Report to Planning and Environment Committee

To: **Chair and Members**
Planning and Environment Committee
From: **George Kotsifas P. Eng.,**
Deputy City Manager, Planning and Economic Development
Subject: **Parking Standards Review Background Report**
Date: **November 22, 2021**

Recommendation

That, on the recommendation of the Director, Planning and Development, the attached Parking Standards Review Information Report, which is the process to review and update the current City of London Parking requirements in Zoning By-law No. Z.-1 **BE RECEIVED** and **BE CIRCULATED** for public review and feedback.

Executive Summary

Summary of Report

The Parking Standards Background Study appended to this report provides information regarding the Parking Standards Review that is being initiated as part of the ReThink Zoning process. It includes guiding principles, goals, and objectives for this review, including a preliminary overview of different approaches to off-street parking regulations that will be considered. It also considers how the different options align with support London's goals around sustainability, climate action, housing affordability, placemaking, active transportation, and transit.

Purpose and the Effect of Recommended Action

The purpose and effect of the Parking Standards Background Study in Appendix A is to provide a framework for public consultation regarding parking regulation options.

Linkage to the Corporate Strategic Plan

The review of parking standards contributes to implementing the Strategic Plan through the Building a Sustainable City areas of focus.

Report

1.0 Background Information

This report provides context to inform the process of reviewing the Zoning Regulations that establish off-street parking requirements based on land use and location within the City. The Background Study that is attached to this report will provide important context and other information that will be used to guide public engagement on this topic. This review is part of the larger ReThink Zoning review but given that parking regulation is a distinct issue from other Zoning regulations, a separate report is presented for discussion. This review will consider changes to the regulations of the current Zoning By-law No. Z.-1 in addition to the approach to be implemented through a new Zoning By-law.

Previous Reports Related to this Matter

December, 2017 – City of London – Downtown Parking Strategy

2.0 Discussion and Considerations

The *Planning Act* is the applicable legislation for planning matters in Ontario. It requires the City of London to have an Official Plan and permits the City to regulate development through zoning in order to implement the Plan. The Act also requires that when an Official Plan is updated after a comprehensive review, a municipality shall update the zoning by-law within three years of coming into effect (Section 26(9)).

The *Provincial Policy Statement 2020* (PPS) provides policy direction related to land use planning and development. Planning authorities shall keep their zoning and development permit by-laws up-to-date with the PPS. The PPS sets out that infrastructure and public service facilities shall be provided in an efficient manner that prepares for the impacts of a changing climate while accommodating projected needs, and planning authorities should promote green infrastructure to complement infrastructure. The PPS requires that a land use pattern, density, and mix of uses should be promoted that minimizes the length and number of vehicle trips and support current and future use of transit and active transportation.

The London Plan was approved by Municipal Council in June of 2016 as the City's new official plan and provides a vision for how London will evolve over the next twenty years. The Official Plan directs growth to strategic locations with an emphasis on growing 'inwards and upwards' to achieve a compact form of development (policy 79). As part of the City Building Section, *the London Plan* provides for different parking policies that regulate the location, configuration and size of parking areas to support the planned vision of the place type and enhance experience of pedestrians, transit-users, cyclists, and drivers. Most importantly, *the London Plan* states that *the Zoning By-law* will establish automobile parking standards, ensuring that excessive amounts of parking are not required. Requirements may be lower within those place types and parts of the city that have high accessibility to transit or that are close to employment areas, office areas, institutions and other uses that generate high levels of attraction (policy 271).

The current *Zoning By-Law Z.-1*, in force since 1993, was prepared to implement the policies of the 1989 Official Plan. Zoning is a regulatory tool that establishes the rules for development on individual properties. Zoning directs what types of buildings and activities are permitted (use), how much of a building or activity is permitted (intensity), and where and how those buildings should be situated or designed (form). All City by-laws, including zoning by-laws, must conform with the policies of the Official Plan. Zoning by-laws are the primary method regulating the provision of automobile and bicycle parking in new or expanded development. Section 4.19 of the Zoning By-law Z.-1 regulates the off-street parking supply for London. Similar to most municipalities in Ontario, the Zoning By-law is used as method to mandate a certain supply of off-street parking at a particular site.

The 1989 Official Plan and Zoning By-law no. Z.-1 both place an emphasis on land use, breaking the city up in zones that are based on land use classifications such as residential, commercial and industrial uses. The London Plan is considerably different from its predecessor in terms of planning approach, putting a greater emphasis on built form. Instead of land use designations, the London Plan establishes a sense of place through different Place Types (based on use, intensity and form of development) that apply to parts of the City.

ReThink Zoning is the process of delivering a new Comprehensive Zoning By-Law that will implement The London Plan and contribute to achieving its vision for London to develop as an exciting, exceptional and connected City. Because *The London Plan* completely replaces the *1989 Official Plan*, it is necessary that a new by-law be prepared that conforms to and implements its policies. The London Plan provides direction on many zoning matters, and ReThink Zoning will be the exercise to prepare the new zoning by-law that will fully implement that vision and direction. ReThink Zoning is a major project that will have a lasting impact on how London will be shaped to meet the vision established in the London Plan.

Some of the key objectives of the London Plan that relate to zoning regulations include:

1. **A mosaic of great places**: where each place type has its own character, vision and function in our city.
2. **Link development to mobility**: where the street classification establishes use, intensity, and forms of development, and is part of creating distinct place types. This is evident in various place types, such as Rapid Transit Corridors, Urban Corridors and Main Streets. The Neighbourhoods Place Type allows different use, intensity, and form based on the street classification.
3. **Flexibility and certainty**: The Plan is designed with the intent of requiring fewer amendments, It allows for interpretation while ensuring reasonable expectations of what can be build.
4. **Context-sensitive approach**: The Plan requires the application of evaluation criteria and other policies to ensure that development is compatible and fits within its context.
5. **Plan for sustainability**: A considerable portion of our greenhouse gas emissions come from transportation and housing. The London Plan draws the link between how we build our city and how we move. Responding to the climate emergency is embedded throughout the Plan, especially in the Key Directions, City Structure, and Environmental Policies.

Zoning is a crucial tool to implement the new Official Plan, and therefore these key elements of the London Plan provide a framework to implement the new Zoning By-law and associated parking regulations.

3.0 Background Paper

A Background Study has been developed to provide a framework for public consultation about the different options and other considerations for parking requirements to support London's goals around sustainability, climate action, housing affordability, active transportation and transit.

Engagement Opportunities
Public and stakeholder engagement is a key component for creating a new zoning by-law and associated parking standards. Consultation will include the public, focused stakeholders, community organizations, industry professional, development industry, and all other interested parties.

Initial engagement will focus on providing the framework for the project and information about the necessity to update the existing parking standards. Later engagement will focus on the different options to regulate parking standards, in particular minimum, maximum and open parking standards.

The ongoing COVID-19 Pandemic has necessitated changes to the types of engagement, so as a result of the social distancing measures, this project will focus engagement options to mainly online methods. These sources include:

- Get Involved Website. This online engagement platform (getinvolved.london.ca) will provide information about the project and will be updated regularly.
- Social Media. Engaging content can be posted using the City's existing handles on Twitter, Facebook, and Instagram to draw the general public to the Get Involved Website.
- Webinars. This engagement method allows Staff to host a virtual 'town hall' or virtual community information meeting.
- Virtual and in-person meetings. Videoconferencing and stakeholder meetings (if appropriate based on the health-regulations) allow us to hold meetings with stakeholders to discuss the project. Meetings can be recorded and shared online for those unable to attend.

Planning & Development staff want to ensure that Londoners have opportunities to provide input on the regulation of off-street parking in our city. The results of this public engagement process will inform the final Parking Standards Review expected to be completed in 2022.

Conclusion

The Parking Standards Background Study appended to this report provides information regarding the Parking Standards Review that is being initiated as part of the ReThink Zoning process. Because *The London Plan* has replaced the *1989 Official Plan*, it is necessary that a new Zoning by-law be prepared that conforms to and implements its policies. As outlined in the Background Study, while parking regulations are a distinct planning issue, they connect in many ways to other city-building considerations. The options explored in the Background Study, including minimum parking requirements, open option standards and maximum parking requirements, provide a framework for better off-street parking standards that achieve the London Plan vision to achieve a compact form of development and build a sustainable city. It is recommended that this report and the Background Study be circulated to stakeholders and the public for comments and feedback.

