TOD IMPLEMENTATION STRATEGY

TREMBLAY STATION

School of Urban and Regional Planning
Queen's University
December 2014

City of Ottawa

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TOD IMPLEMENTATION STRATEGY

TREMBLAY
STATION

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The Project Team

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Executive Summary

OBJECTIVE

The City of Ottawa is in the midst of converting its existing Bus Rapid Transit (BRT) system to a Light Rail Transit (LRT) system, known as the Confederation Line, which is scheduled for completion in 2018. The LRT tracks will span from Tunney's Pasture Station in the West, to Blair Station in the East. This study provides implementation strategies for the redevelopment and intensification of Tremblay Station as a transit-oriented development (TOD), where the designated LRT site and Ottawa's VIA Rail terminal connect.

GOAL

Tremblay Station is a unique and integral site on the Confederation Line that has the potential to improve connections throughout the City of Ottawa. As the station moves towards becoming a more vibrant site with the re-introduction of the major community baseball stadium and a large retail shopping area, the goal is to focus on developing a comprehensive transit-oriented development implementation plan that speaks to the strategies and objectives for achieving transit supportive communities as outlined in the City of Ottawa's Transit-Oriented Development (TOD) Plan.

PROJECT OUTLINE

The study outlines a proposed implementation plan to successfully introduce a transit-oriented development for the Tremblay Station area. To produce a comprehensive plan:

- The study consults several plans, policies and strategies produced by the City of Ottawa, accompanied by site visits to develop a thorough understanding of the site's existing conditions as well as the challenges, opportunities, and strengths to inform implementation recommendations;
- The study draws upon TOD precedents from North America to inform implementation best practices specific to the City of Ottawa and Tremblay Station study area; and
- The study recommends viable strategies and tools the City of Ottawa can utilize to bolster development, including planning tools, public-private partnerships, and financial mechanisms.

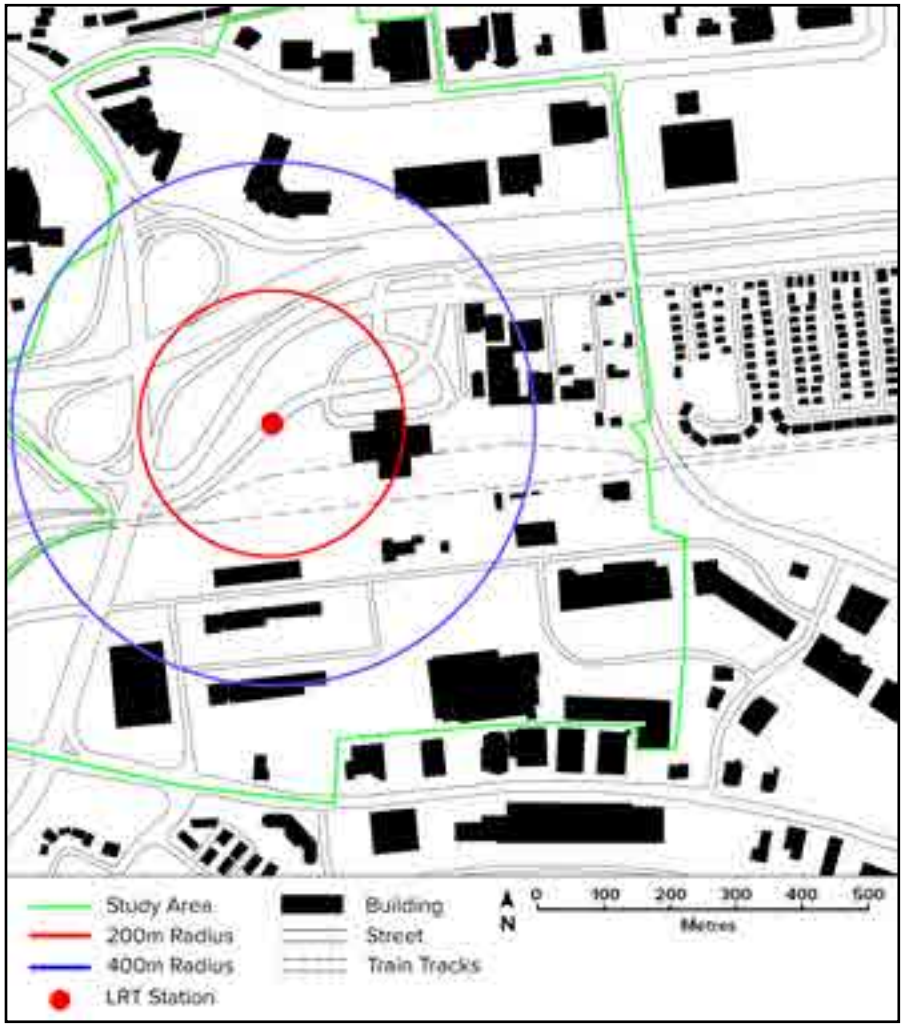
TREMBLAY STATION TOD PLAN

In preparation for the Confederation Line, the City of Ottawa adopted new zoning regulation for Transit-Oriented Development (TOD) areas. The intent of the TOD Plan is to guide the development of transit supportive communities of stations along the LRT line. There are a series of goals and visions outlined in the TOD Plan that inform the implementation strategies recommended in this report.

To foster development around the Light Rail Transit (LRT) stations, the City of Ottawa approved the inclusion of transit-oriented development zones into their Zoning By-Law. The TOD zoning serves:

1. To establish minimum density requirements to support LRT for lands within Council approved TOD Plan areas;
2. To accommodate a range of transit-supportive land uses including a compact pedestrian-oriented built form at medium to high densities;
3. To locate higher densities in proximity to LRT stations to create focal points of activity and to promote the use of multiple modes of transportation;
4. To impose development standards that produce attractive urban environments that exhibit high-quality urban design and that establish priority streets for active use frontages and streetscaping investment.

The following image illustrates the Tremblay TOD Study Area, with a radius of approximately 600-800 metres, with a total area of 100 hectares.



TREMBLAY STATION

INTERNAL FACTORS	EXTERNAL FACTORS
Strengths	**Opportunities**
• Extensive current and future transit networks (BRT, LRT, Via Rail) • Established retail centre • Abundance of developable land available • Existing services, utilities and infrastructure	• High level of stakeholder interest • Proximity to key areas (Downtown, University of Ottawa, Health Services) • Potential for increased site connectivity • Specialization of land uses
Weaknesses	**Challenges**
• Overabundance of parking • Auto-oriented development • Low Density • Potential difficulty for relocation of industrial uses	• Unfavourable market conditions for residential development • Development approval timeline • Developers' interest and preconception • Perception of remoteness

TOD BEST PRACTICES

To inform the recommendations for successful Transit-Oriented Development implementation, over 90 precedents were consulted to identify common themes and approaches to implementation. Of these case studies, 25 were identified as exemplary and were more carefully examined. The chosen precedents include both Canadian and American transit-oriented developments.

Arlington Heights, Illinois

Warwick Station, Rhode Island

TOP 25 TODs

Arlington Heights, Illinois
Bethesda Row, Maryland
City of Evanston, Illinois
Collingwood Village, British Columbia
Court House, Virginia
Del Mar Village, California
Downtown Plano, Texas
Fruitvale Village, California
Galatyn Park, Texas
GreenStreet, Texas
Holland Cross, Ontario
VIllage de la Gares, Quebec
Lindbergh, Georgia
Metropole, Ontario
Mockingbird, Texas
Ohlone-Chynoweth, California
Orenco, Oregon
Pleasant Hill Contra Costa, California
Portland Hills, Nova Scotia
Port Credit, Ontario
Rio Vista West, California
Sheridan Station, Colorado
The Crossings, California
Uptown District, California
Warwick, Rhode Island

City of Evanston, illinois

Fruitvale Village, California

Mockingbird Station, Texas

Orenco Station, Oregon

Financial Mechanism	TOD CASES																						
Revenue Sources	Arlington Heights	Bethesda	Collingwood	Court House	Del Mar	Evanston	Fruitvale	Galatyn Park	GreenStreet	Lindbergh	Metropole	Mockingbird	Ohlone-Chynoweth	Orenco	Plano	Pleasant-Hill	Port Credit	Rio Vista	Sheridan	The Crossings	Uptown District	Village de la Gare	Warwick
Bonds							x					x	x		x								x
Grants				x			x	x	x				x	x	x				x				x
REITs		x														x							
Sales Tax	x					x	x						x										
Special Service Area Taxes	x	x			x	x																	
Tax-Increment Financing	x	x				x	x		x	x		x		x	x	x							
Expenditure																							
Land Acquisition		x					x				x			x					x		x		x
Parking Garage	x	x			x		x		x	x					x							x	x
Remediation																				x			
Streetscape	x	x	x		x	x	x	x	x	x	x	x			x		x	x		x	x	x	
Utilities			x	x	x	x	x			x	x				x			x				x	
Organization																							
Business Improvement Development	x									x													
City Development Corporation				x	x		x	x			x	x	x						x	x	x		
Station Development Corporation																							
Transit Development Corporation							x			x			x			x						x	x

TOD IMPLEMENTATION RECOMMENDATIONS

Through consultation of different plans, policies and TOD best practices, a series of implementation recommendations have been identified to support development of Tremblay Station into a stimulating transit-oriented community.

Guiding Future Development

1. **Zoning By-Law:**
    - Restrict auto-oriented land uses, specifically drive-through facilities.
    - Allow for consolidated parking among uses by permitting parking structures and/or garages on separate lots without being tied to other permitted uses.
2. **Site Plan Review:** That the City revise its site plan review process and incorporate a TOD checklist to measure how the proposed development reflects the objectives of the TOD Plan.

Financing Development

3. **Tax-Increment Financing**: Create TIF districts to finance parking, pedestrian connections, and potentially assemble land for all areas surrounding TODs.
4. **Community Improvement Plan**: Establish a CIP in order to attract investment in the Tremblay area and use Tax Increment Equivalent Grants to offset increased taxes due to infrastructural improvements.
5. **Capital Improvement Plan**: Develop a comprehensive CIP that allocates funds in accordance with the existing TOD Plan and the Servicing Overview.

Attracting Development

6. **Development Permit System**: Streamline the planning approval process using a development permit system that reduces review timelines from 120 days to 45 days.

Facilitating Development

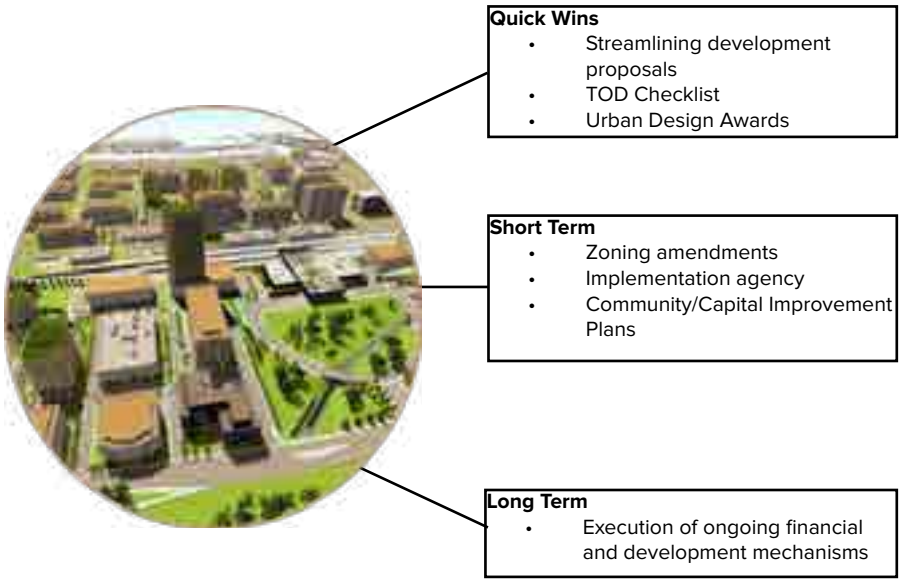
7. **Private-Public Partnerships**: Establish P3s for large scale development projects such as parking garages or redevelopment of the baseball stadium in the future.
8. **Implementation Agency**: Establish an implementation agency to facilitate transit-oriented development along the Confederation Line.

Development Proposal

If the City were to consider development of the 300 Coventry Road site it is recommended that:

9. The City redevelop the surface parking lot adjacent to the Ottawa Baseball Stadium by:
    - Rezoning the property from an L2 major leisure facility to the TD2 zone.
    - Consolidate parking with a five level parking structure adjacent to Highway 417.
    - Support intensification of the Tremblay Station area by constructing a 15 storey office building.
10. There are at least three options for developing the land: municipal, private, or public-private partnerships.

IMPLEMENTATION TIMELINE



Résumé

OBJECTIF

La Ville d'Ottawa est en train de convertir leur system de *Bus à Haut Niveau de Service (BHNS)* à un réseau de *Train Léger sur Rail (TLR)*. La construction de ce système, qui a pour nom Ligne de la Confédération, est prévue d'être complète en 2018. Le système de rail s'étend de la Station Tunny's Pasture a l'ouest, jusqu'à la Station Blair a l'est. Le rapport qui suit fournit un ensemble de stratégies et outils *d'exécution d'Aménagement Axé sure le Transport en Commun (AATC)* pour la région de la Station Tremblay, l'à ou le TLR rencontre la Station VIA Rail.

BUT

La Station Tremblay est située dans une région unique et importante le long de la Ligne de la Confédération. La réintroduction du stade de baseball professionnel, ainsi que le succès prolongé du centre commercial existant, assure que la Région de la Station Tremblay prospéra dans la future. Le but de ce rapport est de développer un plan compréhensif de stratégies d'exécution d'AATC pour atteindre les objectifs décrits dans les *Plans d'Aménagement Axés sur le Transport en Commun de la Ville d'Ottawa (2012).*

LE PROJECT

Ce projet propose un plan de stratégies et outils d'exécution de AATC pour la Région de la Station Tremblay. Afin de compléter ce rapport :

- L'étude consulte plusieurs plans, politiques et stratégies existants de la Ville d'Ottawa, accompagnés par une visite du site en question, pour développer une compréhension de la situation courante de la région.
- Le rapport consulte plusieurs études de cas Nord-Américaines pour identifier les précédents qui illustre les meilleures pratiques d'exécution de AATC.
- L'étude recommande plusieurs stratégies et outils qui peuvent être employés par la Ville d'Ottawa pour encourager le développent dans la région.

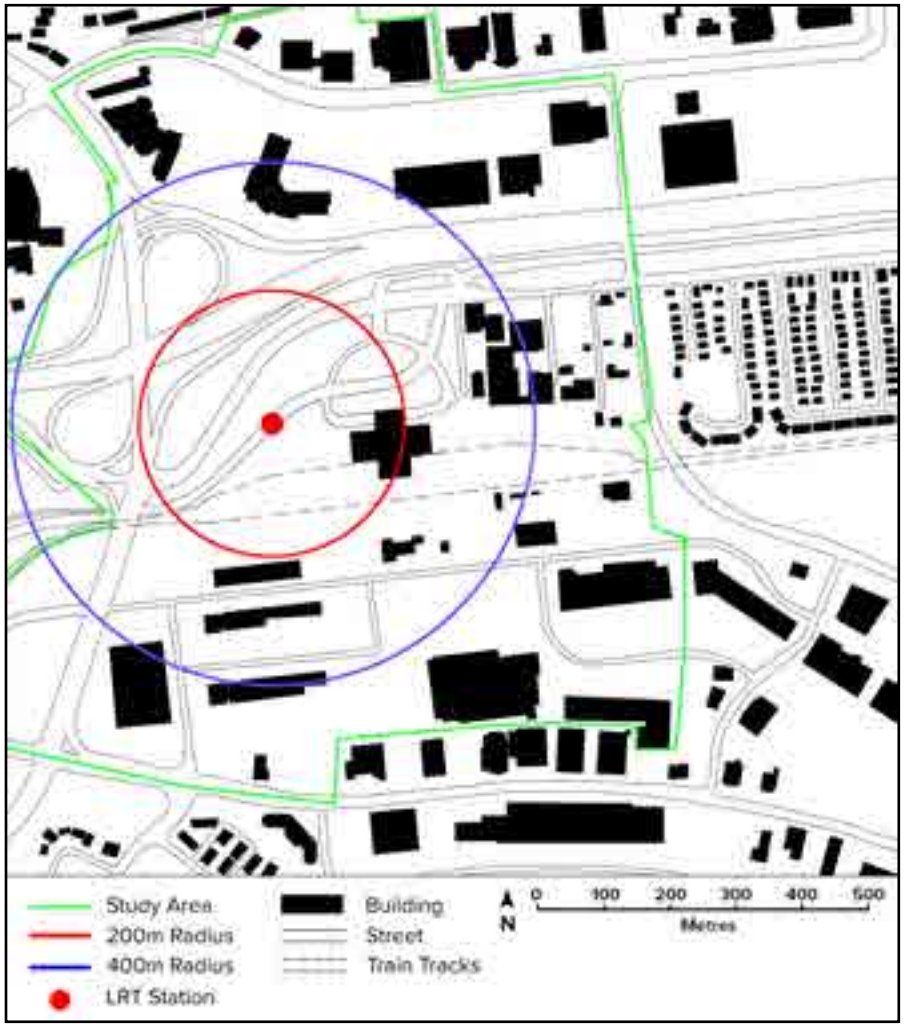
PLAN D'AMÉNAGEMENT AXÉ SUR LE TRANSPORT EN COMMUN (AATC): LA STATION TREMBLAY

En préparation pour La Ligne de la Confédération, la Ville D'Ottawa a adopté des nouveaux règlements de zonage centrés sur les régions d'Aménagement Axé sur le Transport en Commun. L'intention du plan d'ATTC est de guider le développent de communautés qui supportent le transport en commun le long du réseau TLR. Le plan contient une série de buts et d'objectifs qui ont informées les stratégies et outils d'exécution recommandées dans ce rapport.

Pour encourager développent dans les régions qui entourent les stations le long du TLR, la Ville d'Ottawa a approuvée l'inclusion de nouveaux zones de AATC. Ces zones servent a :

1. Établir des densités favorables pour le transport en commun.
2. Accommoder plusieurs types de développements qui supportent des communautés axées sur le transport en commun, incluant le zonage qui encourage l'accès des piétons et le développent à haute densité.
3. Situer le développement a haute densité près de la station TLR pour créer des points focaux d'activité and pour promouvoir l'utilisation d'une variété de modes de transport.
4. Imposer des standards de développent qui produisent un environnement attractif qui démontre un design urbain de haute-qualité et pour établir des rues de priorité pour des façades actifs et investissement de paysagisme.

