

CHAPTER 4: CASE STUDIES

- 4.1 Pasadena
- 4.2 Hartford
- 4.3 Edmonton
- 4.4 Ottawa





CHAPTER SUMMARY

This chapter presents case studies of our North American cities that have implemented parking maximums in their downtowns. Although there are examples of other cities around the world that have adopted parking maximums, this report specifically focuses on cities from the United States and Canada, since urban form, transport patterns, and policy context are the most cross-comparable factors for North American cities. Generally, cities were selected for their similarities to Kingston including population size, concerns for downtown parking, historically significant downtowns, and progressive parking policies. Given there are no established parking maximum standards, it is necessary to understand the methods each city used to determine its parking maximum ratios as well as the process taken to implement policy changes. Attempts were made to contact each city to learn about their methodologies for calculating their respective parking ratios; however, exact details were not uncovered. The lessons learned and key takeaways from each case study can provide further insights for Kingston on implementing parking maximums and other supporting policies; although, they should not be constituted as a definitive assessment.

CASE STUDIES

Case study analyses were conducted on four North American cities that have implemented maximum parking requirements. These cities include:

1. Pasadena, California, USA
2. Hartford, Connecticut, USA
3. Edmonton, Alberta, Canada
4. Ottawa, Ontario, Canada



Figure 24: Map of Case Study Cities *Source: Gosal (2020)*
Icons: Befoolish (n.d)
Map: Vemaps (2020)

4.1 PASADENA

POPULATION: 141,029 (2019)

4.1.1 RATIONALE

The City of Pasadena was selected as a case study for its decades-long history of progressive parking policies, which can be adapted for use in Kingston as the City updates its parking management strategies. Both Pasadena and Kingston are designated as mid-size cities with populations under 150,000 as of 2019. Furthermore, both cities were incorporated in the 19th century and feature historic downtowns that continue to influence planning decisions.



Figure 25: Pasadena City Hall
Source: Rios, n.d

4.1.2 KEY PROGRESSIVE PARKING POLICIES **PARKING MAXIMUMS**

Parking maximums were a component of Pasadena's Transit Mobility Concept in the 2004 Central District Specific Plan, which aimed to reduce auto dependency and promote multi-modal travel throughout the downtown core. Parking maximums formed part of the city's transit-oriented development (TOD) strategy, which specified additional land use regulations and development standards for projects near light-rail stations in the Central District.

For instance, the former minimum parking requirements for non-residential developments became the new maximum standard while minimum requirements were reduced by 10 percent for uses with high-turnover parking (i.e. retail) and 25 percent for office uses (City of Pasadena, 2004). In addition, a maximum of one space for units less than 650 square feet was applied to residential developments. For units larger than 650 square feet, a minimum of 1.5 spaces and a maximum of 1.75 spaces per unit was applied. Further parking reductions are permitted through utilization studies (City of Pasadena, §17.50.340, 2020).



Figure 26: Downtown Pasadena
Source: Steuteville (2017)

PARKING METERS

One of Pasadena's most notable parking changes was parking meter installations throughout the historic downtown, known as Old Pasadena, in 1993. The parking meters were part of a downtown revitalization strategy for Old Pasadena, which had declined during the latter half of the 20th century. In collaboration with Pasadena's Business Improvement District (BID), the city established the Old Pasadena Parking Meter Zone (PMZ) where revenue from the parking meters was reinvested into public infrastructure within the BID. An advisory board consisting of business owners and residents in the PMZ set spending priorities for the meter revenue and recommended other parking policies. In 2001, the 690 meters yielded \$1.2 million in net parking revenue, or \$1,712 per meter (Kolozsvari and Shoup, 2018). An annual debt service of \$448,000 went towards paying off the City's initial \$5 million loan for new street furniture, trees, tree gates, lighting, and alley improvements, while the remaining \$694,000 directly funded public services including weekend foot patrols, street maintenance, and marketing materials (Kolozsvari and Shoup, 2018). A 2001 study found that the average curbside parking occupancy rate was 83 percent, which is approximately the optimum rate to ensure enough space is available for customers (Kolozsvari and Shoup, 2018). Parking meters were an effective strategy for revitalizing Old Pasadena, which freed up valuable on-street spaces for customers and made it a popular shopping district.



Figure 27: Old Pasadena parking meters display how meter revenue is re-invested into public services in the downtown
Source: Linksvayer, n.d.

TRIP REDUCTION ORDINANCE

As part of their effort to manage negative effects of congestion and parking, Pasadena adopted a citywide trip reduction ordinance (TRO) in 1989 that was incorporated into their project review process (City of Pasadena, 2015). The ordinance applies to new non-residential developments and building extensions but imposes different requirements for projects exceeding 25,000 square feet (2,323 square metres) of gross floor area (GFA) and those that exceed 75,000 square feet (6,968 square metres) of GFA. For projects exceeding 25,000 square feet, developers must provide employees with transportation information services such as maps and schedules, commuter-matching services, and designated carpool and bicycle parking. For projects exceeding 75,000 square feet, developers must design, operate, and commit to a TDM Program Plan that reduces vehicular trips through City-approved measures such as discounted transit passes or parking pricing (City of Pasadena, 2015). The latter requirements also apply to multi-family residential buildings with 100 or more units. All projects must strive to attain an average vehicle ridership (AVR) rate of 1.5 while projects within transit development areas must strive to attain an AVR rate of 1.75 (City of Pasadena, 2015). Penalties, such as fines or adding new TDM measures, are issued if developers fail to comply with the ordinance. In instances where the development team does not have an employee who can prepare a TDM plan, the City will provide the developer with a list of TDM consultants who can prepare a plan for them (City of Pasadena, 2015). The local impacts of Pasadena's specific TRO could not be determined; however, research shows that employer-based trip reduction measures can reduce vehicle miles travelled (VMT) by four to six percent (Boarnet et al, 2014).



Figure 28: A bus in Old Pasadena
Source: City of Pasadena, n.d.

PEDESTRIAN CONNECTIONS

Pasadena has committed to creating a safe pedestrian network throughout its downtown. Specifically, the city has designed its parking facilities with pedestrians in mind by constructing them near key retail, restaurant, and employment destinations (City of Pasadena, 2006). This is a key component of the city's "Park Once and Walk" concept where people can walk about 500 meters from parking to destinations in the downtown (City of Pasadena, 2006). Safe and comfortable sidewalk access points are provided at the ground-level of each parking facility (see Figure 29). In addition, pedestrian-oriented information such as nearby shops in the vicinity as well as transit opportunities to other locations is provided to promote alternative transportation modes (City of Pasadena, 2006). The Park Once and Walk concept also applies to cyclists, and designated bicycle parking is located within some parking facilities and along main bikeways. Planning for pedestrians aligns with Pasadena's goal of reducing parking demand through non-auto travel while simultaneously creating a safe, comfortable streetscape (City of Pasadena, 2006).



Figure 29: The ground-floor exterior of this Pasadena parking facility provides a safe, comfortable pedestrian access point to the street
Source: City of Pasadena (2006)

4.1.3 PROCESS

Pasadena's minimum and maximum parking ratios were adopted as ordinances in the city's Zoning Code at various times. Attempts to contact Pasadena's Current Planning and Zoning office were unsuccessful, thus the methodology for determining their specific parking ratios could not be determined. Similarly, it is unknown if the City has conducted studies on the impacts of its parking maximums on public parking facilities, and whether the parking burden has shifted elsewhere.

Old Pasadena's parking meters were a coordinated effort between the city, businesses, and property owners in the area, which helped shift perspectives around paying for parking (Kolozsvari and Shoup, 2018; Nichols, 2012). For instance, the establishment of the PMZ advisory board put businesses in control of how revenue was spent in the neighbourhood as opposed to City officials. As a result, businesses had a vested interest in the parking meters' success as they indirectly benefited from the infrastructure improvements. Similarly, the City developed a targeted marketing campaign for shoppers with information on how parking meter money was being spent (Kolozsvari and Shoup, 2018; Nichols, 2012). For instance, parking meters display specifically how the revenue was being used (see Figure 27).

Pasadena's trip reduction ordinance was adopted, under no legal obligation, to manage traffic impacts on existing infrastructure (Stewart, 1994). Since 1989, the TRO enabled changes to the City's metrics for measuring transportation impacts of new development projects. In 2015, Pasadena shifted transportation impact analysis away from vehicle Level of Service (LoS), a measurement for traffic congestion, to VMT, which measures the amount of travel for vehicles in a geographic area (Dock, 2019; Linton, 2019; Williams et al., 2016).

4.1.4 LESSONS LEARNED

- Parking meters and parking benefit districts are more acceptable if there is a clear connection between fees and benefits for both businesses and shoppers (Kolozsvari and Shoup, 2018; Nichols, 2012).
- Long-lasting partnerships between the City, downtown businesses, and other stakeholders are critical for effective transportation policy outcomes (Kolozsvari and Shoup, 2018; Nichols, 2012).
- Pasadena's TRO and other TDM programs enabled a shift towards improved metrics for sustainability and transportation impacts of new developments (Dock, 2019; Linton, 2019; Williams et al., 2016).

Key Takeaway

The cumulative impact of Pasadena's parking management strategies ranging from parking pricing and maximums to TDM initiatives and improved pedestrian accesses has created a more balanced transportation system that is accessible to everyone shopping and living in the city.



Figure 30: Source: Mancini (2017)



Figure 31: Old Pasadena Parking Benefit District helped turn the neighbourhood into a major shopping destination
Source: Peters (2019)

4.2 HARTFORD

POPULATION: 122,105 (2020)

4.2.1 RATIONALE

Hartford, the capital of Connecticut, was chosen as a case study given characteristics of the city closely resemble those of Kingston. Like Kingston, Hartford has a population of around 120,000 people, mainly employed in education and health services (United States Census Bureau, 2020b; McCahill & Garrick, 2010, p.4; United States Bureau of Labor Statistics, 2020b). In addition, Hartford sits between two major urban centres, New York and Boston. When Hartford first considered implementing maximums in 2016, it was undertaking a comprehensive review and update of its Zoning Code (Bronin, 2019). Hartford also adopted a 9-year update to its City Plan in May 2020 (City of Hartford, 2019; City of Hartford, 2020b). The City of Kingston is currently working on a new zoning by-law and completed a 5-year update to their Official Plan in 2017 (City of Kingston, 2020k; City of Kingston, 2019d). Lastly, with Hartford seeking to achieve environmental and housing affordability goals like Kingston, it can provide a contemporary example of a success in implementing parking maximums (City of Kingston 2019e; City of Hartford 2020a; City of Hartford 2020b).



Figure 32: An aerial view of Downtown Hartford, CT circa 2010
Source: Dunn (2010)

Hartford is a sprawling commuter city. In Hartford, 32.6 percent of households did not have vehicles in 2016 and there is a rate of .99 vehicles per household (Governing.com, 2016). In 2019, transportation insecurity in the state of Connecticut was 12 percent, while for Hartford, it was 26 percent (Abraham et. Al, 2019). According to Abraham et. Al. (2019) “transportation insecurity is defined as the share of participants reporting that at some point in the past 12 months, they could not go somewhere due to lack of reliable transportation” (p. 110). A significant portion of Hartford residents do not use the parking supply and indirectly subsidize suburban drivers through this. Yet, a large portion of land is still solely devoted to parking despite its negative value. Surface parking in Hartford has increasingly occupied land since 1960, and minimum parking requirements have helped spur and then reinforce existing patterns of vehicle use (McCahill & Bronin, 2020). In 1960, 15,000 parking spaces covered 7.5 percent of land downtown and in 2000, 46,000 spaced covered 22 percent of land (See Figure 33) (McCahill & Garrick, 2010, p. 4).

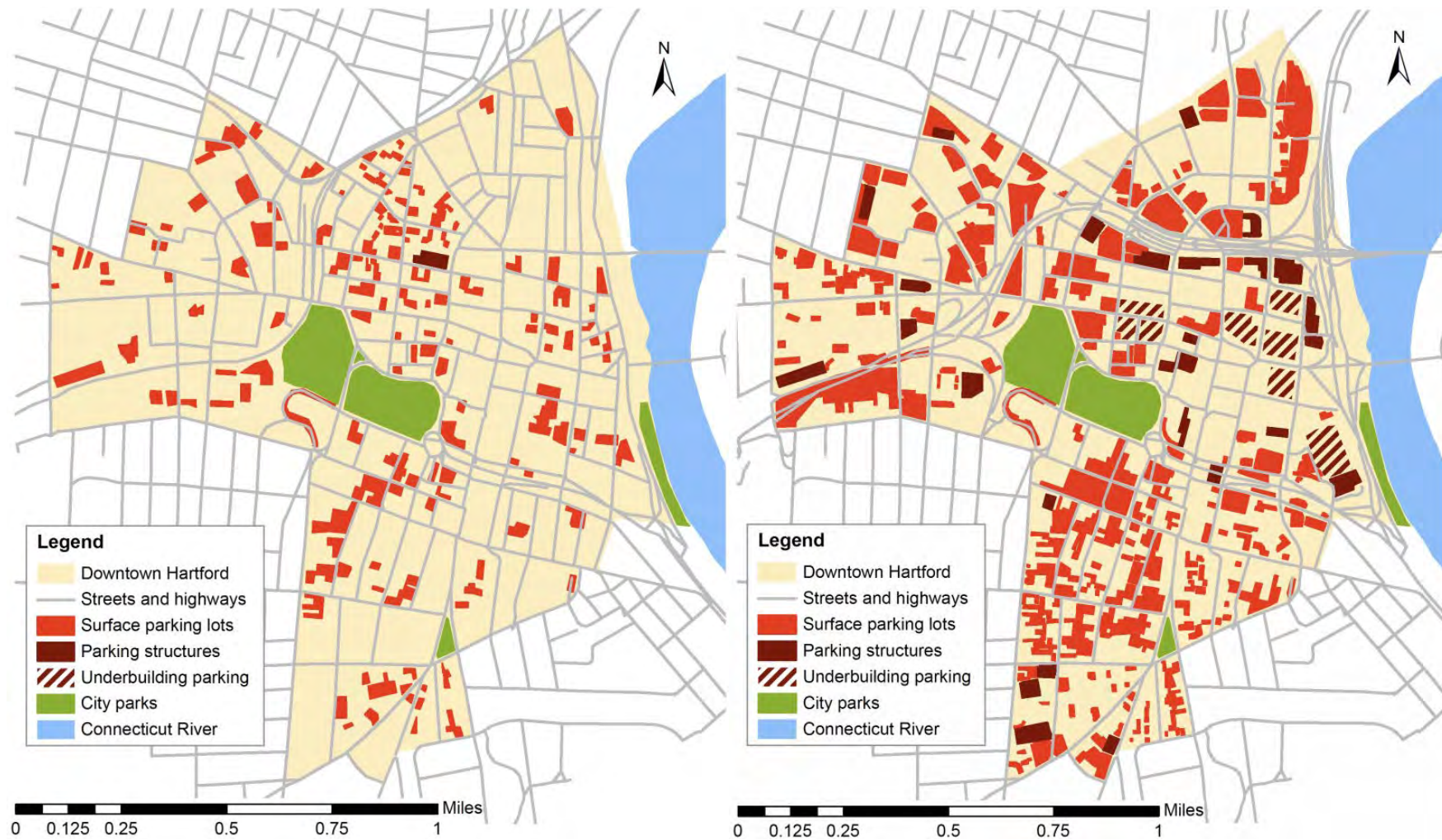


Figure 33: Parking Supply in Downtown Hartford ~1960 vs. ~2000
 Source: McCahill and Garrick (2010, p. 4-5)

4.2.2 KEY PROGRESSIVE PARKING POLICIES

4.2.2.1 PARKING AUTHORITY INITIATIVES

Beginning in 2012, the Hartford Parking Authority (HPA) announced multiple on-street parking initiatives including adding new Pay and Display Stations as well as hiring new parking ambassadors to ease transitions and improve enforcement (Hartford Parking Authority, 2012a). These steps were meant to “helps downtown businesses by creating more curbside availability for short-term visitors and deliveries during weekdays” (Hartford Parking Authority, 2012a, para 7). Through the early 2010s, the HPA attempted to increase its enforcement and collection of citation payments reaching back to 1996 (Hartford Parking Authority, 2012b). In 2013, a pilot residential parking permit program was instituted on a downtown street (Hartford Parking Authority, 2013). In 2014, the Hartford Parking Authority expanded its enforcement of non-time-related on-street parking rules in order to “improve on-street parking access for residents and patrons of local businesses” (Hartford Parking Authority, 2014a, para. 3). Also, in 2014, Hartford released a survey in order to gather public input to “identify Hartford Parking issues and Solutions” (Hartford Parking Authority 2014b). New parking meters with pay-by-plate systems were instituted in 2016 (Hartford Parking Authority, 2016). The changes mentioned in this paragraph relate to parking pricing, enforcement, regulation, and technology improvements.

4.2.2.2 LEGISLATION

The first changes to Hartford’s parking legislation were adopted in an April 2015 zoning bylaw update. Minimum parking requirements remained in the municipal code, but limits on parking maximums were also included. For example, retail uses required a minimum of 1 space per 600 square feet (~55.74 square metres) of net floor area devoted to retail

space and a maximum of 5 spaces per 1000 square feet (~92.9 square metres) of net floor area devoted to retail space (City of Hartford, 2015, p. 166). Additional supporting strategies such as reductions in parking space provisions were also utilized in several cases. These strategies include participating in an area-wide or onsite ride matching program; parking pass cost reduction for those who carpool; and a development cost reduction for developers who submit transportation management plans (City of Hartford, 2015, p. 167). Minimum bicycle parking facilities were also added as a requirement in the 2015 zoning update (City of Hartford, 2015, p.170-171).

In early 2016, the Hartford Planning and Zoning Commission completed a comprehensive Zoning review coined ZoneHartford (Bronin, 2019). In this process, parking minimums for downtown Hartford (three specific zones: DT1, DT2, DT3) were removed and parking maximums were instituted (Schmitt, 2017). Parking minimums were then removed from the zoning code and replaced with maximums citywide in late 2017 (City of Hartford, 2020b). Existing maximums were also updated in the 2017 zoning update. For example, the previous maximum of 5 spaces per 1000 square feet (~92.9 square metres) of net floor area devoted to retail was reduced to 3 spaces per 1000 square feet (~92.9 square metres) of net floor area devoted to retail (City of Hartford, 2015; City of Hartford, 2020b).

