their ability to comprehensively describe key aspects of the corridor. The indicators provide a lens for monitoring activity in the corridor, as well as the protection of the community's important assets, such as heritage resources and affordable housing. Further, through a partnership with the University of Waterloo, the influence of rapid transit on urban growth and land use changes is being explored.

1.2 About ION

ION, the Region of Waterloo's rapid transit service, which was approved by Council in June 2011, is a visionary plan that will help shape our community for the future by bringing LRT to the region in two stages. Stage 1 includes a 19 kilometre LRT route from the Conestoga Mall transit terminal in Waterloo to the Fairview Park Mall transit terminal in Kitchener. Construction of ION LRT is underway, with the service set to launch in 2018. Stage 1 also features a 17 kilometre route of BRT from the Ainslie Street transit terminal in Cambridge to the Fairview Park Mall transit terminal in Kitchener. ION BRT service began operating in September 2015. Stage 2 ION will see the Region replace the BRT line with LRT, creating a seamless LRT route across the community's three urban centres.

More information about ION can be found in the Region of Waterloo's ION Story report:

<http://rapidtransit.regionofwaterloo.ca/en/resourcesGeneral/ION-Story-Fall-2016-access.pdf>;

and at the project website:

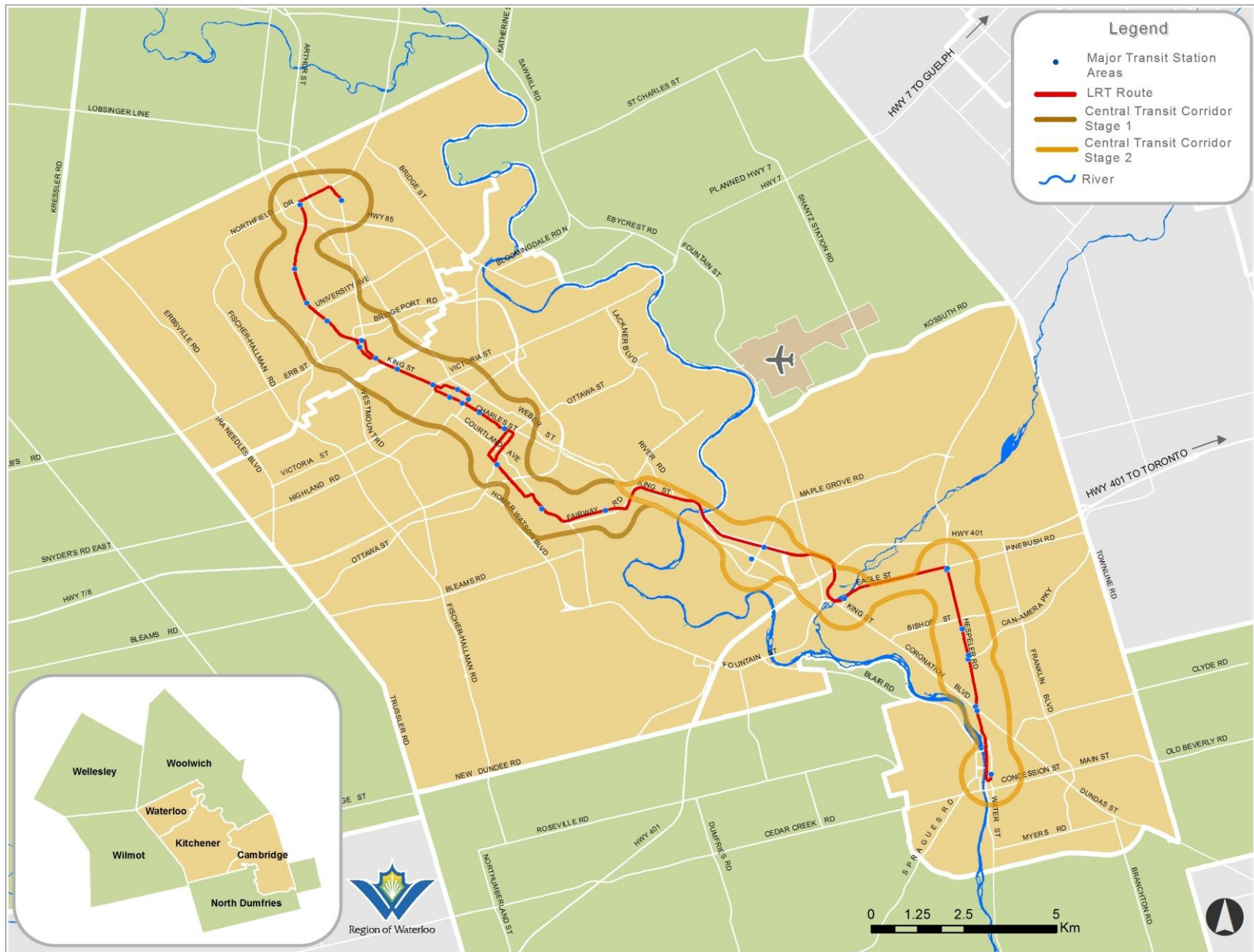
<http://rapidtransit.regionofwaterloo.ca/en/index.asp>.

Along with ION, GRT will create an efficient, integrated, easy-to-use public transit system for all residents in Waterloo Region. New iXpress routes will be added for convenient crosstown travel, local bus service will be increased along with improved frequency in neighbourhoods, and there will be one fare for all GRT and ION services. An expanded network of trails and paths for cycling and walking will also complement the ION and iXpress bus routes and allow for connections between transportation modes.

1.3 The ION Central Transit Corridor

The Central Transit Corridor (CTC) is the area within approximately 800 metres of ION rapid transit stops, and the lands connecting these, to form a continuous corridor (Map 1). The 800-metre distance is generally accepted as the length people will walk (roughly 10 minutes) to access rapid transit. The CTC connects the three Urban Growth Centres (UGCs) of downtown Cambridge, downtown Kitchener and uptown Waterloo, as well as 23 rapid transit station areas. The geography of the CTC includes areas within the corridor that are expected to re-urbanize over time by incorporating the station area planning work that the Area Municipalities are undertaking, including secondary plans, as well as pre-established boundaries such as roads, rivers, property boundaries, and statistical boundaries already being used for monitoring.

Map 1 – Central Transit Corridor



2. The Central Transit Corridor Monitoring Program

2.1 Purpose of the Monitoring Program

Since Council's commitment to implement Light Rail Transit (LRT) in 2011, the Region of Waterloo has recognized the importance of monitoring change in the Central Transit Corridor (CTC) over time. The new rapid transit system will do more than just increase transit access throughout the Region. It also creates an opportunity to build healthy and vibrant communities along the route. The Central Transit Corridor Community Building Strategy (CBS) published on December 3, 2013, recommended how the community should grow around rapid transit stations. It also included a recommendation to establish and implement baseline metrics pertaining to transit investment in the Central Transit Corridor and to report back to Council with periodic updates. The CBS has also informed the development of the monitoring program, and continues to guide planning initiatives directed towards achieving the community-building goals of ION.

2.2 Monitoring ION's Goals

To monitor ION's two goals of moving people and building community, the monitoring program for the CTC explores the changing social, economic and environmental state of the Region's rapid transit corridor, by using data to look at the various ways the CTC is being transformed by ION. A total of nine dimensions are explored as shown in Table 1.

2.3 Baseline and Annual Indicators

For each dimension, one or more indicators have been chosen. These indicators will be collected and reported on annually. In total, sixteen indicators have been developed through the CTC Monitoring Program. Some of the baseline indicators cannot be measured each year due to constraints in data availability. A total of 12 of the 16 baseline indicators are updated annually.

Table 1. Goals, Dimensions and Indicators

Goal	Dimension	Indicator	Metric
Moving People	Mobility	Transit Ridership	Number of trips made using Grand River Transit (million)
		Daily Transit Activity	Per cent of daily average transit activity which occurred in the CTC
	Sustainable Modes of Transportation	Transit Mode Share	Per cent of mode of travel share which was on transit across the CTC
		Active Transportation	Per cent of mode of travel share which was pedestrian and cyclist in the CTC
		Walkability	Per cent of population living in "high" or "very high" walkable areas in the CTC
Building Community	Vibrant Communities	Land Use Mix	Per cent of all regional land uses which were found in the CTC
		Population	Per cent of Region's residents who live in the CTC
	Art and Culture	Cultural Vibrancy	Number of arts and culture establishments in the CTC
		Restaurants	Per cent of the Region's restaurants in the CTC
	Heritage	Heritage Resource Retention	Number of demolition permits on pre-1920 and designated built heritage resources in the CTC
	Investment	Building Activity	Dollar value of building permits in the CTC for new construction (million)
		Assessment Value	Assessed value of properties in the CTC (billion)
	Environment	Emissions	Tonnes of net air emissions per capita in Cambridge, Kitchener and Waterloo
	Crime and Safety	Perception of Safety	Per cent of people in Cambridge, Kitchener and Waterloo who perceive that their downtowns are safe at night
		Calls for Service	Per cent of police calls for service which were related to potential public perception in the CTC
	Inclusive Community	Home Ownership Affordability	Per cent of housing transactions which were affordable to low and moderate income households in the CTC

2.4 Themed Indicators

Each year, new themed indicators will be created to present selected dimensions in a more robust way. In the previous report, published in 2016, the theme of focus was “the environment”. In this 2017 report, the dimension of focus is “investment” and two new indicators were developed: “transaction values”, and “building improvements”. The proposed schedule for future themes and some potential indicators are presented in Table 2. The schedule accounts for the time when data will be available for the indicators, such as the 2016 census transit mode share data that will be released in late November 2017, after the publication of this report. In 2021, a ten-year review of the indicators is proposed.

Table 2. Proposed Future Themes

Reporting Year	Dimension	Potential Indicator
2018	Mobility	Way-finding Vehicular Miles Efficiency
	Sustainable Modes of Transportation	Mode Share Active Mobility Connectivity Walkability
2019	Vibrant Communities	Density of Population and Employees Cultural Employment and Clustering Employment Density
	Art and Culture	Great Places to Visit Creative Public Spaces Public Art
	Heritage	Streetscapes
	Architecture and Design	High Quality Urban Places Surface parking lots
2020	Inclusive Community	Social Support Agencies Rental Affordability Perception of Safety
	Crime and Safety	Traffic Collisions
2021	10 Year Review	

3. Monitoring Results and Analysis

The CTC monitoring program will measure change through the various stages of implementation of ION, from Council endorsement (2011 – 2014), through construction (2015 – 2017), to service start (2018), and early operation (2019 - 2021). These stages are not discrete – for example, although ION was announced in 2011, there was anticipation of its approval by council in the years leading up to the final council decision. However, they are generally useful to consider to understand the changes occurring in the corridor.

The first report from the monitoring program was the Monitoring Change in the Central Transit Corridor – Baseline Report, dated November 17, 2015, which described key aspects of the corridor in the post-announcement period from 2011 to 2014. **Results from the baseline monitoring are summarized in Table 3.** Because construction of ION had not yet been started, these results did not reflect the direct effects of ION infrastructure, but may show indications of change in the CTC in anticipation of ION.

The second report in the program, Monitoring Change in the CTC - 2015 Annual Update, dated November 2016, provided a first look at the state of the CTC during the first full year of ION construction and an update on 12 of the 16 key indicators that could be measured annually. **Results from the annual monitoring data up to 2016 are included in Table 3.** That report also took a deeper dive on the first of the annual themes: the environment. **Results from the 2015 environment theme are summarized in Table 4.**

This third report in the program, Monitoring Change in the CTC - 2016 Report, provides another look on the state of the CTC as ION construction continued, as well as updates to 13 of the 16 key indicators that can be measured annually. This report also presents the second theme area: investment. **Results from the 2016 investment theme are summarized in Table 5.**

It is recognized that there are many factors that influence each of these indicators. The economy, policies, programs and political decisions at many levels of government are large influences on change in the Region, both inside the CTC and more broadly.

The CTC monitoring program will continue to measure and report on indicators until at least 2021. This provides an opportunity for a comprehensive review of the change happening in the corridor along the LRT route before, during, and after the construction and operation of ION. These metrics are important in helping to tell the story about the different ways ION is moving people and shaping the future of our communities.

Table 3. Indicators for the CTC Monitoring Program (2011 to 2016)

Goal	Dimension	Indicator	Metric	2011	2012	2013	2014	2015	2016
Moving People	Mobility	Transit Ridership	Number of trips made using Grand River Transit (million)	19.7	21.3	22.0	21.6	20.3	19.7
		Daily Transit Activity	Per cent of daily average transit activity in the CTC	67%	65%	67%	64%	63%	63%
	Sustainable Modes of Transportation	Transit Mode Share	Per cent of mode of travel share on transit across the CTC	-	-	-	-	5%	-
		Active Transportation	Per cent of mode of travel share which was pedestrian and cyclist in the CTC	5%	-	-	-	-	-
		Walkability	Per cent of population living in "high" or "very high" walkable areas in the CTC	55%	55%	56%	56%	56%	57%
Building Community	Vibrant Communities	Land Use Mix	Per cent of all regional land uses found in the CTC	69%	69%	69%	69%	69%	70%
		Population	Per cent of Region's residents who live in the CTC	17.5%	17.6%	17.7%	17.8%	17.9%	17.8%
	Art and Culture	Cultural Vibrancy	Number of arts and culture establishments in the CTC	192	-	-	-	-	271
		Restaurants	Per cent of the Region's restaurants in the CTC	50%	51%	52%	52%	52%	52%
	Heritage	Heritage Resource Retention	Number of demolition permits on pre-1920 and designated built heritage resources in the CTC	13	36	11	9	12	17
	Investment	Building Activity	Dollar value of building permits in the CTC for new construction (million, adjusted)	\$491	\$262	\$227	\$548	\$259	\$308
		Assessment Value	Assessed value of properties in the CTC (billion)	\$10.0	-	-	\$12.0	\$12.8	\$13.6
	Environment	Emissions	Tonnes of net air emissions per capita in Cambridge, Kitchener and Waterloo	2.52	2.42	2.40	2.57	2.61	2.54
	Crime and Safety	Perception of Safety	Per cent of people in the Tri-Cities who perceive that their downtowns are safe at night	65%	-	-	-	-	64% ¹
		Calls for Service	Per cent of police calls for service related to potential public perception in the CTC	40%	41%	43%	43%	42%	-
	Inclusive Community	Home Ownership Affordability	Per cent of affordable housing transactions to low and moderate income households in the CTC	55%	56%	53%	54%	57%	57%

¹ Although this indicator's data was meant to reflect 2016, the survey was actually conducted in spring 2017.