L'image suivant illustre la Région de la Station Tremblay.



LA RÉGION DE LA STATION TREMBLAY

Facteurs Internes	Facteurs Externes
Forces	*Opportunités*
• Réseaux de transport, courant et futur (BHNS, TLR, VIA Rail) • Centre commerciale établie • Abondance de terre développable • Services publics et infrastructure existants	• Haut niveau d'intérêt par les parties prenantes • Proximité d'aménités (Centre-Ville, l'Université d'Ottawa, hôpitaux) • Potentiel pour augmenter la connectivité • Spécialisation d'usage de terre
Faiblesses	*Risques*
• Abondance de parking • Développent auto-orienté • Faible densité • Difficulté de déplacer les sites industriels	• Conditions de marche défavorables • Longues approbations de développement • Préconceptions du secteur privé • Préconception d'isolement

MEILLEURES PRATIQUES D'AATC

Afin d'informer les recommandations pour le succès d'AATC, plus de 90 précédents ont été consultés pour identifier les thèmes et stratégies d'exécution en commun. De ces précédents, 25 ont été identifiés comme exemplaires et ont été examinés en plus de détaille. Les études de cas choisis pour ce rapport incluent des exemples Canadiennes et Américaines de développements AATC.

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Méchanisme Financier	TOD CASES																						
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Bonds							x					x	x		x								x
Bourses				x			x	x	x				x	x	x				x				x
Société d'Investissement Immobilier Côtée (SIIC)		x														x							
Taxe sur la Vente	x					x	x						x										
Taxe de Districts Spéciaux	x	x			x	x																	
Financement par Surcoit d'Impôts	x	x				x	x		x	x		x		x	x	x							
Dépenses																							
Acquisition de Terrains		x					x				x			x					x		x		x
Structures de Stationnement	x	x			x		x		x	x					x							x	x
Assainissement																				x			
Aménagement Paysager	x	x	x		x	x	x	x	x	x	x	x			x		x	x		x	x	x	
Services Publiques			x	x	x	x	x			x	x				x			x				x	
Organization																							
District d'Amélioration des Affaires	x									x													
Corporation de Dévéloppement Municipale				x	x		x	x			x	x	x						x	x	x		
Corporation de Dévéloppement de Station																							
Corporation de Dévéloppement de Transit							x			x			x			x						x	x

RECOMMANDATIONS POUR L'AATC

Après avoir consulté une variété de plans et politique une série d'outil et stratégies d'exécution d'AATC on été identifies pour supporter le développement dans la Région de la Station Tremblay.

Guidage du Développement

1. **Zonage** : Modifier le règlement de zonage de la Ville d'Ottawa afin de :
    - Limiter le développement auto-orienté, spécifiquement les services au volant.
    - Permettre la consolidation de stationnement d'automobiles en garages multi-étages et/ou des garages sur des lots de terrain distinctes sans être attachés a d'autres usages permîtes.
2. **Règlements de Plans d'Implantation** : Modifier le processus de règlementation des plans d'implantation pour inclure une liste de contrôle d'AATC pour mesurer comment les propositions de développement tiennent avec le plan AATC de la Ville d'Ottawa.

Financement du Développement

3. **Financement par Surcroit d'Impôts (FCI)** : Créer des quartiers de FCI pour financer le développement les stationnements d'automobiles, les connections pour piétons, et l'assemblage de terre pour tous les régions AATC le long de la Ligne de la Confédération.
4. **Plan d'Amélioration Communautaire (PAC)** : Établir un plan d'amélioration communautaire pour la Région de la Station Tremblay afin d'attirer l'investissement privé et d'employer le financement de contrepartie par de nouvelle taxes foncières pour des projets d'infrastructure.
5. **Plan d'Amélioration Capitale (PAC)** : Développer un plan d'amélioration capitale qui alloue les fonds en accordance avec le plan AATC de la Ville d'Ottawa.

Attraction du Développement

6. **Système de Permit de Développement** : Accélérer le processus de demande d'aménagement en utilisant un système de permit de développement qui réduit le temps d'attente de 120 jour à 45 jours.

Facilitation du Développent

7. **Partenariats Public-Privé (P3**) : Établir des relations P3 pour les développements a grande-échelle, tel que les stationnements d'automobiles ou le développent de la stade de baseball.
8. **Agence d'Exécution** : Établir une agence d'exécution d'AATC pour faciliter le développent axé sur l'aménagement du transport en commun le long de la Ligne de la Confédération.

Proposition du Développement

C'est recommandé que Ville d'Ottawa considère le développement du site municipal à 300 Rue Coventry. Nous conseillons que :

9. La Ville développe le stationnement d'automobiles de surface adjacente à la state de baseball par :
    - Changer le zonage de L2 (zone de grande installation de loisir) à TD2 (zone de AATC de haute densité).
    - Fusionner le parking en construisant une structure de stationnement de 5 niveaux dessus-sol.
    - Supporter l'intensification de la Région de la Station Tremblay en construisant une immeuble de bureaux de 15 niveaux.
10. Il y a au moins trois options pour le développement du lot : municipal, privé et P3.

CALENDRIER D'EXÉCUTION

Solutions Rapides

- Systeme de Délivrance de Permis d'Exploitation.
- Liste de contrôle d'AATC
- Prix de l'Esthétique Urbaine

Court Terme

- Règlements de Zonage
- Agence d'Exécution
- Plan d'Amélioration Communautaire/Capitale

Long Terme

- Exécution continue de mécanismes financiers pour le développement

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1.0
Introduction

1.1 - Intent

The City of Ottawa is in the midst of converting its existing **bus rapid transit (BRT)** system to a **light rail transit (LRT)** system, known as the Confederation Line, which is scheduled for completion in 2018. The LRT tracks will span from Tunney's Pasture Station in the West, to Blair Station in the East. The construction of this new express system is expected to bring increased density and **transit-oriented development (TOD)** to areas surrounding the stations. The City approved a set of TOD studies in 2012 outlining new zoning provisions, design layouts, and visions for three of the thirteen stations: Tremblay (Train), St. Laurent, and Cyrville. This report provides a strategy for implementing the TOD plan in the Tremblay Station area, where the LRT and Ottawa's VIA Rail terminal meet.

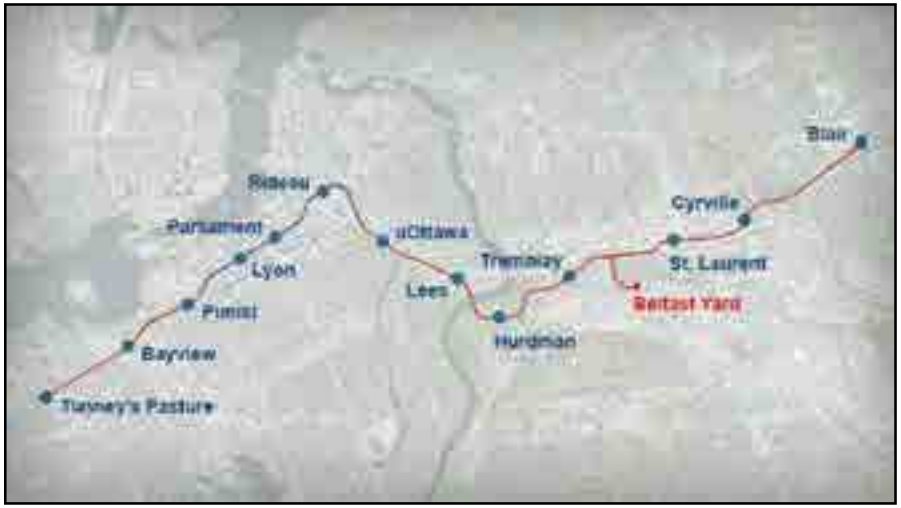

Figure 1.1 - The Confederation Line
Source: City of Ottawa, 2014

1.2 - Project Mandate

Each year, teams of second-year graduate students at Queen's University's School of Urban and Regional Planning (SURP) undertake major project courses in which they act as a consulting group for a partner in the public sector. In the fall of 2014, a team of ten graduate students partnered with the City of Ottawa to prepare an implementation strategy for the redevelopment of the Tremblay Station area. The objective of this project course is to provide students with experience in preparing a plan under conditions that simulate professional practice, while addressing the immediate needs of a real client.

1.3 - Planning Versus Implementation

The project team was tasked with preparing tangible strategies for implementing an existing plan. Therefore it is important to highlight the difference between planning and implementation within this context. Planning is what the City has intended for the Tremblay Station TOD area. It demonstrates the City's commitment to the long-term visions and values identified in Tremblay Station's TOD Plan. Implementation is what will actually be accomplished. It is a measure of accountability and includes short term operational targets and long-term development objectives for the Tremblay Station TOD. The research and recommendations provided throughout the report are aimed to implement the plan by spurring development in the study area that serves to achieve the vision set out by the City of Ottawa.

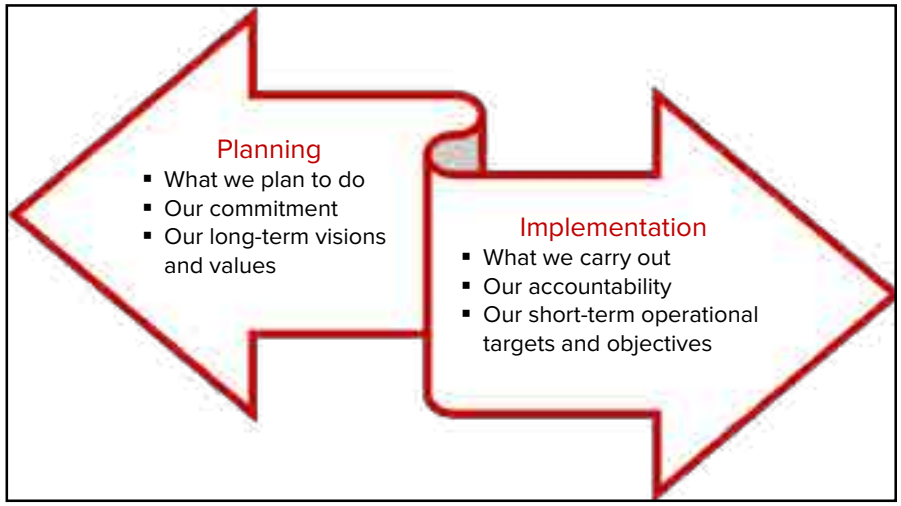

Figure 1.2 - Differentiating planning and implementation

1.4 - Defining Transit-Oriented Development Success

For implementation strategies to effectively act as a measure of accountability for the 2012 TOD Plan, success for the area must be defined. Transit-oriented development focuses on compact, mixed-use development around transit nodes in order to manage the effects of growth, create more livable communities, and reduce automobile use. Taking this definition into consideration, the recommendations provided by the team aim to achieve this for the Tremblay Station area.

1.5 - Structure of the Report

The report can be divided into 5 sections. The first section, Chapter 2, outlines the Tremblay Station TOD Plan. It is the goal of this report to provide strategies to implement this plan. The second section, Chapters 3 to 7, covers the background information on the study area that was gathered using site visits, key interviews and consultation, and extensive research. This section includes analyses of site conditions, market conditions, relevant policies, and stakeholder feedback. The third section, Chapters 8 and 9, covers best practices of successful TOD development in Canada and the United States, and outlines the common implementation strategies used to develop TODs and their relevance to the Ottawa context. The fourth section, Chapter 10, illustrates a development proposal for land owned by the City of Ottawa. The proposal embodies some of the key implementation mechanisms identified in Chapter 9. The fifth section, Chapters 11 and 12, conclude the report with some key recommendations for the City of Ottawa to implement its TOD Plan for Tremblay Station.

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2.0
The TOD Plan

In 2012 the City of Ottawa adopted a new **transit-oriented development (TOD)** plan for Cyrville, St. Laurent, and Train (later rebranded as Tremblay) stations in preparation for the 2018 completion of the Confederation Line. The City also adopted new zoning for these TOD areas. The new zoning and plans are intended to guide future development around each station. This section outlines the key zoning provisions and an overview of the TOD Plan for Tremblay Station. The implementation strategies recommended in this report are intended to implement the vision and goals for Tremblay Station outlined within the plan.

2.1 - Planning Approach to TOD

The TOD Plans were prepared with an understanding that redevelopment and higher densities will occur over the long term around the **Light Rail Transit (LRT)** stations and that these centres will grow and evolve in response to market pressures and public improvements.[1] It is anticipated that the permitted densities and mix of uses may result in TOD Plan areas functioning like small downtowns.

Most transit-oriented developments have an acceptable walking distance to rapid transit ranging from 400 to 800 metres (5 to 10 minutes). The target average population density for these TOD Plans range from 200 to 400 people per gross hectare, within a walking distance of 800 metres. To achieve this, it is essential that priority be given to pedestrians and cyclists within the TOD Plan area, to have improved connections with the surrounding communities, and to concentrate higher density land uses in close proximity to the transit stations. The TOD Plans were prepared by combining essential elements in TOD with context-specific solutions that were pertinent to Ottawa. In order to realize TOD intensification, flexibility will be provided by permitting existing development to remain and expand when desired and by having a regulatory framework in place that permits a broad range of land uses and higher densities over time.

The study area boundaries for the TOD Plans were established based on an approximate 10 minute (800 metre) walking distance from the transit stations. This is greater than the 600 metre walking distance identified in the Ottawa TOD Guidelines. This increase is due to a combination of factors, including the Highway 417 corridor that bisects the TOD Plan areas and the nature of existing land use patterns. The TOD Plan areas are estimated to be approximately 100 hectares in size each.

Within the TOD Plan areas there are some areas that are designated “Areas Not Under Consideration for Intensification”. These areas include land that is either already developed to a transit-supportive density, areas that are not at a transit-supportive density but are unlikely to change in the foreseeable future, or areas that are protected due to heritage or environmental considerations. Some areas within the TOD Plan boundaries have clusters of existing lower density residential development. These areas are identified on the TOD Land Use Plans as “Stable Neighbourhoods” and will not experience the level of intensification that the TOD Plan Areas will.

2.2 - TD - Transit-Oriented Development Zone

In order to foster development around the Light Rail Transit (LRT) stations, the City of Ottawa approved the inclusion of TD (Transit-Oriented Development) Zones into the zoning by-law. Sections 195 and 196 in the **zoning by-law** extensively detail the provisions and limitations of TD Zones.[2]

The City of Ottawa’s TD zoning has four purposes:

1. To establish minimum density targets needed to support LRT use for lands within approved TOD Plan areas;
2. To accommodate a wide range of transit-supportive land uses including a compact pedestrian-oriented built form at medium to high densities;
3. To locate higher densities in proximity to LRT stations in order to create focal points of activity and to promote the use of multiple modes of transportation; and,
4. To impose development standards that ensure the development of attractive urban environments that exhibit high-quality urban design and that establish priority streets for active use frontages and streetscaping investment.

2.2.1 - General Provisions and Limitations

TD zoning permits a wide range of land uses including residential, office, retail, arts and culture, entertainment, service, and institutional uses. Industrial uses are notably absent from this list.

Regardless of use, building heights within TD zones must be at least 6.7 metres and 2 storeys tall to discourage low density development. Buildings that are 15 metres or less from R1/R2/R3 (residential) zones are limited to a maximum height of 14.5 metres. This is intended to promote a height gradient from a maximum of approximately 30 storeys near the LRT, to one or two-storey homes in surrounding residential neighbourhoods. All other buildings are subject to height maximums set out in the TD1/TD2/TD3 sub-zones.

Permitted Uses	Residential; Office; Arts and culture; Entertainment; Service; Institutional
Minimum Building Height	6.7 metres and 2 storeys
Maximum Building Height (next to R1/R2/R3 zones)	14.5 metres
Maximum Building Height (Elsewhere)	See Table 2.3

Table 2.1 - General provisions and limitations for TD zones
Source: City of Ottawa, 2014

Parking minimums and maximums use established standards set in Sections 101 and 103 respectively of the zoning by-law.[3,4] Parking minimums are amongst the lowest in the city, identical to those found in downtown Ottawa. Parking maximums for downtown, are lower than those for the the TOD areas. Table 2.2 outlines some of the parking minimums and maximums for some of the possible uses in TOD areas.

TD zoning also includes a handful of design guidelines that promote pedestrian-friendly environments and active street frontages. These include step backs, sightlines on lots with 2 buildings each at least 6 storeys high, mandatory communal/amenity spaces equal to 2% of total lot area for lots greater than 1250m^2 in size, transparent at-grade glazing for non-residential and mixed-use buildings, and at-grade customer access for each shop located along an active frontage street.

Use	Minimum (TOD/ Downtown)	Maximum (TOD)	Maximum (Downtown)
Office	0.75 per 100m^2 of gross floor area	2.2 per 100m^2 of gross floor area	1.0 per 100 m^2 of gross floor area
Shopping Centre	0.75 per 100m^2 of gross leasable floor area	3.6 per 100m^2 of gross leasable floor area	1.0 per 100m^2 of gross leasable floor area
Retail Store; Retail Food Store	None	3.6 per 100m^2 of gross leasable floor area	1.0 per 100m^2 of gross floor area
Research and Development Centre; Technology Inudstry	0.75 per 100m^2 of gross floor area	1.0 per 100m^2 of gross floor area	1.0 per 100m^2 of gross floor area
Residential	Varies by type and location	1.5 per dwelling unit (combined total of resident and visitor parking)	1.75 per dwelling unit (combined total of resident and visitor parking)

Table 2.2 - Comparison of parking minimums and maximums between TD zones and downtown
Source: City of Ottawa, 2014

2.2.2 - TD1/TD2/TD3 Zones

Further to the general zoning provisions, TD zones are divided into 3 subzones to aid planners and developers in creating a density and height gradient from the LRT station to residential neighbourhoods. Table 2.3 summarizes these regulations.