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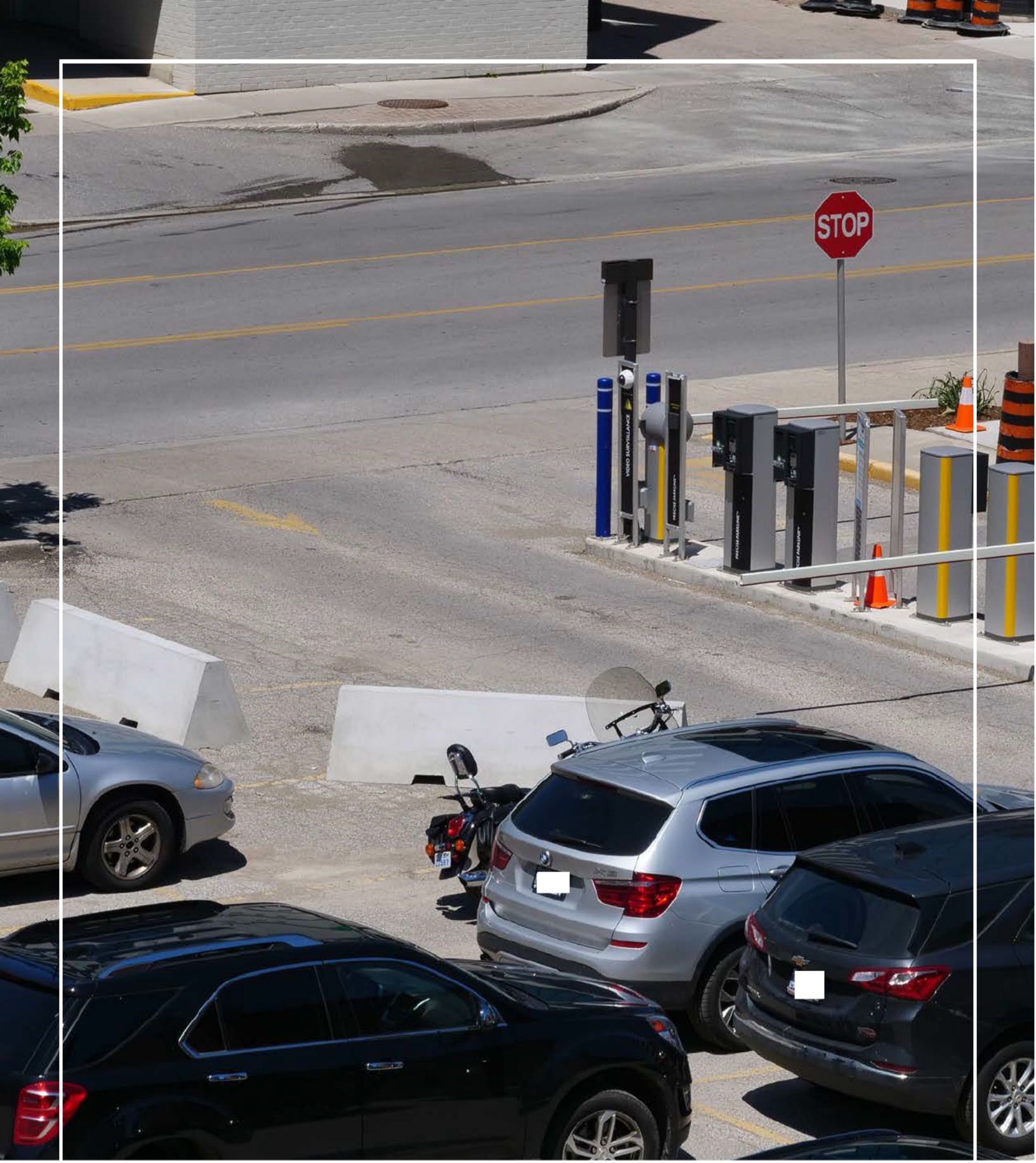
Appendix A – Background Study

Parking Standards Background Study

November, 2021

London
CANADA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1.0 Introduction

Parking is a key element to achieving the London Plan's objectives for city building. The way parking is regulated will in part determine the land uses that are built, the level of intensity that can be achieved, and the character or form of new development.

The London Plan was adopted as a new Official Plan for London in 2016, and it brought forward a new approach to how we manage growth and shape the city to address the new challenges that we face. The London Plan includes a new emphasis on how development is designed to create great and exciting places. It also prioritizes new mobility options and considers how to grow more sustainably and resiliently in response to the current climate emergency. The way we regulate and manage parking supply is central to each of these aspects of city building described in the London Plan. The primary tool that the City uses to regulate parking is the Zoning By-law.

The City's current zoning by-law includes a section that lists the defined uses and provides a minimum parking requirement for each one. The current zoning by-law was written to implement the previous 1989 Official Plan, so we have begun the process of preparing a new zoning by-law to implement the London Plan called ReThink Zoning. While ReThink Zoning will establish parking requirements for the new by-law, this review of parking regulations will inform the ReThink Zoning process and will also include recommended amendments to the current zoning by-law.

2.0 Background to Parking Regulation

2.1 Current Parking Issues

Urban areas have historically been shaped by transportation patterns. Over the las centuryCity planning and transportation engineering standards have reoriented North American cities to prioritize the automobile at the expense of other transportation modes, and the consequences of those earlier actions define our current development patterns.

In the same way cities were shaped by railways and trams in the 19th century, and by private cars in the mid-20th century, the rise of new technology has the potential to shape our urban form in the 21st century. Advancements in technology and changes in priorities are leading to emerging trends in human travel. At the same time Planners have learned that some of the fundamental principles of city building that were true a century ago remain true today, and we should focus our efforts on achieving great places and neighbourhoods throughout the city in order to realize the vision established in the London Plan. Some current trends related to parking requirements include:

New private sector transportation services are emerging.
'New mobility' technologies like connected and automated vehicles (CAV), and ride hailing services (like Uber) form a shift in transportation services.

Younger generations are becoming more multi-modal and less car dependent.
Several emerging services provide an alternative to car ownership. Car-share and bike-share are becoming more popular and accessible through online booking and payment applications. Especially millennials indicate that they are more reliant on their smart phones than other technology including a car.

Driverless Cars are on the horizon.
The emergences of CAVs providing door-to-door, on-demand ride hailing is predicted to become an everyday travel option in the near future. Although much is uncertain, CAVs would likely no longer require an on-site parking spot as they would continue to the location to pick up somebody else.

As mobility options increase, the need for parking will decrease
As it's challenging to forecast the exact implications of the trends above, the parking standards should be flexible enough to react to changes in the transportation system while maintaining a development approval process that allows sufficient parking and is supportive of sustainable development.

All transportation systems are made up of three components: vehicles, right-of-way, and storage space. Parking relates to the 'storage space' that vehicles occupy when they are not in use and can be either on-street or off-street. On average, cars are parked 95% of their lives and driven only 5% (Shoup, 2005). As a result, our transportation systems require large amounts of land for parking, as also seen by the significant amount of parking inventory in Downtown London (Figure 1). The green areas indicate publicly accessible off-street parking. On-street parking and privately owned off-street parking (available for employees) are not included in the image.

Figure 1: Aerial Image of Downtown London, CityMap 2021.

The London Plan states that the City of London will set automobile parking standards, ensuring that excessive amounts of parking are not required. It also states that the City will plan improvements to the mobility network with an emphasis on active mobility, improved transit services, and Transportation Demand Management Targets. While auto-dependence is discouraged, The London Plan also recognises that automobiles will continue to be used and require an adequate supply of off-street parking to be maintained to support short-term parking demands. The London Plan directs that adequate parking standards be established that ensure excessive amounts of parking are not required.

2.2 Parking in relation to land use

Parking is one of the most significant factors that influences the form, design, and function of our cities and neighbourhoods. While often seen as a limited technical part of a larger development process, parking has a powerful effect on the environment, economic success, affordability, and resiliency of our city. The current approach to municipal zoning and parking regulations requires a certain number of parking spaces to be provided for different land uses. These requirements set out the amount of space that must be dedicated solely to the storage of cars, either in surface parking areas or in parking structures. Parking regulations also provide for the appropriate size of parking spaces, driveways and drive-aisles to access parking spaces.

When designing a development, the location of the driveways and number and size of parking spaces can easily take over the design process because the form and function of parking spaces is relatively constant and can't be shaped like the architecture of a building. Experiences in London show that these parking regulations often result in a constrained envelope for the architecture of the building, with increased costs to build extensive parking lots or structures.

A better approach to parking regulations can be a driver for positive and equitable growth and induce healthy development for residents, businesses, and the environment. The right parking regulations can work together with municipal investment in transit and active transportation infrastructure to promotes mixed-use and compact development and built form.