Table 4. The Environment in the CTC

Dimension	Indicator	Metric	Indicator Value
Environment (2015) ²	Trails and Pathways	Length of trails and pathways in the CTC	78 Kilometres
	Public Greenspaces	Area of public greenspaces in the CTC	398 hectares

Table 5. Investment in the CTC

Dimension	Indicator	Metric	2011	2012	2013	2014	2015	2016
Investment (2016)	Transaction Values	Dollar value of transaction values in the CTC (million, adjusted)	\$619	\$764	\$821	\$916	\$898	\$1,030
	Building Improvements	Dollar value of building permits for property improvements in the CTC (million, adjusted)	\$74	\$80	\$93	\$80	\$96	\$166

² For more information on the 2015 Environment thematic indicators including methodology and detailed results refer to the 2015 Monitoring Report available on the Region of Waterloo's website at: http://www.regionofwaterloo.ca/en/aboutTheEnvironment/resources/Monitoring_Change_in_the_CTC_2015_Report-access.pdf

3.1 Goal: Moving People

Together with public sector investments in the active transportation network and planned improvements to service levels and the regional transit network, the ION rapid transit system has the opportunity to greatly enhance mobility within and between Cambridge, Kitchener and Waterloo.

The year 2016 was characterized by construction of the LRT infrastructure in stage one of the corridor, and detours of many bus routes in that area. It is unlikely for the indicators measuring mobility to portray improvements in the CTC during the post-announcement and construction phases of ION. Nevertheless, monitoring these indicators will allow for tracking of travel behaviour change over the years since ION was announced, and after ION has been constructed, opened for service, and is functioning within the community.

3.1.1 Mobility: Total Transit Ridership

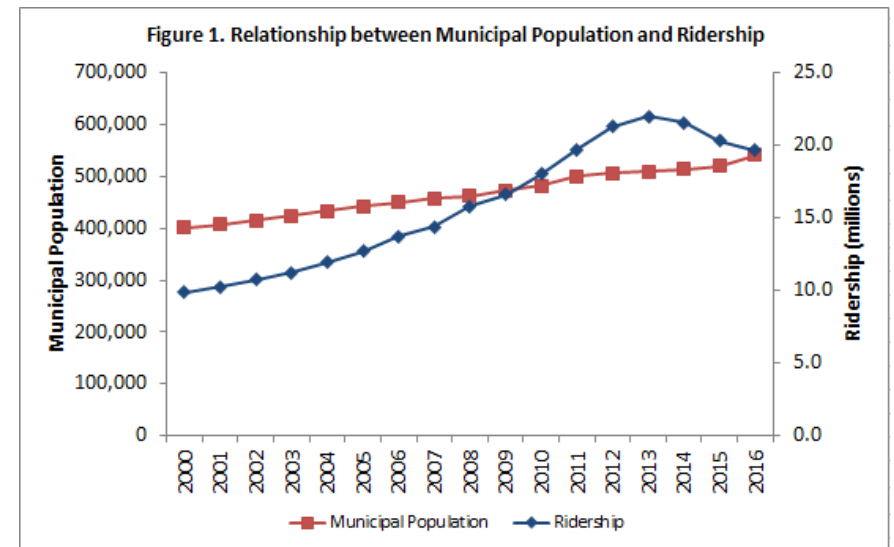
19,691,267 trips were made across Waterloo Region using Grand River Transit in 2016

Total transit ridership within the Region decreased by 30,699 trips between 2011 and 2016 to under 19.7 million trips, which is a return to ridership levels of 2011 (Table 1). On a per capita basis, the total transit ridership in the service area declined from 45.6 to 43.5 annual trips between 2011 and 2016. This indicates that on average, a person living in the service area would have taken 43.5 trips on the GRT in 2016.

Table 1. Total Transit Ridership per capita within the Transit Service Area from 2011 to 2016

	2011	2012	2013	2014	2015	2016	Growth (%)
Total Transit Ridership	19,721,966	21,274,042	22,000,737	21,596,989	20,327,109	19,691,267	0%
Municipal Population (for settlements with bus service)	500,700	505,920	509,445	514,611	520,670	541,395	8%
Transit Service Area Population	432,266	438,563	435,780	434,437	434,988	452,684	5%
Total Transit Ridership per capita (Service Area)	45.6	48.5	50.5	49.7	46.7	43.5	-5%

A decline in transit ridership was experienced in both 2015 and 2016, but at a much smaller rate in 2016. These ridership trends are consistent with those experienced by other transit authorities across Southern Ontario. As described in the Grand River Transit (GRT) Business Plan 2017-2021 Interim Report (TES-TRS-16-17, August 9, 2016), this recent decline was due to several factors: i) loss of school board funded high school trips; ii) service impacts due to construction detours; and iii) fare increases above inflation coupled with service reductions in 2013 and 2014. Other factors include lower fuel prices and perhaps some transit trips shifting to ride-sharing services. The significant decrease in the rate of decline in 2016 suggests the effects of these factors may already be lessening. With the completion of construction projects together with the planned service improvements in 2017-2021, ridership is expected to increase.³



³ For information on service improvements to the regional transit network and planned ridership growth strategy, please read the **GRT Business Plan 2017-21 Interim Report**: <http://www.grt.ca/en/aboutus/grtbusinessplan2017.asp>

3.1.2 Mobility: Total Daily Transit Activity

63 per cent of the daily average transit activity in the Region occurred within the CTC in 2016

In 2016, the daily transit activity, which is the number of people who boarded or got off a Grand River Transit (GRT) bus, was 114,625 within the CTC. Between 2011 and 2016, there was an overall increase of 6,334 riders (Table 1). Recent declines in daily transit activity can likely be attributed to several factors including localized service impacts influenced by construction detours within the CTC. The total daily activity outside the CTC has also slightly tapered.

Table 1. Total Daily Activity from 2011 to 2016						
Scale	2011	2012	2013	2014 ⁴	2015	2016
CTC	108,291	114,917	122,199	119,248	116,135	114,625
Not in CTC	53,839	61,243	59,133	68,371	68,233	67,590
Region	162,130	176,160	181,332	187,619	184,368	182,215

The CTC is continuing to capture more than half of the total daily transit activity occurring within the Region (Table 2). In 2016, approximately 63% of the total daily activity in the Region occurred within the CTC, indicating that nearly two out of three riders travelling in the Region had boarded or alighted at a GRT bus stop within the CTC.

Table 2. Distribution of Total Daily Activity within Region						
Scale	2011	2012	2013	2014	2015	2016
CTC	67%	65%	67%	64%	63%	63%
Not in CTC	33%	35%	33%	36%	37%	37%
Region	100%	100%	100%	100%	100%	100%

⁴ The methodology changed between the Baseline Report and the 2015 Update Report. See Section 5.1 for a more detailed explanation.

3.1.3 Sustainable Modes of Transportation: Walkability

57 per cent of the population living in the CTC lived in “very high” or “high” walkable areas in 2016

Approximately 103,692 people live in the Central Transit Corridor, including 58,706 that live in very high or high walkable areas in 2016 (Table 1). Areas that are considered to be walkable are those that are characterized by residential land uses in proximity to a variety of destinations (retail, schools, etc.) and small block sizes that are conducive to walking. Over half (57 per cent) of the population within the CTC live in very high or high walkable areas while 34,305 (33 per cent) live in moderate walkable areas, and 10,681 (10 per cent) live in very low and low walkable areas in 2016. In the time period between 2011 and 2016, there has been a small overall shift in the proportion of the population living in high or very high walkable areas of the CTC (from 55% to 57%). This change resulted from 73% (5,130) of population growth in high or very high walkable areas during this time compared to 17% (1,154) in moderate walkable areas and 10% (701) growth in low walkable areas of the CTC.

Table 1. Estimated Population in Walkability Ratings within the CTC												
Walkability Rating	2011		2012		2013		2014		2015		2016	
	Population	%	Population	%	Population	%	Population	%	Population	%	Population	%
Very High Walkable	22,676	23%	22,422	23%	22,582	23%	23,158	23%	23,360	23%	24,002	24%
High Walkable	30,900	32%	31,401	32%	32,573	33%	33,578	33%	34,538	34%	34,704	34%
Very High & High Walkable	53,576	55%	53,823	55%	55,156	56%	56,736	56%	57,898	56%	58,706	57%
Moderate	33,151	34%	33,828	35%	34,141	34%	34,408	34%	34,356	34%	34,305	33%
Low	4,417	5%	4,209	4%	4,264	4%	4,116	4%	4,521	4%	4,912	5%
Very Low	5,563	6%	5,410	6%	5,617	6%	5,737	6%	5,778	6%	5,769	6%
Low & Very Low	9,980	10%	9,620	10%	9,881	10%	9,853	10%	10,299	10%	10,681	10%
Total Population in CTC	96,707		97,270		99,177		100,997		102,553		103,692	

Residents living in more walkable neighborhoods have been shown to walk, cycle and use transit more and own fewer cars than those living in less walkable areas in Waterloo Region. Continuing population growth in very high or high walkable areas is helpful in creating safer, more vibrant communities, and is enhanced by more dense and mixed-use development, as well as greater connections to the corridor. Research has also shown that increasing numbers of people walking and cycling in neighbourhoods decreases the incidence rates of collisions with motor vehicles.

3.2 Goal: Building Community

ION is a catalyst for building community in the CTC. Indicators that monitor the 'building community' goal of ION strive to tell a story about how the ION LRT system may influence social, economic, and environmental aspects in the CTC and contribute to change in the community. Measuring these dimensions provides snapshots of the ways people and the market may be adapting to a new higher-order transit service over the pre-and-post implementation phases of ION.

3.2.1 Vibrant Communities: Land Use Mix

70 per cent of Waterloo Region's land uses were found within the CTC in 2016

There were 194 unique land uses within Waterloo Region in 2016 of which 136 were found within the CTC. The CTC therefore represents 70 per cent of all land uses in the Region. The number of land uses within the corridor has been relatively stable since 2011, with a net increase of five land uses from 131 in 2011 to 136 in 2016 (Table 1).

Table 1. Unique Land Use Codes Existing in the CTC						
Scale	2011	2012	2013	2014	2015	2016
CTC	131	132	131	132	135	136
Region	191	192	190	190	196	194
Per cent in CTC	68.6%	68.8%	68.9%	69.5%	68.9%	70.1%

By 2016, 57 properties in the CTC experienced a change in their form of land use to a use that did not exist in 2011. Of these, land use codes for 53 out of the 57 properties changed to a code related to a new form of condominium ownership. The remaining four properties were industrial uses that may be subject to the Special Purpose Business Property Assessment Review (SPBPAP) conducted by the Municipal Property Assessment Corporation (MPAC), which resulted in several new industrial land use codes that have emerged in the Region and CTC in 2016.

From 2015 to 2016, two properties had new land use codes as new forms of condominium ownership. One of the new land use codes is described as a 'multi-type complex' for large mixed-use buildings. The property under this code is the Waterloo Corporate Campus, which is across from the future Northfield LRT Station, and will consist of retail, office, and commercial uses, as well as a potential future hotel use. The property's previous land use code was deemed as 'standard industrial use'. The other new land use code is described as a 'residential phased condominium project'. The property under this code is City Centre Condominiums in downtown Kitchener, consisting of two residential condominium buildings to be built in two phases. The property's previous land use code was for 'vacant commercial land'.

3.2.2 Vibrant Communities: Population

18 per cent of the Region's residents were living in the CTC in 2016

Approximately 103,700 people were estimated to be living within the CTC in 2016, representing 17.8 per cent of Waterloo Region's population of 581,700 (including students) (Table 1). From 2011 to 2016, population within the CTC has been increasing at a faster rate (1.4 per cent annually) than the population outside the CTC (1.0 per cent annually) and across the Region as a whole (1.1 per cent annually).

Specifically, there was an estimated increase of 7,000 residents within the CTC from 2011 to 2016. At the same time, there were approximately 23,200 new residents outside the CTC.

The number of residents within stage one of the CTC has been increasing at 1.8 per cent annually over the same time period. Approximately 78,200 residents in the CTC were living in stage one in 2016, which is 14 per cent of the total population living within the whole Region. While stage one encompassed 75 per cent of the total population in the CTC in 2016, stage two captured 25 per cent of the population within the corridor, which equates to 25,500 people (4 per cent of the Region's total population) and is growing at a rate of 0.4 per cent annually.