According to Hartford's updated zoning regulations, the intent of newly adopted parking provisions are to: provide an appropriate parking supply; reduce the space parking takes up to support a variety of land uses; support active transportation and particularly encourage bicycle use; reduce negative environmental impacts of 'impervious' surfaces (i.e., surface runoff, urban heat island effect); and protect green space and 'historic resources' while supporting Hartford's overarching urban design objectives (City of Hartford, 2020a, p.230; City of Hartford, 2020b; & City of Hartford 2019).

In addition to parking maximums being adopted, other supporting parking management strategies in Hartford's Zoning Regulations include: required bicycle parking, showers, and change rooms for workplaces; required electric vehicle charging stations; specific maximums for land use classifications (i.e., 3 spaces for every 5 restaurant patrons); an explicit promotion of tandem and shared parking, particularly for small sites; and multiple use reductions based on a parking demand matrix for different land uses at different times of the day (City of Hartford, 2020a, p. 230-235). The updated regulations are applicable to new builds and all intensifications of use (City of Hartford, 2020a).

4.2.3 PROCESS

It is important to note that under Connecticut law, if designated as such (which in Hartford it is), a local Planning and/or Zoning commission has full authority over matters that are planning and/or zoning related (General Statutes of Connecticut, 2005). As such, a council vote is not required for planning and zoning related matters.

Hartford's 2010 Official Plan, *One City, One Plan*, identified an oversupply of parking, especially in the downtown (City of Hartford, 2011). Complete streets and transportation planning studies were also completed including a 2010 Downtown Circulation Study and a 2016 Complete Streets Ordinance. In 2014, a city-wide housing analysis was conducted, and some important conclusions were

made. Hartford is forecasted to have no/low growth and has low incomes, yet high rents, low density, and "tepid demand" (City of Hartford, 2014, p. 4).

A 2014 study (Blanc et. Al., 2014) also revealed that in Hartford, the parking supply represented \$50 million in lost tax revenues (\$1,200 per spot). This revenue loss served as a major catalyst spurring these parking changes (Bronin, 2017 & Bronin, 2019). If land use was intensified to a mix-use building for example, tax revenues would be much higher for the municipality (Blanc et. Al., 2014). The updated legislation was meant to help the fiscally challenged City better manage municipal revenue, intensify land use downtown, and act on other economic, environmental, and social goals (Bronin, 2017 & Bronin, 2019).

According to an online newspaper article, the work of a team of University of Connecticut researchers, including civil engineering professor Norman Garrick, influenced the Planning and Zoning Commission and its chair's, Sara Bronin, decision-making (Freund, 2018). In the article, Bronin states: "UConn research enabled Hartford to become a national leader in land use regulation and parking policy, and every day we are seeing the benefits." (Freund, 2018, para 14). Two studies of note are "Losing Hartford: Transportation policy and the decline of an American city" and "Effects of Urban Fabric Changes on Real Estate Property Tax Revenue: Evidence from Six American cities" (McCahill & Garrick, 2010; Blanc et. al., 2014). In another 2010 study, at a downtown insurance firm charging employees for parking it was found that 71 percent of employees were driving to work compared to 83 percent to 95 percent for other companies in the same area. Working with employers was part of Hartford's approach (Garrick and McCahill, 2010, para 8).

The Hartford Parking Authority undertook numerous steps from 2012 onward. Next, Hartford began incrementally amending its parking legislation beginning with the April 2015 zoning update (City of Hartford, 2015). In 2016, Hartford comprehensively overhauled its 50-year-old zoning code allowing the city to “remake itself by casting off outdated requirements and codifying community priorities such as equity, sustainability, and vibrancy” (Bronin, 2019, p. 725). Parking minimums were eliminated first in the downtown area and expanded to retail and service uses city-wide later in 2016. Subsequently, in 2017, Hartford eliminated parking minimums completely and implemented maximums. In the downtown, parking requirements are considered on a case-by-case basis. Today, exclusions remain for car sales lots which are required by state law to have parking, and special projects, such as stadiums, which require public hearings and are evaluated individually (Bronin, 2017). With the current 2020 Official Plan, zoning bylaws are aligned with the city’s official policy, enabling a more progressive approach to planning land use, transportation, and parking that falls in line with best practices.

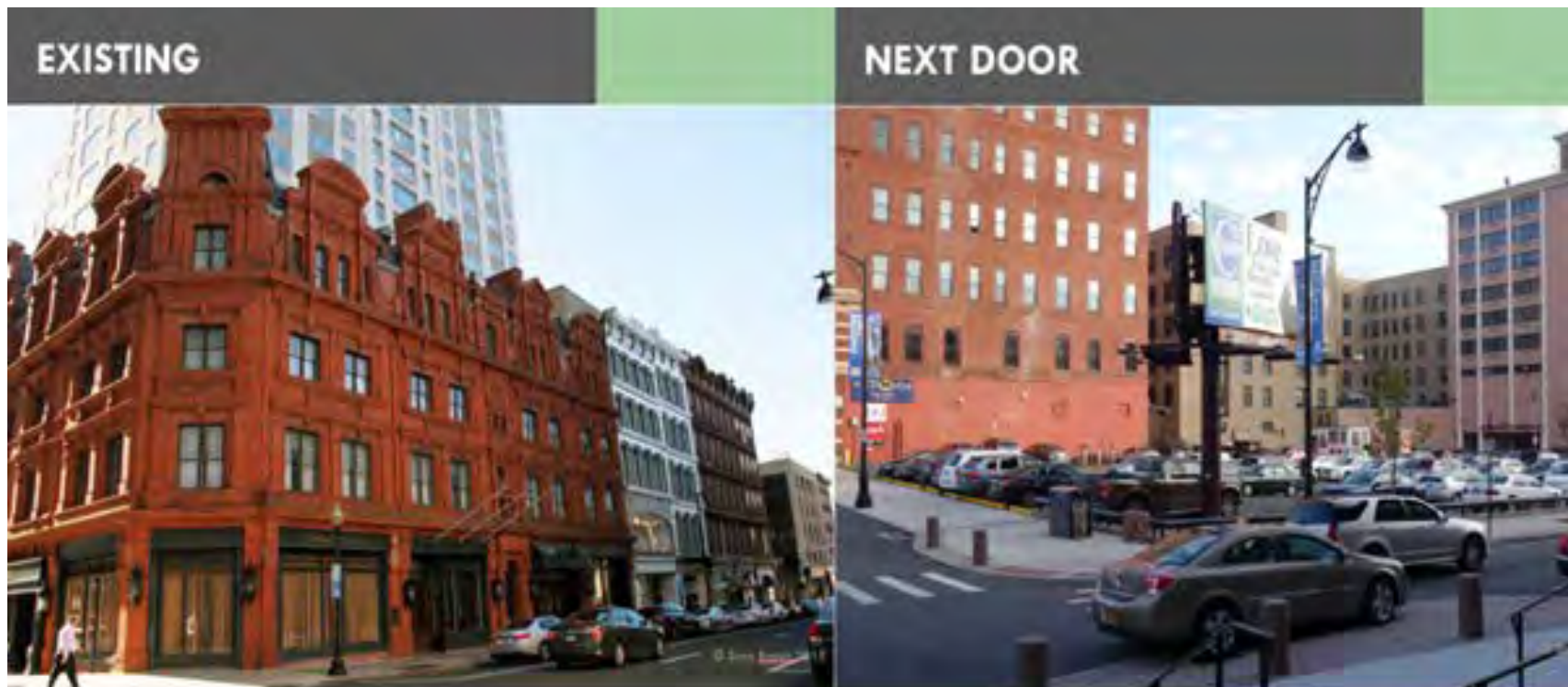


Figure 34: A surface parking lot directly across from a recently restored historical building.

Source: Quinn-Smith (2020). Image provided by S.Bronin.

4.2.4 LESSONS LEARNED

- Phased implementation of different Hartford Parking Authority initiatives followed by incremental steps toward parking maximums (Hartford Parking Authority, 2012a; 2012b; 2013; 2014a; 2014b; 2016; & Bronin, 2019). Hartford kept their parking minimums and also instituted parking maximums (City of Hartford, 2015). Minimums were then removed downtown while maximums were revised when comprehensive zoning reform occurred (Bronin, 2019). Finally, parking minimums were removed citywide and now only limits on parking maximums exist in the zoning code (City of Hartford, 2020b).
- The city Planning and Zoning Commission worked in close contact with academic researchers and employers to greater inform their decision-making processes (Freund, 2018; Garrick & McCahill, 2010).

Key Takeaway

Hartford recognized that its oversupply of parking would actively impede its goals to increase equitable transportation, economic vitality, and housing affordability as well as help move forward with its complete streets, and environmental goals. Incremental changes to its parking regulations combined with co-operation with developers, firms, researchers, and residents helped Hartford successfully implement its progressive policy.



Figure 35: Pedestrian oriented Pratt Street in Downtown Hartford

Source: *To Design* (n.d.)

4.3 OTTAWA

POPULATION: 870,250 (2019)

4.3.1 RATIONALE

The City of Ottawa, Canada's Capital, was selected as a case study because it exists within the same provincial policy context as Kingston. Furthermore, the City of Ottawa began updating its parking requirements in 2015 (City of Ottawa, 2020). As a case study, it offers insights on how another Ontario municipality adopted progressive parking standards in addition to the pre-existing parking maximums.

4.3.2 KEY PROGRESSIVE PARKING POLICIES

The review of the minimum parking requirements brought forth some major changes. First, the City of Ottawa defined three new areas, X, Y, and Z to the City's zoning bylaw (See Figure 36). These areas represent land classified as the inner urban area, traditional and arterial main streets, and locations near major LRT stations (City of Ottawa, 2016). New parking minimums were then developed to fit with the desired development in these areas.

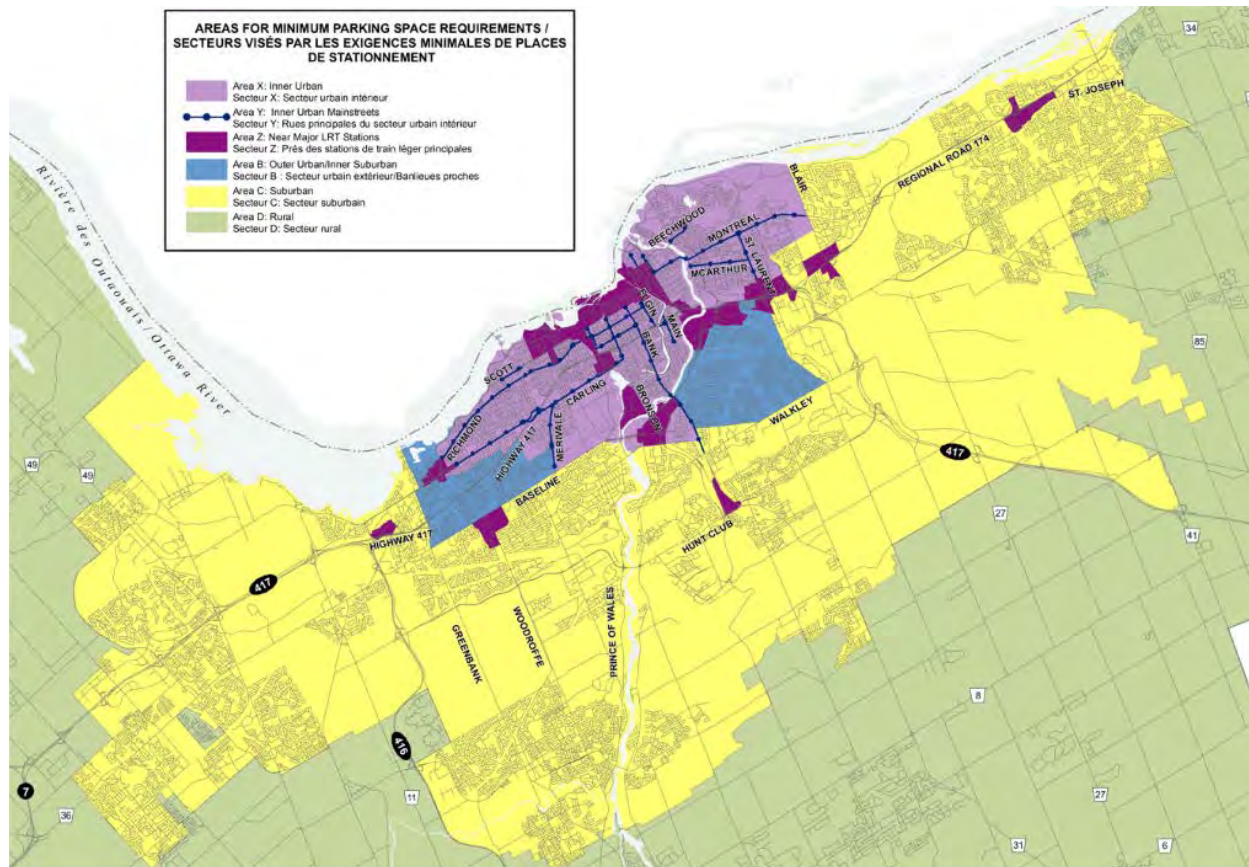


Figure 36: Map of Areas for Minimum Parking Space Requirements

Source: City of Ottawa (2016)

Area Z includes lands generally within 400 metres to 800 metres of LRT stations. In this area all parking minimums were removed except for visitor parking (City of Ottawa, 2016). Changes were informed by the idea that development around LRT stations should be higher density and density should not be a result of meeting minimum parking requirements (City of Ottawa, 2016).

Area Y includes lands adjacent to inner-urban main streets. In this area parking minimums for small-scale uses were eliminated (City of Ottawa, 2016). In this case, small-scale includes all non-residential land uses up to 500 square metres gross floor area, except for retail food stores and restaurants. However, retail food stores under 1500 square metres gross floor area and restaurants under 300 square metres gross floor area are also considered small-scale uses. In addition, for residential and office uses in Area Y, any building fewer than four storeys is considered small-scale (City of Ottawa, 2016). For all other land uses in Area Y minimum parking requirements were halved. The new parking standards in Area Y allow inner-urban main streets to gradually shift towards a denser, more pedestrian, and transit-oriented built form (City of Ottawa, 2016).

Area X includes the remaining lands in the inner urban area. In this area parking minimum requirements were eliminated for all non-residential land uses under 200 square metres gross floor area, and for the first twelve residential units in any building (City of Ottawa, 2016). For other land uses in this area parking requirements were halved. The parking changes in Area X guide the area to a denser built form which is necessary for supporting the development and intensification on main streets (City of Ottawa, 2016).

4.3.3 PROCESS

In 2015, the City of Ottawa began to review its parking standards. Like many other Canadian municipalities, Ottawa had an outdated parking policy that originated from the 1960s. These outdated requirements emphasized providing an excess of parking which hindered development and stressed the built form especially in the urban centre (City of Ottawa, 2016). Realizing this, the City of Ottawa sought to revamp the parking requirements in their zoning bylaw (Bliss, 2016). The City of Ottawa started this process by reviewing the minimum parking requirements, with additional, separate reviews for parking maximums and bicycle parking at a later date (City of Ottawa, 2016). The parking minimum review included in-depth research on best practices to inform a revised set of parking requirements that would reflect the goals of the Municipal Parking Management Strategy that was put forth by the City of Ottawa in 2009. As background research, the City conducted a broad scan of minimum parking requirements in other Canadian cities accompanied by more detailed observations of Montréal and Toronto. In addition, academic literature was reviewed to gain better insight on parking minimum requirements and spillover (City of Ottawa, 2016).



Figure 37: Public parking in Ottawa
Source: Vachon (2018)

The purpose of the revised minimums was to balance the need for parking against the costs, such as inefficient land use (City of Ottawa, 2016). During the public consultation, planners emphasized that these changes would not affect existing parking and would help to create a city that encouraged walkability, affordability, and the growth of small businesses (Bliss, 2016). This turned out to be a successful endeavour for Ottawa, and council unanimously voted to pass the recommended changes for parking minimums in 2016 (Bliss, 2016). Although the City of Ottawa clearly outlined their reasoning for pursuing updated parking standards, the actual methodology used to attain the numbers for these new minimum ratios was not determined.

4.3.4 LESSONS LEARNED

- It may be appropriate to adjust parking ratios based on locations. Different areas have different land use goals and different built forms which may benefit from tailored parking ratios.
- Parking spillover results from a combination of factors and behaviours not strictly from the amount of parking supply and it can be managed through regulation, pricing, and enforcement (City of Ottawa, n.d.).

Key Takeaway

During consultation, the City of Ottawa was able to overcome the controversial nature of parking reductions by highlighting the positive outcomes of a more compact built form including improved walkability, housing affordability, and growth of small businesses.



Figure 38: View of Ottawa
Source: Illarionov (2020)

4.4 EDMONTON

POPULATION: 972,223 (2019)

4.4.1 RATIONALE

The City of Edmonton was selected as a case study as it is the first major Canadian city to remove parking minimums citywide (Brasuell, 2020). In addition, Edmonton is similar to Kingston in that its parking standards had remained unchanged for decades despite changing objectives, such as multi-modal travel throughout the City (City of Edmonton, 2019c). Specifically, both cities aim to reduce auto dependency through an integration of transportation systems in the downtown core.

4.4.2 KEY PROGRESSIVE PARKING POLICIES

REMOVAL OF PARKING MINIMUMS

Removal of the 1964 Zoning Bylaw for minimum parking was a key component of Edmonton's 2013 *Capital City Downtown Plan* (City of Edmonton, 2013). Its aim was to promote bicycle and pedestrian routes throughout the downtown core, particularly in the Warehouse Campus neighbourhood. Parking minimums were gradually reduced beginning in 2010, which led to a complete removal by early 2020. During this period, the removal of parking minimums extended from TOD and downtown areas to city wide implementation. Strategies included area-specific parking requirements, shared use parking provisions, cash-in-lieu parking policies, and parking maximums (Piroddi, 2009).

EXTENSION OF PARKING MAXIMUMS

The downtown core was the first area to have parking maximums. The removal of parking minimums led to a recommendation to extend parking maximums to transit-oriented development areas and main streets throughout Edmonton. As of July 2nd, 2020, regulations for parking maximums were implemented in three categories of land use: commercial, residential, and mixed use.

For example, commercial land uses are permitted one parking space per 200 square metres of floor area. High-rise multi-unit residential are permitted 0.75 parking spaces for a one-bedroom unit and 1.25 spaces for a two or more-bedroom unit. Office and industrial uses are permitted one vehicle parking per 200 square metres of floor area.