However, car-friendly policies such as separated land uses, low density and great availability of free parking create drivable cities but prevent walkable communities (Shoup, 2018). That type of parking regulations can impede this equitable growth, standing in the way of the key objectives for the future of our city as outlined in The London Plan. Parking regulations are rooted in past practices and experiences to ensure every building has sufficient parking to meet peak demand. As the Zoning By-law Z.-1 was implemented in 1993, the regulations are based on outdated market factors that potentially differ from the actual parking demand. As an important junction between land use planning, transportation and mobility, and the economic resiliency and success of our cities, parking standards can provide great public value or harm, depending on how they are regulated and implemented.

2.3 Negative effects of excessive parking

The site-based approach mandated in the zoning by-law has some clear benefits, but also makes parking a planning consideration that doesn't necessarily take the surrounding context into account. In other words, a certain supply of parking is guaranteed on a particular site without taking the broader effects of parking onto land use and transportation into account. A summary of arguments that support and oppose minimum parking requirements is provided in Figure 2 (Willson, 2013).

Arguments in favor of minimum parking requirements	Arguments against minimum parking requirements
Reduce congestion around a site caused by vehicles looking for parking.	Encourages private vehicle use.
Avoid parking spillover.	Adversely impacts transit ridership and alternative modes of transit (disadvantages non-drivers).
Creates 'orderly' development patterns.	Ignores additional costs of parking compared with potentially lower costs associated with alternative modes of transit.
Creates an 'even' playing field among developers.	Reduces development densities/intensity and hampers infill development and adaptive reuse.
Reducing the need for parking management by making adjudication of conflicts between property owners unnecessary.	Directly and indirectly harms the environment. Lower physical activity also has negative consequences for public health.
Reduces demands for public provision of parking.	Often based on imprecise representation of actual parking utilization levels.

Figure 2: Summary of arguments for and against minimum parking requirements, Willson 2013.

An increasing volume of scientific studies have explored the negative impacts of parking regulations in different North American cities. Higher parking requirements lead to increased land costs per area of developed floor space, making development at the urban periphery (also knowns as urban sprawl) relatively more attractive due to lower land costs (Willson, 1995). Other studies suggest that minimum parking requirements discourage urban infill development (Burby, 2000). Lower density land use patterns are not conducive to walking, cycling and transit and increase auto-dependence. In 2005, renowned parking expert Donald Shoup released a book called 'The High Cost of Free Parking'. In this book, Shoup recommended that cities should charge fair market prices for on-street parking and use the revenue to benefit the metered areas and remove off-street parking.

In his more recent book 'Parking and the City' (2018), Shoup linked minimum parking regulations to several harmful effects such as increasing traffic, congestion and carbon emissions, pollution of water and air, encouraging urban sprawl, raising housing cost, degrading urban design, reducing walkability and subsidizing cars. What is meant with the latter is that the costs associated with the construction of parking are spread out through all sectors of the population, instead of being borne solely by the users of parking spaces due to costs being passed from developer to purchaser to tenant to consumer (Lehe, 2018). Shoup provides an example where parking requirements raise the price of food at grocery stores for everyone, regardless of how they travel. People who cannot afford to own a car pay more for their groceries to ensure that more affluent people can park free when they drive to the store (Shoup, 2018).

The biggest element of this equity issue is the impact on housing affordability, as outlined by Canadian transportation expert Todd Litman:

Conventional parking minimums significantly increase housing costs, especially when land prices are high and housing construction costs are relatively low, such as affordable, urban infill housing. Based on typical affordable urban housing developments costs, one parking space per unit increased total development costs by about 12.5%, and two parking spaces increase costs by about 25%" (Litman, 2013 & 2021).

Litman explains that lower income households, who tend to live in more affordable forms of housing and have on average the lowest levels of vehicle ownership, pay a higher percentage of housing costs on the provision of parking than higher income households, whose costs typically include greater construction costs and greater land values, making the proportion spent on parking less, since parking is a relatively fixed cost across local geographies.

A recent study by Hess & Rehler (2021) explored the impacts of a new zoning code that repealed minimum parking requirements city-wide in Buffalo (NY). This shift has eliminated inflexible parking minimums in favor of market-based demand (developers can choose how much parking to supply), and also encouraged parking management strategies and shared parking through TDM strategies. Hess & Rehler found that the effect on parking supply following elimination of minimum parking requirements in Buffalo varied considerably by land use. Developers of mixed-use sites took advantage of the reform, but single-use residential, commercial, and civic projects specified a parking supply in excess of that required by earlier minimum requirements. Among these mixed-use developments, the reform produced 21% fewer parking spaces per development than required by minimums in the preceding zoning code In particular, mixed-use developments in proximity to transit along primary commercial corridors tended to provide fewer off-street parking compared to before the repeal of the parking minimums.

Appropriate parking standards that don't require excessive parking not only reduce the construction costs associated with development by allowing developers to build less parking spaces, but also potentially reduces other costs of a development approval in terms of time and consultant fees. Excessive parking standards affect the viability of infill development, a form of development that takes advantage of existing infrastructure and services without needing to expand outward. As residential intensification plays a large role in achieving our goals for growing 'inward and upward', appropriate parking policies will support the realization of these goals by making infill development more feasible from a financial perspective.

Finally, unnecessary planning applications and minor variances relating to parking reductions also cost Staff time and resources reviewing and processing applications.

2.4 Parking and alternative modes of transportation

A clear relationship exists between the provision of parking spaces and alternative modes of transportation including public transit, walking and cycling. Fundamentally, when someone chooses an alternative mode of transportation to get around, they are not travelling in an automobile and thus do not require the use of a parking space at their destination. This obvious connection between alternative modes of transportation and parking can be used to decrease the use of personal automobiles by incentivizing the use of alternative modes. This can include defining appropriate parking standards, parking management strategies, public transit improvements and appropriately priced public parking supplies.

While studying the impact of parking policies on the transportation choices of residents in San Francisco, research found that land use policies and transportation choices are linked. Greater transit accessibility reduces car ownership and use. Greater walkability and active transportation infrastructure increase the use of alternative transportation modes and reduces car use. Most importantly, the parking supply a building provides has a stronger effect on transportation choices than transit accessibility (Millard-Ball, 2021). In other words, buildings with one parking space per residential unit have more than twice the car ownership rates than buildings with zero parking spaces.

This finding confirms that the availability of parking (parking supply) has a greater effect on car use than the availability of alternative transportation modes. As The London Plan places a new emphasis on creating attractive mobility choices as alternative to the automobile, significant efforts and investments are made for public transit and active transportation infrastructure projects in the city. Examples include the new BRT links East London Link, Wellington Gateway and Downtown Loop currently in design and construction stage and Cycling Master Plan projects like the Dundas Cycling Track and Colborne Cycle Track. Based on the London Transit Annual Report 2019, conventional transit ridership grew by 5.8% between 2015-2018, while service hours over the same period increased by 9.2%. Ridership per capita has shown slight improvements beginning in 2017, demonstrating that transit ridership is growing at a faster rate than the population of London. By making investments in transit and active transportation infrastructure, the City is at an opportune moment to implement improvements in the parking policies to further shift the transportation focus from private car-use to alternative modes of transportation. Without a full review and rethink of parking regulations, the transit and active transportation improvements will fail to achieve their full potential.

2.5 Climate Emergency

On April 23, 2019, the City of London declared a Climate Emergency "for the purpose of naming, framing and deepening our commitment to protecting our economy, our eco systems and our community from climate change". Essential in this declaration is the recognition by council that the existing City initiatives are insufficient to decrease greenhouse gas (GHG) to meet current targets. Climate change may affect London in a number of ways:

- *Severe weather damages including flooding, high winds, freezing rain and extreme temperatures.*
- *Increase in warmer-climate diseases like Lyme disease and West Nile virus.*
- *Increase in cost and decreased availability of food.*
- *Increase in health care costs from heat waves.*
- *Increase in property insurance costs.*
- *Loss of biodiversity.*

These impacts will only get worse if strong collective actions to curb greenhouse gas emissions and adopt to the changes already occurring are not taken immediately. There are two primary types of responses to these impacts:

Mitigation
Mitigating future impacts through reductions in greenhouse gas (GHG) emissions such as carbon dioxide, methane, and nitrous oxides, primarily as a result of the use of fossil fuels (e.g., gasoline for personal vehicles, natural gas to heat buildings).