	Subzones		
Density and Height Regulations	**TD1**	**TD2**	**TD3**
Minimum density for residential uses (units/hectare)*	150	250	350
Minimum floor space index for non-residential use (units/hectare)*	0.5	1.0	1.5
Maximum height (metres)	20	60	90

*Applicable to lot sizes greater than 0.125 hectares
Table 2.3 - Density and height regulations in TD1/TD2/TD3 zones
Source: City of Ottawa, 2014

2.3 - Tremblay Station TOD Plan

The Tremblay TOD area extends for a radius of approximately 600-800 metres and is denoted by the green outline on Map 2.1.[5] The outline covers an area of approximately 100 hectares and indicates the boundaries of the Tremblay study area. While the site has development potential, there is practically no development within a 200 metre radius of the future LRT station, which is ideal for transit-oriented development, and also little development within 400 metres. Figures 2.1 to 2.3 illustrate some examples of successful TODs and serve as a contrast to existing development in the Tremblay study area.

2.3.1 - Vision

The Tremblay TOD Plan has a general vision for the study area, which is to be developed as a mixed use area (see Map A.2 in Appendix). This vision provides considerable flexibility for the study area to develop as an office-oriented, retail-oriented, or residential-oriented TOD depending on prevailing market conditions. Conversely, the vision does not encourage a dominant use that would give a unique identity to Tremblay Station.

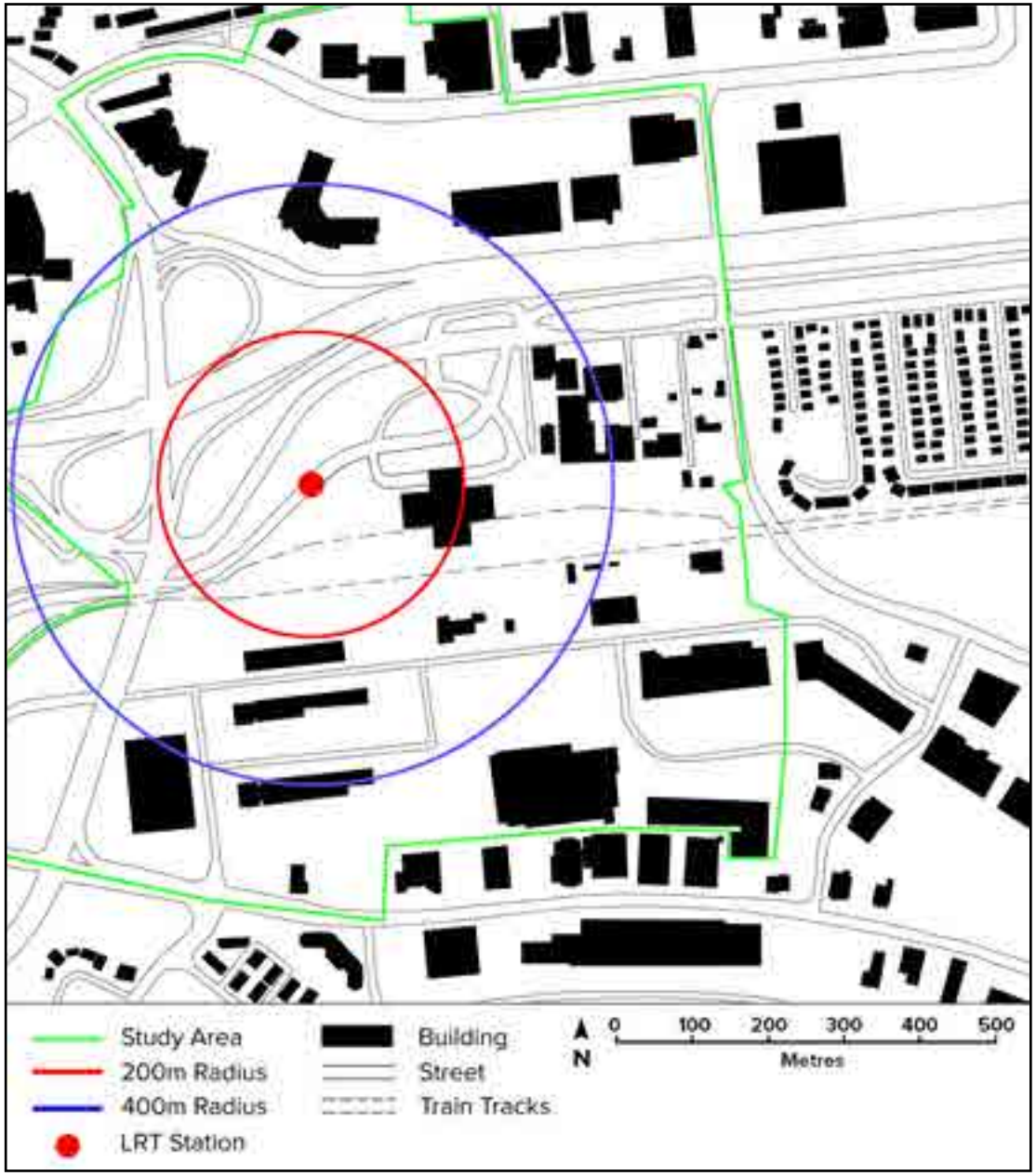
2.3.2 - Zoning

The study area is 100 hectares in size, but only 44 hectares is estimated to be available for development or redevelopment into transit-supportive uses.

All parcels have been rezoned in accordance with the TOD plan, with the exception of the Ottawa Train Yards shopping district, an industrial site along Belfast Road, and a general mixed-use zone at the northwest corner of the Queensway and Belfast Road (see Map 2.2). The zoning is intended to create a height and density gradient that will provide an appropriate transition from the taller and higher density developments clustered around the LRT station and major traffic areas, to the bordering lower density neighbourhoods, such as the Eastway Gardens residential neighbourhood to the east of the station.

2.3.3 - Connectivity

Maps A.3 through A.5 located in Appendix A outline the pedestrian, cycling, and street networks envisioned for Tremblay Station. The Queensway and the VIA Rail tracks that cut across the entire study area severely limit the north-south connectivity of the area. The plan greatly improves north-south pedestrian connectivity over these physical barriers by proposing overpasses and/or tunnels, but vehicles, and

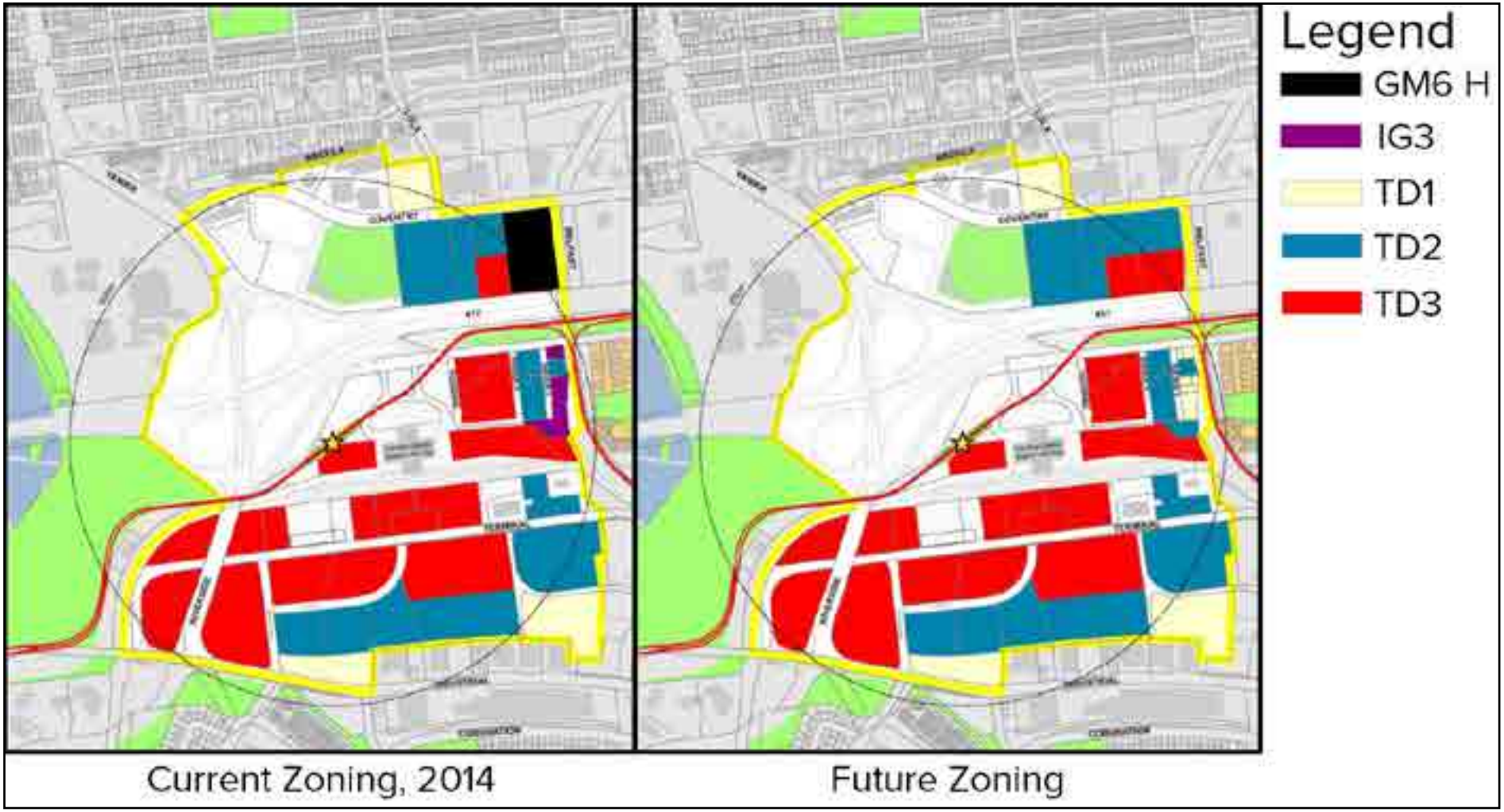


Map 2.1 - Figure-ground map of the Tremblay Station study area
Adapted from: City of Ottawa, 2012

Figure 2.1 - Existing development within a 400m radius of Orenco Station, Portland, Oregon

Figure 2.2 - Existing development within a 400m radius of Mockingbird Station, Dallas, Texas

Figure 2.3 - Existing development within a 400m radius of Fruitvale Station, Oakland, California



Map 2.2 - Current and future zoning
Source: City of Ottawa, 2012; City of Ottawa, 2014

bicycles to a lesser extent, are largely confined to Riverside Drive/Vanier Parkway and Belfast Road.

Most of the connectivity improvements will be found along Terminal Avenue and Steamline Street. New sidewalks will be constructed along Terminal Avenue while Steamline Street will be extended across the entire study area. To move away from auto-oriented development and to create smaller walkable blocks, the plan also includes several smaller streets between Terminal Avenue and Steamline Street.

2.3.4 - Green Plan

The TOD plan also outlines existing and future parks, amenity spaces, and priority streetscapes (see Map A.6 in Appendix). Future amenity spaces are plotted for demonstration purposes, but their size reflects the amenity space required for each lot as per the zoning by-law. The location of the priority streetscape along Terminal Avenue, coupled with the improved pedestrian and cyclist connectivity, indicate the importance of Terminal Avenue to the Tremblay Station plan.

2.3.5 - Phasing

Map A.7 outlines the phasing for the Tremblay TOD Plan. Most of the development around the LRT station and along Terminal Avenue is expected to be completed in the short-term, implied to be around 2031. It is unclear as to when long-term or very long-term development is expected to take place.

2.3.6 - Projected Costs for Infrastructure

The TOD Plan also includes a TOD Servicing Overview, the main objectives of which are to determine the current state of the major infrastructure system capacities and the improvements necessary to support short term and long term projected development density conditions in the TOD Plan areas. The TOD Servicing Overview estimates the costs of related improvements and recommends the timing and phasing of works needed to support eventual increasing development densities. The study analysed the infrastructure works required for the ultimate long-term development of the TOD Plan areas, as well as for the development expected over the next 20 years. In general, most services are required to be upgraded within the next 20 years to handle both the short and long term levels of development.

The TOD Plan projects that new infrastructure costs will increase for each successive LRT station away from downtown Ottawa (see Table 2.4). Each station has a unique set of infrastructure demands. Estimates indicate that the majority of infrastructure costs for Tremblay Station will be focused on hydro and road infrastructure. In comparison, the costs for St. Laurent primarily stem from roads, and the costs for Cyrville come from extensive stormwater and road infrastructure.

Item	Tremblay	St. Laurent	Cyrville	TOTAL
Water	640	950	860	2,450
Sanitary	2,580	1,160	0	3,740
Stormwater	0	0	12,500	12,500
Hydro	5,200	1,000	1,500	7,700
Roads	4,114.5	14,754.5	10,030	28,899
TOTAL	12,534.5	17,864.5	24,890	55,289

Table 2.4 - Infrastructure costs in TOD areas in $1,000s
Source: Stantec & City of Ottawa, 2012

Similar to the infrastructure costs in Table 2.4, estimated costs for new sidewalks are expected to increase for each successive LRT station away from downtown Ottawa (see Table 2.5). Unlike other infrastructure costs, multi-use pathways and on-street cycling infrastructure is expected to cost more for stations closer to downtown, reflecting greater bicycle use closer to the core of the city (see Table 2.5).

TOD Plan Area	Tremblay	St. Laurent	Cyrville	TOTAL
Sidewalks	3,251.1	2,914.7	4,051.9	10,217.7
Multi-Use Pathways/On-Street Cycling	10,060	7,155	5,055	22,270
TOTAL	13,311.1	10,069.7	9,106.9	32,487.7

Table 2.5 - Sidewalks and MUP/cycling infrastructure costs in $1,000s
Source: City of Ottawa, 2012

Roughly half of the new sidewalks, multi-use pathways, and on-street cycling infrastructure are expected to be completed by 2017. New sidewalks for Belfast Road, Tremblay Road, Terminal Avenue, and Industrial Avenue are expected to be completed by 2017 at a cost of $1.8 million. Other sidewalks found in Map A.3 are scheduled for completion in the long-term at an unspecified date or are to be built when development occurs. Meanwhile, most of the on-street cycling infrastructure and multi-use pathways are scheduled to be completed by 2015 or 2016. Only three pieces of cycling infrastructure for the study area are to be built as development occurs. Two of these are located at the southern end of the site and would connect the study area to the residential neighbourhood surrounding the hospital lands.

Table 2.6 summarizes the infrastructure costs for the Tremblay, St. Laurent, and Cyrville TOD areas. These projections indicate that the infrastructure costs associated with TOD development will be lower around Tremblay Station and will gradually increase for each station further from the downtown core.

TOD Plan Area	Tremblay	St. Laurent	Cyrville	TOTAL
Infrastructure	12,534.5	17,864.5	24,890	55,289
Sidewalks, Multi-Use Pathways, On-Street Cycling	13,311.1	10,069.7	9,106.9	32,487.7
TOTAL	25,845.6	27,934.2	33,996.9	87,776.7

Table 2.6 - Summary of infrastructure costs in $1,000s
Source: City of Ottawa, 2012

2.4 - Implications for Implementation

The general vision for mixed use development around Tremblay Station is highly amenable to office, retail, or residential-oriented development. However, the lack of clear and specific vision for the study area may hinder the implementation of the Tremblay TOD Plan.[5] The infrastructure investment required for the Tremblay TOD area is expected to be lower than for St. Laurent and Cyrville, making the Tremblay TOD plan a more attractive option for the City.

- Given that Terminal Avenue has been identified as a priority streetscape in the TOD Plan, implementation should prioritize the creation of connections to the area south of the Tremblay LRT station and focus on stimulating development along Terminal Avenue.
- Within the southern portion of the study area, the City only owns public streets and sidewalks (see Map A.8 in Appendix). Therefore, the City may need to leverage the baseball stadium and its surface parking lot, the only parcel of land they own within the entire study area, to implement their vision for Tremblay Station.
- Almost $90 million in infrastructure and connectivity upgrades are forecast for the next 20 years. These are basic upgrades that have been funded and accelerated by alternative financing mechanisms in other cities.

Chapter Notes

[1] Ottawa, City of. (2012). Transit-oriented development (TOD) plans: Train, St. Laurent, Cyrville. Retrieved from http://documents.ottawa.ca/sites/documents.ottawa.ca/files/documents/transit_en.pdf

[2] Ottawa, City of. (2014a). TD - Transit-oriented development zone (Sections 195-196). Retrieved from http://ottawa.ca/en/residents/laws-licenses-and-permits/laws/city-ottawa-zoning-law/zoning-law-2008-250-consolidation-69

[3] Ottawa, City of. (2014b). Minimum parking space rates (Sec. 101). Retrieved from http://ottawa.ca/en/residents/laws-licenses-and-permits/laws/city-ottawa-zoning-law/minimum-parking-space-rates-sec-101

[4] Ottawa, City of (2014c). Maximum limit on number of parking spaces near rapid transit stations (Sec 103). Retrieved from http://ottawa.ca/en/residents/laws-licenses-and-permits/laws/city-ottawa-zoning-law/zoning-law-2008-250-consolidation-40

[5] Ottawa, City of. (2012)

[6] Urban Land Institute. (2003). Ten Principles for Successful Development Around Transit: 1-32.

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3.0
Site Context

The Tremblay Station study area is comprised of approximately 100 hectares with 40 low-density, individual properties. The current built form of the site does not conform to typical **transit-oriented development (TOD)** standards. This chapter outlines the history and development of the study area and describes in detail its built environment, land uses and connection to adjacent neighbourhoods.

3.1 - History of the Site

The Tremblay Station area is located in what was historically known as the Township of Gloucester. The area was first settled by Braddish Billings, who arrived in Gloucester Township in 1812 and was a prominent farmer.[1] Gloucester was a thriving agricultural community throughout the latter half of the 1800's whose borders stretched from the east banks of the Rideau River and the south banks of the Ottawa River to Manitock.[2] A survey of the Township was completed in 1820 and Gloucester was incorporated in 1850. Hurdman's Bridge, built by W.H. Hurdman in 1875 and located just west of the study area, was one of the first bridges over the Rideau providing increased connectivity just west of the study area.[3]

The Tremblay Station area remained largely agricultural until it was subdivided in 1911.[4] The northern part of the Tremblay Station area and beyond was subdivided into the neighbourhood of Overbrook and a plan of subdivision was registered on August 9, 1911.[5] The southern part was also subdivided in 1911 as the Bannermount subdivision, which would later be known as Eastway Gardens.[6] Bannermount, whose streets were alphabetized from A to U, was originally built to house railway employees that were working for the Montreal & Ottawa railway and the Ottawa & New York railway that operated in the area.[7]

Political events influenced the area's shift from predominantly agricultural use, to a pair of residential communities, then to an industrially dominant area. The shift to the industrial area was influenced largely by the creation and final adoption of Gréber's *Plan for the National Capital*.[8]

Railway relocation was the first step in the new plan and began even before the final report was adopted. In 1947, the National Capital Planning Board approved a report that recommended the removal of all railways from Ottawa and much of Gloucester except to serve future industrial areas in Gloucester.[9] In 1947, the Ottawa Public Works Department was authorized to acquire land in Gloucester for future Ottawa industrial development in the area east of Hurdman's Bridge and south of Cyrville.[10] These lands have remained as an industrial area until today. These two events are the basis for the formation of the Tremblay Station area as it currently exists, with a fully functioning passenger rail service operated by VIA Rail.