4.4.3 PROCESS

Parking regulation amendments were based on Edmonton's 2019 four-phase study. Phase I provided technical data derived from parking utilization by time of day for commercial, residential, and mixed-use land uses. Findings indicated that commercial uses tend to peak in the mid-day period, residential uses peak in the late evening/overnight period, and mixed land uses have a maximum 61 percent parking occupancy. Parking was oversupplied at a higher rate with commercial land uses, and to a lesser extent at mixed land uses. Residential uses had a relatively higher utilization rate. A key finding was the wide variation in how parking was supplied and utilized across the city, with no discernible relationship with land use and geographic area. Phase II supplemented qualitative data from business, homeowner, residential, and commercial users through online surveys, focus groups, town hall meetings, and interviews. A key finding was that parking regulations should be flexible for each site based on land use and zone, as determined by local market demand. Phase III ascertained City Council's approval of Open Option Parking, one of the three presented options. Phase IV implemented zoning bylaw amendments to parking minimums and maximums.

4.4.4 LESSONS LEARNED

- Elimination of parking minimums is more acceptable if parking spaces are gradually reduced over time.
- A phased approach that incorporates technical data and user input is more likely to garner City Council approval for amendments to bylaws.
- A wide range of tools is essential to elicit meaningful input from users.
- Presenting options with risk-benefits analysis to City Council is key to the decision-making process.
- Flexibility in parking regulations for each site based on land use, zone, and local market demand is essential for public buy-in.

Key Takeaway

Edmonton's four-phased study provided strategies on how to eliminate city-wide parking minimums and to expand parking maximums that are flexible to land use, zone, and local market demand while reflecting the broader policy goals to reduce driving and promote mobility choices.



Figure 39: Timeline of parking reductions in Edmonton
Source: City of Edmonton (2019d)

CHAPTER CONCLUSION

This chapter summarized the key progressive parking policies of four North American case studies and their processes for implementation. The lessons learned as well as a key takeaway were provided for each case study. In Pasadena, a combination of different parking management strategies is applied, which results in a more balanced transportation system. Hartford followed a phased approach for adopting parking maximums and removing minimums, which eased the implementation process. Ottawa adopted location-based parking ratios that tailored parking requirements to the land use goals and built form of each established policy area. Finally, Edmonton followed similar approaches as Hartford and Ottawa by adopting location-based ratios, gradually removing parking minimums, and extending parking maximums.

CHAPTER 5: RECOMMENDATIONS

5.1 Phased Implementation of Parking Maximums

5.2 Additional Recommendations

5.3 Overcoming the Political Nature of Parking





CHAPTER SUMMARY

This chapter outlines four sites from Parking Area 1 representing different land uses (i.e. supermarket, high-rise multi-family residential, mid-rise multi-family residential, and general office) that were selected for this report to illustrate what maximum parking ratios could look like in downtown Kingston. Each site's zoning requirements and existing roadway conditions are provided for context. Charts for each site detail the recommended maximum parking ratios followed by a justification. In addition, five other recommended parking management strategies are described to help facilitate the implementation of the recommended maximum requirements.

5.1 RECOMMENDATION #1: PHASED IMPLEMENTATION OF PARKING MAXIMUMS

Kingston currently has a strong foundation in parking management and many existing strategies are in line with best practices from other cities (See Appendix A). For instance, Kingston has established various parking permit areas in its downtown, laid plans for a connected active transportation network, developed annual transit ridership targets, and implemented parking spillover policies. Kingston can improve upon the existing parking management framework by better aligning policies with its transportation goals, such as having more specific requirements for bicycle parking in zoning bylaws. In addition, Kingston could start re-investing revenue from parking permit areas into local neighbourhoods to improve public infrastructure such as sidewalks. Parking is the link between transportation and land use and improving upon existing policies will help Kingston achieve its overarching goals of becoming more environmentally sustainable and building more affordable housing.

It is recommended that Kingston undertake a phased approach when shifting from minimum to maximum parking requirements. As identified in this report, a phased approach has been used by other cities who have successfully implemented parking maximums. For example, the City of Edmonton first implemented maximums in the downtown and then expanded to transit-orientated development areas and main streets across the City (City of Edmonton, 2019). Kingston should begin by implementing maximums in strategic locations. Specifically, Kingston should begin to implement maximum parking requirements in the Central Business District, or Parking

Area 1. Again, this approach has been taken by other cities, such as the City of Pasadena which implemented maximums in its downtown core (Kolozsvari & Shoup, 2018). Relating to policy, a phased implementation of parking maximums allows Kingston to align parking changes with current goals and objectives. Specifically, beginning in Parking Area 1 complements Kingston's goal of becoming the most sustainable city in Canada, as alternative sustainable travel modes such as walking, cycling, and transit are available in this area (City of Kingston, 2019d). In addition, beginning in Parking Area 1 aligns with Kingston's current priority of determining parking requirements for mid and tall rise buildings to be located in this area as set out in the Density by Design report (City of Kingston, 2019g). Only after successful implementation of parking maximum requirements in Area 1 should Kingston consider expanding maximums to other parking areas in the City.

To provide an example of the implementation of parking maximum requirements in Parking Area 1, four sites within the area were selected as follows (also see Figure 40):

- Metro Supermarket (310 Barrie Street)
- Carruthers Wharf (135 Ontario Street)
- Anna Lane Condominium (121 Queen Street)
- Smith Robinson (S&R) Building (27 Princess Street)

The current parking requirements of these sites were compared to the maximum requirements from the four case studies in this report, as well as parking demand rates for each land use from the Institute of Transportation Engineers (ITE) *Parking Generation Manual 5th Edition*. The ITE data was collected from parking utilization studies at sites across the United States over various periods of time (Institute of Transportation Engineers, 2019). Maximum parking supply ratios were derived from the ITE demand rates and applied to each of the four sites to illustrate how on-site parking would retroactively impact each site.

Given that this report was completed while working entirely remotely, parking utilization surveys were not conducted at the sites. Parking utilization surveys should be undertaken for these sites, and others within Parking Area 1, before Kingston shifts from minimum to maximum parking requirements.



Figure 40: Four selected sites in Parking Area 1

5.1.1 METRO SUPERMARKET



Figure 41: *Source Martin (2020)*

5.1.1.1 SITE DESCRIPTION

Metro is a grocery store located on Barrie Street. Metro is one of Kingston's centrally located grocery stores serving a customer base largely made up of downtown residents and the Queen's University student population. Metro is situated between two main streets. Princess Street runs along its northern edge, Brock Street borders it to the south with a local street, and Barrie Street, spans its eastern boundary. The Metro site itself covers an area of approximately 7400 square metres and has a building footprint just over 2300 square meters.

5.1.1.2 EXISTING CONDITIONS

Zoning Requirements

Metro is zoned C1 under the Downtown and Harbour Zoning Bylaw No. 96.259, which forms part of Kingston's Central Business System. The zoning bylaw states that there are no parking requirements for commercial uses in the C1 zone (S.5.22.5.5). This means that it is up to Metro's discretion to supply the amount of parking necessary to serve customers. In terms of bicycle parking, section 5.22.8 stipulates that commercial uses must provide 2 bicycle parking spaces per 100 square metres of gross floor area.

Existing Roadway

Metro is easily accessible by driving, transit, and active transportation as a result of its central location. Motorists can access Metro by one of its three parking lot entrances located on Princess Street, Barrie Street, and Brock Street. Cyclists can also make use of these entrances and there is a limited number of bicycle parking spaces provided on the north side of the building. Transit riders can access Metro from the express bus stops located on Princess Street and Brock Street. People who are walking to the site can enter from anywhere, however there is only one entrance equipped with sufficient pedestrian infrastructure. This limited infrastructure is inconvenient for people who are trying to enter the site safely and for those with greater accessibility needs.

Existing Parking – On-street

There are limited on-street parking options available to motorists near the Metro site. These parking spaces are regulated through "Pay-and-Display" with time restrictions and pricing. Metered parking stalls are provided on both sides of Barrie Street and are available for a maximum of two hours.

Existing Parking –Off-street

Metro's parking lot spans an area of approximately 4700 square metres and covers about 63 percent of the site. Metro provides 137 off-street parking spaces for its customers. Four of these spaces are reserved as accessible spaces and one for expecting mothers. The parking ratio provided at the Metro site is about six spaces per 100 square metres gross floor area. Appendix C shows a comparison of parking provided by other centrally located grocery stores in Ottawa, Toronto, and Kingston.

5.1.1.3 ASSESSED PARKING DEMAND

ITE's Parking Generation Manual was used to assess parking demand for Metro. Metro falls within the supermarket category of the Parking Generation Manual. Under this category the average parking supply ratio is 3.7 spaces per 1000 square feet (which translates to approximately 3.98 spaces per 100 square metres). The ITE derived this number from parking surveys conducted at sixteen different sites across dense multi-use urban settings. The studies were conducted based on observation at the different sites during different hours of the day, and on different days of the week (Institute of Transportation Engineers, 2019). No parking demand studies were conducted for Metro specifically.

5.1.1.4 PARKING MAXIMUMS

The maximum parking requirements from the four case studies and the ITE Parking Generation data for supermarkets were applied to Metro (See Table 6). All the applications resulted in fewer parking spaces than there are currently at Metro. Results range from 36 fewer spaces to 114. To account for these differences, two maximum parking requirement options are provided. Option A recommends adopting a maximum of 3 spaces per 1000 square feet of GFA (approximately 3.23 spaces per 100 square metres). This maximum is used by the City of Hartford for retail uses. When applied to the Metro site, this requirement results in a maximum of 77 parking spaces. Option B presents a more aggressive approach and recommends that a maximum ratio for commercial uses be used that results in fewer than 77 spaces at the Metro site. This recommendation accounts for the small number of spaces provided by the City of Edmonton and the City of Ottawa maximum requirements (See Table 6).

Table 6: Recommended Parking Maximums for Metro

Current Bylaw Designation	Kingston's Minimum Parking Requirement	Parking Provided at Site	Case Study	Case Study's Maximum Parking Requirement	Application of Case Study at Site	Recommended Maximum
C1 Central Business System - Commercial	No requirement for commercial uses in the Central Business System (C1) Zone	137 (includes 5 accessible spaces)	Pasadena	4/1000ft ² (~4.3/100m ²)	101 spaces	Option A 3/1000ft ² gross floor area = 77 spaces Option B Less than 77 spaces
			Ottawa	1/100m ² GFA within 600m of a rapid transit station (Central Area)	23 spaces	
			Hartford	3/1,000ft ² net floor area devoted to retail space (~3.23/100m ²)	77 spaces	
			Edmonton	1 space per 200m ² floor area (0.5/100m ²)	47 spaces	
			ITE	3.7/1000ft ² * (~3.98/100m ²)	98 spaces	

*Based on surveys of 16 sites in a dense multi-use urban setting.

5.1.1.5 JUSTIFICATION

Anecdotal observations suggest that the Metro grocery store has an oversupply of parking. This oversupply is illustrated by a yearly charity ball hockey tournament that covers the entire northwest portion of the parking lot, as shown in Figure 44 (Stafford, 2019). This area of the parking lot contains approximately 60 parking spaces. This suggests that if Metro has been developed without these 60 parking spaces, as is recommended in Option A, it would still have adequate parking. The Metro site may even have been able to be developed with a more aggressive parking maximum as recommended in Option B, given its location and opportunities for transportation alternatives. Both Option A and Option B would have opened additional space for development along Princess Street and encouraged more efficient land use on the site. For example, the extra parking area could have been used for additional housing in Area 1, which aligns with the City of Kingston's goal to build a range of housing types and increase housing affordability (City of Kingston, 2019e).



Figure 42: 2018 Taylor Hall Charity Ball Hockey Tournament in Metro Parking Lot
Source: Boys and Girls Club of Kingston and Area (2018)

5.1.2 CURRUTHERS WHARF



Figure 43 : Carruthers Wharf
Source: Homestead (2020a)

5.1.2.1 SITE DESCRIPTION

Carruthers Wharf is a 15-storey, rental apartment building located in a waterfront neighbourhood along Ontario Street close to downtown Kingston. The building is owned and operated by Kingston-based property manager Homestead, which operates over 27,000 properties across Ontario (Homestead, 2020b). The property is marketed as being in Kingston's "most prestigious waterfront neighbourhood" with a "panoramic view of Lake Ontario...overlooking Kingston's historic harbour" (Homestead, 2020a).

The building has a total of 130 units with a combination of one and two-bedroom suites ranging in price from \$1,995 to \$2,550 (Homestead, 2020a). Carruthers Wharf also features several amenities including a fitness room, party room, on-site laundry facilities, rooftop patio with barbecues, and indoor and outdoor parking (Homestead, 2020a).

5.1.2.2 EXISTING CONDITIONS

Zoning Requirements

Carruthers Wharf is zoned Block 'D' (HR-2), a specific Harbour zone, which stipulates a minimum rate of one parking space per dwelling unit. Carruthers Wharf complies with this requirement by providing 138 parking spaces for 130 units. The Bylaw further stipulates that accessible parking be provided at a rate of one percent of the required parking spaces. Carruthers Wharf complies with this requirement by providing six accessible parking spaces. Bicycle parking is required at a ratio of 1 space per unit (City of Kingston, 2019h, p.92).

Existing Roadway

Ontario Street is a two-lane roadway with one eastbound through lane and one westbound through lane in each direction. The roadside environment is a residential and commercial area with sidewalks along either side of the roadway and a mix of vehicular and pedestrian traffic. Ontario Street is also on a Kingston Transit route with a bus stop on the west side of Ontario Street, midway between William Street and Earl Street, and a second bus stop on the east side of Ontario Street at the corner of Earl Street.

Existing Parking – On-Street

Five on-street metered parking spaces are located along the east side of Ontario Street between Earl Street and William Street. Parking is prohibited on the west side of this same section. An additional twelve metered on-street parking spaces are provided on William Street east of Ontario Street.

Existing Parking – Off-Street

The Marriott Hotel adjacent to Carruthers Wharf provides a total of 94 surface parking spaces that can be shared during peak periods. The Downtown and Harbour Zoning Bylaw stipulates that parking for non-residential uses within the Block 'D' HR-2 zone shall be structured to provide for shared parking during alternate peak use periods (City of Kingston, 2019h, p. 176). A City-owned lot on Earl Street with 30 parking spaces is within a one- or two-minute walk from Carruthers Wharf.

5.1.2.3 ASSESSED PARKING DEMAND

Resident parking demand surveys conducted by the BA Group reveal that there is a parking oversupply at Carruthers Wharf. The supply ratio is 1.06 spaces per unit based on 129 occupied dwelling units and a total of 138 spaces at the property (BA Group, 2020). Peak demand reached 106 utilized spaces leading to a demand ratio of 0.82 spaces per unit (BA Group, 2020). Parking space sales and leasing data were also analyzed. There were 111 spaces that had been sold or leased during the study period leading to a separate demand ratio of 0.86 spaces per unit, 0.04 higher than parking count demand (BA Group, 2020). Visitor parking demand was also assessed, where all eight of the available visitor spaces were in use, resulting in a demand ratio of 0.06 spaces per unit (BA Group, 2020).

ITE Parking Generation data shows that the average parking supply ratio for high-rise multifamily housing sites located in dense urban settings is 0.9 per unit (Institute of Transportation Engineers, p.122, 2019). This ratio was calculated from surveys of 18 separate sites in the US between the 1980s and 2010s (Institute of Transportation Engineers, p.70, 2019).

5.1.2.4 PARKING MAXIMUMS

The maximum parking requirements from the four case studies and the ITE Parking Generation data for high-rise multi-family housing sites were applied to Carruthers Wharf. Table 7 shows that each of the case study's requirements results in more parking than is currently supplied at the site, with the ITE data being the exception. Based on these results, two parking maximum options are provided. Option A applies a maximum requirement per dwelling unit of 0.85 spaces per unit based on the peak period demand identified by BA Group Consulting Ltd. Option A would result in a total of 106 parking spaces. Option B applies a maximum requirement according to unit type of 0.5 spaces per bachelor and 1-bedroom units and 1 space per unit with 2 or more bedrooms. Option B would result in a total of 108 parking spaces.

Table 7: Recommended Parking Maximums for Carruthers Wharf

Current Bylaw Designation	Kingston's Minimum Parking Requirement	Parking Provided at Site	Case Study	Case Study's Maximum Parking Requirement	Application of Case Study at Site	Recommended Maximum
Block 'D' (HR-2)	Minimum 1.0 space per dwelling unit	138 (includes 6 accessible spaces and 8 visitor spaces)	Pasadena	1/unit less than 650ft ² (~60m ²) 1.75/unit 650ft ² or more (~60m ²)	228 spaces	Option A 0.85/ unit = 111 spaces Option B 0.5 spaces per bachelor/1-bedroom unit (22 spaces) 1 space per 2+ bedroom units (86 spaces) =108 spaces
			Ottawa	1.5/unit within 600m of a rapid transit station (Central Area)	195 spaces	
			Hartford	2/unit	260 spaces	
			Edmonton	0.5/studio dwelling 1.0/ 1-bedroom dwelling 1.5/2+ bedroom dwelling	173 spaces	
			ITE	0.6/unit*	78 spaces	

*Based on surveys of 1 site in a dense multi-use urban setting.

5.1.2.5 JUSTIFICATION

The proposed maximum parking requirements for Carruthers Wharf would be adequate to accommodate the parking needs of the building's residents. The range between the BA Group's recommended minimum requirements for Parking Area 1 and the proposed maximum requirements ensures that parking demand can be met. Additionally, there are opportunities for residents to use alternative transportation modes. For instance, the site is within walking distance of several shopping and dining destinations in Kingston's downtown as well as Queen's University, Kingston General Hospital, the main branch of the Kingston Public Library, the Wolfe Island Ferry, and the Leon's Centre (Homestead, 2020a). Walk Score, an index that measures neighbourhood walkability at multiple geographic scales and has proven to be a valid, reliable tool, was applied to Carruthers Wharf (Carr et al, 2011; Duncan et al, 2013). The site has a score of 85 indicating that it is "very walkable" (Walk Score, 2020a). Kingston Transit also operates bus routes along Ontario Street with two accessible bus stops outside the building. The Downtown Bus Transfer Point is within a 10-minute walk of Carruthers Wharf, which offers additional bus routes to other locations outside the downtown. Moreover, shared parking opportunities are available between Carruthers Wharf and the adjacent Marriott Hotel.

In addition, more accurate and flexible parking requirements can reduce development costs, which lowers rents by between 10 and 20 percent (Litman, 2020b). Increasing densities and reducing parking requirements can contribute to more affordable housing opportunities, which aligns with one of Kingston's strategic objectives.