Table 1. Population Living within the CTC from 2011 to 2016							
Scale	2011	2012	2013	2014	2015	2016	Average Annual Growth (%)
Stage one	71,700	72,600	74,200	75,800	77,100	78,200	1.8%
Stage two	25,000	24,700	25,000	25,200	25,400	25,500	0.4%
Total in CTC	96,700	97,300	99,200	101,000	102,600	103,700	1.4%
Total Outside CTC	454,900	456,700	462,000	466,900	471,900	478,100	1.0%
Total in Region	551,600	554,000	561,200	567,900	574,500	581,700	1.1%
Percent Living in Stage one	74%	75%	75%	75%	75%	75%	
Percent Living in Stage two	26%	25%	25%	25%	25%	25%	
Per cent Living in CTC	17.5%	17.6%	17.7%	17.8%	17.9%	17.8%	

3.2.3 Art and Culture: Cultural Vibrancy

271 arts and culture related establishments in the Region were located within the CTC in 2016

In 2016, there were an estimated 543 arts and culture establishments within the Region, 271 of which were within the CTC. The proportion of cultural establishments that are located within the CTC has increased from 41 per cent (192 out of 463 establishments) in 2011 to 50 per cent in 2016. Of the arts and culture establishments within the CTC, approximately 71 per cent are located within Stage one (which is unchanged from 2011) and 29 per cent were located in Stage 2.

Since 2011, the number of cultural establishments has increased in every category, except for retail, and administration and support (Table 1). Manufacturing establishments have more than doubled, from 12 to 26 establishments. The number of creative professionals also grew by 84%. These significant increases have impacted the mix of cultural establishments in the CTC. As there are only two years for which the data is available, this pattern of growth cannot be identified as a trend, but the numbers to date do reflect continued growth in the cultural sector. More details of the types of establishments counted within these categories can be found in Appendix A.

Category	Type	2011	2016	% change
Manufacturing	Bakeries, Breweries, Wineries, Jewellery, Silverware	12	26	117%
Retail	Art Dealers	8	4	-50%
Information	Publishers, Software ⁵ , Motion picture, Broadcasting, Libraries, Archives	26	32	23%
Professionals	Architecture, Design, Programming, Advertising, Photography	61	112	84%
Admin & Support	Travel agencies, tour operators	26	22	-15%
Education	Fine arts schools	19	24	26%
Arts, Entertainment, Recreation	Performing Arts, Promotions, Agents, Independent Artists, Heritage	28	34	21%
Accommodation	Accommodation services	12	17	42%
Total Cultural Establishments in the CTC		192	271	41%
Total Cultural Establishments in the Region		463	543	17%
Percentage of total Regional Cultural Establishments located in the CTC		41%	50%	9%

⁵ Software includes software publishers of video games.

3.2.4 Art and Culture: Restaurants

52 per cent of restaurants in the Region were located within the CTC in 2016.

In 2016, 885 restaurants were within the CTC (Table 1), an increase of 154 restaurants (or 21%) since 2011. Approximately 643 restaurants were within stage one, representing 37 percent of the total number of restaurants in the Region, and 242 restaurants within stage two, making up 14 per

Table 1. Number of Restaurants (2011-2016)

Scale	2011	2012	2013	2014	2015	2016
Stage one	525	547	587	611	645	643
Stage two	206	234	236	237	244	242
CTC	731	781	823	848	889	885
Outside CTC	720	737	762	777	811	831
Region	1,451	1,518	1,585	1,625	1,700	1,716

Table 2. Distribution of Restaurants within the Region (2011-2016)

Scale	2011	2012	2013	2014	2015	2016
Stage one	36%	36%	37%	38%	38%	37%
Stage two	14%	15%	15%	15%	14%	14%
CTC	50%	51%	52%	52%	52%	52%
Outside CTC	50%	49%	48%	48%	48%	48%
Region	100%	100%	100%	100%	100%	100%

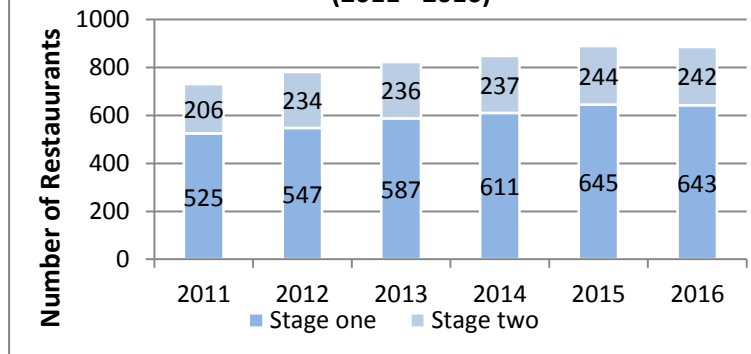
Table 3. Restaurants per 1,000 people (2011-2016)

Scale	2011	2012	2013	2014	2015	2016
Stage one	7.3	7.5	7.9	8.1	8.4	8.2
Stage two	8.2	9.5	9.2	9.4	9.6	9.5
CTC	7.6	8.0	8.3	8.4	8.7	8.5
Outside CTC	1.6	1.6	1.6	1.7	1.7	1.7
Region	2.6	2.7	2.8	2.9	3.0	2.9

cent of the Region's total number of restaurants (Table 2). The distribution of restaurants in Waterloo Region has remained relatively consistent between 2011 and 2016, with over half of the region's restaurants located in the CTC since 2011. Stage one experienced the greatest increase in the number of restaurants, with an increase of 118 restaurants (or 22%) during the time between 2011 and 2016. The number of restaurants showed a steady upward trend increasing by between 40 and 50 annually, but experienced a slight decline from 2015 to 2016.

The vibrancy of the core areas is reflected in the density of restaurants in the CTC versus outside the CTC. In 2016, the density of restaurants per 1,000 people remained significantly higher in the CTC than elsewhere in the Region. In 2016, there were 8.5 restaurants per 1,000 people⁶ in the CTC compared to 1.7 outside of the CTC (Table 3). The 2011 to 2016 data shows that number of restaurants reported to be operating within both stages of the CTC is generally increasing, despite the ongoing construction within the corridor (Figure 1).

Figure 1. Number of Restaurants in the CTC (2011 - 2016)



⁶ Please refer to the Population indicator to see the estimated year-end population numbers used to calculate the number of restaurants per 1,000 people from 2011 to 2016.

3.2.5 Heritage: Heritage Resource Retention

Seventeen demolition permits were issued for formally recognized and pre-1920 built heritage resources in the CTC in 2016

Year	Stage one	Stage two	CTC	Formally Recognized
2011	13	0	13	5
2012	34	2	36	2
2013	11	0	11	0
2014	9	0	9	1
2015	11	1	12	3
2016	17	0	17	1
Total 2011-2016	95	3	98	12
Total 1995-2016	161	18	179	35

In 2016, seventeen demolition permits were issued for formally recognized and pre-1920⁷ built heritage resources in the CTC, one of which was for a formally recognized building, the Waterloo Royal Canadian Legion Poppy House, which was listed on the Municipal Heritage Register. The seventeen demolition permits for built heritage resources represent 30 per cent of the 57 demolitions that took place within the CTC in 2016 (Appendix B). All seventeen were located in stage one, and represent a slight increase over all but one of the past 5 years.

Of the seventeen demolitions in 2016, one was non-residential, two were mixed-use and fourteen were residential built heritage resources (Table 2). Of the fourteen residential demolition permits, ten (71%) were to accommodate higher density residential development and four were to replace an existing historic single-detached dwelling with a new single-

detached dwelling. There was one emergency demolition of a mixed-use built heritage resource as a result of fire damage. The demolished buildings were from the last quarter of the 19th century and early 20th century and reflected a variety of architectural styles.

The total number of demolitions has varied annually, with an increase in recent years. Between 2011 and 2016 there were 98 demolitions on formally recognized and pre-1920 built heritage resources in the CTC. Of the 98 demolition permits, 95 were located in stage one, and three were located in stage two of the CTC. Twelve built heritage resources that were formally recognized were demolished between 2011 and 2016. Although none of the heritage demolitions in 2016 were directly related to construction of the ION, it should be noted that the majority were triggered by residential intensification projects, which may make the demolitions an indirect impact of rapid transit development. The spike of demolitions in 2012 was related to a road-widening project.

Table 2. Number of Demolition Permits on Residential and Non-residential Built Heritage Resources by Location and Building Type																		
	2011			2012			2013			2014			2015			2016		
Scale	Res	Non-Res	Mixed-use	Res	Non-Res	Mixed-use	Res	Non-Res	Mixed-use	Res	Non-Res	Mixed-use	Res	Non-Res	Mixed-use	Res	Non-Res	Mixed-use
Stage one	11	1	1	27	5	2	10	1	0	9	0	0	9	2	0	14	1	2
Stage two	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0
CTC	11	1	1	28	6	2	10	1	0	9	0	0	9	3	0	14	1	2

⁷ Pre-1920 properties were selected as one criterion for identifying heritage properties following an evaluation of peak construction booms observed in the Region between the mid-1800s to mid-1900s. 1920 was shown to be the last significant boom in construction of what are now considered to be historic properties (100+ years old). This time period represented the last post-war construction boom before more modern types of construction became popular in the form of planned communities and subdivision development.

3.2.6 Investment: Building Activity

\$308 million in new building permits value⁸ was issued within the CTC in 2016

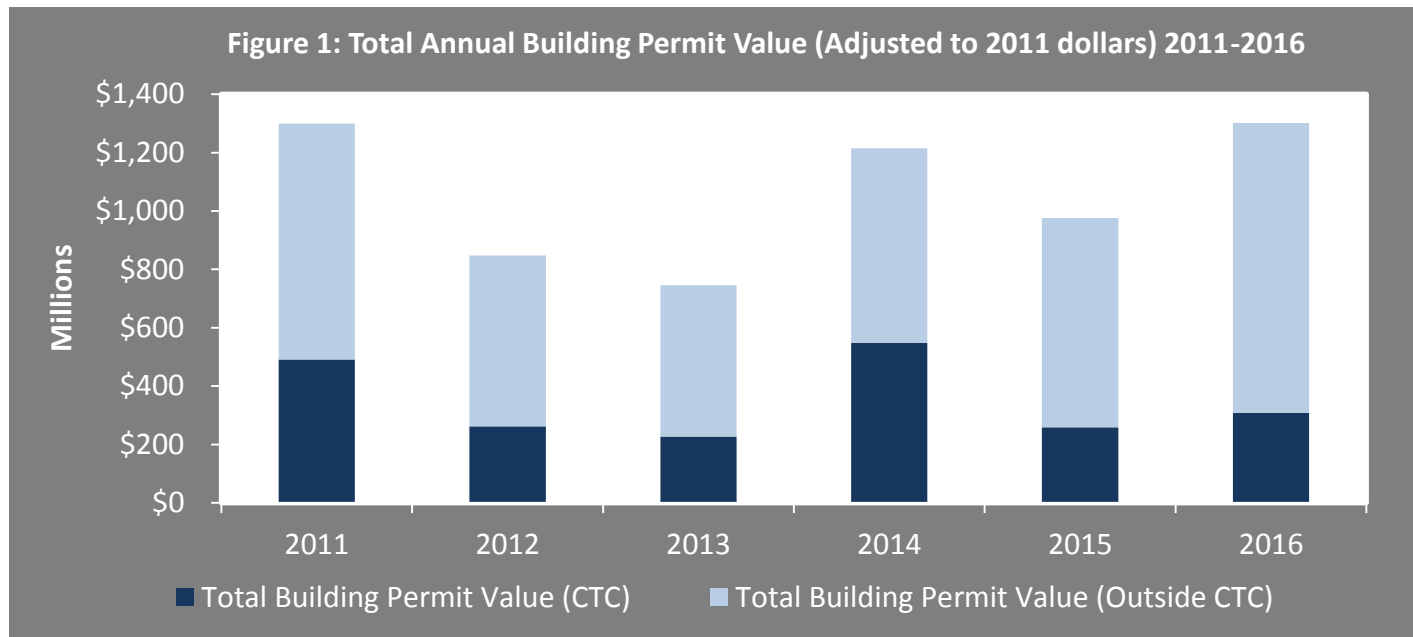
In 2016, building permit activity for new employment floor space and residential units within the CTC (Table 1) was estimated at \$307.9 million, representing almost a quarter of the new construction in Waterloo Region (Figure 1). Of the building activity in the CTC, approximately \$251 million in construction value was for 1,860 new residential units, which represented a third of the total 5,374 residential units across the Region. In the non-residential sector, \$56.6 million was invested in industrial, commercial and institutional projects in the corridor creating over 200,000 square feet of new floor space, 11 per cent of the total new non-residential square feet across the Region.

Building permit construction value for new residential units and new employment floor space between 2011 and 2016 in the CTC was \$2.1 billion.