Adaptation
Adapting infrastructure, homes, buildings, landscapes to better withstand current and future impacts of more frequent severe weather events that are created from a climate that is wetter, warmer and wilder.

The City of London has proposed a more aggressive long-range greenhouse gas reduction goal for both municipal operations and the community as whole to mitigate and adapt to climate change:

Our new target will strive towards net-zero greenhouse gas emissions in London by the year 2050.

Transportation emissions

The 2017 Community Energy and Greenhouse Gas Report from the City of London identified that transportation is by far the sector with the largest emissions of GHG. Our 2017 transport emissions are 1390 kt CO2 (of which 70% of emissions are from personal vehicles), representing 49% of total emissions today, and has been relatively unchanged since 2007.

In Canada as a whole, the transportation sector is responsible for approximately 25% of total GHG emissions, and of the 15.4 million people who regularly commute (before the Covid-19 Pandemic), only 12% use public transit as their primary transportation mode.

The Reducing GHG Emissions in Canada's Transportation Sector report recommends three main objectives in the transportation sector to reduce GHG emissions:

1. Encourage mode shifting away from solo car rides towards transit, auto-share, and active transportation.
2. Significantly increase the market share of zero-emission vehicles sold in Canada.
3. Reduce the emissions intensity of the fleet of vehicles in Canada, including light and heavy freight.

Mode Share Targets

The City of London Transportation Master Plan (2013) assessed three primary growth & transportation scenarios to determine the most effective integrated land use and transportation strategy to achieve the transit focused vision in the TMP. Scenario 1 representing a continuation of the status quo, was compared to Scenario 2 and 3; each of which featured alternative growth allocation patterns and growth rates, along with higher transit mode share targets. In order to meet the 2030 and 2050 emissions targets, a significant shift in mobility trends will be required to reduce our GHG emissions, and parking policies will be playing a key role in driving that change in behaviour.

Even when fully implemented, the existing Transportation Master Plan does not achieve the required emissions reductions targets even with (nearly impossible) 100% vehicle electrification. Only aggressive changes in mode split from automobile to zero carbon transportation such as walking, cycling or electric transit, can achieve the climate emergency goals.

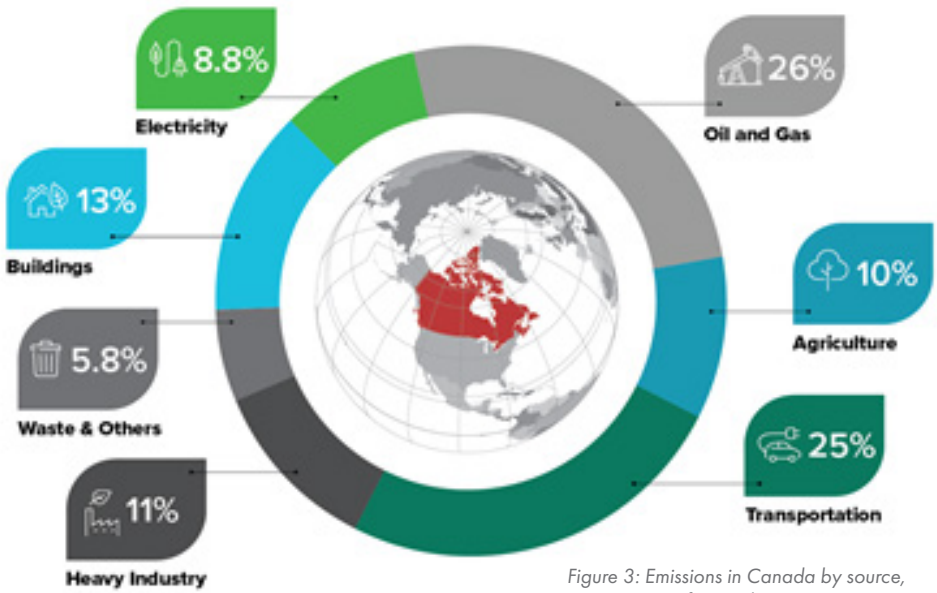

Figure 3: Emissions in Canada by source, Government of Canada 2019.

In addition to the GHG emissions resulting from the movement of vehicles, the construction of parking spaces also results in GHG emissions. When considering the environmental impacts of the construction of parking spaces, combined with the environmental impacts of owning a vehicle, the City of London has an opportunity to show leadership on climate action and mitigation by realizing more sustainable development and a reduction in GHG emissions with the creation of new parking policies. Implementing parking management strategies to support active transportation and transit, a more efficient use of available parking spaces and an overall reduction of the number of parking spaces are all necessary to reduce the GHG emissions in the City of London and achieve a fundamental shift in transportation behavior.

2.6 Parking and the public realm

The appearance and condition of the public realm, the publicly accessible places and spaces in a city, plays an important role in London's identity and economic vibrancy (London Plan Policy 799). As part of the Place Type policies of the London Plan, a range of uses, intensity of development and form of development are provided. Form measures such as parking, landscaping, orientation, setbacks, building location, building massing, step-backs, materials and architecture are an important design consideration for all planning and development applications to represent our city as a mosaic of outstanding places. The London Plan provides that surface parking areas should be located in the rear and interior sideyard, and underground parking and structured parking integrated within the building design is encouraged. For shopping areas or large blocks of future redevelopment, sites should be designed to attract pedestrian activity to the front of these buildings, while amenities such as landscaping or patios serve to screen any large fields of parking on the remainder of the site from the street (Policy 859).

As explored in Section 2.2, the relatively fixed requirements for a functional layout of parking and drive-aisles often are a primary consideration for an architect or designer. The fixed and inflexible elements of parking shape every element of our buildings and the public realm. When large parking areas are required to be included in the design exercise, parking lots must take up space that could be better served by other building elements providing a connection between the private development and public realm.

Especially surface parking lots consume a large amount of land area that interrupts the pattern of building frontage with an underused, open space that is not attractive or welcoming to pedestrians. When provided in parking structures, parking spaces can lead to architecture that lacks a relationship with the street level, unless significant design interventions are used to hide the parking structure.

Requiring large amounts of land for parking to support a building inherently reduces the overall intensity of development and increases the distances between uses. This can further lessen the walkability of our neighbourhoods, resulting in a vicious cycle where more cars are used to move between less dense urban areas, requiring even more parking spaces. Litman calls this process 'parking squeezing out housing: by increasing land needed per residential unit, increased surface parking reduces the maximum potential development density (Litman, 2021).

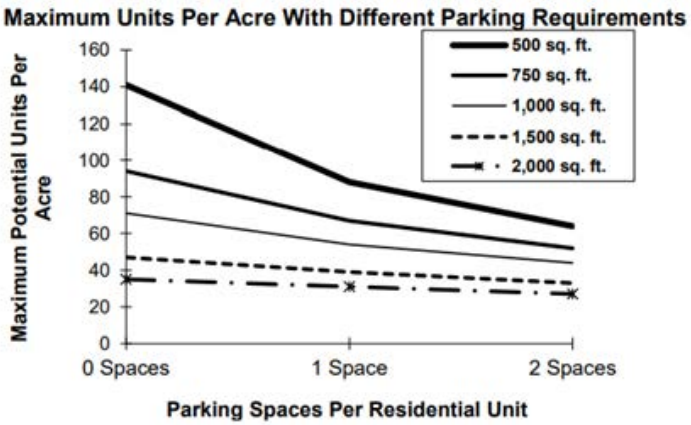

Figure 4: Maximum potential density declines as number of surface parking spaces increases (Victoria Transport Policy Institute, Litman, 2021).

This effect is proportionally larger for smaller units, as the maximum potential density declines as the number of surface parking spaces increase (Gabbe & Pierce, 2017). Increasing parking standards from 1 to 2 spaces per unit reduces the maximum potential density for 500 sq. ft. apartments (black line) from 88 to 64 units per acre (37% decline), but only causes a 13% reduction in maximum density for 2.000 sq. ft. dwellings (striped dotted line) (Litman, 2021).

Each off-street parking space typically occupies 30m2 (330 sq. ft), half for the parked car, and half for the access aisles (Shoup, 2018 & Litman, 2021). Visualizing this typical parking space shows that the requirements for a two-bedroom apartment in many jurisdictions is more than half the size of the apartment itself (Spivak, 2018).

Therefore, increased parking creates lower density land use patterns that are less suitable for transit, cycling and walking. Generally, it's assumed that development densities under 30 units per hectare (12 units per acre) does not support public transit service and neighbourhood amenities within walking distance that form a substitute for driving (Litman, 2021). Finally, off-street parking requires curb cuts to access the surface parking area from the street. These curb-cuts degrade the pedestrian environment by causing vehicles to cross sidewalks, and also reduces capacity for on-street parking (Litman), 2021).