Figure 44 : Carruthers Wharf
Source: Martin (2020)

5.1.3 ANNA LANE CONDOMINIUM



Figure 45 : Anna Lane Condominiums *Source: Martin (2020)*

5.1.3.1 SITE DESCRIPTION

The Anna Lane Condominium is a 9-storey residential building with 115 units ranging from bachelor to three bedrooms in downtown Kingston. Anna Lane's amenities include secure bike parking (Options for Homes, 2013; City of Kingston, 2012b). Residents of Anna Lane are also within walking distance of the Food Basics grocery store, restaurants, Shoppers Drug Mart, the Kingston Public Library and a variety of other amenities. Anna Lane is considered a "Walker's Paradise" receiving a walk score of 94 out of 100 (Walk Score, 2020b).

Anna Lane was completed in 2015 by the non-profit developer Options for Homes (Options for Homes, 2012). As an affordable housing project, the developer used profits from the development to provide purchasers with a down payment on a unit (DowntownKingston!, 2013; Options for Homes, 2020).

5.1.3.2 EXISTING CONDITIONS

Zoning Requirements

The Anna Lane Condominium is zoned C1-23, an amendment to the Central Business System (C1) Zone. Under C1-23 the Anna Lane Condominium is permitted to provide a minimum of 94 parking spaces, a ratio of 0.82 spaces per dwelling unit. This was a reduction to the 1 space per dwelling unit requirement for residential uses in the C1 Zone (City of Kingston, 2019h, p.136). Bicycle parking is required at a ratio of 1 space per unit (City of Kingston, 2019h, p. 92).

Existing Roadway

The Anna Lane Condominium is located in downtown Kingston at 121 Queen Street on the corner of Queen and Bagot Street. Queen Street is a one lane east-bound and two-lane west-bound roadway. Bagot Street is two lanes and runs north south. Both streets have sidewalks and a mix of commercial and residential land uses (Josselyn Engineering Ltd., 2011). The site is also close to multiple transit stops, including a transit stop on the corner of the block for the 801/802 route, and the Kingston Downtown Transfer Point within a 5-minute walk (City of Kingston, 2020l). The Anna Lane Condominium itself can be accessed by its main entrance on Queen Street or on the west side of Bagot Street where the entrance to the underground parking is located (Josselyn Engineering Ltd., 2011).

Existing Parking – On Street

On street parking in the form of “Pay and Display” metered spaces is provided on sections of Queen Street and Bagot Street (Josselyn Engineering Ltd., 2011).

Existing Parking – Off Street

There are 94 parking spaces at the Anna Lane Condominium for use by building residents. 25 are surface parking spaces, and 69 are in a two-storey underground parking structure. Of the 94 spaces, four are accessible (Options for Homes, 2012). Off street parking is also available surrounding the lot in the form of nearby municipal parking lots. The Samuel Springer Memorial lot with 60 parking spaces, and the Drury lot with 140 spaces (Josselyn Engineering Ltd., 2011).

5.1.3.3 ASSESSED PARKING DEMAND

Parking demand assessed by BA Group Consulting Ltd. in 2017 revealed 92 out of the 94 parking spaces provided at Anna Lane had been sold to residents. This is a smaller demand ratio than the supply, with a ratio of 0.80 spaces per dwelling unit compared to the 0.82 spaces per dwelling unit provided on the site (BA Group, 2020, p. 39).

5.1.3.4 PARKING MAXIMUMS

The maximum parking requirements from the four case studies and the ITE Parking Generation data for mid-rise multi-family housing sites were applied to the Anna Lane Condominium (See Table 8). Two options are presented for parking maximums on the site. Option A is a maximum of 0.85/unit or 98 spaces. Option B is a maximum requirement based on the number of bedrooms in each unit. These ratios are 0.5 spaces per bachelor unit or one bedroom, and one space for units with two or more bedrooms, a total of 89 spaces for Anna Lane.

Table 8: Recommended Parking Maximums for Anna Lane

Current Bylaw Designation	Kingston's Minimum Parking Requirement	Parking Provided at Site	Case Study	Case Study's Maximum Parking Requirement	Application of Case Study at Site	Recommended Maximum
Central Business System (C1) - C1-23	94 spaces	94 (includes 4 accessible spaces)	Pasadena	1/unit less than 650ft ² (60m ²) (no more or less) 1.75/ unit 650ft ² (60m ²) +	184 spaces	Option A 0.85/unit = 98 spaces Option B 0.5/ bachelor or 1-bedroom unit (27 spaces) 1/ 2+ bedroom unit (62 spaces) =89 spaces
			Ottawa	1.5/unit within 600m of a rapid transit station (Central Area)	173 spaces	
			Hartford	2/unit	230 spaces	
			Edmonton	0.5/studio dwelling 0.75/1-bedroom unit 1.25/2+ bedroom unit	116 spaces	
			ITE	1.2/unit*	138 spaces	

*Based on surveys of 65 sites in a dense multi-use urban setting.

5.1.3.5 JUSTIFICATION

It is expected that the proposed parking maximums at the Anna Lane Condominium would meet the parking needs of its residents had it been built today. As illustrated by the amendment bylaw passed during the application process, the developer asked for a reduction to the parking minimum of 1 space per dwelling unit. As a result, the parking requirement was reduced to a ratio of 0.82 parking spaces per unit (Josselyn Engineering Ltd., 2011). Furthermore, the reduced amount of parking built on the site was found to not be fully utilized. Specifically, BA Consulting Group Ltd. surveyed the site in 2017 and found only 92 out of the 94 parking spaces provided had been purchased by owners of the 115 units in the building (BA Consulting Group Ltd., 2020). In addition, with the secure bike parking component of the development, multiple surrounding transit stops, and the site receiving a walk score of 94, trips by residents can be made without a personal vehicle (Options for Homes, 2013; City of Kingston, 2020u; Walk Score, 2020b). Furthermore, the availability of sustainable travel modes contributes to Kingston's goal of becoming the most sustainable city in Canada (City of Kingston, 2019d). In addition, these new parking requirements contribute to Kingston's housing affordability goals. By not oversupplying parking the cost of constructing and maintaining parking spaces to the developer is reduced as is the cost to residents found in purchase price (Litman, 2020b).



Figure 46 : Anna Lane Condominiums
Source: Adam Koven (2020)

5.1.4 SMITH ROBINSON BUILDING (S&R)



Figure 47 : Smith Robinson Building
Source: The Smith Robinson Building (2015)

5.1.4.1 SITE DESCRIPTION

The Smith Robinson Building (S&R) is a mixed-use building on the corner of Princess Street and Ontario Street. The building is host to various businesses, including a restaurant, law offices, and banks. For the purposes of this report, our group will be looking at the S&R Building as an office building.

Built in the 1820s, the original building's structure has a significant architectural and historical designation and is iconic to Kingston's downtown. In 1959, the building was purchased by Maurice Smith and Percy Robinson, who together opened the S&R Department Store. However, the economic crash of 2008 impacted many retailers, forcing the S&R Department Store to close its doors in 2009 after nearly 50 years in operation (The Smith Robinson Building, 2015). The building was later purchased in 2010, renovated and restored in 2011 and turned into the office and restaurant space that remains today. Located within the heart of downtown Kingston, the S&R building boasts various employers and shops, with restaurant and retail on the ground floor and three floors of office space (Cushman & Wakefield, n.d.). The S&R building has a walk score of 90, meaning the building is within a very walkable location (WalkScore, 2020c).

5.1.4.2 EXISTING CONDITIONS

Zoning Requirements

The Smith Robinson building is currently zoned Central Business System (C1-3) Heritage Commercial in the Downtown and Harbour Zoning Bylaw No. 96.259. Under this zoning, there are currently no parking requirements for commercial uses in the Central Business System (C1) zone. Bicycle parking is required at a ratio of two spaces per every 100 square metres of gross floor area.

Existing Roadway

The S&R building is located on the corner of Princess Street and Ontario Street. Princess Street is a one-way road with two southbound lanes. The site is surrounded by commercial and mixed-use buildings. There is a transit line that runs directly in front of the building, and the Kingston Transit Downtown transfer point is within a five-minute walk. Given the easy access to public transit, the site promotes employees and customers to take alternative forms of transportation to access the building, rather than single occupant vehicle. Also, given the building is within the downtown, it has large sidewalks in the front and promotes walking and/or cycling. There is also bicycle parking located in the underground parking lot of the building.

Existing Parking – On Street

There is a limited availability of on-street “Pay and Display” parking spaces located near the S&R building on Princess Street and Ontario Street. Given the limited number of on-street parking, employees and visitors to the building could use the municipal parking lots or seek alternative forms of transportation, such as Kingston Transit.

Existing Parking – Off Street

The S&R building has minimal on-site parking, which is permit parking only. There area total of 39 parking spaces on the site, including 19 spaces underground and 20 spaces in an outdoor lot. There are also numerous city-owned "Pay-and-Display" public parking lots surrounding the building such as the King Queen Lot and the Ontario Brock Lot, both within a 2-minute walk.

5.1.4.3 Assessed Parking Demand

ITE’s Parking Generation Manual was used to assess parking demand for the S&R building. The S&R falls within the general office building category of the Parking Generation Manual. Under this category, the average parking supply ratio is 2.9 spaces per 1000 square feet. The ITE derived this number from parking surveys conducted at seven different sites across dense multi-use urban settings. The studies were conducted based on observation at the different sites during different hours of the day, and on different days of the week (Institute of Transportation Engineers, 2019). No parking demand studies were conducted for the S&R building specifically.

5.1.4.4 PARKING MAXIMUMS

The maximum parking requirements from all four case studies and the ITE were applied to the S&R building under the general office building category. The ITE defines a general office building as a “building housing multiple tenants” (ITE, 2019, p.465). As seen in Table 9, applying the case studies to the site resulted in much higher numbers than what is currently on the site, apart from Edmonton, which results in 40 spaces, which is approximately the current number of spaces provided. Therefore, the recommendation for the S&R building would be to follow the Edmonton maximum which is 1 space per 200 square metres of floor area.

Table 9: Recommended Parking Maximums for the Smith Robinson Building

Current Bylaw Designation	Kingston's Minimum Parking Requirement	Parking Provided at Site	Case Study	Case Study's Maximum Parking Requirement	Application of Case Study at Site	Recommended Maximum
Central Business System (C1) - C1-3 Heritage Commercial	No requirement for commercial uses in the Central Business System (C1) Zone	39 (includes 2 accessible spaces)	Pasadena	3/1000ft ² (~93m ²)	261 spaces	1/200m ² = 40 spaces
			Ottawa	1/100m ² gross floor area within 600m of a rapid transit station (Central Area)	81 spaces	
			Hartford	4/1,000ft ² (~93m ²)	349 spaces	
			Edmonton	1/200 m ² of floor area	40 spaces	
			ITE	2.9/1000ft ² * (~93m ²)	253 spaces	

*Based on surveys of 7 sites in a dense multi-use urban setting.

5.1.4.5 JUSTIFICATION

It is expected that the maximum parking ratio recommended for the Smith Robinson Building would be adequate to support the parking needs of the building's tenants and customers if it had been built today. Given the heritage designation of the building, the building currently has a limited supply of parking available. When the building was being renovated in 2011, the leasing agents, Cushman and Wakefield, were specific in their search for tenants, stating that each tenant must be accepting of the limited parking availability on the site. Although there is limited parking available on-site at the S&R building, there are numerous municipal parking lots within a 5-minute walk of less or the site. In addition to the municipal lots, the Kingston Transit Downtown Bus transfer point is less than a 5-minute walk from the building. This encourages employees and customers to seek alternative forms of transportation to access the site. Park-and-Ride is a good alternative as it transports riders from outside the downtown into the downtown. The parking spaces provided at the S&R building are by permit only. The cost of obtaining a permit for the site is not stated, however, the adjacent lot at 44 Princess Street, a permit costs \$122 a month for a weekday rate and \$172 for a full-time rate (Springer, 2020). A Kingston Transit monthly pass for an adult (25-64) is \$80 per month (City of Kingston, 2020). Given that a bus pass is significantly cheaper than a parking permit, it encourages the use of public transit over private automobile when accessing the building or coming into Kingston's downtown.



Figure 48 : Smith Robinson Building from Princess Street eastbound *Source: Martin (2020)*

5.2 ADDITIONAL RECOMMENDATIONS

5.2.1 Recommendation #2: Adopt Performance-based Parking Pricing within Area 1 and Regularly Review

Parking pricing should be considered an essential component of effective parking management. To ensure that the City of Kingston's parking pricing for on-street parking is accurate and up-to-date, it is recommended that the City performs regular reviews through parking utilization surveys (City of Kingston, 2015a). These prices should be "performance-based" and reflect current parking demands based on location and time. Prices should be set to achieve an occupancy rate where one or two spaces per block remain available during a one-hour time period. The areas with the highest demand should be priced higher than areas that are less convenient (Litman, 2006). In addition, prices should be set for morning, mid-day, and evening periods. This will help capture any differences in demand based on time of day. Pricing on-street parking in this manner will accomplish three important objectives (Shoup, 2011). It will ensure that at least one parking space per block is readily available for motorists. It will create a high occupancy of parking spaces, meaning that the on-street parking will be well used and serve many customers. And it will provide a source of revenue to the municipality. Balancing the price and occupancy in this way will guarantee that motorists can find parking that is accessible and close to their destination without excessive cruising (Shoup, 2011). This avoids wasting drivers' time, and unnecessary congestion and pollution as a result of cruising (Litman, 2006; Shoup, 2011).

Applying these parking pricing recommendations will help support the incorporation of parking maximums by ensuring that there is a consistent supply of on-street parking conveniently available to motorists in Area 1. Furthermore, these recommendations can help the City of Kingston build towards the vision outlined in the Strategic Plan. As previously mentioned, parking pricing can help eliminate any congestion and pollution caused by cruising — which aligns with the City of Kingston's desire to promote pedestrian safety. Also, depending on the conditions, a 10 percent increase in parking fees may result in a 1-3 percent reduction in vehicle trips (National Academies of Science, Engineering, and Medicine, 2005; Litman, 2008), which would lead to a slight reduction in greenhouse gas emissions from motorists.

5.2.2 Recommendation #3: Establish Parking Benefit Districts in Central Neighbourhoods

As a way of capitalizing on parking pricing, it is recommended that the City of Kingston implement parking benefit districts (PBDs). As previously mentioned, PBDs are areas where revenues generated for on-street parking, parking lots and garages, and parking permits are collected and reinvested back into the area to make improvements to the streetscape. It is recommended that in the short-term Kingston perform a PBD pilot by converting one or two of the residential permit areas near the downtown. Planners should reach out to residents in these neighbourhoods to introduce the concept, gauge interest, and select a neighbourhood that is supportive of the project. Like in Pasadena, Kingston should explicitly state the connection between the parking fees and the improvements to get stronger neighbourhood buy-in. Additionally, by giving residents the ability to take charge, it can make the process citizen led to a greater extent.

During the pilot, all revenues generated from monthly on-street parking permits should be pooled and used as a public investment for the neighbourhood. Investments could come in the form of new benches, sidewalk repairs, street trees, bicycle infrastructure, and more. As a way of generating more money through parking pricing, the City of Kingston could implement a permit program like the one in Boulder, Colorado. In Boulder, the City sells market rate on-street permits on select blocks to residents outside of that neighbourhood (Shoup, 2018b). These blocks must have a vacancy rate greater than 25 percent and the City of Boulder only sells a maximum of four permits to cars from outside of the neighbourhood on a given block, thus controlling the impacts of this program on the neighbourhood (Shoup, 2018b). In Kingston, this could come in the form of overnight parking permits or commuter permits, due to the proximity of the neighbourhoods to downtown. The money collected from this pilot can be reinvested into the neighbourhoods with additional investments going to the blocks that allow cars from outside of the neighbourhood to park there. If this pilot is successful, the City of Kingston could look towards creating a parking benefit district in the downtown area.

Investments made from parking revenues could continually help improve downtown streetscapes. These types of improvements can create a cycle of redevelopment by continuing to attract more and more visitors into the area (Eden, 2016). Implementing parking benefit districts and using the revenues collected from on-street parking meters and parking permits to invest in improvements to the streetscape also aligns with Kingston's strategic objectives. By making these investments, the City of Kingston can contribute more towards its goal of prioritizing active transportation and investing in building quality streets.

5.2.3 Recommendation #4: Integrate Transportation Demand Management Strategies within City Policies and Processes

To reduce parking demand, it is recommended that the City of Kingston engage with the development community by better integrating TDM measures within its policies and processes. In the short-term, non-prescriptive guidelines can highlight opportunities for developers to integrate relevant TDM measures into a project. In the medium-term, the City can require developers to prepare a TDM report as part of the development application process. The City of Hamilton has adopted these approaches in its own TDM strategy where developers may be asked to prepare TDM memos or reports as part of a complete application for a Plan of Subdivision, Site Plan, or rezoning (City of Hamilton, 2015). The scope of each memo or report is dependent upon location, context, and other characteristics of the proposed development (City of Hamilton, 2015). In addition, Hamilton's OP supports the inclusion of TDM within planning and development processes:

“Transportation demand management measures shall be evaluated in all transportation related studies, master plans, environmental assessments, neighbourhood traffic management plans and new development plans including the degree to which it can help achieve transportation goals...” (City of Hamilton, Official Plan, Policy C4.2.4, 2019)

In the long-term, Kingston should aim to implement new legislative and zoning requirements, like a TRO, that require new developments to design, implement, and operate a building based TDM program or plan. Although the City's OP and other supporting policies recognize TDM as an important strategy for achieving their strategic goals, there should be more done to coordinate with developers to integrate these measures. Considering that American zoning ordinances and Canadian zoning bylaws are two separate sets of tools that exist in different policy contexts, a TRO may not be easily translatable between the two jurisdictions. However, this presents a future research opportunity for another SURP project course.

Pasadena's TRO is one example of a progressive TDM strategy; however, many cities have adopted ordinances and regulations that share similar components. A report by a transportation management association (TMA) in Boston summarized the key components associated with effective TROs from a scan of 13 different US cities, including Pasadena. These components can guide Kingston as they begin to incorporate TDM measures within new developments:

1. *Requirements* These are the TDM measures that must be adopted by the developer. Some cities may require the adoption of specific measures while others provide the developer with flexibility to choose (A Better City, 2014).
2. *Penalties* Penalties for non-compliance vary across cities but can range from fines, either per employee or per parking space, to withholding building permits to business licence revocation in some circumstances. However, these penalties should not be strongly enforced. Rather, City staff should work with developers and businesses to achieve compliance and only impose penalties if there is a failure to submit a TDM plan or a lack of cooperation in the administrative process (A Better City, 2014).
3. *Applicability* These are the various thresholds in which the TRO applies. For instance, some TROs apply to building square footage, number of parking spaces, or potential trip generation while others may apply to the number of employees onsite. Based on the cities assessed by the Boston-based TMA, thresholds for building square footage can range between as low as 1,000 square feet (93 square metres) and as high as 100,000 square feet (9,290 square metres).
4. *Goals* All TROs set goals for either a percentage or number of trip reductions achieved, yet methods vary by city. Pasadena sets AVR reduction targets while other cities have measures for reducing single occupancy vehicles (SOV) and vehicle miles traveled (VMT). Goals are important but the City should prioritize “compliance and effort” as over achieving targets (A Better City, 2014). City staff should work with businesses to help them achieve these targets such as offering additional financial incentives.