Table 1. Building Activity from 2011 to 2016 in the CTC (Adjusted to 2011 dollars) ⁹												
Structure Type	2011		2012		2013		2014		2015		2016	
Residential	Value (million)	Units	Value (million)	Units	Value (million)	Units	Value (million)	Units	Value (million)	Units	Value (million)	Units
Singles	\$4.2	13	\$3.4	12	\$3.1	11	\$3.3	10	\$1.5	5	\$1.8	7
Semi-detached	\$0.2	1	\$0.9	7	\$1.3	6	\$1.3	6	\$0.5	2	\$1.4	7
Townhouses	\$6.2	44	\$26.8	179	\$7.8	48	\$14.7	92	\$5.8	50	\$5.3	55
Apartments	\$198.7	1147	\$96.1	623	\$127.1	624	\$300.7	1623	\$108.1	1096	\$242.7	1791
Total	\$209.1	1205	\$127.2	821	\$139.4	689	\$320.1	1731	\$115.9	1153	\$251.3	1860
Structure Type	2011		2012		2013		2014		2015		2016	
Non-Residential	Value (million)	Sq.Ft	Value (million)	Sq.Ft	Value (million)	Sq.Ft	Value (million)	Sq.Ft	Value (million)	Sq.Ft	Value (million)	Sq.Ft
Commercial	\$46.1	318,002	\$45.5	392,408	\$21.4	77,131	\$40.5	176,871	\$81.4	519,751	\$41.9	134,373
Industrial	\$8.5	3,600	\$2.4	20,909	\$3.7	29,349	\$14.5	8,818	\$8.3	115,860	\$12.1	54,736
Institutional	\$227.2	121,503	\$87.3	269,053	\$62.8	236,186	\$173.2	321,145	\$53.1	155,164	\$2.6	14,530
Total	\$281.8	443,105	\$135.3	682,370	\$88.0	342,666	\$228.2	506,834	\$142.8	790,775	\$56.6	203,639
Total Value	\$490.9		\$262.4		\$227.3		\$548.2		\$258.7		\$307.9	

⁸ Only building permits that are for new residential units or new employment space are monitored in this indicator. Other building activity such as renovation of existing space, façade improvements, or accessory buildings is not included.

⁹ Values adjusted using CPI to 2011 dollars. For unadjusted values, please see Appendix C.



Specifically in 2016, there were 19 properties that had a non-residential building permit worth more than \$1 million in the CTC, of which one had a building permit worth \$10 million. For example, permits were issued for interior finishes to the Google office building, and new retail (Mountain Equipment Co-op in Kitchener and Farm Boy in Cambridge). On the residential side, 18 properties had a building permit worth more than \$1 million, of which seven had building permits worth over \$10 million. New residential developments include a new apartment building with ground floor commercial space at 155 Caroline Street in Waterloo, the Midtown Lofts in Kitchener, and Linden Crossing in Cambridge, as well as several apartment dwellings for students and young professionals in the university district. These new residential developments are an indication of more intensified forms of housing and mixed use within the CTC. These figures do not include Trio on Belmont and Victoria Commons which are both located adjacent to, but just outside, the CTC monitoring boundary.

3.2.7 Investment: Assessment Value

Property in the CTC was valued at \$13.6 billion in 2016

Assessment values have been on the rise since 2011 for both the CTC and the Region (Table 1). An increase in property assessment values may indicate a relationship between the investment in ION and economic growth within the corridor. There have been a number of new high value and high quality developments as well as renovations of existing buildings as evidenced by the current growth in assessment value from \$10 billion in 2011 to \$13.6 billion in 2016. This is an increase of an average of \$606 million (6.1 per cent) annually from 2011 to 2016 (Table 2).

Table 1. Assessment and Taxes Generated in CTC from 2011 to 2016 (in millions of dollars)					
Scale		2011	2014	2015	2016
Stage One	Assessment Value	\$6,901.2	\$8,485.7	\$9,030.1	\$9,804.9
	Taxes Generated	\$88.9	\$94.6	\$104.6	\$112.1
Stage Two	Assessment Value	\$3,081.6	\$3,559.0	\$3,720.1	\$3,815.7
	Taxes Generated	\$44.7	\$44.6	\$50.5	\$51.7
CTC	Assessment Value	\$9,982.8	\$12,044.6	\$12,750.1	\$13,620.6
	Taxes Generated	\$133.5	\$139.2	\$155.1	\$163.8
Outside CTC	Assessment Value	\$44,330.8	\$53,601.6	\$56,351.5	\$58,968.6
	Taxes Generated	\$489.1	\$548.0	\$581.9	\$602.9
Region	Assessment Value	\$54,313.5	\$65,646.3	\$69,101.6	\$72,589.3
	Taxes Generated	\$622.6	\$687.2	\$737.0	\$766.7

A number of major projects within the CTC have contributed to the increase in assessment value in 2016. There were nine properties in the CTC that experienced an assessment increase of greater than \$10,000,000 between 2015 and 2016.

Table 2. Assessment and Taxes Generated Change from 2011 to 2016					
Scale		Change from 2011 to 2016 (millions)	Per Cent Change	Average Annual Change (millions)	Average Annual Per Cent Change
Stage One	Assessment Value	\$2,903.7	42.1%	\$484.0	7.0%
	Taxes Generated	\$23.2	26.1%	\$3.9	4.4%
Stage Two	Assessment Value	\$734.1	23.8%	\$122.4	4.0%
	Taxes Generated	\$7.0	15.6%	\$1.2	2.6%
CTC	Assessment Value	\$3,637.8	36.4%	\$606.3	6.1%
	Taxes Generated	\$30.2	22.6%	\$5.0	3.8%
Outside CTC	Assessment Value	\$14,637.9	33.0%	\$2,439.6	5.5%
	Taxes Generated	\$113.8	23.3%	\$19.0	3.9%
Region	Assessment Value	\$18,275.7	33.6%	\$3,046.0	5.6%
	Taxes Generated	\$144.1	23.1%	\$24.0	3.9%

Municipal taxes (regional and area municipal) generated on properties within the CTC were estimated at \$164 million in 2016.¹⁰ Between 2011 and 2016, the change in taxes generated was 22.6 per cent within the CTC, resulting in a yearly average rate of change of 3.8 per cent (Table 2). Stage one had a 26.1 per cent increase in taxes generated over five years. Stage two ION and outside the CTC had a 15.6 per cent and a 23.3 per cent increase in taxes generated respectively.

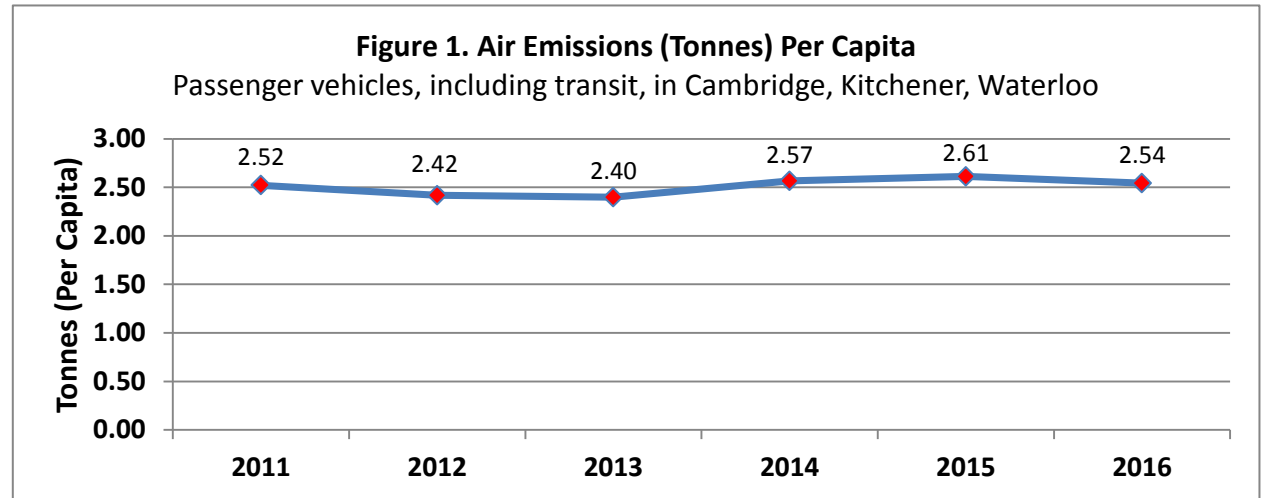
¹⁰ While assessment value is a good indicator of the change in value of properties, not all changes in assessment result in an increase in taxes generated. Reassessments and the resulting assessment phase-ins are included in the year-to-year assessment change; however, reassessments do not generate additional property tax revenue. Additionally, several of these new/improved buildings (such as hospitals or municipal buildings) will not generate taxes due to their tax-exempt status. Of the \$13.6 billion total assessment value in the CTC in 2016, \$1.5 billion was on tax-exempt properties. As a result, the taxes generated in the CTC increased at a lower rate than the change in taxes generated across the Region.

3.2.8 Environment: Emissions

2.54 tonnes of net air emissions from local passenger transportation per person was seen in Cambridge, Kitchener and Waterloo in 2016

There was a 1% increase in emissions per person from local passenger transportation from 2011 to 2016 (Figure 1). This equates to 2.54 tonnes of air emissions per person in 2016 compared to 2.52 tonnes in 2011. Total air emissions from local passenger transportation grew by 6.5% from 1.23 million tonnes in 2011 to 1.31 million tonnes in 2016. In comparison, population for the three cities grew by 5.6% during the same time period.

The change in emissions between 2011 and 2016 is still as expected until the ION becomes fully operational next year and after a couple of complete calendar years of service to allow the impact of the LRT system to influence local transportation choices. Therefore, increases in emissions from localized transportation in the three cities can be expected to continue for a few more years until use of local transit and non-motorized transportation modes increase more substantially and more automobile drivers switch to alternatively fuelled cars such as electric vehicles, which have zero tailpipe emissions. A noticeable downward emission trend could be seen in future CTC monitoring reports if increases in transit ridership become greater than the growth in vehicle kilometers travelled by private motorized passenger vehicles.



Use of alternative technologies and/or fuels with the GRT bus fleet in the future would also lower overall emissions in this area which in effect could dampen the expected growth in transit emissions as the bus fleet continues to grow, or even reduce emissions from transit overall in the long-term. Emissions from GRT vehicles grew by 11% between 2011 and 2016. Increases in localized use of car share, rideshare, bikes here, cycling and walking will also help drive down emissions per person over time if it is a part of a shift away from motorized modes of local travel.

This indicator estimates changes in air emissions from passenger transportation (i.e. non-freight) originating within the Cities of Cambridge, Kitchener and Waterloo. Emissions included in this indicator are Carbon Dioxide (CO₂), Nitrogen Oxides (NO_x), Carbon Monoxide (CO), Volatile Organic Compounds (VOCs), Particulate Matter (PM) and Sulphur Dioxide (SO₂). Emission calculations are estimated based on local vehicle registrations, estimated kilometers travelled and fuel consumption for cars, SUVs, pick-ups, school busses, motorcycles as well as Grand River Transit vehicles.

3.2.9 Crime and Safety: Perception of Safety

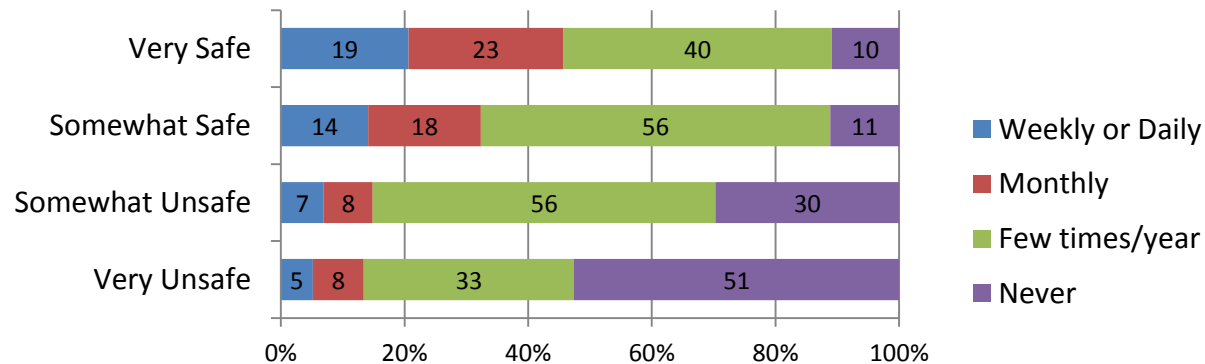
64 per cent of people in Cambridge, Kitchener and Waterloo perceive that their downtown communities are safe at night in 2017

In 2017, 15 per cent of respondents felt very safe in their downtown area at night, while 49 per cent felt somewhat safe (Table 1). Twenty-five per cent of the respondents felt somewhat unsafe and 11 per cent felt very unsafe. When very safe and somewhat safe are combined, a total of 64 per cent of people feel their downtowns are safe in 2017, compared to 65 per cent in 2011, a statistically negligible difference.

Year	Very safe	Somewhat safe	Somewhat unsafe	Very unsafe
2011	19%	46%	25%	10%
2017	15%	49%	25%	11%

The more often people visit the downtown at night, the higher the feelings of safety they report about being in the downtown at night. A significant difference on the 'feelings of safety in the downtown' scale was found based on respondents' reported frequency of visits to the downtown at night (Table 2). The more often respondents report to visiting the downtown at night, the higher the feelings of safety they report about being in the downtown at night. In particular, the biggest difference was seen between those who report to "never" go to the downtown at night and those who visit the downtown at any frequency, even if it is just once or twice per year.