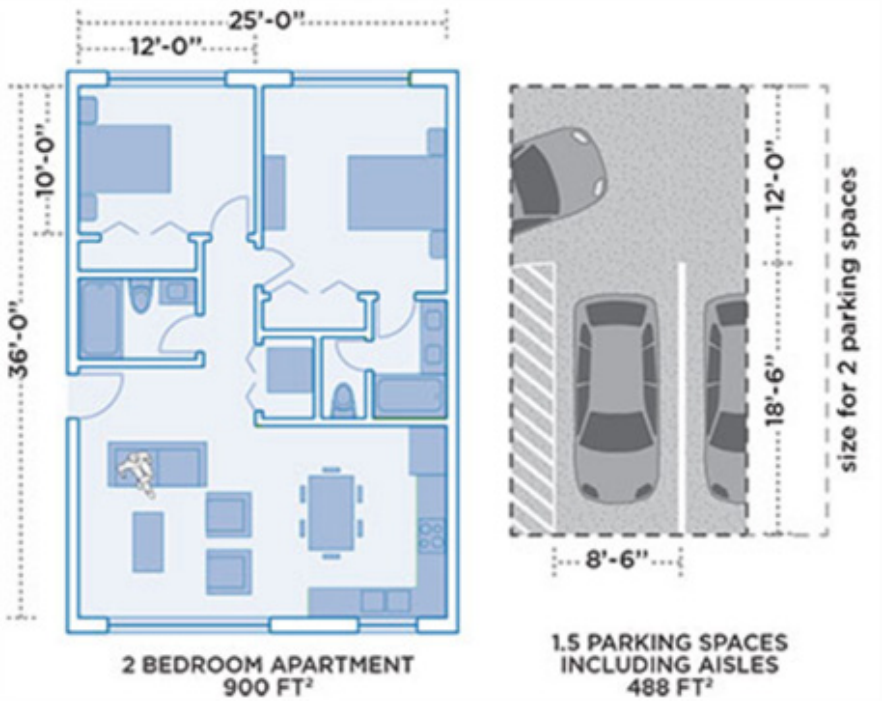

Figure 5: Living space versus Parking Space. Spivak 2018.

In 2019, the City of Edmonton explored the relationship between parking utilization and various geographical variables to identify potential trends in utilization across the City.

Six predictive variables were chosen to test their relationship with parking demand and for grouping neighbourhoods, visualized in figure 6.

Variable	Source	Rationale
Population Density (people per km^2)	Neighbourhood Level Census Statistics	Population density is an indicator for urbanity. Denser places are typically better served by alternative modes of transit.
Employment Density (employees per km^2)		Employee density is an indicator for urbanity. Neighbourhoods with higher job densities are typically better served by alternative modes of transit.
Drive Alone Rate (%)		This rate describes the proportion of residents who primarily drive alone via car. This measure can represent the auto-dependency in an area.
Walk Score	Sourced from walkscore.com	Measure of walkability and quality of pedestrian environment.
Transit Score		Measure of transit accessibility (aggregates transit frequency, density of stops and routes, and mode).
Assessment Value Density ($/m^2)	City of Edmonton assessment data	Assessment value density measures how valuable the land is on average.

Figure 6: Predictive Variable Definitions, Comprehensive Parking Study City of Edmonton, 2019.

The six predictive variables were tested for their relationship with the maximum observed parking utilization in each neighbourhood with a correlation test. The strongest relationship exists between maximum observed parking utilization and walk score. The Walkscore Index assesses the 'walking potential' of a place through combination of the shortest distance to a preselected destination, the block length and the intersection density (Hall, 2018). This means that destination density and land use mix (proxy for walk score) may be the strongest predictor of the maximum observed parking utilization among those variables tested. However, this correlation is relatively weak (r is 0.21 and R^2 is 0.045). This means that only 4.5% of the variation in parking utilization is explained by the variation in neighbourhood walk score. Overall, the City of Edmonton found that, on their own, none of the variables have strong predictive relationships with parking utilization (City of Edmonton, 2019). Combining all variable in a multiple linear regression model found that none of the other five variables add any unique explanatory power beyond the walking score.

The London Plan has shifted the conversation away from the quantity of parking towards a focus on the design and quality of these spaces. The London Plan recognizes the relationship between automobile parking and good urban design by minimizing the impact of parking facilities on the public realm by strategically locating and screening these parking areas and directing surface parking towards the rear yard or interior side yard of development (Policy 272). This Parking Review Background Report continues this shift to focus more on parking from an overall urban design perspective.

2.7 Parking Reform in North America

There is an increasing recognition by local governments in North America that parking standards have contributed to the existing oversupply of off-street parking, and that minimum parking standards often represent barriers to intensification and redevelopment. A shift from the status quo towards a new way of supplying parking has been used in other cities, including zoning changes to lower minimum parking requirements, or even the complete removal of such minimum requirements.

Within Canada, the City of Edmonton was the first major city to remove minimum parking ratios city-wide. Although there are some significant differences between Edmonton and London, important lessons arose from the approach Edmonton took that must be considered when looking for the best option in London. Edmonton used an 'Open Option Parking' approach to gradually reduce parking minimums starting in 2010, which eventually led to the complete removal of parking minimums in 2020, except for accessible parking spaces. Together with the removal of minimum parking standards, Edmonton increased the number of bike parking spaces required and established maximum parking space ratios for residential, commercial and mixed-use development in the downtown core, which was later extended to transit-oriented development and main street areas.

The City of Ottawa began updating their parking requirements in 2015 with the introduction of three new parking areas representing the inner urban area (area X), inner urban main streets (area Y) and areas near major light rail transit (LRT) stations (area Z). Through the introduction of these new areas, new minimum parking ratios were developed to support the desired development pattern in these areas. For area Z, Ottawa chose to remove all minimum parking requirements, except for visitor parking spaces. This change was intended to encourage higher density around LRT stations and attempted to balance the need for parking against associated costs such as inefficient land use.

The City of Calgary voted to remove parking minimums for non-residential uses in November 2020, eliminating minimum parking regulations from their zoning by-law. The project was called Parking Choices for Businesses and attempted to align parking supply with demand. The underlying principle was that businesses and developers know their parking needs best and should have the flexibility to make choices to support their business needs. The amendment also removed parking requirements for childcare centers and schools, while maintaining minimum pick-up and drop-off requirements for these uses. The amendments also allowed shared parking for any use that doesn't have minimum parking requirements. Future work identified a review of residential parking standards, bike parking, implementing maximum parking requirements, the design of parking, evaluation of cash-in-lieu programs and parking regulations near transit-oriented developments.

Other examples of cities that recently passed parking reform amendments from the United States include Berkeley, California; Seattle, Washington; and South Bend, Indiana (Gabbe, 2020). Mexico City eliminated parking requirements for new developments citywide in 2017 making it the largest city in North America to overhaul their parking requirements. Some cities that are currently working on parking reforms include Toronto, Kingston, Kitchener, Brampton, and Winnipeg as well as Los Angeles, Pittsburgh, and Atlanta.

2.8 How London Compares to Ontario Municipalities

The following figures provides a comparison between London's existing minimum parking requirements with other Ontario Municipalities:

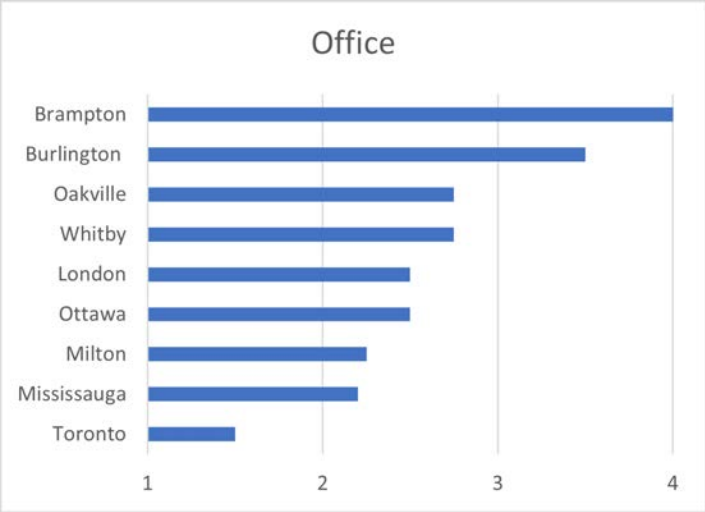

Figure 7: Existing minimum parking requirements per 100 sq. meters for Office use, 2020