The same report also outlines common best practices for effective TROs that were shared among the 13 cities. These practices include broad support, staffing, streamlined process, and evaluation.

1. *Broad Support* There must be coordination between different city departments, non-profit organizations, and even other levels of government to work towards the same goals and cooperate with the private sector. The examples provided in the document discuss coordination between state and municipal governments, which may not necessarily be replicable between Ontario and Kingston. However, other Ontario municipalities such as Sudbury and Hamilton have TDM measures that closely involve local organizations and developers in the process (City of Greater Sudbury, 2020; City of Hamilton, 2015).
2. *Staffing* Designated staff members should be employed by the developer or business to monitor the adopted trip reduction measures. Staff are funded differently across cities, including fees imposed by the city, a percentage of sales tax, or through revenue collected from parking permits and citations.
3. *Streamlined Process* Rather than leaving the TDM options open-ended to the developer or business, the City should provide a list of TDM requirements that align with their strategic objectives. This allows for more measurable programs to be implemented. TROs can be revised over time to ensure the effective delivery of TDM programs.
4. *Evaluation* Processes should be established by the City to track progress towards goals, whether it be through surveys, audits, or status reports.

Integration of TDM measures within the City’s policy development processes align with Kingston City Council’s priorities of demonstrating leadership on climate action and improving walkability, roads, and transportation.

5.2.4 Recommendation #4: Develop a Parking Enforcement Plan

To improve parking enforcement, it is being recommended that the City of Kingston adopt an updated parking enforcement plan. Specifically, Kingston should adopt a similar parking enforcement plan as the City of Portland. The City of Portland has been a leader in progressive parking policy for many years. Portland's *Performance Based Parking Management Manual*, produced in 2018 was based on the city's existing parking policies, targets, and parking parameters. The purpose of this manual was to translate the existing policies into guidelines. Outlined within this document is Portland's parking enforcement strategy.

Cities with excellent parking enforcement typically will achieve a "capture" rate of 20 percent, or roughly 1 in 5 parking violations. Above 20 percent can be harmful and discourage people from visiting the downtown and local businesses (Portland Bureau of Transportation, 2018). Capture rates can vary based upon the size of the enforcement area, the method of patrol, and number of enforcement officers. Therefore, Kingston should determine an attainable capture rate within Parking Area 1 that is based upon current parking enforcement policies and practices. Kingston can use the calculation methodology outlined below from the City of Portland for calculating both the violation rate and the capture rate.

Violation Rate: Percentage of unique vehicles surveyed which are found to be parked in violation of the prevailing regulation. Calculated as follows:

$$\text{Violation Rate} = \frac{\text{Vehicles in Violation}}{\text{Vehicles Observed}}$$

Capture Rate: Percentage of unique violations which are cited or issued a warning. Calculated as follows:

$$\text{Capture Rate} = \frac{\text{Vehicles Cited or Issued Warning}}{\text{Vehicles in Violation}}$$

Smaller enforcement areas that are patrolled by officers, most seen in downtown metered areas, should yield capture rates of 30 to 40 percent. Larger areas that have a mix of regulations may only produce capture rates of five to 10 percent (Portland Bureau of Transportation, 2018).

5.2.5 Recommendation #5: Prepare a Comprehensive, City-Wide Parking Management Strategy

It is recommended that the City of Kingston prepare a comprehensive Parking Management Strategy. After its completion, this document will contain all relevant information pertaining to parking within Kingston. The preparation of a Parking Management Strategy is an efficient way for the City to combine all current and future parking-related documents into one report. Kingston is currently doing a lot of work with respect to changes and updates to existing parking policies and requirements within the City. Therefore, it would be beneficial to have all parking-related material compiled into one document. Furthermore, the Parking Management Strategy would support goals in current policies such as Kingston's Transportation Master Plan and Kingston's Strategic Objectives. The City can use policies and recommendations outlined within this report, as well as other parking studies that are currently underway or have been completed to create a comprehensive Parking Management Strategy. This will help to develop a singular, collaborative and comprehensive document. Additionally, the city should look to conduct a parking inventory to determine the amount of parking spaces available in both public and private lots throughout the City. Knowing this information would be beneficial for future parking studies conducted and to help guide future parking decisions in the City.



Figure 49: Cars parked along a street *Source: City of Kingston (2020y)*

5.3 OVERCOMING THE POLITICAL NATURE OF PARKING

Parking is an inherently political issue. Thus, it is recognized that parking policy changes should be implemented gradually. However, there are ways that parking changes can be framed in a manner that will make them more acceptable to the public and City Council.

First, parking is ultimately an issue of equity. Everyone pays for parking whether they drive or not because the cost of parking is engrained within all components of the local economy such as the cost of a meal at a restaurant, monthly rents, store merchandise, and theatre tickets (Shoup, 2005). The collectivization of parking costs skews travel choices towards automobiles and away from public transit, cycling, and walking because of increased travel distances and reduced driving costs (Shoup, 2005). Therefore, framing parking as an equity issue will communicate to the public and Council the unfairness behind off-street parking requirements. Furthermore, highlighting this injustice provides an opportunity for the City to reinforce its Social Equity Pillar as part of its sustainability vision.

Second, reducing the amount of parking space helps contribute to more dynamic public spaces. As outlined in this report, parking consumes significant amounts of land that could be used for public spaces for pedestrians and businesses to rejuvenate the downtown. The COVID-19 pandemic has highlighted how parking space must be designed in a flexible manner that allows for adaptation to other uses. This presents an opportunity for Kingston to further preserve its unique cultural and heritage assets.

Third, reducing parking requirements helps reduce development costs for housing, thereby increasing affordability. This fact further emphasizes how the hidden costs of parking inflate the price of everything else, especially housing. Tying together Kingston's goals of increasing affordable housing and reducing parking requirements is crucial for achieving further progress on these issues.

Fourth, if the City should pursue other parking pricing initiatives, such as a parking benefit district, it is necessary to be transparent about how parking fees will benefit everyone, ranging from the individual to the neighborhood to the entire City. This contributed to the effectiveness of Pasadena's benefit district. Despite initial opposition from business owners, they were put in control over how parking meter revenue was spent, which led to improved streetscapes that benefited their businesses and pedestrians alike. Marketing strategies also helped change local perspectives about paying for parking, with labels on each meter informing how revenue was being spent in the district. These connections can help make paying for parking feel like a civic duty rather than an obligation.

These four points offer a way of framing potential parking changes in a manner that's more acceptable or relatable to the public and Council, which can hopefully alleviate the controversial and political nature of parking.

CONCLUSION

The purpose of this report is to recommend to the City of Kingston appropriate, onsite parking maximum ratios tailored to different land uses in Parking Area 1 as well as other parking management strategies that will help facilitate the shift from minimum to maximum requirements. Maximum ratios were determined by applying maximum requirements from four case studies and ITE parking demand rates to four selected sites in Kingston's downtown. The other recommended parking management policies were determined through a policy review, a literature review, and case study analyses. Ongoing parking utilization studies should be conducted by the City to ensure that there is sufficient supply to meet demand but not to the detriment of sustainable transportation modes. Parking demand is shaped by complex factors, thus the City must continue paying attention to local conditions as parking requirements are updated.

A key consideration while developing these policy recommendations was ensuring alignment with Kingston's sustainability goals and strategic objectives. Although setting parking requirements is a technical activity, it is ultimately a policy decision that should contribute to the municipal vision. Thus, a combination of parking management strategies was selected that addressed different components of the parking system to increase efficiency, reduce demand, and provide support. This approach allows Kingston to improve the management of its existing parking supply while also reducing automobile dependency and promoting sustainable transportation modes. Alignment with the City's other goals helps set a clear vision, which can make regulations more easily understood by the public and more acceptable to City Council. It is believed that the recommendations outlined in this report align with the City's strategic objectives and will contribute to Kingston's goal of becoming Canada's most sustainable city.

REFERENCES

- Abbott, N.T. & Bigazzi, A.Y. (2017). Utilizing Shared Parking to Mitigate Imbalanced Supply in a Dense Urban Neighborhood. *Transportation Research Record*, 2651(1), p. 92-100.
- Abraham, M., Seaberry, C., Ankrah, J., Bourdillon, A., Davila, K., Finn, E., McGann, S., & Nathan, A. (2019). Greater Hartford Community Wellbeing Index 2019. New Haven, CT. *DataHaven*. Available at ctdatahaven.org
- A Better City. (2014). *Establishing an effective trip reduction policy in Massachusetts: Lessons learned from leading Programs*. A Better City. Retrieved from <https://www.abettercity.org/docs/Effective%20TRO%20Final.pdf>
- BA Group. (2020). *Zoning by-law: Multi-unit Residential parking supply requirement review*. Prepared for the City of Kingston.
- Basa, J. (2020). *Overflow from commuter parking lot causes frustration for west-end Kingston business owner*. Global News. Retrieved from <https://globalnews.ca/news/6514383/commuter-parking-kingston-businesses/>
- Befoolish. (n.d.). [Digital city icons]. *Befoolish*. Retrieved from <https://thenounproject.com/befoolish/>
- Bianco, M.J. (2000). *Effective Transportation Demand Management: Combining Parking Pricing, Transit Incentives, and Transportation Management in a Commercial District of Portland*. *Transportation Research Record*, 1711(1), pp. 46-54.
- Blanc, B., Gangi, M., Atkinson-Palombo, C., McCahill, C., & Garrick, N. (2014). Effects of urban fabric changes on real estate property tax revenue: Evidence from six American cities. *Transportation Research Record*, 2453(1), 145–152. <https://doi.org/10.3141/2453-18>
- Bliss, L. (2016). *Parking reform cartoon scores most Canadian victory ever*. CityLab. Retrieved from <https://www.bloomberg.com/news/articles/2016-09-13/ottawa-parking-reform-prevails-thanks-to-viral-video>
- Boarnet, M., Hsu, H., & Handy, S. (2014). Impacts of Employer-Based Trip Reduction Programs and Vanpools on Passenger Vehicle Use and Greenhouse Gas Emissions. (Policy brief). *California Air Resources Board*. Retrieved from https://ww2.arb.ca.gov/sites/default/files/2020-06/Impacts_of_Employer-Based_Trip_Reduction_Programs_and_Vanpools_on_Passenger_Vehicle_Use_and_Greenhouse_Gas_Emissions_Technical_Background_Document.pdf
- Bojo, L.M. (2018). *Parking Benefit Districts in Austin, Texas*. In D.C. Shoup (Eds), *Parking and the City*. (pp. 453-463). Routledge: New York, NY.
- Boys and Girls Club of Kingston and Area. (2018). Taylor hall charity ball hockey tournament [Photograph]. *Boys and Girls Club of Kingston and Area*. Retrieved from <https://www.kingstonist.com/news/taylor-hall-charity-ball-hockey-tournament-set-to-take-over-the-hub/>
- Brasuell, J. (2020). *Edmonton eliminate off-street parking requirements citywide*. Planetizen. Retrieved from <https://www.planetizen.com/news/2020/08/110076-edmonton-eliminates-street-parking-requirements-citywide>
- Bronin, S. (2017). *Rethinking parking minimums*. City of Newington. <https://www.newingtonct.gov/AgendaCenter/ViewFile/Item/2246?fileID=3987>
- Bronin, S. C. (2019). Comprehensive Rezoning (SSRN Scholarly Paper ID 3563358). *Social Science Research Network*. <https://papers.ssrn.com/abstract=3563358>
- Cadillac Fairview. (2020). [Mall parking lot turned into drive-in movie theatre] [Photograph]. *Cadillac Fairview*. Retrieved from <https://www.blogto.com/film/2020/07/cadillac-fairview-mall-parking-lot-drive-in-movie-theatres/>
- Carr, L.J., Dunsiger, S.I., & Marcus, B.H. (2011). Validation of Walk Score for estimating access to walkable amenities. *British Journal of Sports Medicine*, 45(14), p. 1144-1148.

- CBC News. (2020). *Eastern Ontario universities move toward more online courses in fall*. CBC News. Retrieved from <https://www.cbc.ca/news/canada/ottawa/universities-classes-online-covid19-ottawa-queens-1.5565992>
- Cervero, R., & Arrington, G. B. (2008). Vehicle Trip Reduction Impacts of Transit-Oriented Housing. *Journal of Public Transportation*, 11(3), 1-17. doi: <http://doi.org/10.5038/2375-0901.11.3.1>
- Chapin, B., Jia, W., & Wachs, M. (2018). Parking and Affordable Housing in San Francisco. In D.C. Shoup (Eds.), *Parking and the City*. (pp. 141-147). Routledge: New York, NY.
- Chatman, D. G. (2003). *How Density and Mixed Uses at the Workplace Affect Personal Commercial Travel and Commute Mode Choice*. Transportation Research Record, 1831(1), 193–201. <https://doi.org/10.3141/1831-22>
- Chatman, D. G. (2013). *Does TOD need the T?: On the importance of factors other than rail access*. Journal of the American Planning Association, 79(1), 17–31. <https://doi.org/10.1080/01944363.2013.791008>
- City of Edmonton (2013). *Capital City Downtown Plan*. City of Edmonton.
- City of Edmonton. (2019a). *What We Heard Report*. City of Edmonton. Retrieved from https://www.edmonton.ca/city_government/documents/PDF/MakingSpace-WhatWeHeardReport.pdf
- City of Edmonton. (2019b). *Comprehensive parking study – phase I*. City of Edmonton. Retrieved from https://www.edmonton.ca/city_government/documents/PDF/ParkingRequirements_Study_Phase1_TechnicalStudy.pdf
- City of Edmonton. (2019c). *History of parking requirements*. City of Edmonton. Retrieved from <https://www.chbaedmonton.ca/uploads/files/Documents/Parking/Attachment1.%20History%20of%20Parking%20Requirements.pdf>
- City of Edmonton. (2019d). [Timeline of parking reductions in Edmonton] [Digital Infographic]. Retrieved from <https://www.chbaedmonton.ca/uploads/files/Documents/Parking/Attachment1.%20History%20of%20Parking%20Requirements.pdf>
- City of Edmonton. (2020). *Zoning Bylaw 12800, 54.2 On-Site Vehicle Parking Quantities* (July 2, 2020). City of Edmonton,
- City of Greater Sudbury. (2020). *Transportation demand management*. City of Greater Sudbury. Retrieved from <https://www.greatersudbury.ca/live/transportation-parking-and-roads/road-plans-and-studies/transportation-demand-management/>
- City of Hamilton. (2019). *Urban Hamilton Official Plan*. City of Hamilton. Retrieved from: <https://www.hamilton.ca/sites/default/files/media/browser/2017-08-02/urbanhamiltonofficialplan-volume1-chapterc-citywidesystems-dec2019.pdf>
- City of Hamilton. (2015). *TDM for development*. City of Hamilton. Retrieved from <https://www.hamilton.ca/sites/default/files/media/browser/2015-06-05/tdm-guidelines.pdf>
- City of Hartford. (2020a). *Zoning Regulations: Zone Hartford*. City of Hartford. Retrieved from <https://www.hartfordct.gov/Government/Departments/DDS/DDS-Divisions/Planning-Zoning>
- City of Hartford. (2020b). *Hartford City Plan*. City of Hartford. Retrieved from: <https://secureservercdn.net/198.71.233.179/3vb.f1d.myftpupload.com/wp-content/uploads/2020/05/ApprovedPOCD.pdf>
- City of Hartford. (2019). *City of Hartford Plan 2035 Survey*. City of Hartford Plan 2035. Retrieved from <https://hartford2035.org/survey/>
- City of Hartford. (2011). *One City, One Plan*. City of Hartford. Retrieved from <https://www.hartfordct.gov/Government/Departments/DDS/DDS-Divisions/Planning-Zoning>

- City of Hartford. (2015). *Old Zoning Regulations*. City of Hartford. Retrieved from <https://www.hartfordct.gov/Government/Departments/DDS/DDS-Divisions/Planning-Zoning>
- City of Hartford. (2014). *The State of Housing in Hartford – Citywide Analysis*. City of Hartford. Retrieved from <https://www.hartfordct.gov/Government/Departments/DDS/DDS-Divisions/Planning-Zoning>
- City of Kingston. (2020a). *By-law number 8499: Restricted area (zoning) by-law of the corporation of the City of Kingston*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/documents/10180/139730/City+of+Kingston+Restricted+Area+Zoning+Bylaw>
- City of Kingston. (2020b). [Digital map of Kingston's proposed parking management areas]. Provided by Laura Flaherty.
- City of Kingston. (2020c). [Digital map of Parking Area 1]. Provided by Laura Flaherty.
- City of Kingston. (2020d). *Employer Transpass*. Kingston Transit. Retrieved from <https://www.cityofkingston.ca/residents/transit/fares/employer-transpass>
- City of Kingston. (2020e). *HONKMobile*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/residents/parking/app-pay>
- City of Kingston. (2020f). *Information Report to Council: Report Number 20-058*. City of Kingston. Retrieved from https://www.cityofkingston.ca/documents/10180/38383061/City-Council_Meeting-07-2020_Report-20-058_Strategic-Plan_2019-Year-End-Update.pdf/2ea6ed8e-23f1-51e9-ffea-0aee3a02827f?t=1580396399200
- City of Kingston. (2020g). *Information report to council: Report number 20-229*. City of Kingston. Retrieved from https://www.cityofkingston.ca/documents/10180/13878/City-Council_Meeting-29-2020_Report-20-229_New-Zoning-By-law-Project-Status-Update.pdf/6fbbddfc-f399-596c-67b3-934c5861fa84?t=1605215379297
- City of Kingston. (2020h). *Kingston Transit*. Kingston Transit. Retrieved from <https://www.cityofkingston.ca/residents/transit>
- City of Kingston (2020i). *Love Kingston marketplace*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/city-hall/projects-construction/love-kingston-marketplace>
- City of Kingston. (2020j). *Mayor's Housing Task Force Rental Housing Market Analysis*. Watson & Associates Economists.
- City of Kingston. (2020k). *New zoning bylaw*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/city-hall/projects-construction/zoning-bylaw-update>
- City of Kingston Planning Services. (2020). *New zoning by-law: Parking standards study [DRAFT]*. City of Kingston.
- City of Kingston. (2020l). *Offer council your input to refresh the City's strategic priorities*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/-/offer-council-your-input-to-refresh-the-city-s-strategic-priorities>
- City of Kingston. (2020m). *On street parking*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/residents/parking/on-street-parking>
- City of Kingston. (2020n). *Parking enforcement*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/residents/parking#enforcement>
- City of Kingston. (2020o). *Parking lots & garages*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/residents/parking/parking-lots>
- City of Kingston. (2020p). *Pittsburgh township zoning by-law 32-74*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/documents/10180/139739/Pittsburgh+Township+Zoning+Bylaw/85bd81cc-cb69-4d2f-9cbd-61f6de76cb50>
- City of Kingston. (2020q). *Report to Council Report Number 20-128*. City of Kingston. Retrieved from https://www.cityofkingston.ca/documents/10180/37998574/City-Council_Meeting-17-2020_Report-20-128_COVID-19_Response-Update_Operational-and-Financial-Impacts.pdf/4d00ff48-52c8-3f19-757f-c11161fc3525?t=1589481846816