Feelings of Safety in the downtown at night by frequency of visits to downtown at night (CKW only, N=341)



*The data has been weighted to adjust for the demographic profiles of Cambridge, Kitchener and Waterloo (CKW)

3.2.10 Crime and Safety: Police Calls for Service

42 per cent of police calls for service related to potential public perception of safety occurred within the CTC in 2015¹¹

Scale		2011	2012	2013	2014	2015	Average Annual Change (%)
CTC	Number of Calls	17,024	17,549	17,601	17,447	19,097	3.0%
	% in CTC	40%	41%	43%	43%	42%	
Outside CTC	Number of Calls	25,400	25,299	23,738	23,562	25,908	0.5%
	% outside CTC	60%	59%	57%	57%	58%	
Region	Number of Calls	42,423	42,847	41,339	41,009	45,004	1.5%

There were just over 45,000 calls for police service within Waterloo Region in 2015 that were identified as potentially being related to public perception of safety, and of those, approximately 19,097 calls (42 per cent) took place within the CTC (Table 1). The subset of police calls for service that are included in this count are those that a member of the public might notice, such as graffiti, intoxicated person, or break and enter (See Appendix D). Police calls for service do not represent actual criminal activity; the majority of calls for service that police respond to are not criminal in nature. However, the selected calls for service are tracked in this report as they may affect public perceptions of safety.

The number of selected calls for service made within the CTC has been relatively consistent, experiencing a slight increase over 2011 (3.0 per cent annually), and is consistently less than half of all the calls made within the Region.

Four of the top five citizen generated call types to experience the greatest growth (by number of calls) across the Region between 2014 and 2015 are included in the subset of call types monitored in this indicator. The increases in the selected calls for service within the CTC may be

due to a variety of factors: population growth, the number of people visiting or travelling through the CTC, changes in police procedures, and increases in citizen engagement and reporting. On a per capita basis, there were 18.6 calls per 100 people living in the CTC in 2015 (Table 2). The number of calls made per 100 people living in the CTC has been relatively consistent, increasing by about 1.4 per cent per year since 2011.

Scale		2011	2012	2013	2014	2015	Average Annual Change (%)
CTC	Calls within CTC	17,024	17,549	17,601	17,447	19,097	3.0%
	Population within the CTC	96,707	97,270	99,177	100,997	102,553	1.5%
	Calls per 100 People in CTC	17.6	18.0	17.1	17.3	18.6	1.4%
Outside CTC	Calls outside CTC	25,400	25,299	23,738	23,562	25,908	0.5%
	Population outside the CTC	454,929	456,705	462,011	466,899	471,901	0.9%
	Calls per 100 People outside CTC	5.6	5.5	5.1	5.0	5.5	-0.4%
Region	Calls within Region	42,423	42,847	41,339	41,009	45,004	1.5%
	Population within Region	551,636	553,975	561,188	567,896	574,454	1.0%
	Calls per 100 People within Region	7.7	7.7	7.4	7.2	7.8	0.5%

¹¹ 2015 was the most recent year for which data was available at the time of the writing of this report

3.2.11 Inclusive Communities: Home Ownership Affordability

57 per cent of the housing transactions were affordable to low and moderate income households within the CTC in 2016

In 2016, more residential property transactions were below the affordability cut-off price of \$337,035 than above it. Of the 800 residential 'market value' transactions within the CTC, 57 per cent (452 transactions) were at a price below the affordability cut-off (Table 1) while 44 per cent (348) of the residential transactions exceeded the cut-off. Since the baseline year of 2011¹², there have been 2,273 affordable transactions and 1,855 transactions that exceeded the affordability cut-off within the CTC.

The level of affordability ('cut-off') is determined using the lower of the 'income approach' and the 'market approach'. For Waterloo Region, the 'market approach' is the more conservative measure, which is the value of housing for which the purchase price is at least 10 per cent below the average purchase price of a resale unit in the regional market area. For the analysis, a transaction is considered 'market value' if it exceeds \$10,000, is not a corporate transaction, and is not between family members.

While the CTC had 57 per cent of residential transactions that met the affordability cut-off in 2016, the Region had approximately 2,733 (36 per cent) out of 7,532 residential unit transactions that met affordability cut-off. Of the number of affordable transactions in the CTC, 247 occurred within stage one and 205 occurred within stage two.

Table 1. Residential Units Under the Affordability Cut off (transactions over \$10,000)							
Year		2011	2012	2013	2014	2015	2016
Stage one Affordable Cut off¹³		\$263,349	\$270,967	\$281,678	\$290,778	\$300,857	\$337,035
Stage two Affordable Cut off¹⁴		\$243,239	\$260,713	\$268,423	\$281,278	\$297,290	\$331,287
# of Transactions Between \$10,000 and Cut Off	Stage one	202	240	195	202	216	247
	Stage two	156	139	141	154	176	205
	CTC	358	379	336	356	392	452
	Region	2,364	2,322	2,416	2,289	2,384	2,733
# of Transactions Over \$10,000	Stage one	373	442	384	397	409	481
	Stage two	282	233	256	268	284	319
	CTC	655	675	640	665	693	800
	Region	6,209	6,296	6,421	6,354	6,883	7,532

¹² The baseline for this indicator has been adjusted. See section 5.1 in the report for details on the update.

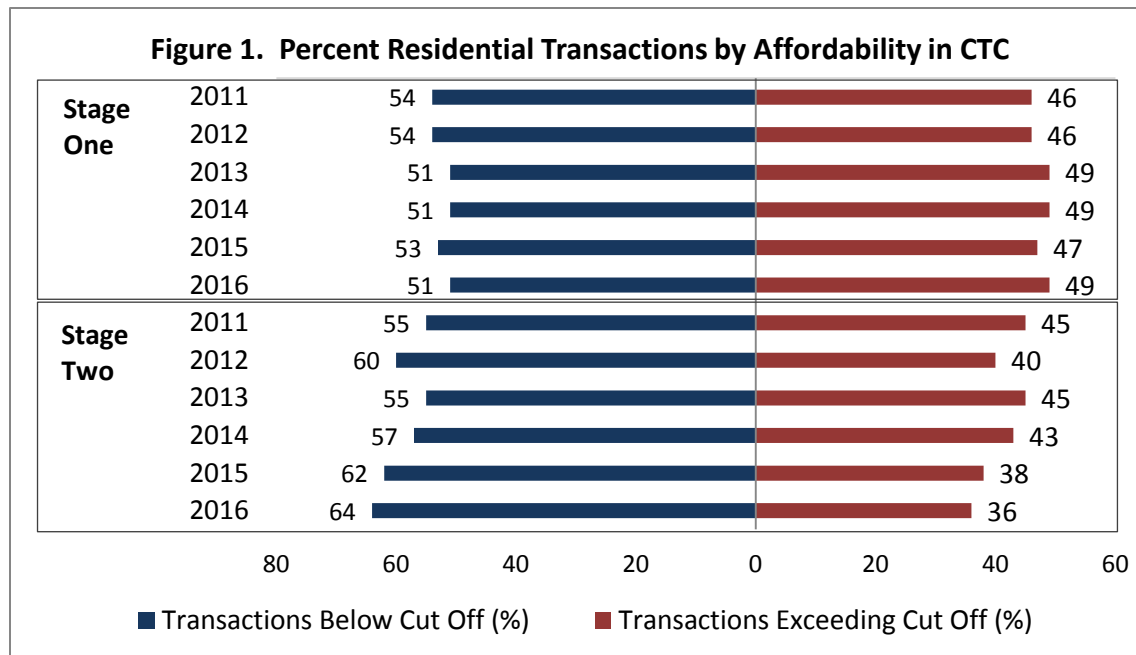
¹³ 10 per cent below the average residential re-sale transaction through the MLS® System provided by the Kitchener-Waterloo Association of REALTORS®

¹⁴ 10 per cent below the average residential re-sale transaction through the MLS® System provided by the Cambridge Association of REALTORS®

In 2016, the median residential unit transaction value of \$331,200 within stage one was under the affordability cut-off by \$5,835 (Table 2). In stage two, the median transaction value of \$300,000 was \$31,287 less than the affordability cut-off. Median transaction values outside the CTC are higher than the affordability cut-off of \$337,035. Thus, the majority of transactions within the CTC are considered more affordable than transactions elsewhere in the Region.

Table 2. Median Transaction (\$) Values from 2011 to 2016						
Scale	2011	2012	2013	2014	2015	2016
Stage One	\$257,300	\$263,500	\$280,500	\$290,000	\$299,000	\$331,200
Stage Two	\$235,500	\$245,000	\$257,750	\$267,500	\$275,000	\$300,000
CTC	\$248,000	\$256,000	\$274,625	\$283,000	\$288,000	\$322,950
Outside CTC	\$288,500	\$299,900	\$205,000	\$322,500	\$335,625	\$375,000
Region	\$284,000	\$294,950	\$304,900	\$318,250	\$330,000	\$370,000

The median value of housing sales is influenced by the mix of housing types sold. A housing mix that includes large single detached houses will have a higher median value than a mix with more apartment units. Thus, the percentage of affordable transactions within stage one of the CTC has remained relatively stable during the years since 2011 (Figure 1), in large part due to the supply of apartment units coming on to the market.



4. Monitoring Investment

Investment is one of the dimensions that the CTC monitoring program measures as it represents an important characteristic of change in the Central Transit Corridor (CTC). Previous CTC monitoring reports provided a look into the investment dimension through two annual indicators: value of building permits for construction of new residential and employment space, and assessed value of properties. To further explore the theme of private sector investment in the corridor, this report examines two additional indicators, 'Transaction Values' and 'Building Improvements' (Table 1).

Table 1. Investment Indicators

Opportunity	Dimension	Indicator	Metric	2011	2012	2013	2014	2015	2016
Building Community	Investment	Building Activity	Dollar value of building permits in the CTC for new construction (million, adjusted)	\$491	\$262	\$227	\$548	\$259	\$308
		Assessment Value	Assessed value of properties in the CTC	\$10	-	-	\$12	\$13	\$14
		Transaction Values	Dollar value of property transaction values in the CTC (million, adjusted)	\$619	\$764	\$821	\$916	\$898	\$1,030
		Building Improvements	Dollar value of building permits for property improvements in the CTC (million, adjusted)	\$74	\$80	\$93	\$80	\$96	\$166

The Region of Waterloo and local area municipalities are investing in upgrading infrastructure and supporting development around ION station areas. It is anticipated that this public sector investment will help to support business growth through an expanded market and improved productivity and to attract new people and jobs to the transit corridor. The local area municipalities have proposed recommendations as part of their station area planning processes to stimulate new investment and promote economic development by encouraging job growth and commercial vitality. Fostering investment and strengthening employment

opportunities in the CTC are also among the key opportunities identified in the Region's Community Building Strategy. Further, one of the Region's Strategic Plan (2015-18) objectives is to support existing businesses and attract new employers and investments.

As well as public sector investment in the CTC, there has been substantial private sector investment. The two additional indicators in the investment dimension provide data about transaction values and building permits in the corridor, which allows for greater understanding of investment patterns in the corridor.

4.1 Investment: Building Improvements

Indicator

\$166 million in total building permit value for property improvements took place within the CTC in 2016

Importance

Building permit activity is one of the annual indicators examined in the Region's CTC monitoring reports, however, it only highlights construction of new residential units and new non-residential square footage. This additional indicator, building improvements, measures all other building activity that requires a building permit to make property improvements such as renovations of existing space, new signs and façades, patios, and interior alterations. This type of building activity further describes investment in the CTC as it suggests that property owners are putting funds towards maintaining and improving their properties. These investments range from minor plumbing permits, to extensive renovations such as the complete remodelling of the Walper Hotel, which required closure of the business for an extended period. The building permits associated with temporary structures such as tents that were erected for a specific event were excluded from the analysis, as were permits associated with the construction of ION such as transformer pads, station platforms and retaining walls. The ION-related permits were removed from the calculations in order to separate the potential benefits of ION from the associated costs.

Methodology

To report on building permit activity that is in addition to permits that create new residential units or employment square footage, the complete building permits databases for the Cities of Kitchener and Waterloo were acquired through their Open Data websites, while Cambridge staff provided building permits within the CTC for 2011 to 2016. Permit id numbers were used to exclude all the permits that were already part of the Region of Waterloo building permits database. All of these permits were then standardized and compiled in a new database. Excluded permits from the database included: temporary tents, ION infrastructure permits (for ION stops, retaining walls, etc.), and cancelled or revoked permits. Only the permits that were issued between the years of 2011 and 2016 were included for dollar value calculations. Finally, the dollar value of these improvement permits was adjusted using the Consumer Price Index, in order to account for the effects of inflation.

Results

Within the CTC, there was \$166 million in building permit activity for property improvements in 2016, of which \$29 million was for residential properties and \$137 million was for non-residential properties (Table 1). Between 2011 and 2016, the majority of building improvements was consistently for the non-residential sector.