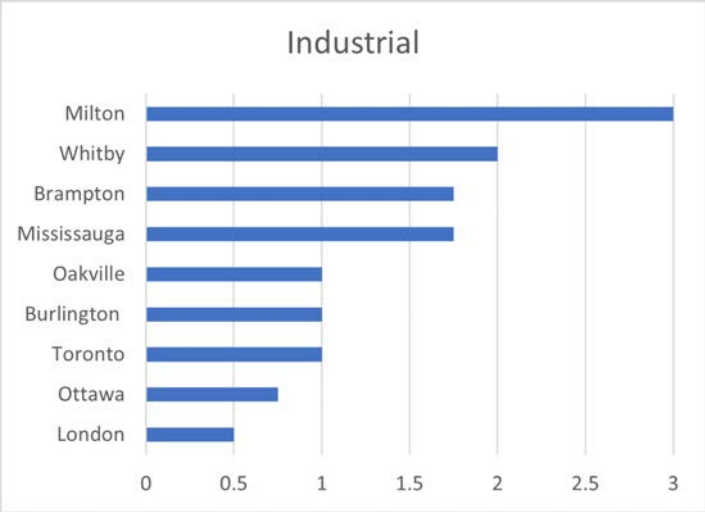

Figure 8: Existing minimum parking requirements per 100 sq. meters for Retail use. 2020.

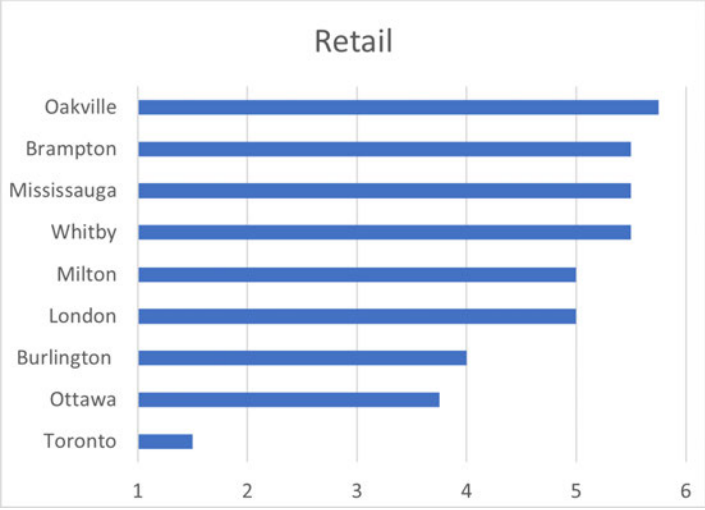

Figure 9: Existing minimum parking requirements per 100 sq. meters for Industrial use. 2020.

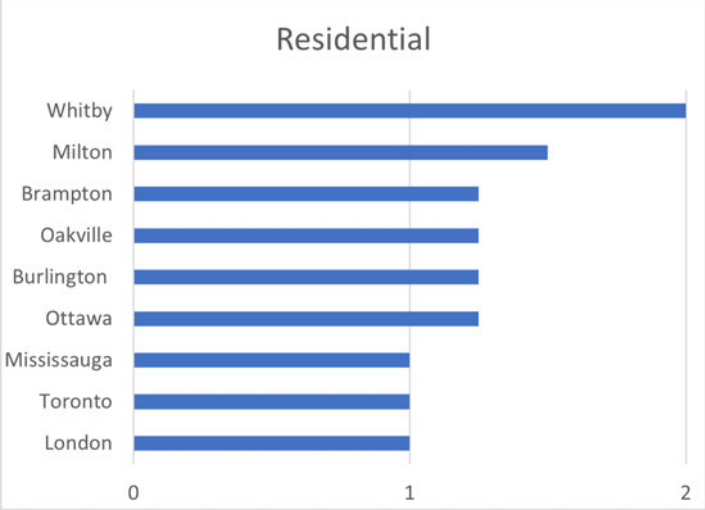

Figure 10: Existing minimum parking requirements per 1 bed-room apartment (1 residential unit), 2020.

The minimum parking requirements for Office and Retail uses indicate that London's existing requirements are 'in the middle of the pack' compared to other municipalities. For industrial and residential (1-bed room apartments) uses, the existing requirements are low compared to other municipalities in Ontario. It should be noted that parking requirements and land use definitions vary across different jurisdictions, which makes an accurate comparison more difficult. The same land use can be subject to different parking standard areas or use a different requirement (e.g., number of users, percentage of gross floor area). It is increasingly recognized that the inconsistency in the requirements and failure to take a broader context into consideration are key shortcomings of the minimum parking requirements

2.9 Parking during Covid-19

This background paper was written during the Covid-19 Pandemic. The pandemic has had significant impact on many aspects of our lives including health (both physical and mental), economy, safety, social relationships, education, recreation and entertainment. Our transportation and public transit networks have been significantly affected, with different employment sectors shifting towards a work from home model and many entertainment opportunities closing down or shifting their operations to comply with public health measures. At this time, it is still unknown what the lasting impacts of Covid-19 will be on our post-pandemic world.

Many of the challenges around parking discussed in this chapter existed before the pandemic and will still exist afterwards as well. The City of London has shown resiliency during the Covid-19 Pandemic and will continue to monitor and adjust the implementation of a new parking approach as we recover from the pandemic

3.0 Assessment Off-Street Parking Approaches

3.1 Indicators of success

There are three main options for how parking can be regulated that are described in this Report. These options are presented here to provide a framework for a new public conversation about possible off-street parking policies in London. Key indicators of success should be considered for each option to define a successful approach include the following:

1. Do the parking standards support the City's objectives and policies of The London Plan including City Design, Mobility (including the intended mode shift towards Active Transportation) and overall livability and quality of life?
2. Do the parking standards support the City's goals relating to the declaration of a Climate Emergency and necessary decrease of GHG in our City.
3. Do the parking standards support the City's objectives to manage outward growth by supporting infill and intensification, making is easier and more attractive for developers to provide strategic infill development.
4. Are the parking standards easy to understand and implement over time as land uses might change?
5. Will the Parking Standards lead to a reduction in rezoning and minor variance applications?
6. What other impacts of parking standards might exist and can they be mitigated?

3.2 Three Parking Approaches

Demand for parking can be explained based on two factors. One is derived demand, meaning that the demand for parking results from the demand for a related purpose. People don't use parking to sit in their car, but as a convenient means by which to get access to a particular location for an activity or purpose. This demand for parking comes with an opportunity cost, which is that on-site parking reduces development opportunities and additional density in favor of dedicated parking areas.

Demand for parking is also *spatiotemporal*, meaning that the demand varies by time of day and location. Parking Standards in zoning by-laws traditionally aim to provide sufficient parking during peak-times, leading to a situation where outside of that peak parking is oversupplied. Examples of this can be found all around us, like a large surface parking lot at a shopping mall that caters to a peak-demand for Holiday-shopping but is mostly empty for the rest of the year.

There are three main approaches that municipalities in Canada use to regulate the amount of parking required for homes and businesses. They include:

- ***Minimum Parking Requirements*** *– where a minimum number of parking spaces is required for different land uses*

- ***Maximum Parking Requirements*** *– where a maximum number of parking spaces is required for different land uses*

- ***Open Parking Requirements*** *– where regulations do not dictate minimum or maximum requirements, and the market determines how much parking will be provided.*

The figure below summarizes these approaches and the influence the parking requirements have on the urban built form:

Minimum Parking Requirements	Plenty of parking spaces are provided Supports driving but can limit walking Homeowners and businesses have less choice
Open Option Requirements	A range of parking spaces can be provided Supports driving and walking Homeowners and businesses have more choice
Maximum Parking Requirements	A restricted number of parking spaces can be provided Supports walking but can limit driving Homeowners and businesses have less choice

Figure 11: Approaches to parking and implications for built form.

3.2.1 Approach 1: Minimum Parking Requirements

This is the most common approach to regulate parking in North America, and it is how London's zoning by-law is currently set up. A municipality determines a set number of parking spaces for specific land uses that must be provided on site. This approach often leads to large numbers of parking spaces that must be provided and results in lower density neighbourhoods designed for driving that are less walkable. Due to the set number of parking spaces required, homeowners and businesses have limited choice in determining the amount of parking they provide.