- City of Kingston. (2020r). *Report to Environment, Infrastructure & Transportation Policies Committee Report Number EITP-21-004*. City of Kingston.
- City of Kingston. (2020s). *Report to Planning Committee: Report Number PC-20-065*. Provided by Greg McLean.
- City of Kingston. (2020t). *Transit fares and passes*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/residents/transit/fares>
- City of Kingston. (2020u). *Transit schedules and maps*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/residents/transit/bus-schedules>
- City of Kingston. (2020v). [Digital image of City of Kingston's existing Zoning Bylaw schedule]. City of Kingston. Retrieved from: <https://apps.cityofkingston.ca/kmaps/>
- City of Kingston. (2020w). *Parking Regulations*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/residents/parking/parking-regulations>
- City of Kingston. (2020x). *Transportation*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/residents/environment-sustainability/climate-change-energy/climate-action-plan/toolkit/transportation>
- City of Kingston. (2020y). [Cars parked along a local Kingston street] [Photograph]. City of Kingston. Retrieved from: <https://www.cityofkingston.ca/residents/parking/parking-updates>
- City of Kingston. (2019a). *By-law number 97-102: The Cataraqui north zoning bylaw*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/documents/10180/139737/Cataraqui+North+Zoning+Bylaw>
- City of Kingston (2019b). *By-law Number 2010-128 A By-Law to regulate parking*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/documents/10180/16904/Bylaw+2010-128/45b59385-867b-489c-8930-e668611919c2>
- City of Kingston. (2019c). *City of Kingston Annual Report 2019*. City of Kingston. Retrieved from https://www.cityofkingston.ca/documents/10180/30029/CityofKingston_AnnualReport.df/db_4d58f-c53d-4458-89b4-710f269fc7f7t=1582127374837
- City of Kingston. (2019d). *City of Kingston Official Plan*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/business/planning-and-development/official-plan>
- City of Kingston. (2019e). *Council Priorities 2019-2022*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/city-hall/city-council/council-priorities>
- City of Kingston. (2019f). *Council Strategic Priorities Implementation Plan – Exhibit A to Report 19-133*. City of Kingston. https://www.cityofkingston.ca/documents/10180/34589274/City-Council_Meeting-15-2019_Schedule-A_Exhibit-A-Strategic-Plan-Implementation+Plan.pdf/30bab555-7b41-44da-857e-168969409a54
- City of Kingston. (2019g). *Density by design – Kingston's mid-rise and tall building policies: Issues and options report*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/city-hall/projects-construction/density-by-design>
- City of Kingston. (2019h). *Downtown and harbour zoning by-law number 96-259*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/documents/10180/139732/Downtown+and+Harbour+Zoning+Bylaw>
- City of Kingston. (2019i). *Kingston's Strategic Plan (2019-2022)*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/apps/councilpriorities/index.html#:~:text=The%20City%20is%20committed%20to%20creating%20a%20high%20quality%20of,citizens%20in%20facilitating%20economic%20growth>
- City of Kingston. (2019j). *Kingston township zoning by-law number 76-26*. City of Kingston. Retrieved from <https://www.cityofkingston.ca/documents/10180/139734/Kingston+Township+Restricted+Area+Zoning+Bylaw>

- City of Kingston. (2019k). *Population, Housing and Employment Growth Forecast, 2016 to 2046*. Watson & Associates. Retrieved from https://www.cityofkingston.ca/documents/10180/31619068/Projects_Planning_PopulationHousingEmploymentForecast_Final-Report_March2019.pdf/d39310e1-e11c-4f05-b1fb-2695b9a9ea71
- City of Kingston. (2019l). *Report to council: Report number 19-218*. City of Kingston. Retrieved from https://www.cityofkingston.ca/documents/10180/36744865/City-Council_Meeting-23-2019_Report-19-218_Active-Transportation-5-Year-Implementation-Plan.pdf/e15ed121-c969-47bf-a241-13aadbd19634
- City of Kingston. (2018a). *City of Kingston Active Transportation Master Plan*. Prepared by WSP. Retrieved from https://www.cityofkingston.ca/documents/10180/20004516/Projects_WalknRollKingston_FinalReport.pdf/fec89519-a0ac-424b-ae31-4db4c425a049?t=1533053505000
- City of Kingston. (2018b). *Parking violations and fines*. Retrieved from <https://www.cityofkingston.ca/documents/10180/16225/Parking+Violations+%26+Fines/f00abab9-5d68-4ffb-b375-a4e263bd1e1b>
- City of Kingston. (2017). *Kingston transit 5-year business plan, 2017-2021*. Kingston Transit. Retrieved from <https://www.cityofkingston.ca/documents/10180/19838/Transit+Business+Plan+-+2017-2021.pdf/54fd3026-8fc8-4015-abf3-764dbb802f2a?t=1481655153000>
- City of Kingston. (2016). *Parking rate and fine review webpage*. City of Kingston & MMM Group. Retrieved from <https://www.cityofkingston.ca/city-hall/projects-construction/archived-projects/parking-rate-and-fine-review>
- City of Kingston. (2015a). *Kingston Transportation Master Plan*. AECOM & City of Kingston. Retrieved from <https://www.cityofkingston.ca/documents/10180/14295/Kingston+Transportation+Master+Plan/efed4ee8-b5d5-4967-9a32-50166d009354>
- City of Kingston. (2015b). *Kingston Transit Express Routes Map Sept 15*. Kingston Transit. Retrieved from https://www.cityofkingston.ca/documents/10180/8664501/MAP_ExpressRoutes-Sep15.PDF/bbecbde3-4ce7-44ce-bddc-eb6348d0ae54
- City of Kingston. (2012a). *Williamsville Main Street Study*. Retrieved from: https://www.cityofkingston.ca/documents/10180/908512/Williamsville_MainStreetStudy.pdf/4509e9e0-ba0e-4408-91d1-7c9fcd84f1d3?t=1357933075000
- City of Kingston. (2012b). *City of Kingston: Report to council*. Retrieved from https://www.cityofkingston.ca/documents/10180/221349/COU_A1812-12248.pdf
- City of Mississauga. (2019). *Parking Matters: Parking Master Plan and Implementation Strategy*. Prepared by WSP. Retrieved from <http://www7.mississauga.ca/Departments/Marketing/documents/parking-master-plan/Mississauga%20PMPIS%20Report%20%28AODA%29.pdf>
- City of Ottawa. (2020). *Economy and demographics: Ottawa fast facts*. Retrieved from <https://ottawa.ca/en/city-hall/budget/financial-reports-and-statements/long-range-financial-plans/long-range-financial-plan-iii-part-1-and-part-2/economy-and-demographics>
- City of Ottawa. (2016). *Report to Planning Committee and City Council*. City of Ottawa.
- City of Ottawa. (n.d.). *Minimum Parking Review: Supplemental Documents — Spillover Parking*. City of Ottawa.
- City of Pasadena. (2020). § 17.50.340 - *Transit-Oriented Development (TOD), Title 17 Zoning Code, Code of Ordinances*. City of Pasadena. Retrieved from: https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART5STSPLAUS_CH17.50STSPLAUS_17.50.340TRIEDET
- City of Pasadena. (2015). *General Plan “Mobility Element”*. City of Pasadena. Retrieved from <https://ww5.cityofpasadena.net/wp-content/uploads/sites/56/2017/07/Adopted-Mobility-Element-2015-08-18.pdf>
- City of Pasadena. (2011). *Parking Meter* [Photograph]. City of Pasadena. Retrieved from <https://nacto.org/wp-content/uploads/2011/10/Pasadena.pdf>

- City of Pasadena. (2006). *Pasadena Pedestrian Plan*. City of Pasadena. Retrieved from https://ww5.cityofpasadena.net/transportation/wp-content/uploads/sites/6/2015/10/Ped_Plan_VOL_1_F.pdf
- City of Pasadena. (2004). *Central District Specific Plan*. City of Pasadena. Retrieved from <https://www.cityofpasadena.net/wp-content/uploads/sites/30/Section-05-District-Wide-Mobility-Concept.pdf?v=1605985416742>
- City of Pasadena. (n.d.) [Photograph of a bus in downtown Pasadena] [Photograph]. City of Pasadena. Retrieved from <https://www.cityofpasadena.net/transportation>
- City of Portland. (2018). *Performance Based Parking Management Manual*. Developed by Kimley & Horn. Retrieved from https://pdxshoupistas.com/wp-content/uploads/2018/06/Portland-Parking-Management-Manual-digital-version-April-2018_v3_reduced.pdf
- Cushman and Wakefield Kingston. (n.d.). *27 Princess Street: The Smith Robinson Building*. Cushman & Wakefield. Retrieved from <https://www.cushmanwakefieldkingston.com/case-studies/27-princess-street>
- Davis, A.Y., Pijanowski, B.C., Robinson, K., & Engel, B. (2010). The environmental and economic costs of sprawling parking lots in the United States. *Land Use Policy*, 27(2), pp. 255-261.
- Dock, F.C. (2019). *Pasadena's Experience using Vehicle Miles Traveled (VMT) to Measure Transportation Impact*. Transportation Research Record, 2673(4), p. 275-283.
- Doornekamp Construction (2020). *Smith & Robinson Building*. Doornekamp Construction. Retrieved from <https://www.doornekamp.ca/projects.html>
- Downtown Kingston. (2020). [Digital map of downtown Kingston BIA]. *Downtown Kingston Business Improvement Area (BIA)*. Retrieved from https://www.downtownkingston.ca/sites/downtownkingston.ca/files/map_of_bia_for_web_1.pdf
- Downtown Kingston. (2013). *Kingston: A thriving downtown*. Downtown Kingston. Retrieved from https://www.downtownkingston.ca/system/files/oct_2013_cui_kingston_a_thriving_downtown.pdf
- Duncan, D.T., Aldstadt, J., Whalen, J., & Melly, S.J. (2013). Validation of Walk Scores and Transit Scores for estimating neighborhood walkability and transit availability: A small-area analysis. *GeoJournal*, 78(2), p. 407-416.
- Dunn, S. (2010). [Aerial photograph of downtown Hartford] [Photograph]. *Hartford Courant*. Retrieved from <http://web.colby.edu/ckasprak/2010/12/17/urban-sprawl-at-its-worst-hartford-connecticut/>
- Dunphy, R. (2004). *Developing around transit: Strategies and solutions that work*. Urban Land Institute.
- Eden, E. (2016). *Parking benefit districts around the U.S.* Planetizen. Retrieved from <https://www.planetizen.com/node/86042/parking-benefit-districts-around-us>
- Engel-Yan, J. & Passmore, D. (2013). Carsharing and car ownership at the building scale. *Journal of the American Planning Association*, 79(1), p. 82-91.
- Engel-Yan, J. & Passmore, D. (2010). Assessing alternative approaches to setting parking requirements. *Institute of Transportation Engineers Journal*, 80(12), p. 30-34.
- Engel-Yan, J., Hollingworth, B., & Anderson, S. (2007). Will Reducing Parking Standards Lead to Reductions in Parking Supply? Results of Extensive Commercial Parking Survey in Toronto, Canada. Transportation Research Record: Journal of the Transportation Research Board, 2010(1), p. 102-110.
- Ewing, R & Cervero, R. (2017) Does Compact Development Make People Drive Less? The Answer Is Yes. *Journal of the American Planning Association*, 83:1, pp.19-25, DOI: 10.1080/01944363.2016.1245112
- Ferguson, E. (1990). *Transportation Demand Management Planning, Development, and Implementation*. Journal of the American Planning Association, 56(4), pp. 442-456.

- Forinash, C.V., Millard-Ball, A., Dougherty, C., & Tumlin, J. (2003). Smart Growth Alternatives to Minimum Parking Requirements, presented at 2nd Urban Street Symposium: Uptown, Downtown, or Small Town: Designing Urban Streets That Work, Anaheim, 2003. Washington, D.C., USA: *Transportation Research Board*.
- Freund, E. (2018). *UConn Engineering Professor's Research Influences Progressive Change in Hartford*. UConn Today. Retrieved from <https://today.uconn.edu/2018/02/uconn-engineering-professors-research-influences-progressive-change-hartford/>
- Garrick, N., & McCahill, C. (2010). Turning downtown into suburbia: The case of Hartford. *Planetizen*. Retrieved from <https://www.planetizen.com/node/44254>
- General Statutes of Connecticut. (2005). Planning & Zoning Statutes Chapter 124—Zoning § 8.1 (2005). Retrieved from https://www.cga.ct.gov/current/pub/chap_124.htm#sec_8-1
- GHN83613. (2012). Kingston Transit bus parked in front of City Hall in Kingston, ON, Canada. [Photograph]. *Wikimedia Commons*. Retrieved from https://commons.wikimedia.org/wiki/File:Kingston_Transit_in_front_of_City_Hall.jpg
- Giuliano, G. (1992). *Transportation Demand Management: Promise or Panacea?* Journal of the American Planning Association, 58(3), pp. 327-335.
- Google Maps. (2019). *24 Fair Oaks Ave, Pasadena, California ("Street View")* [Digital Image]. Accessed on November 27, 2020. Retrieved from: <https://www.google.ca/maps>
- Gosal, J. (2019). *Kingston* [Photographs]. Personal collection of photos.
- Governing.com. (2016). *Vehicle Ownership in U.S. Cities Data and Map*. Governing. Retrieved from <https://www.governing.com/gov-data/car-ownership-numbers-of-vehicles-by-city-map.html>
- Government of Ontario. (2020). *Provincial Policy Statement, 2020*. Retrieved from <https://www.ontario.ca/page/provincial-policy-statement-2020>
- Government of Ontario. (2016). *O. Reg. 191/11: Integrated accessibility standards*. Retrieved from <https://www.ontario.ca/laws/regulation/110191>
- Guo, Z. (2018). *From Parking Minimums to Parking Maximums in London*. In D.C. Shoup (Eds.), *Parking and the City*. (pp. 191-198). Routledge: New York, NY.
- Hartford Parking Authority. (2012a). *Hartford Parking Authority Announces On-Street Parking Initiatives*. Hartford Parking Authority. Retrieved from <https://hartfordparking.com/hartford-parking-authority-announces-on-street-parking-initiatives/>
- Hartford Parking Authority. (2012b). *HPA increases collection of citation payments*. Hartford Parking Authority. Retrieved from <https://hartfordparking.com/hpa-increases-collection-of-citation-payments/>
- Hartford Parking Authority. (2013). *Residential Parking Permit pilot program completed on Seymour Street*. Hartford Parking Authority. Retrieved from <https://hartfordparking.com/residential-parking-permit-pilot-program-started-on-seymour-street/>
- Hartford Parking Authority. (2014a). *Hartford parking authority to begin night enforcement of on-street parking rules*. Hartford Parking Authority. Retrieved from <https://hartfordparking.com/hartford-parking-authority-to-begin-night-enforcement-of-on-street-parking-rules/>
- Hartford Parking Authority. (2014b). *Study Will Identify Hartford Parking Issues and Solutions*. Hartford Parking Authority. Retrieved from <https://hartfordparking.com/study-will-identify-hartford-parking-issues-and-solutions/>
- Hartford Parking Authority. (2016). *Hartford Parking Authority Announces New Parking Meters*. Hartford Parking Authority. Retrieved from <https://hartfordparking.com/hartford-parking-authority-announces-new-parking-meters/>

- Hess, D.B. (2017). *Repealing minimum requirements in Buffalo: New directions for land use and development*. *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*, 10(4), pp. 442-467.
- Hess, D.B. & Lombardi, P. (2004). Policy support for and barriers to inner-city transit-oriented development: A literature review. *Transportation Research Record: Journal of the Transportation Research Board*, 1887(1), pp. 26-33.
- Homestead. (2020a). *Carruthers Wharf*. Homestead. Retrieved from <https://www.homestead.ca/apartments/135-ontario-street-kingston>
- Homestead. (2020b). *About Homestead*. Homestead. Retrieved from <https://www.homestead.ca/about-us>
- Illarionov, V. (2020). [Ottawa skyline] [Photograph]. *Adobe Stock Images*. Retrieved from <https://www.cushmanwakefield.com/en/canada/offices/ottawa>
- Institute of Transportation Engineers (ITE). (2016). *Transportation Planning Handbook*. John Wiley & Sons, Incorporated
- Institute of Transportation Engineers. (2019). *Parking Generation Manual, 5th Edition*.
- Josselyn Engineering Ltd. (2011). *Parking report for 326 Bagot Street in the City of Kingston JEI Project 926*. Prepared for the City of Kingston.
- Kirkpatrick, E., Davis, A., & Pijanowski, B. (2018). The Environmental Impacts of Parking Lots. In D.C. Shoup (Eds.), *Parking and the City*. (pp. 132-140). Routledge: New York, NY.
- Kolozsvari, D. and Shoup, D. (2018). "Parking Matters in Old Pasadena". In Shoup, D.C. (Eds), *Parking and the City*. (pp. 415-425). Routledge: New York, NY.
- Koven, A. (2020). [Anna Lane Condominium] [Photograph]. *Koven Lifestyle Real Estate*. Retrieved from <https://www.adamkoven.com/listings/810-121-queen-street-exclusive-listing>
- Lalani, N. (1984). *Evaluating Shared Parking for New Developments*. *Public Works*, 115(2), p. 64.
- Lee, R., Rees, R., & Watten, M. (2010). Smart Growth Parking Requirements Review. *Institute of Transportation Engineers Journal*, 80(12), pp. 36-40.
- Leon's Centre. (n.d.). *Getting Here*. Leon's Centre. Retrieved from <http://www.leonscentre.com/getting-here/>
- Lewyn, M. & Schechtman, J. (2015). No Parking Anytime: The Legality and Wisdom of Maximum Parking and Minimum Density Requirements. *Washburn Law Journal*, 54(2), pp. 285-302.
- Li, F. & Guo, Z. (2018). Do Parking Maximums Deter Housing Development? *Journal of Planning Education and Research*, 38(2), pp. 183-197.
- Li, F. & Guo, Z. (2014). Do Parking Standards Matter? Evaluating the London Parking Reform with a Matched-Pair Approach. *Transportation Research, Part A: Policy and Practice*, 67, pp. 352-365.
- Linksvayer, M. (n.d.). [Old Pasadena parking meter] [Photograph]. *Smart Growth America*. Retrieved from: <https://smartgrowth.org/ideas-worth-stealing-parking-benefit-districts/>
- Linton, J. (2019). *Big wonky good news: L.A. city adopts people-centered transportation metric: 'VMT' in, 'LOS' out*. StreetsBlogLA. Retrieved from: <https://la.streetsblog.org/2019/08/06/big-wonky-good-news-l-a-city-adopts-people-centered-transportation-metric-vmt-in-los-out/>
- Litman, T. (2006a). *Parking Management Best Practices*. American Planning Association: Chicago, USA.
- Litman, T.A. (2006b). *Parking Management: Strategies, evaluation and planning*. Victoria Transport Policy Institute: Victoria, BC, Canada.
- Litman, T. (2020a). *Parking pricing implementation guidelines*. Victoria Transport Policy Institute.