Table 1. Total Building Improvement Values from 2011 to 2016 in the CTC (Adjusted to 2011 dollars)¹⁵						
Scale	2011	2012	2013	2014	2015	2016
Residential	Value	Value	Value	Value	Value	Value
Stage one	\$8,468,132	\$12,762,244	\$16,033,866	\$25,397,924	\$13,080,919	\$26,564,458
Stage two	\$2,288,621	\$7,421,386	\$2,505,943	\$5,135,155	\$4,352,919	\$2,204,390
Total	\$10,756,753	\$20,183,630	\$18,539,809	\$30,533,078	\$17,433,838	\$28,768,847
Scale	2011	2012	2013	2014	2015	2016
Non-Residential	Value	Value	Value	Value	Value	Value
Stage one	\$43,735,390	\$45,282,645	\$60,767,965	\$36,088,831	\$68,232,493	\$126,845,532
Stage two	\$19,372,673	\$14,775,627	\$13,342,504	\$13,230,990	\$10,607,570	\$10,656,145
Total	\$63,108,063	\$60,058,272	\$74,110,469	\$49,319,821	\$78,840,063	\$137,501,677
Total Value	\$73,864,816	\$80,241,902	\$92,650,278	\$79,852,900	\$96,273,901	\$166,270,524

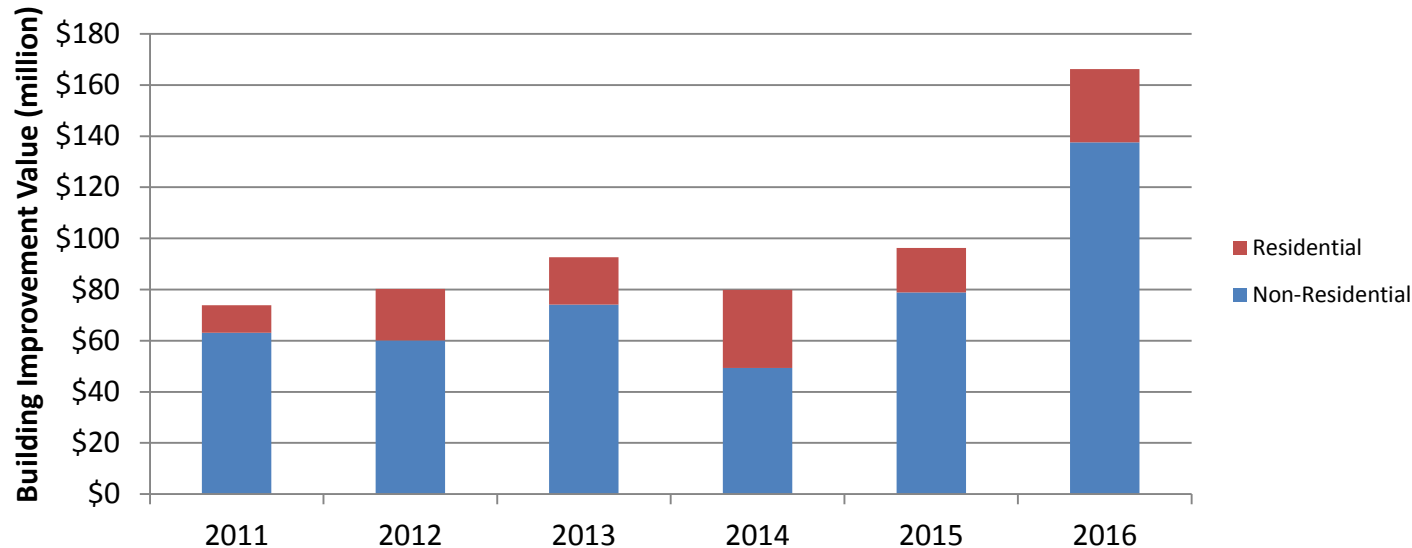
In 2016, of the residential properties that experienced improvements, \$26.6 million in improvements were in stage one and \$2.2 million were in stage two. For non-residential properties, \$126.8 million took place in stage one, while \$10.7 million took place in stage two. Annually, since 2011, stage one has experienced the majority of building improvements compared to stage two in both sectors. The total building permit value for property improvements within the CTC for the six years from 2011 to 2016 was \$589.2 million.

Analysis

The spike in building improvements in 2016, particularly for non-residential properties is clearly visible (Figure 1.) Examples of 2016 activity includes the Walper Hotel in downtown Kitchener which underwent a \$10 million renovation between 2015 and 2016, with improvements to the hotel's five storeys. An example of a residential renovation is the apartment building at 48 Weber Street West in Kitchener, which had \$1.3 million of renovations in 2015 to improve the quality of the building. Further examples include a group of buildings in Cambridge around 60 Main Street in downtown Galt which are being renovated for retail-commercial space on the main floor and office space above (\$1.1M) and at 25 Westmount Road North in Waterloo, where a repair and remediation of an apartment building was undertaken at a \$1.2M investment.

¹⁵ Values adjusted using CPI to 2011 dollars. For unadjusted values, please see Appendix E.

**Figure 1. Total Annual Building Improvement Values from 2011 to 2016 in the CTC
(Adjusted to 2011 dollars)**



What does the literature tell us?

Building permits help depict investment and building activity in an area. Building permits can be used to examine land development trends over time through new construction, renovations, additions, and demolitions (Shakro, 2013). In the context of a transit service area, Loukaitou-Sideris (2010) found that over time, the number of permits in station areas increased, as well as permits for mixed-use projects. Loukaitou-Sideris found that over half of the residential building permits were for multi-family housing. Loukaitou-Sideris also noted that the value of both residential and commercial permits increased as well, indicating that transit promotes development activity along their corridors. Other studies have noted that transit systems attract new development or redevelopment to areas around the system (Dubé, Des Rosiers, Thériault, & Dib, 2011; Zhang & Wang, 2013). Further, building activity may differ during construction periods. The announcement of a transit system may increase building activity near planned rail stations (Cao & Porter-Nelson, 2016). Hurst and West (2014) also found that the number of permits increased slightly during the construction period compared to before construction, but increased even more by the end of construction.

Not all building activity near transit areas leads to significant changes. Some smaller projects, including improving storefronts, remodeling, and altering interiors, have been found to increase in number along a transit corridor, even though the overall permit value may not have been impacted (Cao & Porter-Nelson, 2016). These smaller projects represent signs of revitalization even in already highly developed areas and can lead to improvements in the public realm. The same study also found that the building activity that occurs along a transit corridor may be positively impacted by the number and value of building permits. Cao & Porter-Nelson (2016) noted that commercial property owners improved their

buildings simultaneously with rail transit construction to mitigate the construction impacts on business. Overall, LRTs can encourage large-scale redevelopment, as well as modest reinvestments. However, Rodriguez, Vergel-Tovar, and Camargo (2016) noted that even though building activity does tend to increase along transit corridors, the investment impacts will vary and depends on context, such as land availability, developer attitudes, and market conditions. As a result, some stations may have high development activity while other stations may have less. Rodriguez, Vergel-Tovar, and Camargo (2016) found that end terminals and stops appear to have the strongest building activity.

4.2 Investment: Property Transactions

Indicator

\$1 billion in property transactions were made in the CTC in 2016.

Importance

Tracking the dollar value of real estate transactions can provide insight into the market's confidence in the investment of business or personal assets into property; thus, this indicator helps depict a bigger picture of the notion of investment within the CTC. Research has shown that the presence of rail transit, or the anticipation of it, can trigger changes in investor attitudes. Rail transit may encourage investors to spend funds within the transit corridor because of increasing market demand and result in an increase in the number and the value of property transactions. Residential developers may also seek to invest in transit corridors, which attract more multi-family properties. Transactions may also indicate pending changes in land use, such as from an industrial use to a commercial/office use, and may indicate economic and social vitality in an area.

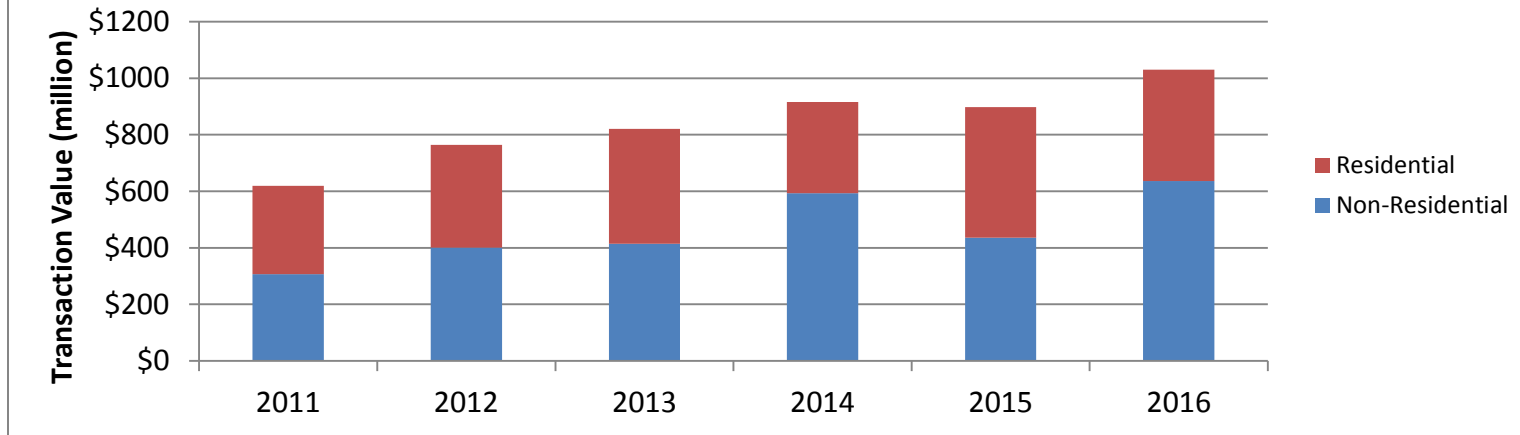
Methodology

The dataset for the transaction indicator was provided under license by Teranet and includes information on the value, type and timing of individual property transactions made in the Region. Total transaction value was reported separately for residential and non-residential properties. Data pertaining to the property type (residential or non-residential), date of the transaction, and the amount of the transaction were used to sum transaction values for each year of which the CTC has been monitored (2011-2016 inclusive). To allow for comparison of total transaction value over time, amounts have been adjusted using CPI to 2011 dollars.

Results

In 2016, a total of \$1 billion was invested in property transactions in the CTC, between the residential (\$394 million) and non-residential (\$636 million) sectors. From 2011 to 2016 inclusive, the value of transactions in the CTC totaled \$5 billion (Figure 1). In 2016, total transaction values in the CTC were lower than outside the CTC (Table 1) for residential transactions (representing about 10 per cent of residential transactions in the Region of Waterloo). On the non-residential side, about 30% per cent of all transactions occurred within the CTC. Annually since 2011, transaction values in stage one have been higher than in stage two. Non-residential transaction values have also been greater than residential values in the CTC aside from 2011 and 2015; however, this trend is reversed outside the CTC, which has experienced much greater values for residential properties rather than non-residential. Transaction values in the CTC made up 17 per cent of the Region's total transaction values in 2016.

**Figure 1. Total Annual Transaction Values in the CTC from 2011 to 2016
(Adjusted to 2011 dollars)**



Scale		2011	2012	2013	2014	2015	2016
Stage One	Residential	\$217.5	\$265.5	\$314.1	\$227.1	\$339.1	\$274.0
	Non-Residential	\$198.5	\$294.6	\$302.7	\$458.4	\$313.8	\$522.2
Stage Two	Residential	\$94.7	\$97.8	\$93.0	\$95.8	\$123.8	\$119.9
	Non-Residential	\$108.1	\$106.1	\$111.3	\$134.9	\$121.4	\$114.1
CTC	Residential	\$312.2	\$363.3	\$407.1	\$322.9	\$462.9	\$394.0
	Non-Residential	\$306.6	\$400.7	\$414.0	\$593.2	\$435.2	\$636.2
Outside CTC	Residential	\$2,696.2	\$2,812.1	\$2,611.7	\$2,645.9	\$2,776.8	\$3,525.7
	Non-Residential	\$809.2	\$788.9	\$903.6	\$993.1	\$1,188.2	\$1,408.6
Region	Residential	\$3,008.4	\$3,175.4	\$3,018.8	\$2,968.8	\$3,239.7	\$3,919.6
	Non-Residential	\$1,115.8	\$1,189.6	\$1,317.6	\$1,586.3	\$1,623.4	\$2,044.8

¹⁶ Values adjusted using CPI to 2011 dollars. For unadjusted values, please see Appendix E.

Analysis

Since ION's announcement in 2011, transaction values in the CTC have steadily increased, even after adjustment to 2011 real dollars, from \$619 million to \$1.0 billion in 2016. The non-residential sector was particularly high in 2014 with the combined sales of the Sun Life Financial's headquarters building (\$147 million) and holdings from the BlackBerry portfolio, which were extensively purchased by Spear Street for \$305 million. The purchase of seven buildings in downtown Kitchener by Europro Real Estate in 2016 represented about 1 million square feet of a mix of retail and office, and was valued at \$140 million.

What does the literature tell us?

An increase in the amount and value of transactions could imply that more investments are occurring. This may result from greater economic activity but are also influenced by the following factors: location/proximity to amenities, land use mix, walkability, and market conditions. Many studies suggest that rail transit can provide spin off economic benefits and promote development (Cervero & Duncan, 2002; Loukaitou-Sideris, 2010). Proximity to a transit corridor is an important factor in investment and land values for both residential and non-residential properties. Yang, Quan, Yan, and He (2016) found that developers are willing to invest and pay more for land parcels closer to stations. Peer reviewed literature also confirms increasing land values as properties become closer to transit stations (Cervero & Kang, 2011; Weinberger, 2001). Dubé, Des Rosiers, Thériault, & Dib (2011) suggest that properties within a walkable distance to transit will experience significant increases in sale prices, which suggests a return on investment for walkability.