In 1950, the City of Ottawa expanded its jurisdiction to include most of the area inside the proposed **greenbelt** in the National Capital Plan. The City of Ottawa officially annexed 5,910 hectares from Gloucester, which included the current Tremblay Station study area. Additional annexed areas included Overbrook, Hurdman's Bridge, Billings Bridge, Ellwood, Hog's Back, Manor Park, Rideau Park, Hawthorne, and the developing communities of Riverview and Alta Vista.[11]

Image 3.1 - Tremblay Station area, 1945
Source: City of Ottawa Archives, 2008

In 1960, the Queensway opened from Hurdman's Bridge to Green's Creek. The construction of the Queensway had a drastic impact on the neighbourhood of Eastway Gardens as Streets A through D were expropriated to accommodate the Riverside Drive-Queensway interchange. Eastway Gardens would be further diminished in 1966 with the completion of the Ottawa Station for VIA Rail and the Terminal Avenue Railway Freight Terminals that would see the removal of streets E through H.[12]

Image 3.2 - Construction of the new train station and Queensway, 1966
Source: City of Ottawa Archives, 2008

The final major piece of infrastructure that defines the area today is the Ottawa Stadium, built in 1993 at the corner of the Vanier Parkway and Coventry Road.[13] The stadium housed the Ottawa Lynx, an International League baseball team until 2007. The Lynx were the Triple A affiliate of the Montreal Expos and the Baltimore Orioles. After 2007, there was a yearly succession of teams playing in different leagues, contributing to the decline of baseball in Ottawa. While the stadium currently lacks activity, it will become home to the Ottawa Champions, a Can-Am league baseball team, in the spring of 2015.

3.2 - Regional Context

The implementation strategy for the Tremblay Station TOD plan must take into consideration the context within which the area is currently located relative to other stations along the Confederation Line.

3.2.1 - Rural to Urban Transect

Duany and Plater-Zyberk's rural-to-urban transect is a strategic planning tool for organizing the elements of urbanism in a city. It is a concept that is drawn from ecology and delineates the typical progression of human habitation, sequenced from rural (low density) to urban (high density) transects (see Figure 3.1).[14]

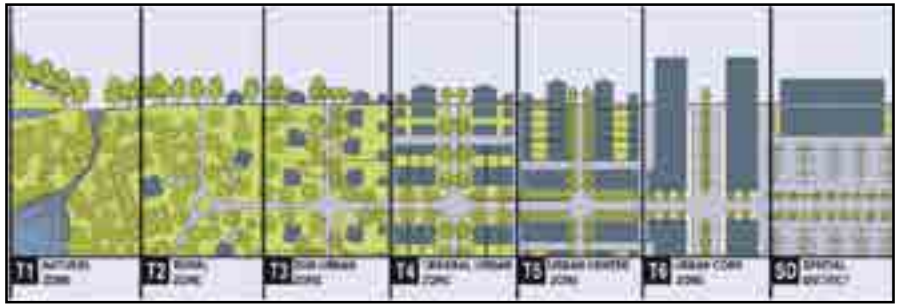


Figure 3.1 - Rural to urban transect
Source: Duany Plater-Zyberk & Company, 2014

The City of Ottawa's urban form is not typical of the transect model. The presence of the greenbelt and the separation of the downtown core from the rest of the city by the Rideau River and Canal have had significant impacts on urban development within the area. The Tremblay Station area displays elements typical of both the General Urban Zone (T4) and Sub-Urban Zone (T3). Although the study area itself consists primarily of low-density office, retail, and light industrial uses, the surrounding residential neighbourhoods are composed of single-detached homes, row houses, and higher density apartment and condominium complexes. Overall, both the

study area and surrounding neighbourhoods display auto-oriented development patterns with wide, multi-lane roads, ample parking, and disconnected sidewalks and pedestrian rights-of-way. The transect concept can be used to categorize the Tremblay Station study area in relation to other TOD study areas (see Figure 3.2).

Figure 3.2 - Rural to urban transect applied to the Confederation Line
Adapted from: School of Urban and Regional Planning, 2012

The TOD plan areas that are most comparable to the Tremblay study area in terms of development patterns and location are Hurdman, St. Laurent, Cyrville, and Blair. Figure 3.3 compares these stations based on their proximity to downtown and employment centres, and the presence of vacant or underutilized land.

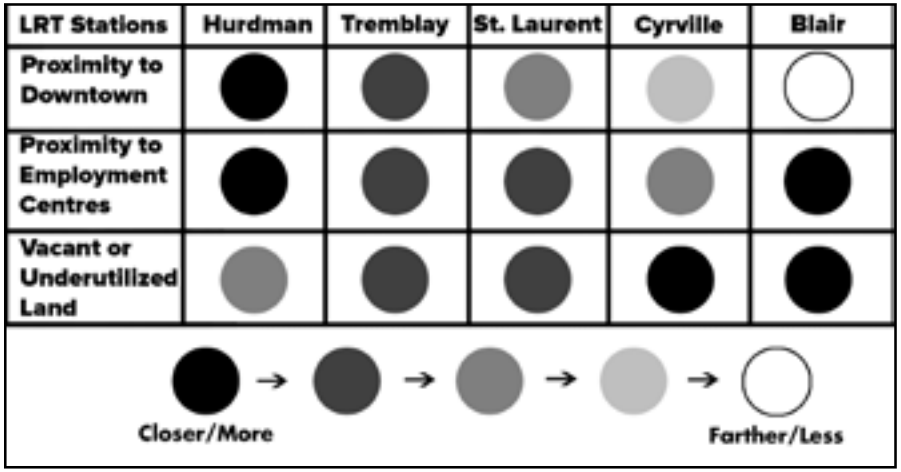


Figure 3.3 - Comparison of Confederation Line stations in eastern Ottawa

Proximity to Downtown

Tremblay Station is second only to Hurdman Station in its proximity to Ottawa's downtown core. The built form and land uses within the Tremblay Station Area are expected to be more consistent with the General Urban transect than with the Suburban transect. Once the Confederation Line is functional, it is expected that areas in close proximity to downtown will be the first to experience positive change and growth consistent with transit-oriented development. Therefore, Tremblay Station is expected to transition from suburban to general-urban along the transect.

Proximity to Employment Centres

A number of employment opportunities were identified in the surrounding study area, including the Train Yards shopping centre, the Canada Post distribution centre, various light industrial uses, the VIA Rail train station, and the newly-built Canada Revenue Agency office building. Additional office space is expected to be built along the northern edge of the land parcels to the south of the VIA Rail station, which will also contribute to increased employment options in the area. To the north of the train tracks lies an underutilized, but fully functional, baseball stadium, as well as two hotels and a conference centre

that have the potential to provide employment expansion in the commercial sector while providing attractive amenities to existing and future residents.

Vacant or Underutilized Land

Ottawa's 2012 TOD study showed that the Tremblay Station area is currently comprised of approximately 100 hectares and 40 individual properties.[15] Less than half of the area (approximately 44 hectares) is estimated to be readily available for long-term development or redevelopment. Of the 44 hectares of developable land, approximately 32 hectares are vacant and can be considered for short-term development to meet the 2031 population projection of a 10,000-person increase in users (residents and/or employees in the area).[16] The remaining 12 hectares of land are home to existing low-density buildings that would require demolition to accommodate transit-supportive densities and are to be considered for the long-term redevelopment of the Tremblay Station area.[17]

3.3 - Community Profile

The data within the City of Ottawa's TOD study was drawn from the 2011 MPAC database, which does not include detailed population information. Due to the abolition of the long-form census, the most recent and reliable data that reflects specific demographic, employment, and income inquiries dates back to the 2006. A primary investigation of the census data for the Tremblay Station area revealed a population of only 113 in 2006 – a number too small to make any reliable conclusions about market and demographic trends. Therefore, further data was analyzed by examining an 800-metre walkability radius from the Tremblay LRT station. This yields a total population of 2514.

3.3.1 - Surrounding Community

Tremblay Station is considered to be within the East Industrial neighbourhood in the Ottawa Neighbourhood Study as of 2014.[18] While there is limited residential land use within the Tremblay Station study area itself, the area is surrounded by residential neighbourhoods in the Overbrook-McArthur and the Elmvale-Eastway-Riverview-Riverview Park areas (see Map 3.1). Populations and densities are significantly higher in those surrounding neighbourhoods as seen in Table 3.1.

Map 3.1 - Neighbourhoods in and around Tremblay Station
Source: City of Ottawa, 2011

Neighbourhood	Area (km^2)	Population	Density (Residents/ha)
Overbrook-McArthur	3.4	10,899	32.1
East Industrial*	13.8	7,742	5.61
Elmvale-Eastway-Riverview-Riverview Park West	5.8	15,454	154.5

*Denotes location of Tremblay Station
Table 3.1 - Comparison with surrounding neighbourhoods
Source: City of Ottawa, 2014

3.3.2 - Demographics and Income

The Tremblay Station area is home to an older demographic, with an average age of 46.8 compared to the citywide average of 38.4. The most populous age group, however, is the 30-34 group followed closely by the 25-29 group (see Figure 3.4).

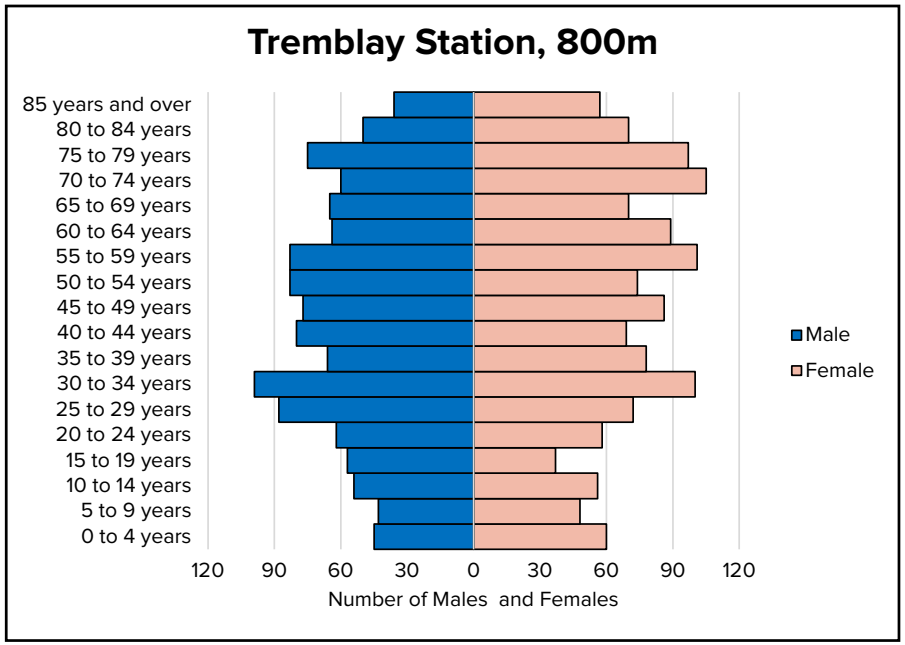


Figure 3.4 - Population distribution within an 800m radius of Tremblay Station
Source: Statistics Canada, 2006

The average household income is $102,822, which is higher than the citywide average of $85,136. Within the study area, 41% of residents within the study area reported annual household incomes greater than $100,000 while only 5% of families reported making less than $20,000 a year. Figure 3.5 summarizes the distribution of household incomes in the study area.

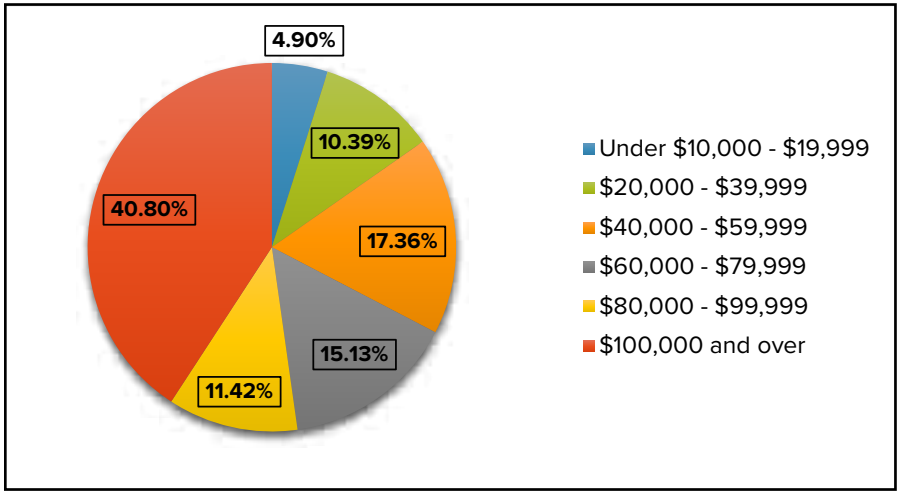


Figure 3.5 - Income distribution within an 800m radius of Tremblay Station
Source: Statistics Canada, 2006

3.3.3 - Employment

According to Census data, 513 people who live within 800m of Tremblay Station are employed. Public administration is the largest employer of those who live in the area at 31% of total employment, health care and social assistance comprise 12% of total employment, and educational services with a total of 11%. These are the three largest employment categories for residents within the study area (see Figure 3.6).

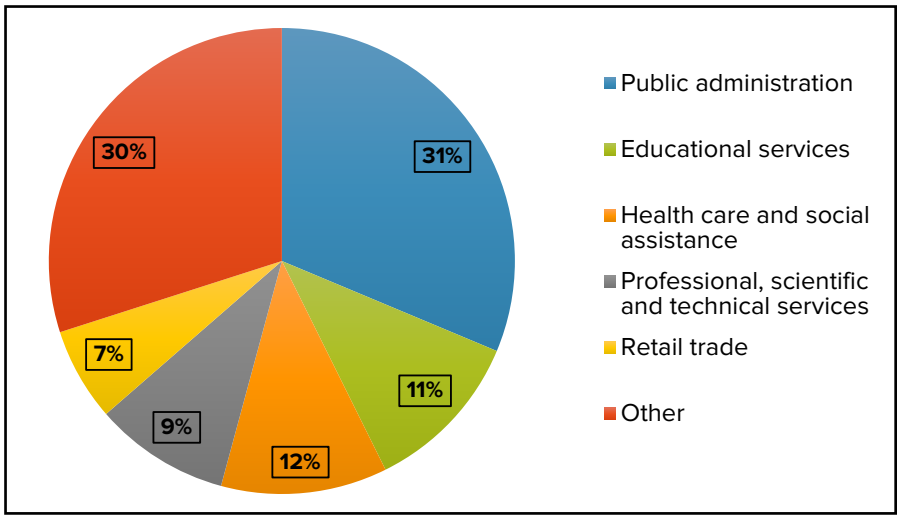


Figure 3.6 - Key employment sectors for residents in the Tremblay Station area
Source: Statistics Canada, 2006

The Tremblay Station area generates substantial employment, with a greater proportion of people traveling to work in the Tremblay area than people who currently live in the area. According to the 2012 Ottawa Employment Survey, there were 3881 jobs within a 600m radius of the existing Train Transitway Station.[19] This number is up substantially from 2006 where only 673 people were employed in the same geographical area.

While the Ottawa Employment Survey did not yield a specific breakdown of employment sectors for the employment area designations around Tremblay Station, the employment area designations in general for the City of Ottawa are broken down by major sector. Figures 3.7 and 3.8 demonstrate the top 5 employment sectors for Mixed Use Centres and Employment Areas respectively.[20]

Federal Public Administration dominates Mixed Use Centres in Ottawa, comprising over 50% of employment in these areas, followed by retail at 20%, and Transportation and Warehousing at 11%.[21]

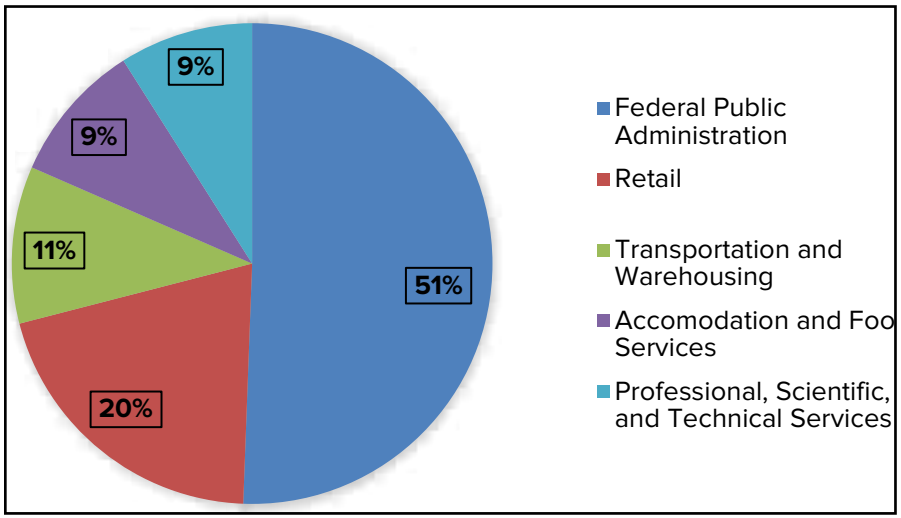


Figure 3.7 - Top 5 employment sectors for mixed-use centres in Ottawa
Source: Ottawa Employment Survey, 2012

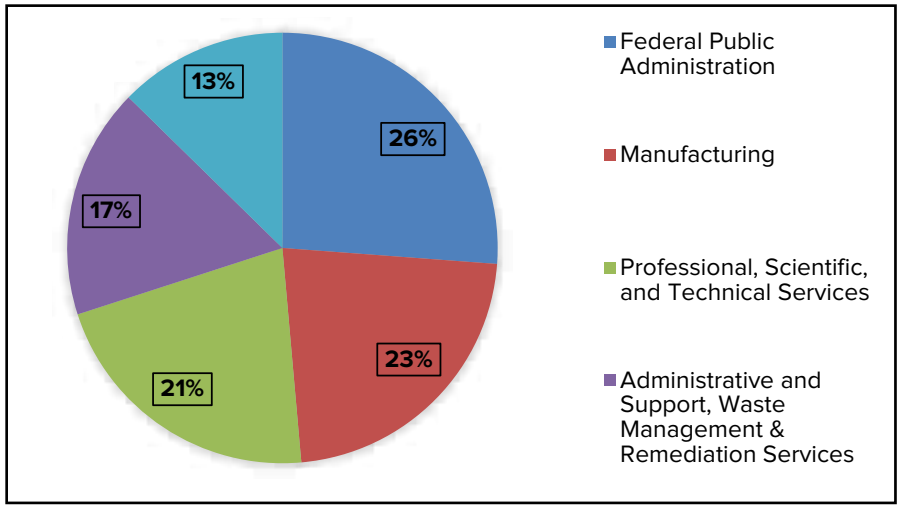


Figure 3.8 - Top 5 employment sectors for all employment areas in Ottawa
Source: Ottawa Employment Survey, 2012

For 'Employment Areas', major sectors are more balanced, yet Federal Public Administration still comprises the largest employment at 26%. Manufacturing is the second largest employer (23%) followed by Professional, Scientific, and Technical Services (21%).[22] Nearly all of these major employment sectors are found in the Tremblay Station area.