- Litman, T. (2020b). *Parking Requirement Impacts on Housing Affordability*. Victoria Transport Policy Institute: Victoria, BC, Canada.
- LiveHartford. (2020). *Transportation*. Prepared for City of Hartford. Retrieved from <https://livehartford.org/explore-hartford/transportation/>
- LSC Transportation. (2006). *Tahoe/Placer County Parking Improvement District Study*. Retrieved from: http://los-altos.granicus.com/MetaViewer.php?view_id=&event_id=553&meta_id=53185
- R.A. Malatest & Associates Ltd. (2020). *Kingston Moves: Household Travel Survey 2019*. Prepared for the City of Kingston. Retrieved from <https://www.cityofkingston.ca/documents/10180/15058/EITP-21-004+-+Exhibit+A+-+Daily+Travel+Characteristics.pdf/2471f6a7-e3b4-d195-7ba4-465477442c1f?t=1606405000227>
- Mancini, W. (2017). [Photograph of man paying at a Pay and Display meter outside Pasadena City Hall] [Photograph]. *Pasadena Star-News*. Retrieved from: <https://www.pasadenastarnews.com/2017/06/29/class-action-lawsuit-could-force-pasadena-to-refund-a-year-of-parking-fees-fines/>
- Marsden, G. (2014). *Parking Policy*. In Ison, S. and Mulley, C. (Eds), *Parking Issues and Policies* (pp. 11-32). Emerald Group Publishing: Bingley, UK.
- Martin, L. (2020). Kingston. [Photographs] (Lee-Ann Martin's own private collection).
- Mayor's Task Force on Housing. (2019). *A foundation for the public good: Recommendations to increase Kingston's housing supply for all*. City of Kingston. Retrieved from https://www.cityofkingston.ca/documents/10180/33838002/MTFH_Recommendation_Report_2020_2_26.pdf/94f30134-cd0d-161a-117f-317e73efc513?t=1582817514977
- McCahill, C. & Bronin, S. (2020). Parking reform for 21st century communities: getting more out of public space [Webinar]. *Smart Growth America*. Retrieved from https://www.youtube.com/watch?v=a39DBrWr90&feature=emb_title
- McCahill, C. & Garrick N. (2010). Losing Hartford: Transportation policy and the decline of an American city. *Proceedings of the 18th Congress for the New Urbanism*. (pp. 19-22). Retrieved from: https://www.cnu.org/sites/default/files/mccahillc_cnu18.pdf
- McCahill, C., Garrick, N., & Atkinson-Palombo, C. (2018). The Fiscal and Travel Consequences of Parking Requirements. In D.C. Shoup (Eds.), *Parking and the City*. (pp. 125-132). Routledge: New York, NY.
- Meyer, M., Siwek, S., & Berman, W. (1994). The State of the Practice of Travel Demand Management. In: Transportation Research Board, TDM Innovation and Research Symposium. *Transportation Research Board, Circular 433*. Washington, D.C., USA.
- MMM Group Limited. (2014). *City of Kingston Parking Standard Review Study*. Prepared for the City of Kingston.
- MyCity (2020). *Join a monthly parking lot permit waiting list*. City of Kingston. Retrieved from https://mycity.cityofkingston.ca/app/answers/detail/a_id/17/related/1/session/L2F2LzEvdGltZS8xNjA4MTQ1ODk0L2dlbi8xNjA4MTQ1ODk0L3NpZC9mVVN4S0NEZkZucGtENWxkSzFIMDNKX1YxaXJjJTdFVUN5MFAxUENpM2NrMEhkdlkOURmYWJjd21aUH02WTV3TUlk1JrOHBQOE9McklFSHNvejZNbmhpcF84Sm9kWmVyaDZvZE0JTdFc3oyNm1hWld1M0Y1YIB5TDF3JTlxJTlx
- National Academies of Sciences, Engineering, and Medicine. (2005). *Traveler Response to Transportation System Changes Handbook, Third Edition: Chapter 13, Parking Pricing and Fees*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/23415>.
- Nichols, C.M. (2012). *Solving the parking predicament: Old Pasadena, Cali*. MyCuriousCity. Retrieved from <https://mycuriouscity.com/home/2012/9/4/solving-the-parking-predicament-old-pasadena-cali>

- O'Neil, L. (2020). *Cadillac Fairview is turning mall parking lots into drive-in movie theatres*. BlogTO. Retrieved from <https://www.blogto.com/film/2020/07/cadillac-fairview-mall-parking-lot-drive-in-movie-theatres/>
- Options for Homes. (2020). *Options for homes*. Options for Homes. Retrieved from <https://www.optionsforhomes.ca>
- Options for Homes (2012). *Site Plan*. Options for Homes.
- Peters, E. (2019). [Individuals walking on an Old Pasadena street] [Photograph]. *Monrovia Weekly*. Retrieved from <https://www.monroviaweekly.com/business/business-spotlight/getting-off-the-beaten-colorado-boulevard-path-old-pasadena-management-district/>
- Pierce, G. & Shoup, D. (2013). Getting the prices right. *Journal of American Planning Association*, 79(1), 67-81. DOI: 10.1080/01944363.2013.787307
- Piroddi, L. (2009). *Feasibility in Developing New Parking Policies*. City of Edmonton. Retrieved from http://webdocs.edmonton.ca/OcctopusDocs/Public/Complete/Reports/EX/CSAM/2008-08-27/2008PDP043_4.doc%20New%20Parking%20Policies.doc
- Portland Bureau of Transportation. (n.d.). *Central city parking policy update: Performance based parking management*. Portland Bureau of Transportation. Retrieved from <https://www.portlandoregon.gov/transportation/article/554129>
- Portland Bureau of Transportation. (2018). *Performance based parking management manual*. Developed by Kimley & Horn for PBOT. Retrieved from https://www.portland.gov/sites/default/files/2020-04/portland-parking-management-manual-digital-version-april-2018_v3_reduced.pdf
- Quinn-Smith, T. (2020). *Webinar recap: Parking reform for 21st century communities*. Smart Growth America. <https://smartgrowthamerica.org/webinar-recap-parking-reform-for-21st-century-communities/>
- Rios, Z. (n.d.). [Pasadena's City Hall] [Photographs]. *VisitTheUSA*. Retrieved from <https://www.visittheusa.com/experience/cultural-getaway-pasadena-california>
- Schmitt, A. (2017). *Hartford Eliminates Parking Minimums Citywide*. StreetsBlog USA. <https://usa.streetsblog.org/2017/12/13/hartford-eliminates-parking-minimums-citywide/>
- Shoup, D. (2011). *The High Cost of Free Parking*. Routledge: Abingdon, UK.
- Shoup, D. (1999). *The trouble with minimum parking requirements*. Transportation Research Part A: Policy and Practice, 33(7-8), pp. 549-574.
- Shoup, D. (1995). *An opportunity to reduce parking requirements*. Journal of the American Planning Association, 61(1), pp. 14-28.
- Shoup, D. (2018a). *Residential parking benefit districts*. In D.C. Shoup (Eds), *Parking and the City*. (pp. 483-493). Routledge: New York, NY. <https://doi.org/10.4324/9781351019668>.
- Shoup, D. (2018b). *On-Street parking management versus off-street parking requirements*. In D.C. Shoup (Eds), *Parking and the City*. (pp. 228-230). Routledge: New York, NY.
- Shoup, D. (2016). *Cutting the Cost of Parking Requirements*. ACCESS, 48: p. 26-33.
- Smith, M.S. (2005). *Shared parking*. Urban Land Institute and the International Council of Shopping Centres, Washington D.C., USA., (Original work published in 1982).
- Springer. (2020). *41 Princess Street*. Springer Group. Retrieved from <http://springergroup.com/monthly-parking-kingston-41-princess-st/>
- Stafford, T. (2019). *Taylor Hall Charity Ball Hockey Tournament set to take over The Hub*. Kingstonist. Retrieved from <https://www.kingstonist.com/news/taylor-hall-charity-ball-hockey-tournament-set-to-take-over-the-hub/>

- Statistics Canada. (2016). *Kingston census profile*. Government of Canada. Retrieved from <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?Lang=E&Geo1=POPC&Code1=0415&Geo2=PR&Code2=35&Data=Count&SearchText=Kingston&SearchType=Begins&SearchPR=01&B1=All>
- Stein, H.S. & Resha, J. (1996). Shared parking in the Portland metropolitan area. *Metro: Portland, OR, USA*.
- Steuteville, R. (2017). [Downtown Pasadena] [Photograph]. Retrieved from: <https://www.cnu.org/publicsquare/2017/06/05/great-idea-rethinking-parking>
- Stewart, J. (1994). *Reducing drive-alone rates at small employer sites: Costs and benefits of local trip reduction ordinances - Pasadena towers case study*. Transportation Research Record, 1433, p. 159-163.
- Surico, J. (2020). *Need more outdoor public space? Maybe cities already have it*. Bloomberg CityLab. Retrieved from <https://www.bloomberg.com/news/articles/2020-05-06/5-ways-cities-can-make-more-public-space-fast>
- Tejada, F. (2017). [Digital image of parking demand] [Animation]. *VOX Media — The High Cost of Free Parking*. Retrieved from <https://www.behance.net/gallery/55160947/VOX-The-High-Cost-of-Free-Parking>
- The Smith Robinson Building. (2015). *History*. Retrieved from <https://smithrobinson.ca/history>
- To Design. (n.d.). [Revitalized Pratt Street in downtown Hartford] [Photograph]. *To Design*. Retrieved from <https://todesignllc.com/portfolio/complete-streets/pratt-street>
- Tumlin, J. & Millard-Ball, A. (2006). Parking for Transit-Oriented Development, presented at 2006 ITE Annual Meeting and Exhibit Compendium of Technical Papers, Milwaukee, 2006. *Institute of Transportation Engineers (ITE)*, Washington, D.C.
- United States Census Bureau. (2020a). *City and Town Population Totals: 2010-2019*. Retrieved from: <https://www.census.gov/data/tables/time-series/demo/popest/2010s-total-cities-and-towns.html>
- United States Census Bureau. (2020b). *Quick facts: Hartford city, Connecticut*. Retrieved from <https://www.census.gov/quickfacts/hartfordcityconnecticut>
- United States Bureau of Labor Statistics. (2020). *Hartford Area Economic Summary*. Retrieved from https://www.bls.gov/regions/new-england/summary/blssummary_hartford.pdf
- Vachon, F. (2018). [Public Parking Signage in an Ottawa Parking Lot] [Photograph]. *The Canadian Press*. Retrieved from <https://globalnews.ca/news/4411606/online-map-parking-spots-ottawa-parkades/>
- Vemaps. (n.d.). Grey Map of North America with Countries Map. [Digital vector map]. *VeMaps*. Retrieved from <https://vemaps.com/north-america-continent/na-c-04>
- Victoria Transport Policy Institute. (n.d.). *TDM Encyclopedia*. Retrieved from <https://www.vtpi.org/tdm/index.php>
- Walk Score. (2020a). *135 Ontario Street*. Walk Score. Retrieved from <https://www.walkscore.com/score/135-ontario-st-kingston-on-canada>
- Walk Score. (2020b). *326 Bagot Street*. Walk Score. Retrieved from <https://www.walkscore.com/score/326-bagot-st-kingston-on-canada>
- Walk Score (2020c). *27 Princess Street*. Walk Score. Retrieved from <https://www.walkscore.com/score/27-princess-st-kingston-on-canada>
- Williams, T.A., Chigoy, B., Borowiec, J., & Glover, B. (2016). Methodologies Used to Estimate and Forecast Vehicle Miles Traveled (VMT) (Report No. PRC 15-40 F). *Texas A&M Transportation Institute*. Retrieved from <https://static.tti.tamu.edu/tti.tamu.edu/documents/PRC-15-40-F.pdf>
- Wilson, R. (2016). *Parking Management for Smart Growth*. In D. Shoup (Eds.), *Parking and the City* (pp. 222-228). Routledge.
- Willson, R.W. (2000). *Reading Between the Regulations: Parking Requirements, Planners' Perspectives, and Transit*. Journal of Public Transportation, 3(1), pp. 111-128.

Appendix A

City of Kingston Parking Management Strategies: Comparison Tables

Increasing Efficiency

	Parking Management Strategy	City of Kingston Existing Conditions	City of Kingston Recommended Improvements
Increasing Efficiency	Shared Parking	<ul style="list-style-type: none"> • Official Plan: Outlines the need for Kingston to work with major institutions and employers to promote the shared use of new parking, which should be strategically located to encourage carpooling, transit use or AT, particularly in the CBD. Also, permit shared or reduced parking for uses with compatible operating characteristics or when a developer supports TDM principles • MMM Group Report: Encourages the promotion of the shared use of new parking, particularly in the CBD • AT Master Plan (Walk 'n' Roll): Outlines plan to amend parking requirements to include policies to permit shared parking 	<ol style="list-style-type: none"> 1. MMM Group Report: Implement the shared parking recommendations as outlined in this report to promote sharing of spaces between residential buildings and office/commercial units in the CBD 2. Establish the "Peak Period Occupancy" as derived from the Ottawa, Toronto and Grimsby zoning by-law shared parking policies <ul style="list-style-type: none"> ○ Toronto and Grimsby: AM and PM and evening (Evenly) ○ Ottawa: Morning, Noon, Afternoon, and Evening (Weekday and Saturday) (MMM Group, 2015)
	Parking Benefit/ Management Districts	<ul style="list-style-type: none"> • Revenue from parking permit areas is not explicitly re-invested back to those areas. • Parking Permit Areas are already clearly defined (City of Kingston, 2020m). • Seasonal difficulties for snow removal • Number of permits are already controlled: "Issuing a limited number of on-street permits to allow all-day parking in a controlled manner helps distribute the parking supply and offers area residents predictable parking, while freeing up on-street spots for those in need of short-term parking." (City of Kingston, 2020m, para 9) 	<ol style="list-style-type: none"> 1. Institute Parking Benefit Districts (PBD) <ul style="list-style-type: none"> ○ Revenues from on-street parking can be used for direct improvements in those areas (Litman, 2006a). 2. Institute Residential PBD's to enhance Residential Parking Permit Program 3. Begin with a pilot project Forming New Parking Management Districts – Step 1: Initiate request for PMD Step 2: Establish preliminary district boundaries Step 3: Establish Parking Committee Step 4: Document existing conditions & active parking management strategies Step 5: Collect data Step 6: Recommend parking management strategies

			<p>Step 7: Implementation</p> <p>Step 8: Monitoring</p> <p>(Portland Bureau of Transportation, 2018, p. 12)</p>
	Parking Permits	<p>Types of Permits: Allow individuals to park in a permit zone during time-of-day restrictions</p> <ul style="list-style-type: none"> • Commuter Parking Permit: \$79.50-\$136.75/mo • Residential Parking Permit: 72h duration of stay – \$25/mo \$12/mo for an on-street permit provided residents don't have driveway access • Residential contractor parking permit – 14-day, 1 month, 4 months, and annual • Temporary parking permit for visitors: \$12, one-time renewal • Parking lots & garages: 3h, 4h, 24h & permit only <p>There are a maximum number of permits available for different City lots, garages, and parking areas (City of Kingston, 2020m)</p> <p>Winter Parking ban on-street citywide. December 1st – March 31st (1:00a.m. to 7:00a.m.) (City of Kingston, 2019b).</p> <p>On-Street Parking Permit Areas</p> <ol style="list-style-type: none"> 1. Area A (Syndenham District/Hotel Dieu Hospital area) 2. Area B (Queen's University/KGH/Williamsville area) 3. Napier Street area 4. Area C (Inner Harbour Neighbourhood) 5. Potential Area D (Area – Portsmouth Neighbourhood) 6. Potential Area E (St. Mary's of the Lake) 7. Area F (Williamsville North Neighbourhood) 8. Potential Area G (Williamsville South Neighbourhood) (City of Kingston, 2020m) <ul style="list-style-type: none"> • The permit areas are further broken down to smaller zones (e.g. Zone A-1 to A-8) (City of Kingston, 2020m) 	<ol style="list-style-type: none"> 1. Better regulate and enforce parking permits (City of Mississauga, 2019) 2. Ensure appropriate pricing & continually update. Clear signage is also needed (City of Mississauga, 2019) 3. Explore more time of day-based price permits (i.e. higher cost during work hours, lower cost during low use periods) (Litman, 2020a) 4. Target permits (i.e. block specific permits, permits based off demand/vacancy) (Litman, 2020a) 5. Reduce discounts for monthly permits to discourage daily driving (Litman, 2020a)
		<ul style="list-style-type: none"> • By-Law 2010-128: A By-Law to Regulate Parking (City of Kingston, 2019b) • Limited Term Parking Zones: Schedules A1-G3 	<ol style="list-style-type: none"> 1. Increase enforcement of regulations, esp. when busy (Litman, 2020a, p. 6)

	Parking Time Limits	<ul style="list-style-type: none"> On-Street Parking Meter Zones: Schedule A1 – Maximum time limit: 2 or 3 hours Municipal Parking Lots: Schedule E – 3, 4, 24, 72h maximum time limits Limited Term Parking Zones: Schedule G1 – 5, 10, 15, 30 minutes max; 1, 2, 3 hours max; NSA. Overnight Parking Prohibitions: Schedule G3 – 2 a.m. – 7 a.m./2 a.m. – 7 a.m. 	<ol style="list-style-type: none"> 2. Reduce on-street time limits where needed to increase turnover (Litman, 2020a, p. 6) 3. Favour short-term rates in the core (Litman, 2020a, p. 6) 4. Clear, Consistent Messaging & Ensure Available Parking (Portland Bureau of Transportation, 2018 p. 31) <ul style="list-style-type: none"> o Simplify: 2-hour zones as default, add more 15/30 & 4-hour zones when more data is collected (Portland Bureau of Transportation, 2016, 31).
	Cycling and Pedestrian Infrastructure	<ul style="list-style-type: none"> Official Plan: Sets the vision for the city to reduce automobile dependency and promote development supportive of walking, cycling and public transit. AT Master Plan (Walk 'n' Roll) (2018): Sets the goal to achieve a 20% active transportation mode share by 2034 with other supporting objectives. AT 5-Year Implementation Plan (2019-2023): Sets priorities and goals for improving walkability, roads, and transportation in the city. 	<ol style="list-style-type: none"> 1. Continue providing infrastructure to create a safe AT network (City of Kingston, 2018). 2. Develop educational programs that encourage more residents to engage in multi-modal travel (City of Kingston, 2018). 3. Develop Transportation Focus Area plans at the neighbourhood-level (City of Kingston, 2018). 4. Expand pedestrian-oriented corridors and integrate bike lanes into street design (City of Kingston, 2018).
	Parking Maximums	None	<ol style="list-style-type: none"> 1. Implement parking maximums that are sufficiently supported by additional parking management strategies.