Land value benefits may differ, however, according to land uses and locations within a transit corridor area (National Association of Realtors & Urban Land Institute, 2002). A condominium in a highly walkable area by a station will accrue more benefits and much higher value compared to a condominium that is also in a walkable area but not near a station (Duncan, 2001). Hurst and West (2014) suggested that single-family and industrial properties close to LRT stations change land uses more so than vacant parcels of land, multi-family, and commercial properties. Commercial properties receive greater capitalization benefits the closer they are to transit stations (Cervero & Duncan, 2002). Office buildings located by transit stations also experience better market performance compared to those not nearby rail corridors (Cervero & Landis, 1993). The amount of commercial, mixed-use, and multi-family residential areas were found to increase in rail transit service areas, with commercial land uses experiencing the most significant growth closer to transit systems (Bhattacharjee & Goetz, 2016). Further, Mathur & Ferrell (2013) found that home prices were higher when the homes were close to transit development during the rail construction period, but the price differential was even higher post-construction as it more than doubled. Generally, investment benefits will differ along transit corridor areas due to various factors including: location, nearby amenities, diversity of land uses, market conditions, and policies.

5. Updates to Indicators

5.1 Adjustments and Corrections in Data and Definitions

Three indicators have updated previous figures that reflect changes in either the source data or adjustments and corrections in the definitions used to query the indicator values. Comparisons between the data shown in the 2016 and 2015 update reports and the original baseline monitoring report may not be valid for the following indicators; however, the previous reports' data has been updated in this report.

Daily Transit Activity

The daily transit activity indicator is an output of a database updated annually by GRT that records the average daily boardings and alightings for every stop in the transit network. Initially this was done using only data from the month of November because of the slow nature of querying and processing data for the entire network. This methodology was used in the baseline report.

In 2014, improvements were made to the output process that allow for all records from the full fall signup period (September to mid-December) to be included in the average, which GRT now uses instead for the database. This updated methodology was used since the 2015 update report. Increasing the sample size from November only to all of fall provides a truer average. Additionally, adapting the time range of the indicator to match that of the GRT database promotes consistency amongst different regional departments and simplifies the update process. An analysis was conducted to ensure that this change to the time window of samples did not have a significant effect on the trends or quantities reported.

Cultural Vibrancy

The number of restaurants within the CTC has been removed from the total count of cultural establishments within the CTC due to its inclusion as a separate Restaurant indicator.

The Canadian Framework for Cultural Statistics (CFCS) includes only video games in the software publisher category, and only website design in the computer design category. A correction to 2011 data has been made in this report to align with these definitions in the CFCS.

Population

The population estimates from 2012 to 2015 have been restated in this report to reflect the new 2016 Census of Population. The walkability indicator also received a restatement of its values as it uses the estimated population counts. Other indicators such as Restaurants that reports on the number of restaurants per 1,000 people and the Police Calls for Service indicator that reports on calls per 100 people have also received updates.

Perception of Safety

The results of Figure 1, “Feelings of safety in the downtowns at night by frequency of visits to downtown at night” have been weighted to adjust for the demographic profiles, namely age, of Cambridge, Kitchener and Waterloo.

5.2 Anticipated Changes in Future Reports

Potential or anticipated changes to data may require published years to be restated to ensure that the indicators value reflect the most up-to-date and current information.

Affordable Housing

According to data released by the Ministry of Housing for 2016 on regional household incomes, and given the average resale prices provided by the Kitchener-Waterloo Association of REALTORS® and Cambridge Association of REALTORS®, the market approach remained the appropriate affordability benchmark for 2016. However, transaction values in 2016 experienced a 12 per cent increase in Stage one and an 11 per cent increase in Stage two from the previous year (for comparison increases from 2011 to 2015 only varied by 3 to 7 per cent). In the next annual monitoring report, the two methods to calculate affordability as defined in the Province’s Provincial Policy Statement, the Market Approach and the Income Approach, may be revisited.

Emissions

Data used in the model will be acquired every second year. On years when the data is not acquired, figures will be generated from the model’s output and will be updated in the subsequent year.

6. Data Sources

The data presented in this report is the best available at the time of publication. Data is typically acquired from external agencies, and occasionally changes over time. All such changes to indicators over the course of the monitoring program are fully documented.

Indicator: Transit Ridership

Scale: Regional

Measurement Interval: Annual

Data Source: GRT ridership indicator is calculated based on daily data obtained from the electronic fare boxes on buses, as well as the sales of various passes, and published on GRT's website at: <http://www.grt.ca/en/about-grt/performance-measures.aspx>

Indicator: Daily Transit Activity

Scale: CTC

Measurement Interval: Annual

Data Source: The data for the ridership information comes from MOBILEstatistics, which allows for Automatic Passenger Counter (APC) data queries to be made and downloaded by GRT.

Indicator: Walkability

Scale: CTC

Measurement Interval: Annual

Data Source: The five walkability categories were determined from the NEWPATH study that was performed in 2009, which assessed the walkability of Kitchener, Waterloo and Cambridge.

Indicator: Land Use Mix

Scale: CTC

Measurement Interval: Annual

Data Source: The Municipal Property Assessment Corporation (MPAC) provides data on each land parcel within the Region, including land use information.

Indicator: Population

Scale: CTC

Measurement Interval: Annual

Data Source: The total resident population of Waterloo Region is estimated annually, based on Census of Canada results, building activity, vacancy rates, and long-term changes in the average number persons per units for various dwelling types. The year-end estimates include usual residents in both private and collective dwellings, temporary postsecondary students not counted by the Census, other foreign and temporary residents, as well as an adjustment for the net undercount of the population.

Indicator: Cultural Vibrancy

Scale: CTC

Measurement Interval: 2011, 2016

Data Source: The arts and culture establishments were counted from the 2016 Workplace Count, a survey of places of employment in the Region.

Indicator: Restaurants

Scale: CTC

Measurement Interval: Annual

Data Source: The list of restaurants is derived from the Region of Waterloo Public Health food inspection data.

Indicator: Heritage Resource Retention

Scale: CTC

Measurement Interval: Annual

Data Source: An inventory of formally recognized (listed and/or designated) and pre-1920 built heritage resources is compared to demolition permits acquired from Area Municipalities.

Indicator: Building Activity

Scale: CTC

Measurement Interval: Annual

Data Source: Figures on building activity in both the residential and non-residential sectors are compiled annually by Regional staff, based on data supplied by the Area Municipalities.

Indicator: Assessment Value

Scale: CTC

Measurement Interval: 2011, 2014, 2015, 2016

Data Source: The most updated parcels for the fourth quarter of 2016 were sourced from MPAC (Municipal Property Assessment Corporation) under license, and used to determine the total assessment of parcels within the CTC.

Indicator: Emissions

Scale: Cities of Cambridge, Kitchener, and Waterloo

Measurement Interval: Annual

Data Source: Greenhouse gas (GHG) emissions and Criteria Air Contaminants (CAC) were estimated using data inputs involving: vehicle in operation (VIO - (by vehicle class, fuel type and fuel efficiency rating), mode share, peak hour person trips, transit ridership, and average annual distance travelled (AADT).

Indicator: Perception of Safety

Scale: CTC

Measurement Interval: 2011, 2016

Data Source: The perception of safety data is obtained from the Waterloo Region Area Survey by the Crime Prevention Council of Waterloo Region.

Indicator: Calls for Service

Scale: CTC

Measurement Interval: Annual

Data Source: The annual Waterloo Regional Police Service (WRPS) occurrence data is obtained through open source data from the Waterloo Regional Police Service website.

Indicator: Home Ownership Affordability

Scale: CTC

Measurement Interval: Annual

Data Source: Average re-sale residential prices are obtained through the MLS® System provided by the Kitchener-Waterloo Association of REALTORS® and Cambridge Association of REALTORS®.

Indicator: Transaction Values

Scale: CTC

Measurement Interval: 2011 to 2016

Data Source: Transaction data is obtained under license from Teranet.

Indicator: Building Permits

Scale: CTC

Measurement Interval: 2016 Only

Data Source: Building permit data was obtained from the Cities of Waterloo (open source), Kitchener (open source) and Cambridge (by request).

For a more comprehensive explanation of the use of data and methodology for each indicator, please read the Baseline Monitoring report.

7. Partnership with the University of Waterloo

The Region of Waterloo entered a partnership with researchers from the University of Waterloo (UW) to engage in a three-year study to quantify, monitor and measure the socio-economic, and core-area intensification impacts of ION on the CTC. The project, called 'Light Rail Transit and Core Area Intensification: Unpacking Causal Relationships' is led by Dr. Dawn Parker, with Dr. Jennifer Dean serving as co-investigator. Many PhD, Masters, and undergraduate students from the University also participate. This project is part of related work in Dr Parker's "Urban Growth and Change" research group in the School of Planning at UW.

The goal of the partnership is to explore and understand the causal dynamics between the anticipated developments of ION, intensification of the core area and socio-economic changes in the CTC. This research complements the CTC monitoring work conducted at the Region of Waterloo. Below is a summary of new research conducted by this group that is relevant for understanding changes in the CTC and their possible causes. Over the last year since the last monitoring metrics report:

- Jinny Tran's undergraduate honours thesis, "Understanding Developer's Decision Making in the Region of Waterloo" has been posted on the University of Waterloo thesis archive and is available for download at <https://uwspace.uwaterloo.ca/handle/10012/11163>.
- Xinyue Pi completed analysis of a survey of 290 local renters on residential location choice, renting experience and behaviours and perceptions towards the upcoming LRT. In addition to detailed analysis of the survey responses, she estimated a regression model, very similar to Robert Babin's from 2016 (<https://uwspace.uwaterloo.ca/handle/10012/10936>), which helps to identify the independent influence of multiple factors on rental prices. Results of the thesis are summarized at https://uwaterloo.ca/environment/sites/ca.environment/files/uploads/files/renter_survey_outreach_24oct2017.pdf. The complete thesis is available for download at <https://uwspace.uwaterloo.ca/handle/10012/12431>.
- Justin Cook, a masters student working under the supervision of Dr. Dean, is completing a thesis that explores the perspective of local real estate professionals. An executive summary of results related to the LRT, "Investigating realtor perspectives on the impact of the ION LRT on the real estate market in the Region of Waterloo" is available at

- Yu Huang, PhD student, is continuing to work on her thesis “Understanding residential location choice behaviour: an empirical agent-based housing market model for Kitchener-Waterloo.” She is currently analyzing a sample of almost 500 KW home buyers and sellers from May 2017 through April 2017. The structure of her survey is very similar to Pi’s rental survey, with CTC specific questions. She is testing new statistical methods to better understand how to characterize how housing preferences differ among demographic groups and how these differences influence buying and selling behaviour.

More information on ongoing research is available at: <http://research.wici.ca/ugc/>

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Appendix A

Cultural Establishments by NAICS Code in the CTC

Type	2011	% of Total	2016	% of Total
Manufacturing				
311811 – Retail Bakeries	7	1%	19	7%
312120 – Brewery	4	1%	6	2%
312130 – Winery	1	0%	1	0%
339910 – Jewellery and silverware manufacturing	0	0%	0	0%
Total Manufacturing	12	2%	26	10%
Retail				
45392 – Art Dealers	8	1%	4	1%
Total Retail	8	1%	4	1%
Information				
5111 – Publishers	4	1%	5	2%
5112 – Software	0	3%	2	1%
512 – Motion picture/music sound	10	1%	12	4%
515 – Broadcasting (radio/television/cable)	6	1%	7	3%
51912 – Library & Archives	6	1%	6	2%
Total Information	26	7%	32	12%
Professionals				
54131 – Architecture	11	2%	16	6%
54132 – Landscape Arch	7	1%	6	2%
5414 – Design (interior/industrial/graphic)	20	3%	48	18%
541511 – Computer programing	0	0%	2	1%
541512 – Computer design	0	0%	1	0%
5418 – Advertising and Media	16	2%	29	11%