3.3.4 - Transit Trends and Walkability

According to Census data, the primary mode of transportation used by residents within 800m of the Tremblay Station in 2006 was private vehicle, as either a driver or passenger, at 53% of total residents. Public transit use in the area came in second at 34%, while only 11% of residents travelled by active transportation (walking and/or biking). These numbers are comparable to the City of Ottawa as a whole, which reported an overall 36% use of public transit and 17% active transportation. However, it must be noted that these numbers are averages and that not everyone in Ottawa lives within 800m of a transit BRT station.

The Neighbourhood Study Initiative assigns a walkability score to Ottawa neighbourhoods based on four factors:[22]

- *Pedestrian Infrastructure and Amenities* refers to the design of the environment that make it conducive to walking.
    - *Pedestrian infrastructure* includes the presence and quality of sidewalks and bike lanes.
    - *Pedestrian amenities* include facilities for pedestrian comfort: water fountains, benches, seats at bus stops, and publicly available.
- *Safety from Traffic* refers to walking spaces separated from traffic, traffic volume and noise, intersection safety, and streetlights.
- *Street Visibility from Houses* refers to the distance of houses from the street and presence of windows looking out onto street, features that are important for pedestrian safety and comfort.
- *Aesthetics* refers to interesting and pleasing things to look at while walking including, trees, parks, nicely kept houses, flowers and shrubs, and lack of litter.

It is notable that there is no walkability data available for the East Industrial neighbourhood. Meanwhile, adjacent neighbourhoods have walkability scores comparable to the city average of 50.0 (see Figures 3.9 and 3.10). The TOD Plan sets out to improve pedestrian connections as seen in Map A.3 in the Appendix, but whether it improves walkability to at least the city average remains to be seen.

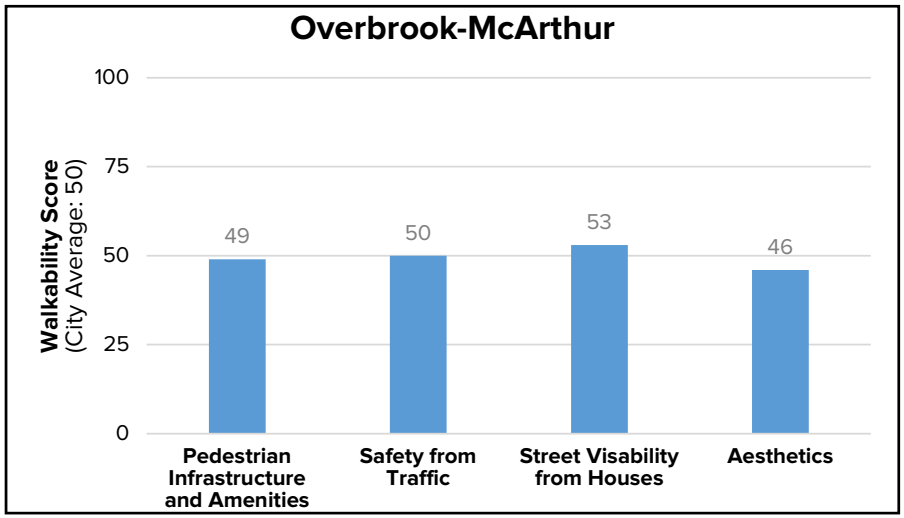


Figure 3.9 - Walkability score for Overbrook-McArthur
Source: Ottawa Neighbourhood Study, 2009

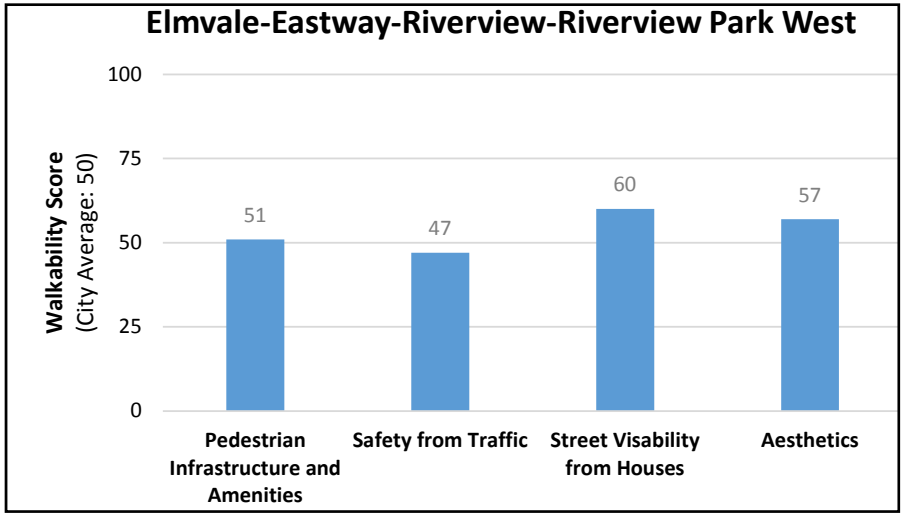


Figure 3.10 - Walkability score for Elmvale-Eastway-Riverview-Riverview Park
Source: Ottawa Neighbourhood Study, 2009

3.4 - Current Built Environment

Development in the area has been markedly auto-oriented rather than transit-oriented with an extensive network of surface parking lots and inactive street fronts characterized by mid-rise offices, low density commercial and light industrial uses, and the Ottawa Baseball Stadium.

3.4.1 - Key Landmarks

The Ottawa Station, served by VIA Rail, is a significant historical landmark and is one of the most uniquely designed buildings within the Tremblay TOD study area. Designed by John B. Parkin & Associates in the modern architectural style and built in 1966, the station won the Massey Medal in Architecture in 1966 and was named as one of the top 500 buildings built in the last millennium by the Royal Architectural Institute of Canada. The station was designated as a Heritage Railway Station in 1996 and is recognized in the Canadian Register of Historic Places.

Image 3.3 - Ottawa Station

Immediately north of the VIA Rail Station is a pedestrian walkway currently under construction. It will improve connectivity between the areas north and south of the Queensway, and will improve the overall accessibility of both sites. The walkway leads to the Ottawa Stadium, which houses a semi-professional baseball field with a seating capacity of over 10,000 and has a large surface level parking lot with 800 spaces accessible by Coventry Road. The left-field fence parallels Coventry Road, making the field easily visible from the street. The stadium is uncovered and is therefore a seasonal use.

Image 3.4 - Ottawa Baseball Stadium

3.4.2 - Offices

Office buildings are relatively uncommon in the study area (see Map 3.2), but their size and massing currently overshadows anything else nearby. All office uses in the area are accommodated by surface parking lots. On the north side of Coventry Road, there are adjoining office buildings with glass fronts of approximately 10 storeys with parking at the rear of the buildings.

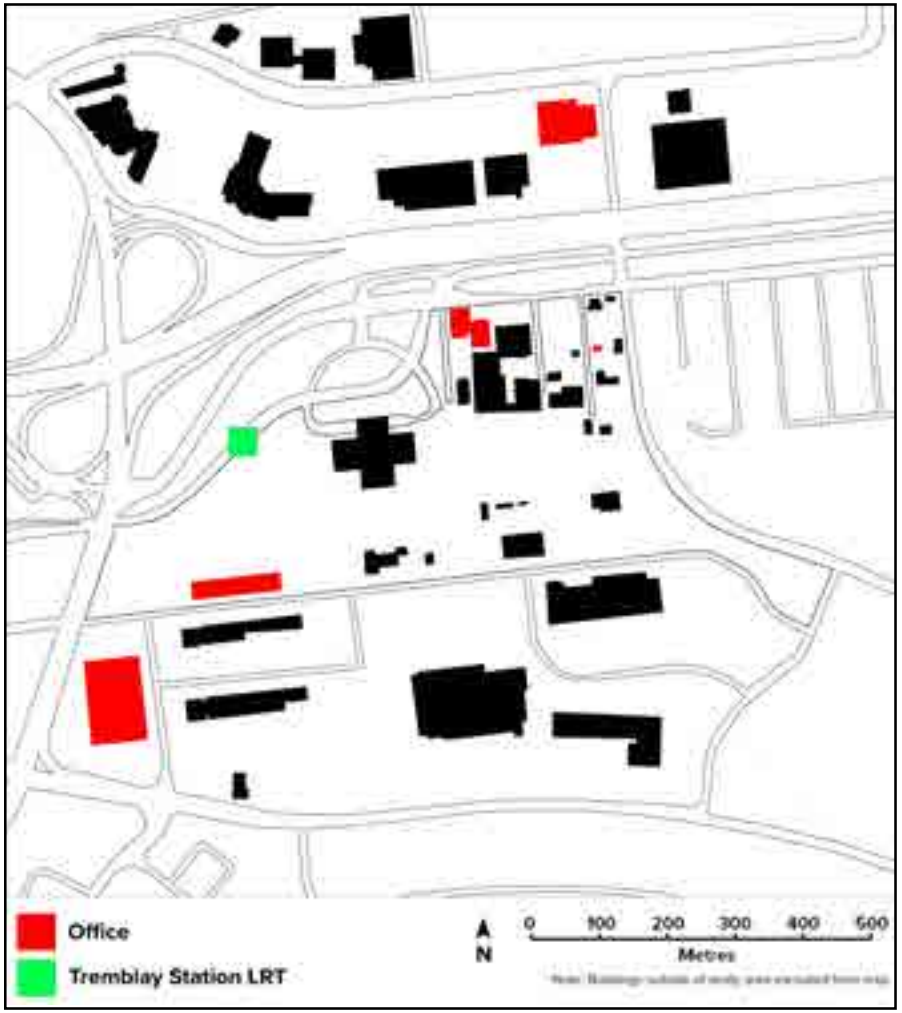
Immediately east of the VIA Rail station at the intersection of Tremblay Road and Pickering Place is a 7-8 storey office building with a metal, glass, and concrete exterior. This office building shares a parking lot with Dustbane, a light industrial use.

The brick Canada Post industrial building can be found along Sandford Fleming Avenue. Roughly 5-6 storeys in height, the building operates as a local post office as well as Ottawa's mail sorting facility.

The 8 storey Canada Revenue Agency building, located along Terminal Avenue, is the most recently completed office building in the area. Similar to the office building adjacent to Dustbane, the CRA building is constructed of contemporary materials including metal, glass, and concrete. Parking lots surround the building on three sides.

Image 3.5 - Canada Revenue Agency building, 395 Terminal Avenue

In addition to these mid-rise office buildings, there is one 2.5 storey aluminum-sided house located along Avenue L that has been converted for office use.



Map 3.2 - Location of office uses in the Tremblay Station area

3.4.3 - Retail

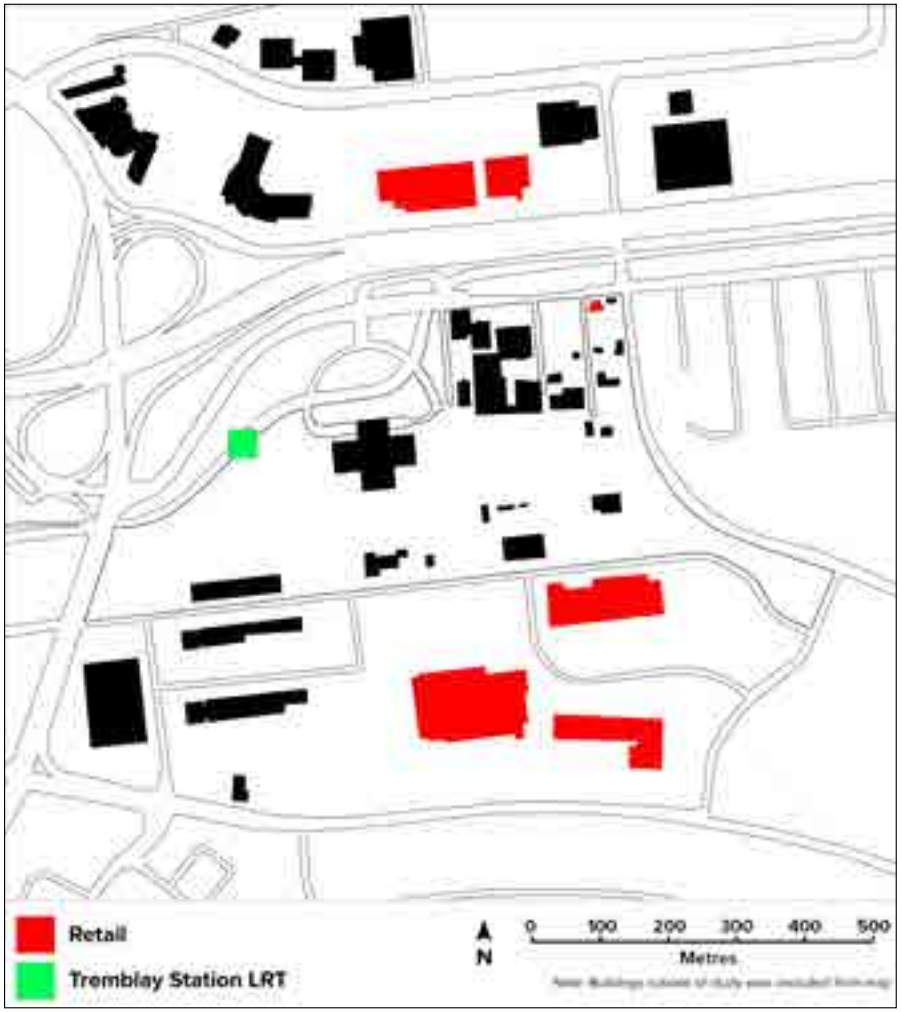
Map 3.3 shows the locations of retail uses within the Tremblay study area. Retail uses in the area are dominated by auto-oriented centres with an abundance of surface level parking. The Ottawa Conference and Event Centre is located on the south side of Coventry Road. This facility is connected to two hotels, the Hampton Inn Ottawa by Hilton and the Courtyard Ottawa East by Marriott and an on-site restaurant, the Bistro. Both facilities have accompanying underground and surface parking lots.

To the east of the baseball stadium, there is a shopping plaza with lone-standing buildings housing large format retail stores, Best Buy and Canadian Tire, as well as Starbucks Coffee with a drive through. The plaza also has a large surface parking lot fronting on Coventry Road.

Retail uses south of the VIA Rail station are predominantly occupied by the Ottawa Train Yards shopping centre. Anchored by Walmart and other local big box stores, the shopping centre is also home to numerous branded retailers and a handful of boutique shops that service a wide range of customers. Most structures are one storey in height and have substantial at-grade parking at their doorstep.

Image 3.6 - Ottawa Train Yards

The Tremblay TOD study area only features two commercial entities outside of the shopping centres. The first is the White House Restaurant located along Tremblay Road that predominantly serves local employees and residents of Eastway Gardens, a residential neighbourhood to the east of the study area boundaries. The second is an automobile service garage at the end of Avenue L.



Map 3.3 - Location of retail uses in the Tremblay Station area

3.4.4 - Light Industrial

Three major light industrial sites exist within the Tremblay TOD study area and, like other uses in the area, they are served by substantial surface parking. North of the Queensway, there is the Enbridge natural gas distribution centre which has a large surface parking lot accessed by Belfast Road. Dustbane, a chemical sanitation products manufacturer, is located in an optimal location for transit-oriented development: immediately adjacent to the VIA Rail station and future Tremblay LRT station. Current development on the site, however, is not transit-supportive and includes a light industrial office, warehouses, and a large surface parking lot that appears to be shared with the neighbouring office building. Finally, located along Terminal Avenue and Steamline Street are two warehouses with heavy truck loading bays. Undeveloped areas within this complex are used as cargo trailer parking areas.

3.5 - Natural Environment

Development and redevelopment of the Tremblay Station study area will be face few environmental constraints in this area. This section outlines the environmental conditions to be considered prior to any further development on the site.