Reducing Demand

	Parking Management Strategy	City of Kingston Existing Conditions	City of Kingston Recommended Improvements
Reducing Demand	Transportation-Demand Management	<p>Official Plan: Sets the vision for the city to expand transit service and increase transit ridership.</p> <p>Kingston Transit 5-Year Business Plan (2017-2021): Sets the goal to achieve 15% of trips by public transit by 2034 with various supporting objectives.</p>	<ol style="list-style-type: none"> 1. Add new Park and Ride lots to address capacity issues and increase ridership in strategic areas (City of Kingston, 2017). 2. Integrate TDM measures within city policies and processes, with the long-term objective of enacting legislation requiring new developments to implement building based TDM programs.
	Parking Pricing	<ul style="list-style-type: none"> • 1,400 on-street Pay & Display City metered parking spots from \$1.50-\$2/hr • 19 parking lots with \$1.50-\$2/hr rates • Event parking rates beginning at 2:30pm excluding Sundays (cost increases in parking lots as get closer to Leon's Centre) <ul style="list-style-type: none"> ○ \$6 flat rate – Barrack Street Lot, Drury Lot, Frontenac Lot, King & Queen Lot ○ \$5 flat rate – Angrove Lot, Anglin Lot ○ \$3 flat rate – evening \$3 max, Chown and Hanson Parking garages \$1.50/hr <p>(City of Kingston, 2020m; City of Kingston, 2020o)</p>	<ol style="list-style-type: none"> 1. Increase rates for municipal parking lots and garages (Litman, 2020b, p. 4). 2. Implement demand-based pricing for on-street parking (Portland Bureau of Transportation, n.d)
	Financial Incentives	<p>The City of Kingston has been provided the following reports related to Cash-in-Lieu incentives: City of Kingston Public Parking and Policy Study and Cash-in-Lieu of Parking By-Law Updates by the MMM Group Limited (2014), Subsequent Implementation, MMM Group Limited Report (2016), and Williamsville Parking Strategy Future Development Considerations (2015)</p> <p>By-law No. 88-270: "A By-Law to Establish Criteria for Deciding Applications for Exemption from the Parking Requirements of the Downtown and Harbour Zoning By-law No. 96-259" provides for financial contribution to</p>	<ol style="list-style-type: none"> 1. The MMM Group Report: Recommended that By-law amendments to the City of Kingston By-laws 96-259 and 8499 be proposed to reduce the minimum parking requirements (BA Group, 2020, p.15) 2. The "cash-in-lieu" aspect of By-law 88-270 be repealed, which is exclusively for small scale conversion redevelopment projections of 13 units or less 3. Increasing the existing cash-in-lieu levy (\$3,000), as it is insufficient in accounting for the cost the development of public parking facilities (BA Group, 2020, p. 47)

		public parking in lieu of providing the required parking on site. However, this By-law only applies to cash-in-lieu options to conversions and renovations of existing to residential units within the 2 primary downtown zones (MMM Group Limited, 2016, p.7)	4. Conducting periodic reviews of the cash-in-lieu of parking fees, or link to a fees index (such as building costs) (MMM Group Limited, 2014, pg. 19)
	Car-Pooling	Official Plan: <ul style="list-style-type: none"> “The City will work together with major institutions and employers to promote the shared use of new parking, which should be strategically located to encourage carpooling...wherever possible, particularly in the Central Business District, east of Division Street.” (City of Kingston, 2019, p. 66) “The City recognizes the role of transportation demand management in promoting its Strategic Direction by making vehicular travel more sustainable, making more efficient use of the existing transportation infrastructure, and increasing transit use. Measures such as flexible work hours, and priority parking for carpool vehicles, can help to reduce peak travel volumes, which then optimize traffic capacity on the existing road infrastructure.” (City of Kingston, 2019, p. 279) 	1. Have a parking pass cost reduction for those who carpool in the downtown 2. Implement MMM Group Report Recommendations on Car-Pooling including: <ul style="list-style-type: none"> Model online ridesharing matching services in other Ontario communities Increase costs for all-day parking in major employment areas Keep rates for carpooling spots same as for single occupancy spots, but carpool spots should have priority parking with convenient and highly visible locations Shared parking for carpool lots, such as teaming with institutions like churches on weekdays for parking spillover Synergized, comprehensive transit plan, such as parking for carpooling near public transit High visibility of shared parking and carpooling options for the public Carpool parking designated at priority locations Use under-utilized lots as carpool parking
	Bicycle Parking	Density by Design Report: Need for secure & well-lit bicycle parking (City of Kingston, 2019g, p. 42). Zoning Bylaw: No. 8499 bicycle parking requirement in Residential Bicycle Parking Areas. No. 96-259 - bicycle parking requirement for office, restaurant, restaurant (take-out), commercial, convenience store uses and multiple dwelling or converted dwellings in Bicycle Parking Areas. No. 97-102, No. 32-75, and No. 76-26 – no requirement AT Master Plan (Walk ‘n’ Roll) - 2018: Bike parking recommendations.	1. Amend zoning bylaw to require bicycle parking for all uses except single detached dwellings. 2. Amend zoning Bylaw to require secure and covered bicycle parking for office, institutional and residential uses excluding single detached dwellings (City of Ottawa, 2020) 3. Amend zoning bylaw to require shower and changing facilities for office and institutional uses based on number of employees (City of Hartford, 2020a, p. 233)

		<p>Official Plan: “Kingston Centre...3.4.D.10 Development within the Kingston Centre block, bounded by Princess Street, Bath Road and Sir John A. Macdonald Boulevard will only be considered in the context of a. a plan for the entire site that addresses...the need for secure sheltered bicycle parking” (City of Kingston, 2019d, p. 123).</p>	
	Car Share Parking	<p>Two car share services in Kingston 1) Queen’s University’s Student Car Share Program 2) Communauto Kingston (City of Kingston, 2020x).</p> <p>Zoning Bylaw: Zoning Bylaw No. 8499 Amendments to require car sharing at residential sites (495, 65, 662-670 Princess St., 551 Victoria Street and 333 University Avenue)</p> <p>Official Plan:</p> <ul style="list-style-type: none"> • “Cash-in-Lieu and Alternative Provisions 4.6.52. ...the City may...d. permit shared or reduced parking...when a developer supports transportation demand management through measures such as dedicating space for car shares...” (City of Kingston, 2019d, p. 294-295). • “Surface Parking 10E.1.17 ...Any new surface parking facilities will be developed according to the following policies... e. Preferential parking for...car-share services are encouraged.” (City of Kingston, 2019d, p. 522). 	<p>1. Amend zoning bylaw to permit a parking requirement reduction when a car share program is provided as part of a residential development (MMM Group Limited, 2014, p. 75)</p>

Support Strategies

	Parking Management Strategy	City of Kingston Existing Conditions	City of Kingston Recommended Improvements
Support Strategies	Overflow Parking	<ul style="list-style-type: none"> Overflow Parking in Kingston: Leon's Centre dispersed parking model. This model uses the extent of the City of Kingston's downtown parking supply to manage the Leon's Centre's demand. 	<ol style="list-style-type: none"> Mandate overflow parking plans for events or uses that are expected to attract large crowds (Litman, 2006). Mandate overflow parking plans for areas with reduced parking requirements (Un, 2010).
	User Information	Public Transit Google trip planner tool Bus schedules posted online and at transit stops Standardized, visible transit stops and signs System maps and transfer maps Colour-coded and numbered route schedules Transit fares and rates Variety of pass options: Monthly Pass, Affordable Pass, Monthly Commuter Pass Student passes Locations for purchasing fares on Kingston Kingston Transit app	<ol style="list-style-type: none"> Use real time data, such as real time digital passenger displays at bus stops Continue improvements to the Kingston Transit app Text messaging option to notify users of incoming arrival/departure times Installing electronic boards in parking lots (real time parking options) Using digital signage and wayfinding throughout the city to inform the public of parking availability
	Parking Enforcement	Kingston bylaw enforcement team investigates, enforces, and educated citizens on municipal bylaws including parking Parking Enforcement: "The City works to enforce parking regulations across the city to ensure fair access to parking for all citizens, including those with accessibility needs." (City of Kingston, 2018).	<ol style="list-style-type: none"> Kingston should seek to determine a "capture" rate that best reflects their current parking enforcement strategies, objectives, enforcement areas, method of travel of officers, etc. Portions of paid citations to be allocated to the city to be reinvested for neighbourhood improvements
		<ul style="list-style-type: none"> Residential on-street parking program regulates residential streets near downtown (City of Kingston, 2016). 	<ol style="list-style-type: none"> Establish a spillover monitoring program to identify the time and location of problems (Litman, 2006).

	Spillover Repair	<ul style="list-style-type: none"> • Parking information provided online for motorists to list parking options (City of Kingston, n.d.). • 2 lines for reporting parking violations, a general line and an “emergency” line (City of Kingston, 2020b) 	<ol style="list-style-type: none"> 2. Expand parking regulation zones or residential permit areas. 3. Prepare overflow plans if spillover significant or in areas with reduced parking requirements (Un, 2010). 4. Compensate people affected by spillover (Litman, 2006).
--	------------------	---	---

Appendix B

Car Sharing Models

	Car Sharing Models		
	Car sharing as an Environmental Benefit	Car sharing as a Sustainable Business	Car sharing as a Business
Government Support Level	Maximum	Moderate	Minimum
Allocation	Jurisdiction may allocate parking spaces on a case-by-case basis or via more informal processes (i.e., non-binding Council/Board of Director resolutions).	Jurisdiction that once allocated parking spaces through an informal process becomes formalized.	Jurisdiction maintains highly formalized and established processes allocation of car sharing parking spaces, including allocation among multiple operators.
Caps (limit on number of carsharing spaces)	Does not impose any cap on the number of car sharing spaces or percentage of spaces to conversion to carsharing.	May impose a cap on the number and location of car sharing spaces or percentage of spaces jurisdiction-wide for conversion to carsharing.	Imposes a cap on the number and location of car sharing spaces or percentage of spaces jurisdiction-wide for conversion to car sharing.
Fees and Permits	Recognizing the social and environmental benefits of car sharing, parking is provided free-of-charge or significantly below market cost.	Fees may be based on cost recovery of parking provision (i.e., foregone meter revenue, administrative costs). Fees may be reduced to reflect environmental goals (i.e, reduced carpool rate for car sharing parking)	Fees based on a cost recovery or profit-based methodology (i.e., permit costs, lost meter revenue, administrative costs).
Signage, Markings, and Installation	Jurisdiction pays for sign installation and maintenance, striping, and markings.	Jurisdiction pays for sign installation and operator pays for maintenance of signage, striping, and markings.	Car sharing operator pays for installation and maintenance of signage, striping, and markings.
Social and Environmental Impact Studies	Car sharing operators required to study and document local social and environmental benefits at regular intervals.	Car sharing operators may be required to study and document local social and environmental benefits on a one-time basis or at regular intervals.	No requirements for any social and environmental impact study of car sharing.
Parking Enforcement	Local police may maintain ticket authority. Citations for parking in car sharing stalls are greater than most other parking violations.	Local police may maintain ticket/citation authority	Local police may have ticketing authority. Citations for parking in car sharing spots are the same as most other parking violations.

Public Involvement	Informal process, if any, led by jurisdiction to elicit public input re: location and number of car sharing parking spots. May be determined by internal staff without public input.	Informal process where jurisdiction and car sharing organization seek public input re: location and number of car sharing parking spots through public notification and staff management of possible public concerns.	Highly formalized process where car sharing organization is responsible for obtaining public input and approval re: location and number of car sharing parking spots through neighborhood councils, commissions, or formal hearings.
--------------------	--	---	--

(Mintea Transportation Institute, 2010)

Appendix C

Inner Urban Grocery Store Parking Lot Comparison

Location	By-Law Parking Requirements	~ Lot Size (Google Earth)	~ Parking Lot Size (Google Earth)	~ Building Footprint size (Google Earth)	~ Percentage of lot covered by parking	~ Total Number of Parking Spaces (Google Earth)	~ Parking Ratio
Metro Barrie St., Kingston	"...[T]here shall be no parking requirements...for commercial uses permitted in the "Central Business System (C1)" Zone"	7451.8 m ²	4691.6 m ²	2339.7 m ²	63%	137 spaces	5.9 spaces per 100m ² Gross Floor Area
Metro Carleton Ave. Ottawa	Area Y Minimum of 1.25 spaces per 100m ² gross floor area	3174.4m ²	1757m ²	1088.2 m ²	55.3%	54 spaces	4.96 spaces per 100m ² Gross Floor Area
Metro Bloor St., Toronto	Policy Area 1 Minimum of 1.0 spaces per 100m ² gross floor area and maximum of 4.5 spaces per 100 m ² gross floor area	3222.2m ²	1877m ²	1345.3 m ²	58.3%	47 spaces	3.49 spaces per 100m ² Gross Floor Area
Fiesta Farms Christie St., Toronto	Other Areas of the City Minimum of 2.5 spaces per 100 m ² gross floor area	5546.4m ²	2101.8m ²	3127.6 m ²	37.9%	60 spaces	1.92 spaces per 100m ² Gross Floor Area
Food Basics, Barrack St., Kingston	Zone C1-22 Minimum of 1.2 spaces per 100m ² gross floor area	3013.1m ²	1083.2m ²	1671.3 m ²	55.5%	27 spaces	1.62 spaces per 100m ² Gross Floor Area

Appendix D

Site Statistics

Carruthers Wharf

Lot Coverage	Area (ft ²)	Area (m ²)	% Coverage
Lot Area	152,804	14,196	100%
Hard Landscape (roadways/parking)	22,916	2,129	41.9%
Landscaped Area (soft landscape) *	20,624	1,916	37.7%
Building Area Coverage	11,141	1,035	20.4%
Ground Floor Area	11,141	1,035	20.4%
Building Gross Floor Area	171,146	15,900	--

*Parkland Area (3,100 m²) not included in open space calculations

Units	130
Storeys	15
Surface Parking	31
Underground Parking	128
Total Parking Spaces	159
Accessible Spaces	6*
Bicycle Parking	--

Metro

Lot Coverage	Area (ft²)	Area (m²)	% Coverage
Lot Area	81,472	7,569	100%
Paved/Gravelled Area (Parking Lot)	53,927	5,010	66%
Landscaped Area	1,033	96	1%
Building Area Coverage	26,512	2,463	33%
Ground Floor Area	--	--	--
Building Gross Floor Area	--	--	--

Parking Spaces	137
Accessible Spaces	5*
Bicycle Parking	12

*included in total number of parking spaces

Smith Robinson Building

Lot Coverage	Area (ft²)	Area (m²)	% Coverage
Lot Area	26,167	2,431	100%
Paved/Gravelled Area (Parking Lot)	7,653	711	29%
Landscaped Area	1,151	107	4%
Building Area Coverage	17,363	1,613	66%
Ground Floor Area	17,106	1,589	65%
Building Gross Floor Area	87,134	8,095	--

Parking Spaces	39
Accessible Spaces	2*
Bicycle Parking	--

*included in total number of parking spaces

Anna Lane

Lot Coverage	Area (ft ²)	Area (m ²)	% Coverage
Lot Area			
Paved/Gravelled Area (Parking Lot)			
Total Amenity Space (indoor and outdoor)	32,938	3,060	
Building Area Coverage (Site Area)	26,695	2,480	
Ground Floor Area	9,037	839.6	--
Building Gross Floor Area	113,462	10,541	--

Units	115 (120 max.)
Storeys	9
Ground-level Parking	25
Underground Parking (2 levels)	69
Parking Spaces	94 (0.78/unit)
Accessible Spaces	4*
Bicycle Parking	42

BA Group Report: Apartment Parking Space Sales/Leasing Data (2017)

Apartment Parking Space Sales/Leasing Data (2017)							
Site	Address	Total No. of Occupied Dwelling Units	Resident Parking Supply		Parking Space Sales/Leasing Demand		Difference between Parking Spaces Sales/Leasing Demand and Parking Count Demand (+/-)
			No. Spaces	Supply Ratio (spaces/occupied unit)	No. Spaces (sold or leased spaces/occupied unit)	Demand Ratio (sold or leased spaces/occupied unit)	
Carruthers Wharf	135 Ontario Street	129	138	1.06 sps/unit	111	0.86 sps/unit	+0.04 sps/unit
Anna Lane	121 Queen Street	115	94	0.82 sps/unit	92	0.82 sps/unit	N/A

BA Group Report: Resident Parking Demand Survey Findings (2017)

Resident Parking Demand Survey Findings						
Site	Address	Total No. of Occupied Dwelling Units	Resident Parking Supply		Peak Observed Resident Parking Demand	
			No. Spaces	Supply Ratio (spaces/occupied unit)	No. of Utilized Spaces	Demand Ratio (utilized spaces/occupied unit)
Carruthers Wharf	135 Ontario Street	129	138	1.06 sps/unit	106	0.82 sps/unit