Minimum parking standards are generally intended to prevent 'spillover parking', which means the parking of vehicles off-site or outside of a defined area intended for this purpose. When parking demand exceeds the supply, cars will spillover to other nearby parking lots or onto municipally owned on-street parking.
The thinking behind high minimum parking standards is that an undersupply of parking can impact on-street parking and disrupt the local transportation network. To avoid this possible outcome, generalized ratios are established that require parking spaces to be provided for the use of a particular building, even if those spaces are typically not utilized.

The most common problem with minimum parking standards is that that the generalized ratios are set based on the peak demand periods and often result in an oversupply of parking, leading to car-dominated landscapes that perpetuate the auto dependence that is common across North America.

An oversupply of residential parking can induce higher car ownership rates, which in turn leads to more driving, congestion, pollution and GHG-emissions (Millard-Ball, 2021). Removing or lowering parking minimums doesn't necessarily lead to less parking spaces, since developers will still provide the amount parking they believe is appropriate for the development. What removing minimums does accomplish is additional flexibility for builders, and prevention of a municipally mandated over-supply of parking.

3.2.2 Approach 2: Maximum Parking Requirements

With this approach, the city sets an upper limit (ceiling) on the number of parking spaces that can be provided in conjunction with a specific use (similar to minimum parking requirements). Compared to parking minimums, this approach results in more walkable and less drivable neighbourhoods. Businesses and homeowners have less choice as only a certain amount of parking spaces can be provided.

The main concern with maximum parking requirements is that it limits the choice of property owners to provide as much parking as they feel is necessary to meet their perceived market demand. Even when maximum parking standards are used, the requirements are often set so high that an oversupply of parking still occurs. However, when used efficiently in strategic locations, maximum parking requirements in conjunction with lowered or removed minimum parking ratios can create a more suitable range of parking spaces that can be provided on a site. If parking minimums are completely removed, the Zoning By-law would only provide a maximum ceiling to the range of parking that can be provided.

Parking maximums are easiest to establish in high-density, mixed-use areas that support alternative transportation modes that are served by transit with high service-levels. In less urban places, parking maximums are easier to establish around higher density nodes and large single use sites such as shopping centres.

3.2.3 Approach 3: Open Option Parking

With this approach, Businesses and homeowners choose the amount of parking they provide in response to market demand. There will be a range of parking provided, as some will provide more parking than others. This open approach could result in a range of neighbourhoods that support both driving and walking.

Open option parking also supports the provision of more housing options as residents can match their needs to the amount of parking provided. Similarly, businesses are able to choose locations or type of developments based on what suits the needs of their customers while not facing regulatory barriers. Of course, with this market-based approach, the City will lose its ability to set specific parking standards.

Open option parking can be considered in relation to the minimum or maximum standard. Currently in London there is an open approach to parking maximums, meaning that there are no general requirements limiting the amount of parking that can be provided.

With the three main approaches to parking standards identified, it should be noted that many jurisdictions choose for a combination of approaches. This combination could take the approach of significantly reduced or removed parking minimums and parking maximums at strategically selected locations.

3.3 Existing Parking Standards

Section 4.19 of the Zoning By-law Z.-1 includes off-street parking standards for London. It includes parking requirements for a total of 196 different uses, prescribing a specific parking ratio based for each.

The Zoning By-law also includes Parking Standard Areas (PSAs) which may require different ratios in different parts of the city. The PSAs can be summarized as follows:

- *PSA 1: Downtown, Dundas Street through the Old East Village, and Hamilton Road.*
- *PSA 2: Area surrounding downtown including areas such as Blackfriars, Soho, Wortley Village, Old North, and Woodfield.*
- *PSA 3: Rest of London.*

In Parking Standard Area 1, parking for non-residential uses is required at a rate of 1 space per 45m2 of floor area. Parking for residential uses includes 1 or 2 spaces per dwelling unit, depending on the unit type. No parking is required for residential uses within the Downtown Area.

Parking Areas 2 and 3 provide specific rates for various non-residential uses at a variety of ratios, as an example a small Retail Store requires 1 space per 25m2 in Parking Area 2 and 15m2 in Parking Area 3.

Using these rates, a retail store of 500m2 (5,382 sq. ft.) would require 12 spaces in Parking Area 1, 20 spaces in Parking Area 2, and 34 spaces in Parking Area 3.

3.4 Parking as consideration for Urban Design

As shown in section 3.3, the existing parking standards revolve around (perceived) parking demand on a site that dictate the parking ratio and the resulting parking area size. However, in some of the newer parking standards approaches explored in this paper it's the other way around; the parking area size (which is based on the ratios) is an important consideration for supporting the planned vision for a specific place type. This aligns with policy 270 of the London Plan that sets out that "the location, configuration, and size of parking areas will be designed to support the planned vision of the place type and enhance the experience of pedestrians, transit-users, cyclists and drivers". In other words, the London Plan provides for a new approach where parking ratios and the resulting parking area size are no longer just about accommodating cars, but just as importantly also about meeting Place Type and urban design objectives.

As part of the Place Type policies, a range of uses, intensity of development and form of development is provided. Parking should be regarded as one of the form measures influencing urban design but no longer the primary dictator of built form. The City Design Policies of the London Plan set out that buildings should be sited so that they maintain and reinforce the prevailing street line of existing buildings and sited to minimize the visual exposure of parking areas to the street (Policy 269).

Surface parking located in highly visible areas should be screened by low walls and landscape treatments. Structed parking will also be screened, and parking structures should be integrated into the design of buildings to ensure the public realm is not negatively affected. Additionally, site layout will promote connectivity and safe movement for pedestrians, cyclists and motorists between, and within, sites. Large surface parking lots shall be designed with areas dedicated for pedestrian priority to ensure safe pedestrian connectivity throughout the site. This includes direction that surface parking lots should be designed to include a sustainable tree canopy at 20 years of anticipated tree growth, incorporate landscape areas for visual amenity, to assist with stormwater management, and reduce the heat island effect.

The London Plan sets out that parking standards in the Zoning By-law will ensure that excessive amounts of parking are not required. To achieve this, opportunities for sharing and consolidating parking to meet parking requirements will be encouraged in the Downtown, Transit Village and Shopping Area Place Types, and in transit station areas and commercial areas along Urban Corridors. Where sharing of parking occurs through a development agreement, a reduction in on-site parking requirements may be accommodated (Policy 274).

Alternatives to Parking Standard Areas

The existing Parking Standard Areas provide different parking ratios for different geographical areas of London. However, there is no differentiation within these areas based on the local context of a site. What could be an appropriate standard in one geographical area/context, may lead to an oversupply of parking in another context, based on factors such as transit-frequency and quality of transit, walkability and level of car dependency.

The closer people live to their place of employment, schools, commercial areas and public transit, and the more convenient travel between these land uses with any mode of transport other than a car, the less likely that people will feel the need to own (and park) a private vehicle. As a result, places in the city that are in proximity to activity nodes and allow for easy non-car travel will likely reduce car ownership and car dependency. This aligns with parking policy 271 that states that parking requirements may be lower within those place types and parts of the city that have high accessibility to transit or that are close to employment areas, office areas, institutions and other uses that generate high levels of attraction.

Figure 12: Rapid Transit, the London Plan.

This review as part of ReThink Zoning is an opportunity to purposely differentiate the parking approach for different areas in the city and to go beyond the existing PSAs. Instead of relying on the PSAs which predate the new official plan, the preferred option to develop new parking standards will be based on the Place Types (figure 13, next page), proximity to rapid transit and protected major transit station areas or a combination of the above.

Protected Major Transit Station Areas (PMTSAs) are defined as the areas "surrounding and including an existing or planned higher order transit station or stops" in the Planning Act (S. 16(15)). This aligns with the new direction on transit-supportive development in the Provincial Policy Statement, 2020. The PPS promotes a clear relationship between land use and transit, with policies that emphasize land use patterns, density and a mix of uses to support current and future sue of transit and active transportation (1.6.7.4). In 2020, the London Plan was amended to reflect that the PMTSAs align with the approved higher order transit routes and the Downtown, Transit Village and Rapid Transit Corridor Place Type boundaries, shown on figure 14.

The growth framework of the City Structure Plan in the London Plan establishes a plan for shaping growth over the next 20 years. The most intense forms of development will be directed to the Downtown, Transit Villages, and at station locations along the Rapid Transit Corridors. Figure 12 shows these Rapid Transit Corridors in alignment with the higher order transit routes approved in the 2019 Rapid Transit Environmental Project Report.