3.5.1 - Topography

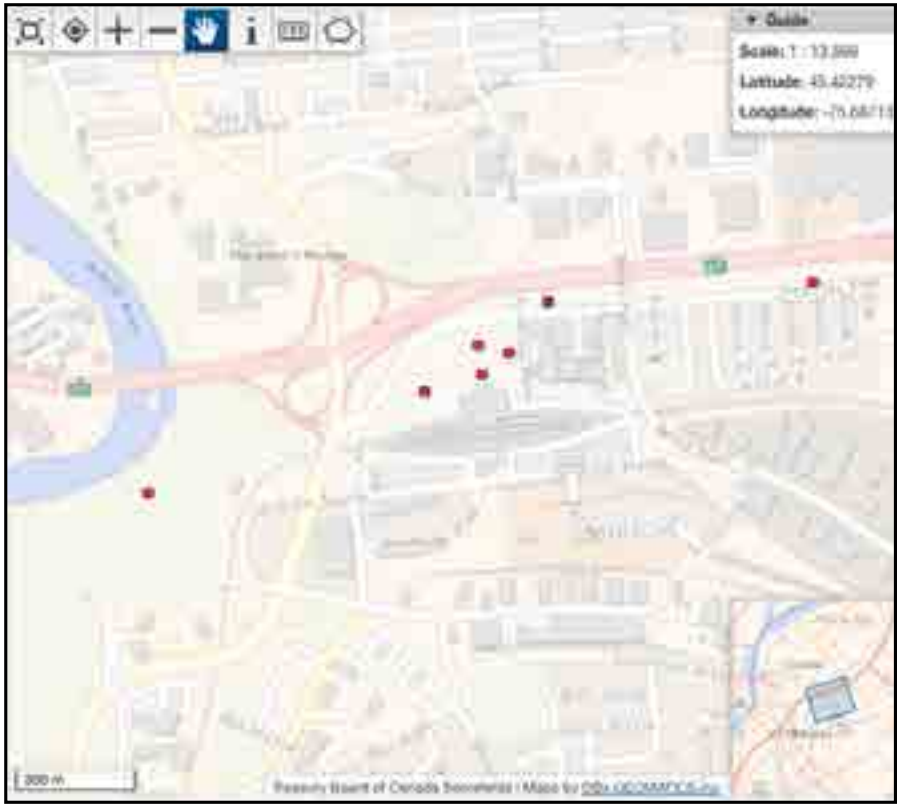
The area around the Tremblay Station is relatively flat with no prohibitive peaks. The slopes currently existing in the area are not considered significant enough to present any constraints on development. There are some steep artificial embankments that were constructed to accommodate the Queensway and the BRT line running through the area, however these reinforced slopes are not expected to impact development opportunities. In addition, despite the study area being just east of the Rideau River, there are no floodplains extending into the area that could pose a constraint on the site.[23]

3.5.2 - Geology

The geology of the area can be classified as consisting of two distinct layers: the bedrock and the surficial geology. The bedrock of the study area is entirely comprised of shale[24], while the surficial geology on top of this bedrock is comprised of a layer of glacial till that is approximately 5 metres thick.[25] The glacial till is a heterogeneous mixture of materials ranging from clay and sand, to large boulders.[26] Due to the material makeup of the surficial geology, the area could be prone to compression and settlement if lower groundwater levels are experienced for prolonged periods of time. This will have to be tested on a site-by-site basis but is not expected to constrain future development.

3.5.3 - Contamination

Contamination is a known issue within the Tremblay Station area, as there are five contaminated sites registered through the Federal Contaminated Sites Inventory as shown in Map 3.4.[27] In addition to these areas, other properties that are currently occupied by light industrial and commercial uses may also be contaminated. Before development can proceed, these properties will require testing and assessment to determine if contamination exists, as well as possible remediation for those sites found to be contaminated. The potential contamination of a number of properties is a significant constraint associated with the Tremblay Station area and may require significant investment in remediation.



Map 3.4 - Contaminated sites in and around Tremblay Station
Source: Government of Canada, 2014

3.6 - Connectivity

There are several challenges to connectivity among various modes of travel within the Tremblay Station study area. The Queensway and the VIA Rail train tracks serve as two substantial barriers. These pieces of significant infrastructure divide the site into three separate parts: the area north of the Queensway, the area south of the VIA Rail train tracks, and the area between the Queensway and the train tracks where the VIA Rail station and future LRT station is located. The division of the area in this way limits options for travelling between the three areas, resulting in significant consequences for site connectivity. In addition, the area has been designed for automobile use, therefore, the Tremblay station study area suffers from a lack of consideration for the safety of pedestrian and cyclists.

3.6.1 - Walking

The existing pedestrian connectivity within the Tremblay Station study area is poor. In particular, only two thoroughfares, Belfast Road and Riverside Drive, bridge the area north of the Queensway and the area south of the Queensway. In addition, these routes are separated by approximately 900 metres according to Google Maps, which is considered a fairly long distance for walkers. In addition, there are limited pedestrian routes between the VIA Rail Station and both the northern and southern portions of the study area. For instance, in order to reach the Ottawa Train Yards shopping centre from the station, a pedestrian must travel to either Belfast Road or Riverside Drive, even though the shopping centre is located directly to the south of the train station. The resulting walking time and distance is substantially longer than the straight-line distance to the Train Yards, which is an additional twenty-five minutes by foot.

Walking connectivity is also limited by the lack of pedestrian infrastructure in the area. Existing sidewalks within the Tremblay study area are limited to the outlying roads with fragmented pieces around the VIA Rail station and Train Yards shopping centre. The minimal pedestrian infrastructure in the area is particularly difficult for the employees working in the area. For instance, employees at the CRA building have no efficient pedestrian access to travel between public transit and the building. These individuals would have to walk along Tremblay Road, down Riverside Drive, and turn onto Terminal Avenue, a process that would involve a significant amount of backtracking. The presence of informal paths that pedestrians have worn into the grass up along the hill bordering Riverside Drive, is evidence that people are looking for improved accessibility (see Image 3.7). Pedestrian connectivity in the study area is benefitted from a multi-use pathway running along Tremblay Road, bisecting the study area. The pathway is well used and is accompanied by an appealing strip of green space, but is noticeably lacking garbage disposal units and public furniture.

Image 3.7 - Informal pathway along Riverside Drive

There are plans to improve walking connectivity in the area. A pedestrian bridge is currently being built over the Queensway, which will significantly improve the accessibility between the VIA Rail station and the area north of the highway.[28] The structure will be covered, providing shelter from the elements and will also include ramps to allow easy access for cyclists and persons with limited mobility. The expected completion date of the pedestrian bridge is in early 2015.[29] In addition, there are plans to expand the network of sidewalks and multi-use pathways as dictated by the TOD Plan for the area (see Maps A.3 and A.4 in Appendix).

3.6.2 - Cycling

Similarly, the cycling connectivity within the study area is also poor, facing many of the same barriers that affect walking connectivity in the area. In addition, there are currently no shared-use or on-street bicycle lanes within the Tremblay Station study area. The sole bicycle access route is along the multi-use pathway running along the centre of the area. The TOD plan outlines a series of on-street bicycle lanes into the area, especially along the major streets such as Belfast Road, Coventry Road, Riverside Drive, and Terminal Avenue (refer to Map A.4 in Appendix).

Image 3.8 - Multi-use pathway

3.6.3 - Transit

The Tremblay Station study area contains the Train Transitway Station, located on the OC Transpo **Bus Rapid Transit (BRT)** line running east-west across Ottawa. Train Station is one stop east of Hurdman Station, which is a major connection point for the Ottawa BRT lines. Existing local bus routes provide transit access to the study area via shared roads with automobiles, while the BRT runs along the separate transit corridor. The future Tremblay LRT station and light rail line will replace the BRT using the existing Transitway. Once completed, the Tremblay LRT station will be the fourth easternmost LRT station on the Confederation Line and will be four stops east of Downtown Ottawa. The area is also serviced by the main Ottawa VIA Rail Station. At this station, trains arrive from Montreal six times a day and from Toronto 5 times a day.[30]

Image 3.9 - Transit stop along Terminal Avenue

3.6.4 - Driving

The Tremblay TOD area is easily accessible by automobile. The entire area can be characterized as predominantly automobile-oriented, with four or six lane roads and many surface parking lots. Additionally, the Queensway runs east-west through the area. The wide right-of-ways and automobile dominated atmosphere are the result of commercial and light industrial uses in the area, which are frequented daily by transport trucks and local traffic from those working or shopping in the area.

Since there are no internal roads running north-south in the area, drivers are required to use the Riverside Drive/Vanier Parkway or Belfast Road arterials to cross the Queensway in either direction. This contributes to traffic congestion along these thoroughfares, particularly along the Riverside Drive/Vanier Parkway arterial, as this is a major route for the neighbourhoods north and south of the Tremblay TOD area.

Image 3.10 - Tremblay Road at Riverside Drive/Vanier Parkway

3.7 - Implications for Implementation

Once the LRT is fully functional in 2018, it is expected that the residential density within the Tremblay Station Area, along with other transit-oriented nodes along the Confederation line, will increase.

The existing built form in the Tremblay study area has several implications for implementing transit-oriented development.

- Light industrial uses, especially Dustbane, are located in prime locations for redevelopment within the study area.
- Ample surface parking in the area is not conducive to transit-supportive or intensified development. The existing auto-oriented commercial centres pose similar challenges for TOD implementation.
- Existing built form may inhibit the creation of future high-quality living environments that include an increase in residential and employment densities in the study area.
- The environmental conditions in the area are mainly favourable for development with only a few sites needing remediation.
- The lack of connectivity in the area is a major factor affecting the implementation of transit-oriented development in the study area.
    - While there are plans to improve connectivity for pedestrians and cyclists, this lack of connectivity may discourage development until these upgrades have been made.

Chapter Notes

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4.0
Market Analysis

The Tremblay Station study area has a mixture of office, industrial, and retail land uses, as well as limited residential uses. This section analyzes the existing market conditions of each real estate class present in the area.

4.1 - Residential

4.1.1 - City of Ottawa

Ottawa's housing market has been performing well, with housing prices and average rents trending steadily upward since 2011.[1] Vacancy rates in Eastern Ottawa are comparable to the rest of the city, varying by 0.1 percent (see Figure 4.1).[2] The increase in prices has coincided with a growing market as housing starts have increased steadily since 2009. Although the number of single detached units has decreased since 2009, the amount of apartments being built has more than doubled in that same time period (see Figure 4.2).[3] However, the increase in multiple unit buildings heightens the risk that the market could become saturated with this type of development, leading to oversupply and rising vacancy rates. In fact, vacancy rates have effectively doubled since 2011, rising from 1.5 percent to around 3.0 percent (see Figure 4.1).

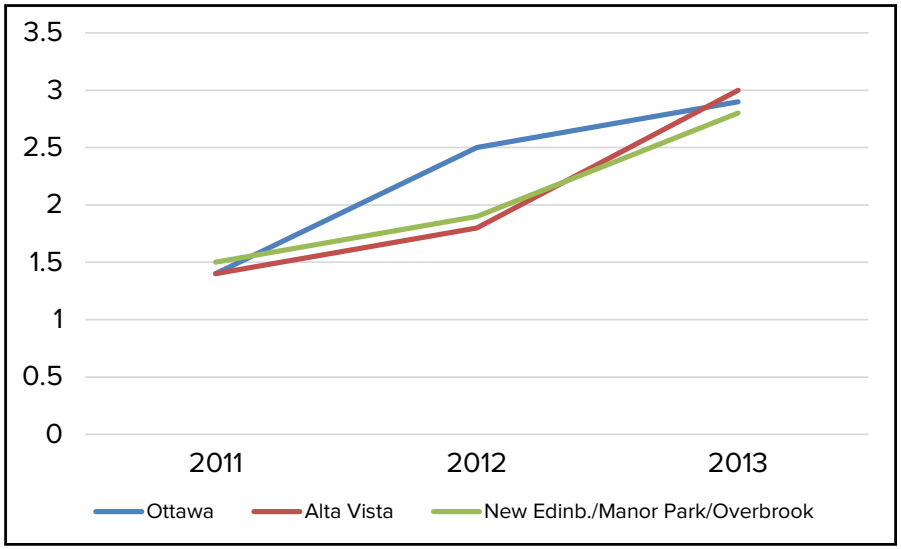

Figure 4.1 - Comparison of residential vacancy rates in Ottawa, 2011-2013
Source: CMHC, 2011-2013

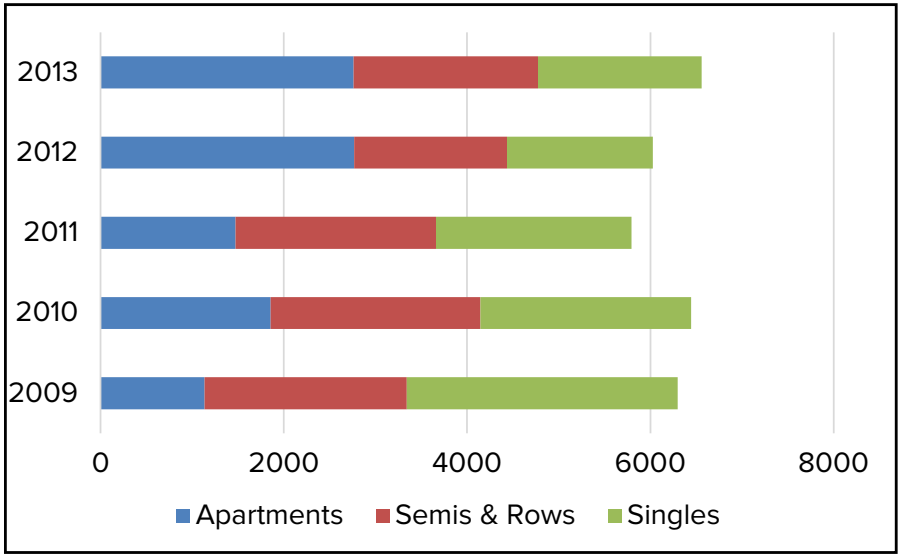

Figure 4.2 - Housing starts in Ottawa, 2009-2013
Source: CMHC, 2011-2013

4.1.2 - Ottawa East and Tremblay Station

Residential dwellings represent the smallest of all real estate classes in the study area. The 2006 Census data shows that there were only 113 people living in the Tremblay Station area. This is a remarkably low number of residents compared to successful **transit-oriented developments (TODs)** described in Chapter 8 and Appendix D. Expanding the area to the station's walkable catchment area, an 800-metre radius around the future **Light Rail Transit (LRT)** station, shows there were approximately 2500 people residing in the area. Table 4.1 shows how the Tremblay Station 800 metre radius compares to nearby LRT station catchments. Additionally, housing information for this area is shown in Table 4.2.

LRT Station	Total Population
Tremblay	2,514
Hurdman	7,909
St. Laurent	3,564
Cyrville	1,837
Blair	1,911

Table 4.1 - Total population within 800m of LRT stations
Source: Statistics Canada, 2006

Number of Dwellings	1117
Owned	50.9%
Rented	49.1%
Average Value of Dwelling	$330,257
Average Gross Monthly Rent	$964
Dominant Dwelling Type	Multiple unit buildings

Table 4.2 - Housing characteristics within the Tremblay Station area
Source: Statistics Canada, 2006

Data indicates the average value of a dwelling in this area was higher than Ottawa's average of $297,718 and the median household income was $82,698. These numbers are likely not fully representative of the Tremblay Station study area, as portions of affluent adjacent neighbourhoods are included in the 800-metre catchment area, driving up housing value and median income. Currently, no residential development proposals have been submitted for the study area.

4.2 - Industrial

4.2.1 - City of Ottawa

Ottawa's industrial market is relatively small compared to other Canadian cities; however, a smaller market means that good-quality industrial space is a sought-after asset. The industrial vacancy rate has been consistent over the past five years, hovering around 6 percent.[4] This trend in stable vacancy rates is the result of slow growth in the industrial market. Rental rates across Ottawa have also been stable, with net rental rates hovering around $8.00 per square foot for the past five years.[5] These rates are expected to remain stable well into 2015.

Inside the **greenbelt**, there are currently only 265.6 net hectares of vacant land available for industrial expansion in the City of Ottawa. Approximately 91 percent of this land is concentrated east of the Rideau River, mostly in the area around the Macdonald-Cartier International Airport, with the remainder of vacant industrial land in the areas of South-Walkley-Albion, Hawthorne-Stevenage, and Ottawa South.[6]

4.2.2 - Ottawa East and Tremblay Station

The Ottawa East industrial market is substantially larger than other areas of the city, with more than 60 percent of the total industrial inventory.[7] Despite an overall vacancy rate that tends to be at, or slightly higher than the citywide average, average net rents are significantly higher in the Coventry/Belfast industrial parks than the rest of Ottawa. At the end of the second quarter in 2014, average net rents in Coventry/Belfast were $12.01 per square foot compared to $8.48 per square foot for the Ottawa citywide average.[8] The Coventry/Belfast industrial areas are currently built out and have no room for expansion. The Tremblay Station area is not specifically designated as an industrial park by the City but it does have a number of industrial properties including Enbridge, Canada Post, Dustbane, and several distribution centres.

4.3 - Office

4.3.1 - City of Ottawa

The office market in Ottawa, Canada's capital city, is deeply influenced by the federal government. In 2011 and 2012, the office market was viewed as relatively stable due to substantial federal government investment and ownership of downtown core assets. However, austerity measures beginning in late 2012 continue to depress the office market, with investors choosing to postpone development or relocate to international markets. Rising vacancy rates has led to declines in office rental rates (see Figure 4.3).