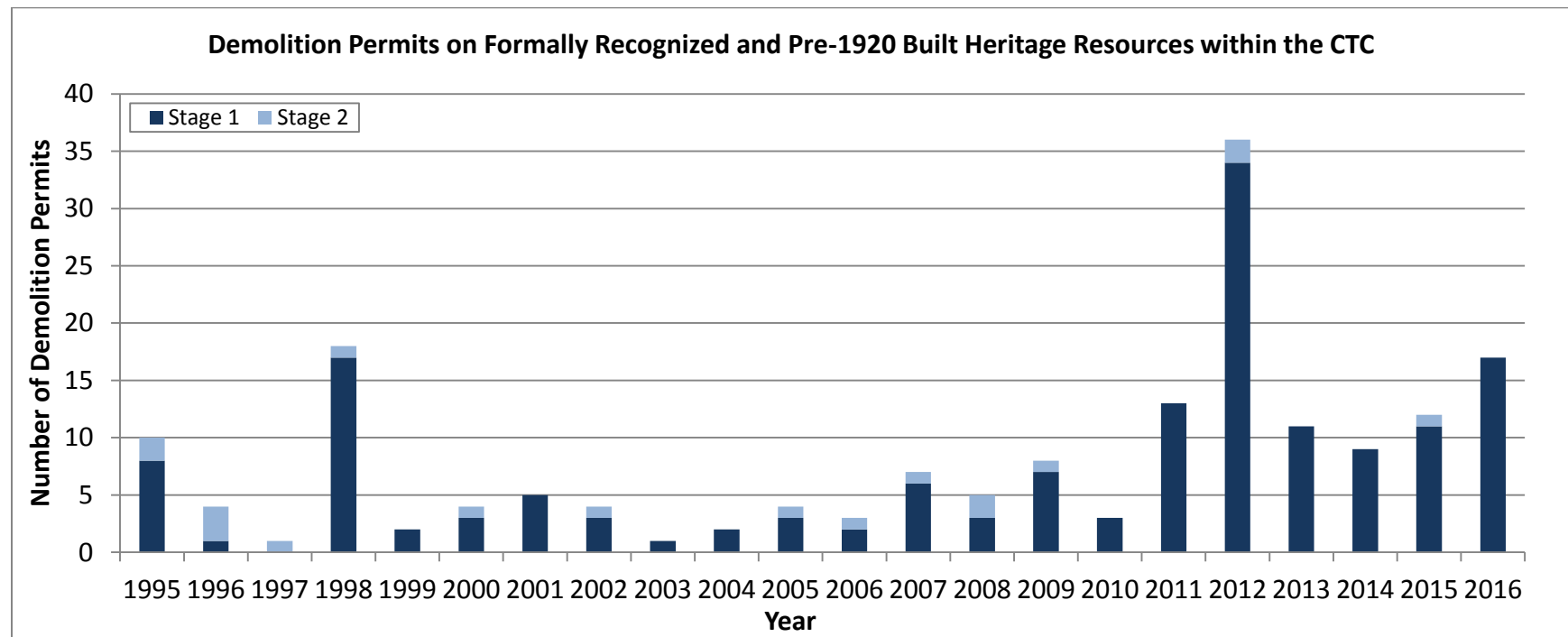
54192 – Photography	7	1%	10	4%
Total Professionals	61	8%	112	41%
Administration & Support				
56151 – Travel agencies	25	3%	22	8%
56152 – Tour operators	1	0%	0	0%
Total Admin & Support	26	4%	22	8%
Education				
61161 – Fine arts schools	19	3%	24	9%
Total Education	19	3%	24	9%
Arts, Entertainment, Recreation				
7111 – Performing Arts	6	1%	6	2%
7113 – Promotions (not sports)	7	1%	8	3%
7114 – Agent & Managers (not sports)	2	0%	1	0%
7115 – Ind. Artists	5	1%	7	3%
712 – Heritage	8	1%	12	4%
Total Arts, Entertainment, Recreation	28	4%	34	13%
Accommodation				
721 – Accommodation services	12	2%	17	6%
Total Accommodation services	12	2%	16	6%
Total Cultural Establishments	192	100%	271	100%

Appendix B

Per cent of Demolition Permits on Formally Recognized and Pre-1920 Heritage Buildings within the CTC

Year	Total Demolition Permits on Heritage Structures	Total Demolition Permits within CTC	Per cent Demolitions on Heritage Structures
1995	10	29	34%
1996	4	31	13%
1997	1	9	11%
1998	18	23	78%
1999	2	39	5%
2000	4	23	17%
2001	5	30	17%
2002	4	56	7%
2003	1	41	2%
2004	2	29	7%
2005	4	34	12%
2006	3	33	9%
2007	7	36	19%
2008	5	54	9%
2009	8	37	22%
2010	3	41	7%
2011	13	75	17%
2012	36	62	58%
2013	11	76	14%
2014	9	94	10%
2015	12	72	17%
2016	17	57	30%
Total 1995-2016	179	981	18%
Total 2011-2016	98	436	22%

Out of the total 436 demolition permits issued within the CTC between 2011 and 2016, there were 98 demolition permits issued for pre-1920 and recognized built heritage resources.



Between 1995 and 2016, thirty-five of the demolished buildings were issued on formally recognized heritage resources, while the remainder were on built heritage resources constructed pre-1920. During the same time period, approximately 89.9 per cent of the 179 demolition permits for on built heritage resources in the CTC were for buildings located in stage one.

Appendix C

Building Activity from 2011 to 2016 in the CTC (Unadjusted)												
Structure Type	2011		2012		2013		2014		2015		2016	
Residential	Value (million)	Units	Value (million)	Units	Value (million)	Units	Value (million)	Units	Value (million)	Units	Value (million)	Units
Singles	\$4.2	13	\$3.4	12	\$3.2	11	\$3.4	10	\$1.6	5	\$1.9	7
Semi-detached	\$0.2	1	\$0.9	7	\$1.3	6	\$1.4	6	\$0.5	2	\$1.6	7
Townhouses	\$6.2	44	\$27.2	179	\$8.0	48	\$15.4	92	\$6.1	50	\$5.7	55
Apartments	\$198.7	1147	\$97.5	623	\$130.2	624	\$314.0	1623	\$114.1	1096	\$259.9	1791
Total	\$209.1	1205	\$129.1	821	\$142.7	689	\$334.2	1731	\$122.4	1153	\$269.1	1860
Structure Type	2011		2012		2013		2014		2015		2016	
Non-Residential	Value (million)	Sq.Ft	Value (million)	Sq.Ft	Value (million)	Sq.Ft	Value (million)	Sq.Ft	Value (million)	Sq.Ft	Value (million)	Sq.Ft
Commercial	\$46.1	318,002	\$46.1	392,408	\$22.0	77,131	\$42.3	176,871	\$85.9	519,751	\$44.8	134,373
Industrial	\$8.5	3,600	\$2.5	20,909	\$3.8	29,349	\$15.1	8,818	\$8.8	115,860	\$13.0	54,736
Institutional	\$227.2	121,503	\$88.7	269,053	\$64.3	236,186	\$180.8	321,145	\$56.1	155,164	\$2.7	14,530
Total	\$281.8	443,105	\$137.3	682,370	\$90.1	342,666	\$238.3	506,834	\$150.8	790,775	\$60.6	203,639
Total Value	\$490.9		\$266.4		\$232.8		\$572.5		\$273.2		\$329.7	

Building Activity from 2011 to 2016 in the Region (Adjusted to 2011 dollars)												
Structure Type	2011		2012		2013		2014		2015		2016	
Residential	Value (million)	Units	Value (million)	Units	Value (million)	Units	Value (million)	Units	Value (million)	Units	Value (million)	Units
Singles	\$382.0	1336	\$281.7	927	\$258.7	846	\$299.9	949	\$364.0	1093	\$556.6	1703
Semi-detached	\$10.1	71	\$10.3	54	\$8.2	38	\$12.1	70	\$9.4	47	\$21.1	110
Townhouses	\$43.7	306	\$75.1	476	\$81.9	524	\$105.0	675	\$113.0	688	\$139.9	946
Apartments	\$297.6	1886	\$137.8	954	\$181.8	1161	\$367.8	2113	\$190.2	1730	\$352.1	2615
Total	\$733.4	3599	\$505.0	2411	\$530.7	2569	\$784.9	3807	\$676.6	3558	\$1,069.7	5374
Structure Type	2011		2012		2013		2014		2015		2016	
Non-Residential	Value (million)	Sq.Ft	Value (million)	Sq.Ft	Value (million)	Sq.Ft	Value (million)	Sq.Ft	Value (million)	Sq.Ft	Value (million)	Sq.Ft
Commercial	\$102.5	689,686	\$110.8	856,445	\$62.8	386,549	\$106.6	680,223	\$111.0	780,636	\$90.8	754,134
Industrial	\$82.6	435,198	\$42.4	328,556	\$37.8	391,153	\$87.5	1,014,395	\$46.8	534,095	\$84.4	766,448
Institutional	\$380.9	552,403	\$189.2	725,845	\$113.9	534,528	\$236.1	489,511	\$141.2	466,555	\$56.8	323,156
Total	\$566.0	1,677,287	\$342.4	1,910,846	\$214.5	1,312,230	\$430.2	2,184,129	\$299.0	1,781,286	\$232.0	1,843,738
Total Value	\$1,299.5		\$847.3		\$745.3		\$1,215.0		\$975.6		\$1,301.6	

Building Activity from 2011 to 2016 in the Region (Unadjusted)												
Structure Type	2011		2012		2013		2014		2015		2016	
Residential	Value (million)	Units	Value (million)	Units	Value (million)	Units	Value (million)	Units	Value (million)	Units	Value (million)	Units
Singles	\$382.0	1336	\$285.9	927	\$265.0	846	\$313.2	949	\$384.4	1093	\$596.0	1703
Semi-detached	\$10.1	71	\$10.5	54	\$8.4	38	\$12.6	70	\$9.9	47	\$22.6	110
Townhouses	\$43.7	306	\$76.2	476	\$83.9	524	\$109.7	675	\$119.3	688	\$149.8	946
Apartments	\$297.6	1886	\$139.9	954	\$186.2	1161	\$384.1	2113	\$200.9	1730	\$377.1	2615
Total	\$733.4	3599	\$512.5	2411	\$543.6	2569	\$819.6	3807	\$714.4	3558	\$1,145.5	5374
Structure Type	2011		2012		2013		2014		2015		2016	
Non-Residential	Value (million)	Sq.Ft	Value (million)	Sq.Ft	Value (million)	Sq.Ft	Value (million)	Sq.Ft	Value (million)	Sq.Ft	Value (million)	Sq.Ft
Commercial	\$102.5	689,686	\$112.4	856,445	\$64.4	386,549	\$111.4	680,223	\$117.2	780,636	\$97.2	754,134
Industrial	\$82.6	435,198	\$43.0	328,556	\$38.7	391,153	\$91.3	1,014,395	\$49.4	534,095	\$90.4	766,448
Institutional	\$380.9	552,403	\$192.1	725,845	\$116.6	534,528	\$246.5	489,511	\$149.1	466,555	\$60.8	323,156
Total	\$566.0	1,677,287	\$347.5	1,910,846	\$219.7	1,312,230	\$449.2	2,184,129	\$315.7	1,781,286	\$248.4	1,843,738
Total Value	\$1,299.5		\$860.1		\$763.3		\$1,268.7		\$1,030.1		\$1,393.9	

Appendix D

A list of the WRPS call type codes used to count the number of total police calls for service in the CTC Public Order Maintenance; Police Reported Violent Occurrences Against a Person; and Police Reported Non Violent Occurrences

Public Order Maintenance		Police Reported Violent Occurrences Against a Person		Police Reported Non Violent Occurrences	
9190	Prostitution	9000	Bomb Threat	9110	Break and Enter
9200	Gaming and Betting	9010	Homicide	9120	Theft over \$5000
9210	Drugs	9040	Sex Offence	9130	Motor Vehicle Theft
9290	Unwanted Contact	9060	Threatening	9790	Theft Under \$5000
9350	Intoxicated Person	9070	Assault	9180	Property Damage
9360	Unwanted Person	9080	Abduction	9920	Graffiti
9370	Mentally Ill	9090	Robbery		
9380	Public Mischief	9100	Extortion		
9470	Suspicious Person	9170	Offensive Weapon		
9480	Suspicious Vehicle	9460	Prowler		
9600	Abandoned Vehicle	9850	Human Trafficking		
9610	Liquor Offence	9900	Criminal Harassment		
9650	Youth Complaint	9050	Indecent Act		
		9310	Dispute		

Appendix E

Total Transaction Values from 2011 to 2016 (Unadjusted)							
Scale		2011	2012	2013	2014	2015	2016
Stage One	Residential	\$217,549,597	\$269,470,977	\$321,691,855	\$237,163,463	\$358,042,569	\$487,730,883
	Non-Residential	\$198,511,472	\$299,027,960	\$310,007,629	\$478,622,005	\$331,379,415	\$493,396,646
Stage Two	Residential	\$94,669,798	\$99,274,012	\$95,249,252	\$100,010,508	\$130,704,729	\$134,730,583
	Non-Residential	\$108,051,660	\$107,677,789	\$113,958,269	\$140,845,900	\$128,134,655	\$85,882,501
CTC	Residential	\$312,219,395	\$368,744,989	\$416,941,107	\$337,173,971	\$488,747,298	\$622,461,466
	Non-Residential	\$306,563,132	\$406,705,749	\$423,965,898	\$619,467,905	\$459,514,070	\$579,279,147
Outside CTC	Residential	\$2,696,178,343	\$2,854,279,746	\$2,674,918,627	\$2,762,849,890	\$2,931,993,950	\$3,775,595,372
	Non-Residential	\$809,234,735	\$788,923,475	\$903,624,045	\$993,070,623	\$1,188,239,879	\$596,891,221
Region	Residential	\$3,008,397,738	\$3,175,354,690	\$3,018,843,502	\$2,968,792,819	\$3,239,706,759	\$4,106,908,216
	Non-Residential	\$1,115,797,867	\$1,207,472,946	\$1,349,445,737	\$1,656,435,728	\$1,714,152,674	\$1,218,485,425

Appendix F

Total Building Improvement Values from 2011 to 2016 in the CTC (Unadjusted)						
Scale	2011	2012	2013	2014	2015	2016
Residential	Value	Value	Value	Value	Value	Value
Stage one	\$9,125,132	\$13,005,337	\$17,166,369	\$29,639,301	\$16,247,179	\$38,950,314
Stage two	\$2,288,621	\$2,012,900	\$1,794,254	\$1,790,746	\$1,828,148	\$2,360,664
Total	\$11,413,753	\$15,018,237	\$18,960,623	\$31,430,047	\$18,075,327	\$41,310,978
Scale	2011	2012	2013	2014	2015	2016
Non-Residential	Value	Value	Value	Value	Value	Value
Stage one	\$43,097,390	\$45,729,451	\$61,506,554	\$34,589,684	\$75,387,768	\$126,805,055
Stage two	\$19,357,673	\$14,974,396	\$13,583,917	\$13,806,846	\$11,200,220	\$11,211,585
Total	\$62,455,063	\$60,703,847	\$75,090,471	\$48,396,530	\$86,587,988	\$138,016,640
Total Value	\$73,868,816	\$75,722,084	\$94,051,094	\$79,826,578	\$104,663,315	\$179,327,618