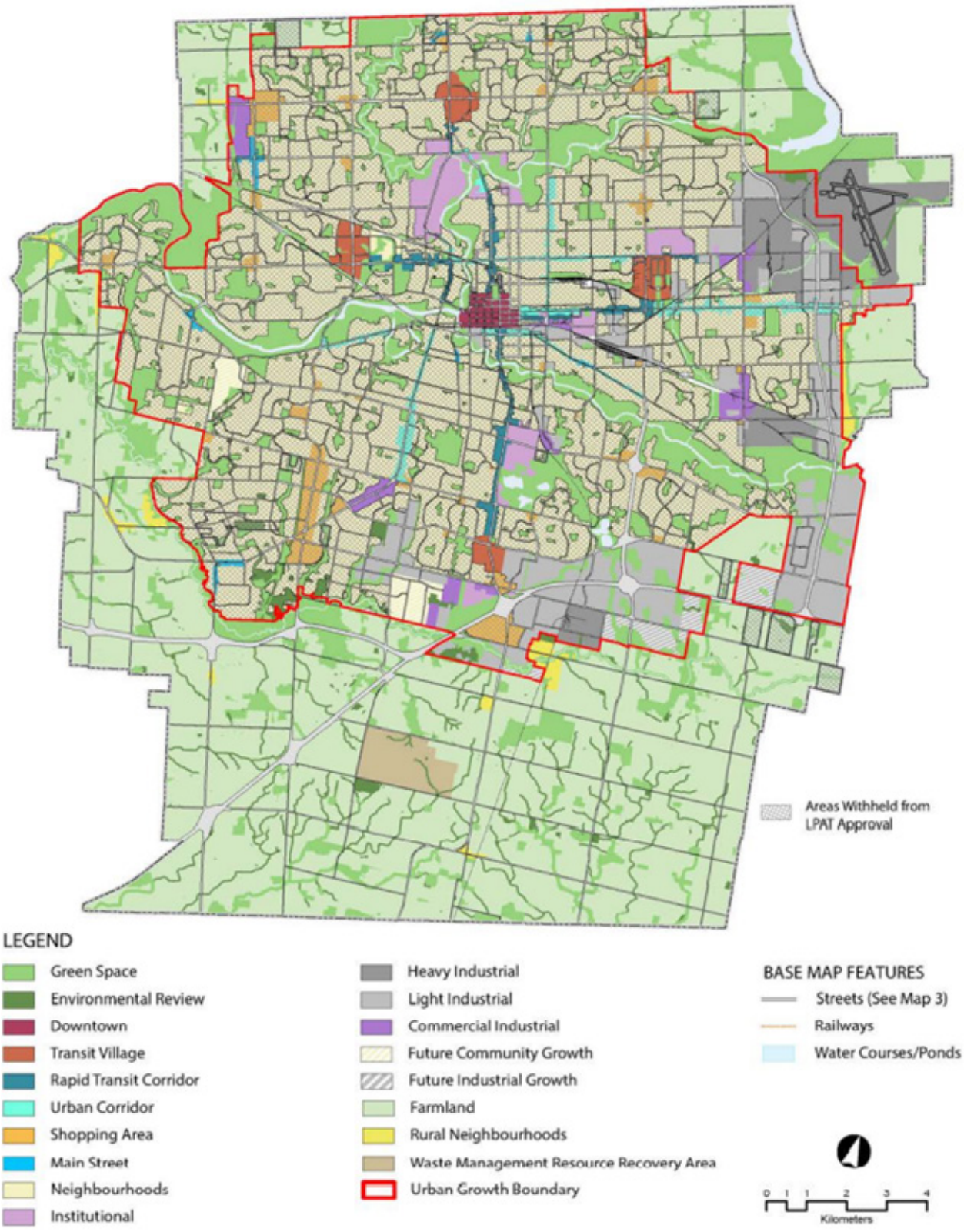

Figure 13: Place Types, the London Plan (map 1).

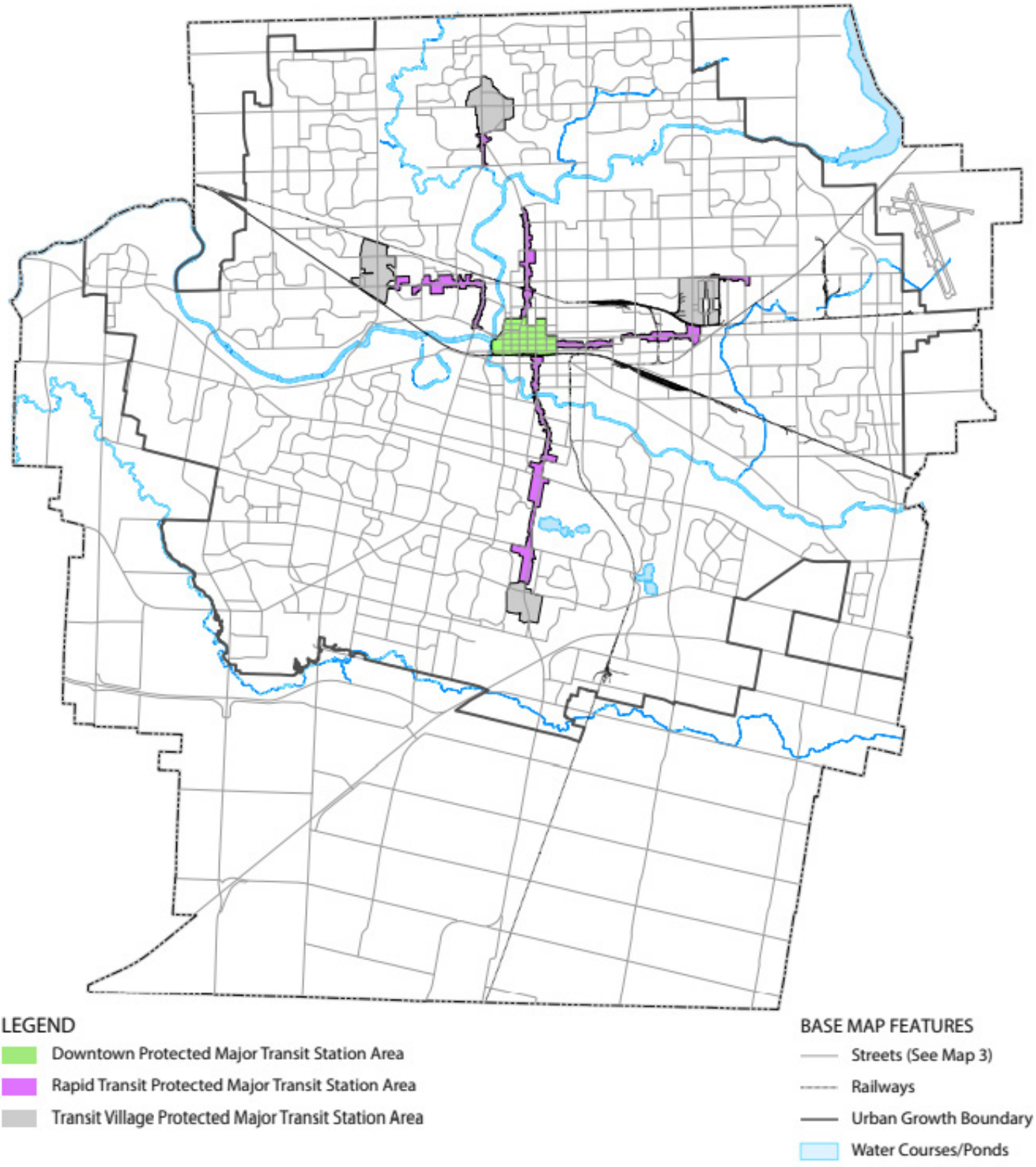

Figure 14: Protected Major Transit Station Areas, the London Plan (map 10)

4.0 Conclusion

This Background Paper includes considerations that represent a growing understanding that excessive minimum parking standards contribute to urban sprawl, discourage urban infill and intensification, degrade urban design, encourage private vehicle use, reduce walkability, harms the environment and effectively spreads the costs associated with the construction of parking through all sectors of the population, instead of being borne solely by the users of parking spaces. Our preliminary findings show that the current parking ratios found in the Zoning By-law are too high, and that amendments should be considered to reduce parking standards in London. Options to consider include reducing the minimum standards, introducing maximum standards, or implementing an open parking option. The recommended process to develop new parking standards will be based on the Place Types in the London Plan, proximity to rapid transit and protected major transit station areas (PMTSAs) or a combination of the above.

The ReThink Zoning process, leading to a new Zoning By-law, is an opportunity to shift away from the outdated parking policy approach towards a different way of supplying parking. The options explored in this Background Paper can provide a framework for better parking standards.

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