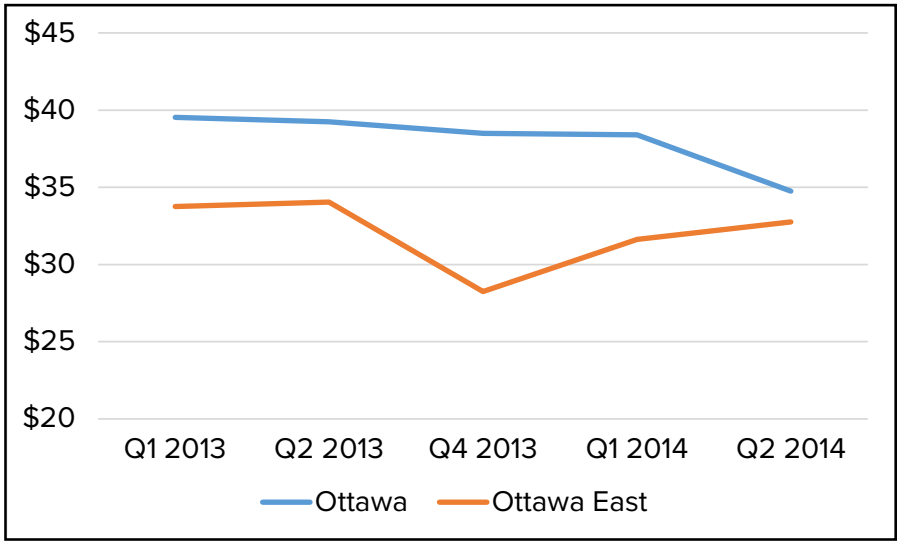

Figure 4.3 - Comparison of office rental rates, 2013-2014
Source: Colliers International Canada, 2013-2014

4.3.2 - Ottawa East and Tremblay Station

The Ottawa East submarket is the smallest in the city, accounting for only 12% of the office buildings in Ottawa. Vacancy rates in Ottawa East are generally low in comparison to the rest of the city (see Table 4.3).[9]

	Vacancy Rates (%)		
Class	**Ottawa East**	**Ottawa**	**Difference**
A	10.1	9.7	0.4
B	5.4	9.9	-4.5
C	10.3	18.8	-8.5

Table 4.3 - Comparison of office vacancy rates
Source: Colliers International Canada, 2014

The Tremblay study area contains three mid-rise office buildings, and one dwelling converted to office use. There are currently two office development proposals in the area. The proposed project at 200 Tremblay Road (425 Terminal Avenue) is a 9-storey office tower with 138 surface parking spaces. The office proposal at 405 Terminal Road, which has been approved by council, is another 9-storey building with both surface and underground parking spaces. Together, the projects will add approximately 47,200m^2 of **Gross Floor Area** to the office market, with a **Net Floor Area** of approximately 40,000m^2.[10,11]

Within the Ottawa East submarket, rents have been increasing for **Class B offices** and **Class C offices** and have declined slightly for **Class A**. In comparison, Ottawa has been experiencing a decline in rents across all 3 classes of office space. In the second quarter for 2014, the Ottawa-wide decline in class A rents has almost reached the same point as Ottawa East class A rents, with an average difference in net rent per square foot being $2 (see Figure 4.3).[12]

4.4 - Retail

4.4.1 - City of Ottawa

The retail market remained relatively consistent for the first half of 2014. While there were fewer retail real estate sales in the first and second quarters, there was only a slight reduction in the total dollar value of transaction in comparison to the same time period in 2013 due to increasing real estate prices. The average sale price per square foot increased by 34%, however, a significant portion of the leap can be attributed to the sale of a few high-end inner-city retail assets and may not be indicative of an upward trend for general retail venue prices.[13]

In suburban areas, there is a less positive outlook for the retail market. Potential purchasers of retail assets are seeking substantial cap rate increases on average quality properties. This indicates that returns on doing business have been relatively flat for the first quarter of 2014.[14] With little or no increase in revenue, smaller businesses are unlikely to consider expanding business operations and taking on new hires. The small-scale retail market is particularly susceptible to external risk and a volatile commercial environment. Small businesses are less resilient against economic shock, with many making only enough to cover operating expenses and salaries in a given fiscal year. A consistent trend of negative growth may lead to higher bankruptcy rates.

4.4.2 - Ottawa East and Tremblay Station

Retail uses make up a large part of the Tremblay study area and The Ottawa Train Yards is the largest retail development encompassing approximately 198 square metres of retail space. The Tremblay Study area, including part of the Train Yards, has 148 square metres of retail space. The study area has an additional 27.4 square metres of other commercial space dotted along Coventry Road (See Figure 4.4). Figure 4.4 summarizes the distribution of retail space in the study area.

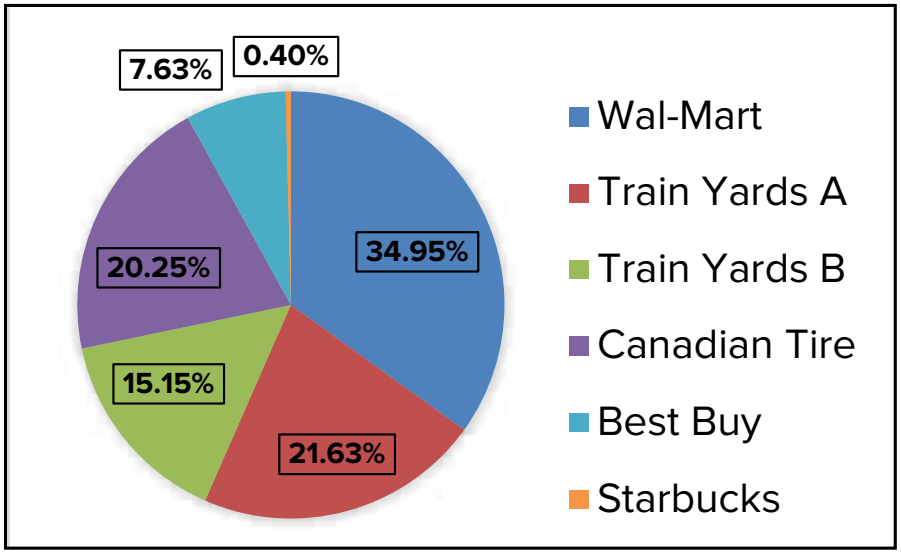

Figure 4.4 - Distribution of retail space within the Tremblay Station area
Source: Cushman Wakefield, 2014

Despite the negative outlook for modest retail assets, the market for the Tremblay Study Area appears to be stable for the foreseeable future due to the class of retail asset present. The Ottawa Train Yards, classified as a large power centre, and the retail area surrounding the Canadian Tire, classified as a smaller power centre, are the two retail asset classes with the lowest overall vacancy rates in 2014's second quarter.[15]

The retail market in Ottawa East appears to perform better overall relative to the rest of the city. Neighbourhood malls in Ottawa East had a vacancy rate of 1.0 percent last quarter as opposed to a 5.4 percent vacancy rate for neighbourhood malls across Ottawa.[16] Despite the average rent prices declining slightly in Ottawa East, vacancy rates remain well below the city average.

4.5 - Implications for Implementation

The ability to have a mix of uses in the Tremblay Station study area is greatly influenced by the market conditions. The current market conditions indicate that there is potential for a variety of uses to be supported in the Tremblay Station area. However, existing industrial uses may delay development in the area, due to unwillingness to relocate. The arrival of LRT will improve the locational appeal of the Tremblay Station area for a variety of uses, likely improving residential, office, and retail market conditions in the area.

- The trend of increasing construction of new multiple unit residential buildings is likely to support intensification in the area.
    - However, a combination of oversaturation, increasing vacancy rates, and rising housing prices and rents may deter developers from building apartments in this area in the short term.
- Lower office vacancy rates in the area make it an attractive place for new office development.
    - Demand for class A offices is expected to increase around the station as a result of:
        - The Confederation Line being operational by 2018.
        - More affordable rents in Ottawa East compared to the downtown core which is attractive for tenants, but rents are also steadily rising which ensures a fair return for investors.
        - Vacancy rates at par or lower than the rest of Ottawa for Class A offices, and lower for Class B and C office buildings.
        - Track record of successful office developments, such as the CRA building.
- Relatively stable retail market and lower cost of retail renting in eastern Ottawa means additional retail development is likely in the Tremblay Station area.
- Auto-centred retail asset classes have been successful in the area, which could lead to more development of this kind, rather than transit supportive retail asset classes.
- The strong industrial market in the area, with a lack of available industrial land in Ottawa and higher than average net rents in the area, is a disincentive for current industrial uses in the Tremblay Station area to relocate outside of the area.
    - Existing industrial uses may discourage other development that is desired in the area, especially residential uses.
    - Relocation of these existing industrial uses may require other strategies to combat strong market conditions.

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5.0
Policy Analysis

The Tremblay Station study area is affected by several policies at the federal, provincial, multi-jurisdictional, and municipal level (see Figure 5.1). This chapter outlines these policies and summarizes their implications for implementing **transit-oriented development (TOD)** in the area.

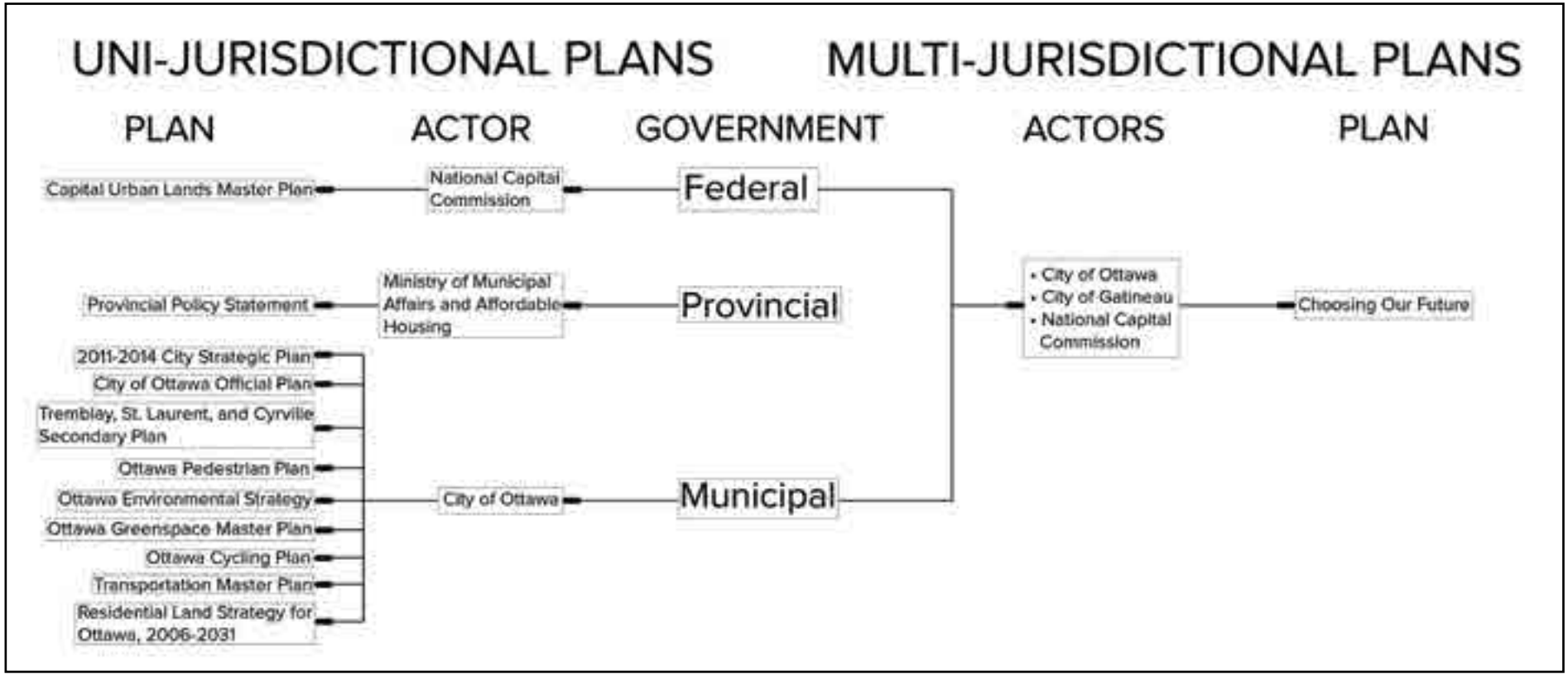

Figure 5.1 - Policies related to implementing TOD at Tremblay Station

5.1 - Federal Policies

5.1.1 - The National Capital Commission

The National Capital Commission (NCC) is a federal organization that administers the land-use of the National Capital Region (NCR), a 4,660 square kilometre area located within the provinces of Ontario and Quebec.[1] The NCC is responsible for federally owned buildings and land within the region. The Tremblay Station study area is located within the NCR and the NCC owns some parcels of land designated as passive recreation and open space in the *Ottawa Official Plan*.

The NCC utilizes regional planning principles to ensure effective and integrated planning on transportation. It is supportive of transit-oriented development and recognizes the need for cooperative planning among federal, provincial, and municipal jurisdictions on this matter.[2] There are opportunities for collaboration between the City of Ottawa and the NCC, especially on funding initiatives for implementation the Tremblay TOD.

In 2014, the NCC established the *Capital Urban Lands Master Plan*. The plan aims to achieve a balanced distribution of federal facilities within the urban perimeter, with enhanced accessibility via a broad range of transportation alternatives.

The NCC outlines a particular focus on new major public transit initiatives, including the **Light Rail Transit (LRT)** Project in Ottawa.[3] Specifically, federal employment areas and other federal facilities are to be located close to public transit lines.[4] There is opportunity for additional federal employment lands to be located in the Tremblay Station TOD area.

5.2 - Provincial Policies

5.2.1 - Provincial Policy Statement

The Ontario Ministry of Municipal Affairs and Housing issued the 2014 *Provincial Policy Statement (PPS)* under the Planning Act. It is the objective of the PPS to focus growth within settlement areas to achieve efficient development patterns while managing land use and development.[5] The Tremblay study area is within a designated settlement area and therefore its development will be influenced by the PPS, which outlines a policy direction that is supportive of transit-oriented development. The PPS promotes a land use pattern of compact, mixed-use development with high employment and residential densities that is transit-supportive, promotes active transportation, and serves to reduce vehicle trips.[6]

5.3 - Multi-Jurisdictional Policies

5.3.1 - Choosing Our Future

Choosing our Future is an initiative by the City of Ottawa, in partnership with the City of Gatineau and the National Capital Commission. Its intent is to create a 50-year vision to guide the NCR towards a more sustainable, resilient, and livable future.[7] The plan outlines strategies that will support the development of TOD at Tremblay Station. It focuses on creating compact development, building complete communities, and redeveloping office areas along the rapid transit corridor as mixed-use areas.[8] The plan also states that federal offices are prime candidates for redevelopment in this type of environment.[9] This indicates that there is potential for the CRA building to catalyze TOD implementation in the study area. The plan also aims to make transit and active transportation modes more efficient and attractive with investment planned for transportation infrastructure including roads, sidewalks, street furniture, bike networks, and public transit.[10] There is planned public investment in these features within the Tremblay study area.

5.4 - Municipal Policies

5.4.1 - 2011-2014 City Strategic Plan

The *City Strategic Plan* outlines Council priorities. The plan aims to fulfill current and future transportation needs by ensuring that transit services are reliable and financially sustainable.[11] It also encourages the adoption of alternative methods of transportation including public transit, cycling, and walking by investing in infrastructure improvements and enriched urban design.[12] This priority demonstrates strong political support for transit-oriented developments.

5.4.2 - City of Ottawa Official Plan

The *Official Plan* outlines a strategic direction for guiding Ottawa's development. Growth will be directed to the urban area where it can be accommodated in compact and mixed-use development, and served with quality transit, walking, and cycling facilities.[13] The Tremblay Station study area, is a prime location for growth. To facilitate a compact urban area, the City will provide public water and sanitary wastewater, meaning service capacity in the Tremblay Station area will be ready for higher density development.[14] Complete communities will

be created through growth management and will harbour a good balance of schools, community facilities, parks, and a variety of housing types and places to work and shop.[15] The goals outlined in the Official Plan are reflected in the Tremblay Station TOD plan which encourages high density, mixed use development for the area.

5.4.3 - Tremblay, St. Laurent, and Cyrville Secondary Plan

The *Tremblay Station, St. Laurent, and Cyrville Secondary Plan* outlines the maximum building heights and minimum densities within the Tremblay Station study area.[16] These targets are intended to encourage transit-supportive development and promote intensification.[17] The zoning for the planning area will be flexible to allow for this planned growth.

5.4.4 - 2013 Ottawa Pedestrian Plan

The *Ottawa Pedestrian Plan* provides a long-term vision for improving Ottawa's pedestrian realm and encouraging pedestrianism.[18] The plan identifies areas surrounding Tremblay Station as a priority for sidewalk construction due to a combination of affordability factors and land use considerations.[19]

5.4.5 - 2010 Environmental Strategy

The *Ottawa Environmental Strategy* aims to protect and strengthen local ecological features and processes and to reduce the City's environmental impact.[20] One objective of the strategy is to focus on walking, cycling, and transit.[21] It aims to shift developmental focus away from single-use developments and car-oriented transportation network use to foster use of less environmentally harmful modes of transportation.[22]

5.4.6 - Ottawa Greenspace Master Plan

The *Greenspace Master Plan* aims to create an Urban Greenspace Network that every resident will be connected to.[23] The area surrounding Tremblay station does not currently boast much greenspace, however, with the implementation of transit-oriented development, ample opportunities will be generated to incorporate greenery.

5.4.7 - Ottawa Cycling Plan

The *Ottawa Cycling Plan* outlines a 20-year strategy intended to develop a city-wide cycling network.[24] It emphasizes creating a variety of connections and facilities that can be used by all types of cyclists.[25] Presently, the TOD study conducted by the City of Ottawa has outlined a comprehensive system of cyclist friendly routes that will be developed in the area. Upon completion, the route network is expected to effectively connect the surrounding communities to the Tremblay LRT Station.

5.4.8 - Transportation Master Plan

The *Transportation Master Plan (TMP)* is the City's blueprint for planning, developing, and operating its walking, cycling, transit, and road networks over the next two decades. The plan aims to create a supportive built environment for rapid transit where development is encouraged close to rapid transit nodes like the Tremblay Station study area.[26] In addition, the City will work to manage parking with the Municipal Parking Management Strategy, which includes set parking rates based on parking studies and consultation, active studies on parking trends, and the provision of parking facilities for more sustainable modes of travel.[27] Several future road projects are referenced in or close to the Tremblay Station study area that aim to prioritize transit and address issues associated with future development.

5.4.9 - Residential Land Strategy for Ottawa, 2006-2031

The *Residential Land Strategy for Ottawa 2006-2031* sets density and intensification targets to guide new residential construction toward more urban forms of development and to support the rapid transit network.[28] The Tremblay Station area is within the Industrial Mixed Use Centre, which is identified as a priority for intensification. This centre is also described as an emerging mixed-use centre. It is deemed not ready to be immediately embraced by the housing market since public realm challenges make it a longer-term proposition for residential development.[29]

The density in the Industrial Mixed-Use Centre is currently 42 people and jobs per hectare. To sustain LRT, however, a minimum density of 120 people and jobs per gross hectare is needed, and the goal for the area is 250 people and jobs per hectare.[30] This target will be reached post-2031 (see Table 5.1). Intensification at this location will be an ongoing long-term planning goal. The strategy outlines short term, mid-term, and long term intensification targets by dwelling units to support the density requirements for the future LRT (see Table 5.2).

New Dwellings	New Jobs	Total Jobs	Total Population	2031 Density	Target Density
500	1,067	5,187	2,617	56	250

Table 5.1 - Projected population and employment for the Industrial Mixed-Use Centre, 2031
Source: City of Ottawa, 2009

Period	2006-2021	2021-2031	Post-2031	Total
Dwelling Units	250	250	1000	1500

Table 5.2 - Intensification targets for the Industrial Mixed-Use Centre
Source: City of Ottawa, 2009

5.5 - Implications for Implementation

All four levels of policy support transit-oriented development, therefore making Tremblay Station area an attractive place for development. However, while the policies are in favour of TODs, they lack comprehensive implementation strategies. Therefore, more site specific strategies are needed to target high density development in the Tremblay Station area.

- Policies encourage transit-oriented development, including a mix of uses, intensified development, and complete communities along rapid transit lines.
- There are opportunities for public funding of projects by the City of Ottawa and/or the NCC including transportation infrastructure and public facilities.
    - Potential for future federal employment areas and other federal facilities to be located in the study area.
- Properties in the Tremblay Station area are market-ready from a policy standpoint.
    - High height and density targets and flexible zoning are in place, meaning zoning by-law amendments and official plan amendments are likely unnecessary.
    - Where developers may require amendments they will be aided by strong political support for TOD.
    - Planned public investment in transportation infrastructure, including sidewalks, cycling routes, and roads, means that private developers will not need to provide upgrades.
    - Public water and sanitary wastewater are provided by the City in the area.

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6.0
SWOC Analysis

A **'Strengths, Weaknesses, Opportunities and Challenges' (SWOC) analysis** was performed to consolidate the findings from site visits, stakeholder meetings, and background research. Figure 6.1 summarizes the key findings from our analysis for the Tremblay Station area. These features will inform the vision of the station area and help guide the implementation of the City of Ottawa's **Transit-Oriented Development (TOD**) plan.

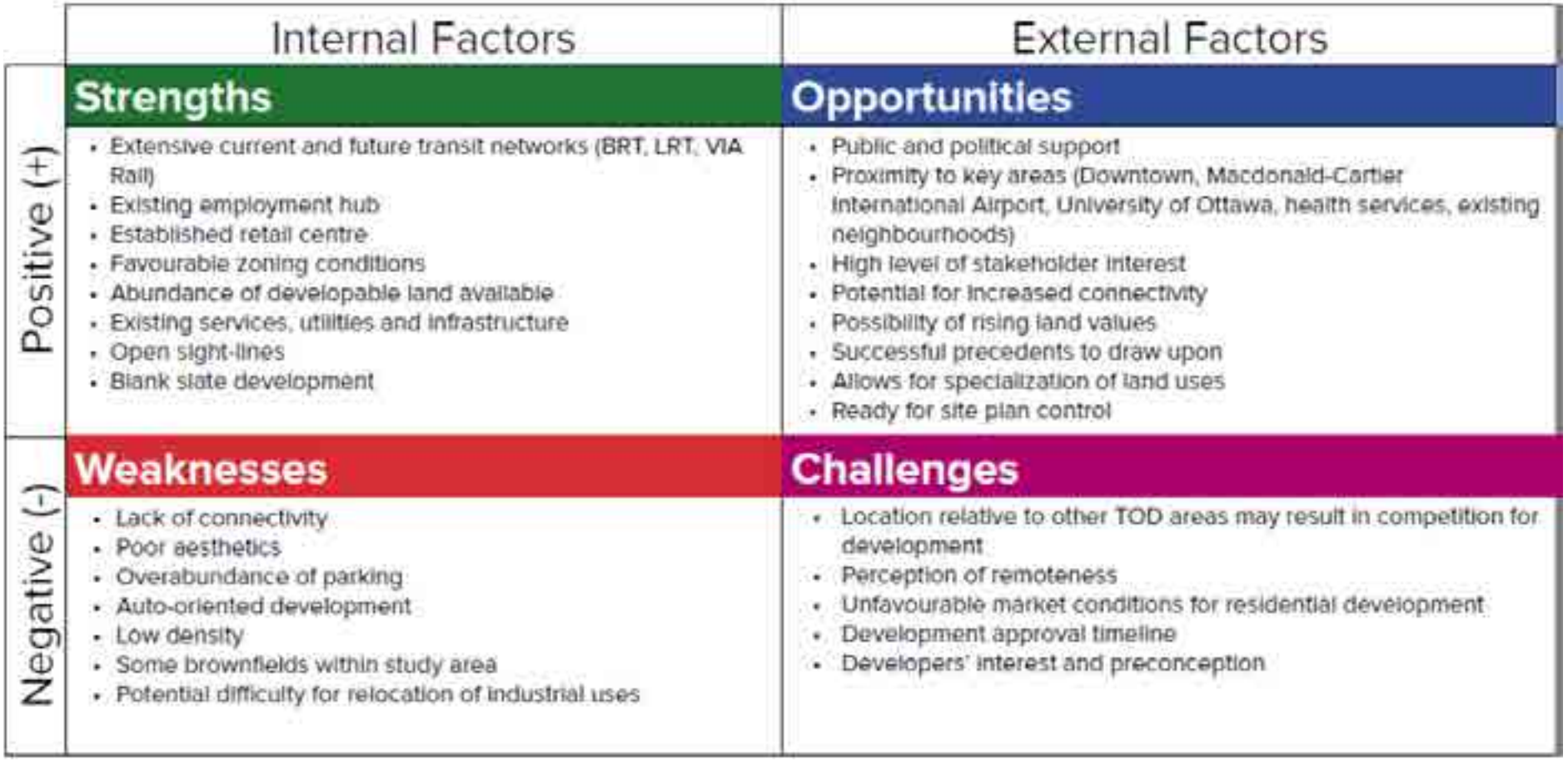

Figure 6.1 - Summary table of SWOC analysis

6.1 - Strengths

There are several desirable, pre-existing features within the Tremblay Station area that favour transit-oriented development. The presence of the **Bus Rapid Transit (BRT)** and VIA Rail stations, as well as the close proximity of the Queensway and Downtown Core, provides exceptional access to the site by bus and private automobile. The well-established Train Yards retail centre, the Canadian Revenue Agency, and Canada Post provide a good employment base for existing and future residents, as well as commuting workers. The City of Ottawa has also established favourable zoning regulations to support increased densities on the developable land throughout the area. Existing infrastructure and utilities service the area and support further development. Finally, the abundance of surface parking lots provides an opportunity to implement development from a blank slate.

6.2 - Weaknesses

The most notable weakness of the study area is the lack of connectivity, especially between the northern and southern parcels that are separated by the Queensway. There is a high automobile traffic volume on arterial roads surrounding the site and there is almost no focus on pedestrian safety or access. The area lacks visual appeal and consists of many large, underutilized surface parking lots. Finally, some light industrial uses in the area may have contaminated the land on which they operate and will require costly environmental assessments and potential clean-up before redevelopment can proceed.

6.3 - Opportunities

Although there are significant weaknesses within the study area, some of these conditions present great opportunities for change. For example, the extensive, underutilized surface parking lots have been identified by the City of Ottawa for the short-term redevelopment of the site. The use of site-plan controls has been well-established in order to regulate any new development in the area. There appears to be a high level of interest among stakeholders in the arrival of the **Light Rail Transit (LRT)** and the redevelopment of the neighbourhood, which will likely increase land values and capital returns. There is also significant political support for development and increases in density. The construction of the new pedestrian bridge across the Queensway will offer a new connection between the northern and southern parcels of the Tremblay Station area. The specialization of land uses in the area will bring in high skilled labour into the city. Furthermore, there is a vast array of precedents from other municipalities across the world that can provide insight into the implementation and development of transit hubs. Finally, Tremblay Station's relatively close proximity to the downtown core, the University of Ottawa, and existing residential neighbourhoods provides opportunities for the site to become more connected to the rest of the city once the LRT is built.

6.4 - Challenges

Although the Tremblay Station area has great potential, there are a number of challenges that must be overcome in order to implement future transit-oriented development. The station's location between Hurdman and St. Laurent stations, both with its own unique vision as a TOD, creates competition for development. Existing industrial businesses in the area are not conducive to residential development and it will be difficult to negotiate their relocation. Competition for resources and market share with both Hurdman and St. Laurent stations presents another issue that will greatly affect the distribution of development along the Confederation Line. The stagnant residential market conditions in the area and the lengthy and costly development approvals process will require some form of financial incentive to stimulate developer interest.

6.5 - Implications for Implementation

Future TOD development around the Tremblay Station should capitalize on the existing strengths in the area. Overcoming the identified challenges will require negotiation among stakeholders to diminish existing weaknesses and harness opportunities for growth. The success of the existing Train Yards development will continue to generate a flow of people to and from the area, while the construction of new office towers will encourage similar development in the future. Overcoming the identified weaknesses,especially the connectivity issues across the train tracks, will require negotiation among stakeholders. The greatest challenges that face the area will be the relocation of industrial uses and the currently unfavourable residential

market conditions. The City of Ottawa's main focus should be to mitigate the identified challenges while capitalizing on the long-term opportunities for growth, such as increasing connectivity throughout the Tremblay Station Area and utilizing the implementation strategies suggested in this report.

7.0

Stakeholder Consultation and Implementation Workshop

The various discussions with key stakeholders heavily informed the recommendations outlined within this report. The team conducted stakeholder interviews and hosted an implementation workshop in order to understand the concerns and visions different parties held for the Tremblay Station study area. The following chapter summarizes the consultations with stakeholders and recapitulates the key takeaway themes and strategies from these conversations.

7.1 - Stakeholders Interviews

Semi-structured stakeholder interviews were conducted on September 12th, 2014 at Ottawa City Hall as a take-off point for this project. The project group received ethics approval by the School of Urban and Regional Planning (SURP) Unit Research Ethics Board to conduct these interviews. The letters of information and consent for these interviews can be found in Appendix B.1. The stakeholder interviews were conducted with City of Ottawa planners and staff, and a major landowner in the Tremblay Station area. The interviews were an essential tool for understanding the history and background information of the study area, understanding stakeholders' ideas about the potential for development on site, and concerns about expected challenges in implementing the transit-oriented development (TOD) plan. Appendix B.2 provides a detailed summary of the key themes and information that emerged from the stakeholder interviews.

In discussing development potential in the area, stakeholders anticipated that the new TD zoning and plans to improve connectivity would be attractive for developers. Opportunities were also identified for attracting student housing in the area, expanding the Train Yards shopping centre, developing the VIA Rail parking lots, and redeveloping the Ottawa Stadium in the future.

Several challenges to transit-oriented development in the Tremblay Station area were identified. Stakeholders noted that due to a lack of public funding available for investment in the area, transit-oriented development would likely need to be spurred by the private sector. The private sector also faces a series of challenges unique to those of the City's. There does not appear to be sufficient demand in the area for residential development and for speculative office development and, in addition, the lengthy development approval process is seen as unattractive for developers. Stakeholders also identified the challenges that the existing built form in the area present for TOD. The free surface parking in the area is not conducive to TOD and encourages driving rather than transit use.

The information gathered from this process served to identify avenues for research on existing area conditions, especially current market conditions. In addition, the interviews served to identify avenues for research on potential strategies for implementing the TOD plan including ways to attract developers, how to streamline the development approval process, ways of financing public investment in the area, and the feasibility of redeveloping the Ottawa Stadium site.

7.2 - Implementation Workshop

On October 17th, 2014 the project team held an implementation strategy workshop at Queen's University. The workshop brought together stakeholders, professional planners, and students and faculty from the Queen's University School of Urban and Regional Planning for a collaborative discussion. The intention of the half-day session was to generate potential strategies for implementing the City of Ottawa's TOD plan for the Tremblay Station area. The project team presented background information on the Tremblay Station area and research on best practices in TOD implementation from around the world. Team members then led group discussions focusing on a vision for the site and implementation strategies for the City of Ottawa. A summary of the visions and implementation strategies identified by participants in the implementation workshop can be found in Appendix B.3.

Image 7.1 - Implementation workshop at Queen's University

Image 7.2 - Implementation workshop at Queen's University

The workshop helped the team explore different implementation strategies from collected case studies and gain insight into which strategies are best suited for the Ottawa context. Discussion on strategies for the Tremblay area focused around reducing and consolidating parking, using **public-private partnerships**, incorporating public engagement, and using financial tools such as **tax increment financing**, incentives, and **Community Improvement Plans** to attract development and fund infrastructure. The strategies identified were further researched by the team as seen in Chapter 9 and helped to inform the final recommendations of this report.

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8.0
Best Practices

Case studies of notable **transit-oriented developments (TODs)** are used in this chapter to outline examples of both successful and unsuccessful precedents. These case studies help to inform what works in TOD application and practice. Section 8.1 lists the 95 case studies initially considered for analysis, which was later narrowed down to 25 to form the core of our precedent analyses. These 25 case studies were selected based on their relevance to Ottawa according to several factors: their proximity to downtown, their relative site size, and similarities in desired built form. Six of the most relevant case studies from Canada and the United States are summarized in Sections 8.2 to 8.7.

The six selected case studies reviewed in this chapter were exemplary due to the use of innovative financial mechanisms, commitment from private developers that resulted in successful projects, implementation of effective planning tools to stimulate increased development around transit, and coordination and partnerships between both private and public agencies. Many of these projects took many years to realize and require ongoing commitment from both public and private entities to ensure their continued success. Appendix D includes the remaining 19 case studies that were reviewed in detail.

8.1 - Comprehensive List of Precedent Case Studies Reviewed

1. 1600 Bath Road, Kingston, ON
2. 50th Street East Urban Centre, Calgary
3. Aldershot Plaza, Burlington, ON
4. Allemohe, Hamburg, Germany
5. ***Arlington Heights, Illinois***
6. Ashmont Station, Boston, Massachusetts
7. Atocha Intercambiadore, Madrid
8. Bay Ridges Plaza, Pickering, ON
9. Belmar, Lakewood Colorado
10. ***Bethesda Row, Bethesda, Maryland***
11. Biogen Idec Campus, San Diego, California
12. Bloor and Dundas Study, Toronto
13. Brentwood Station, Calgary, AB
14. Broadway Station, Vancouver
15. Centre Commons Community, Portland
16. Chat Conversation End
17. Chiswick Park, London, UK
18. City Centre, Englewood, Colorado
19. **CITY OF EVANSTON, ILLINOIS**
20. City Place, Long Beach, California
21. ***Collingwood Village, Vancouver, BC***
22. Commerce Valley Business Park, Markham, ON
23. Conjunctive Points, LA and Culver City, California
24. Croydon Station, Croydon, UK
25. ***Court House, Arlington, Virginia***
26. ***Del Mar Village, Pasadena, Califronia***
27. Discover Place, Burnaby, BC
28. Downtown Park Forest, Park Forest
29. **DOWNTOWN PLANO, PLANO, TEXAS**
30. Dundas West-Bloor Mobility Study, Toronto
31. **FRUITVALE VILLAGE, OAKLAND, CALIFORNIA**
32. ***Galatyn Park, Richardson, Texas***
33. Gare De l'Ouest, Brussels, Belgium
34. Garrison Woods, Calgary
35. **GREENSTREET, HOUSTON, TEXAS**
36. Holland Cross, Ottawa, Ontario
37. Harbor Bay Business Park, Alameda, California
38. Harbourside Business Park, Auckland, New Zealand
39. Hastings Station, Hastings, UK
40. Lancaster Corporate Centre, Kitchener, ON
41. ***Village de la Gare, Québec***
42. ***Lindbergh Station, Atlanta, Georgia***
43. Los Angeles LRT, Los Angeles, California
44. Lynn Valley, Vancouver, BC
45. Manchester Parkade, Massachusetts
46. Mashpee Commons, Cape Cod, Massachusetts
47. Metro Office Park, Guaynabo, Puerto Rico
48. ***Metropole, Ottawa, Ontario***
49. Metrotown, Burnaby
50. Milwaukee Intermodal Station, Milwauke, Wisconsin
51. Mizner Park, Boca Raton, Florida
52. **MOCKINGBIRD STATION, DALLAS, TEXAS**
53. MontMorency Station, Laval, Québec
54. Morningside Mall, Toronto
55. Nagoya Station, Nagoya, Japan
56. Naiman Tech Centre, San Diego, California
57. **OHLONE-CHYNOWETH STATION, SAN JOSE, CALIFORNIA**
58. Olde Thornhill Village, Markham
59. Orenco Station, Portland, Oregon
60. Orestad, Copenhagen
61. Paseo Colorado, Pasadena
62. ***Pleasant-Hill Contra Costa Centre, Walnut Creek, California***
63. ***Portland Hills, Dartmouth, Nova Scotia***
64. ***Port Credit Village, Mississauga, Ontario***
65. ***Rio Vista Station, San Diego, California***
66. Rosa Parks Transit Station, Detroit
67. Rosslyn-Ballston Corridor, Arlington, Virginia
68. Savoie-Technolac, Le Bourget du Lac Cedex, France
69. Schlitz Park, Milwaukee, Wisconsin
70. ***Sheridan Station Area Plan, Denver, Colorado***
71. Shops at Don Mills, Toronto
72. Shudehill Station, Manchester, UK
73. Southern Cross Station, Melbourne
74. SouthWest 1 Enterprise Park, Berrinba, Australia
75. Stockley Park, London, UK
76. Stratford Station, London, UK
77. Surrey Central, Surrey
78. Technology Square, Cambridge, Massachusetts
79. Technopole Angus, Montreal QC
80. The Branches, Reston, Virginia
81. The Bridges, Calgary, AB
82. ***The Crossings, Mountain View, California***
83. The Equinox, Toronto, ON
84. The Renaissance, Calgary
85. Time, North Vancouver, BC
86. Trafalgar Village Mall, Oakville, ON
87. Transit Hub, Tempe, Arizona
88. Transit Mall, Portland
89. Transmilenio Portal del Sur, Bogota
90. University of Waterloo Research and Technology Park, Waterloo, ON
91. University Town Centre, Prince George's County, Maryland
92. ***Uptown District, San Diego, California***
93. Urban Outfitters Corporate Campus, Philadelphia, Pennsylvania
94. ***Warwick Station, Warwick, Rhode Island***
95. Winter Park Village, Winter Park

BOLDED CAPITALIZED text indicates case studies found in Chapter 8

***Italicized* text indicates availability of detailed summary in Appendix D**

8.2 - City of Evanston, Illinois

City Population	75,000
Metro Population (Chicago)	9,700,000
Primary Transit Mode	Commuter and urban rail
Project Completed	Revitalization mostly complete by 2006
Developer	Multiple
Zoning	Mixed-use; High-density around stations
Land Uses	Mixed-use commercial; Residential; Office; Industrial; Institutional

Table 8.1 - Key information for the City of Evanston

Project Overview

The City of Evanston, a town with an area of 20 square kilometres that neighbours Chicago to the north, was the site of extensive development and prosperity prior to the 1950s. However, the suburban exodus of the 1950s saw the decline of its city centre and a loss of some of its population. Two decades of strategic planning and heavy public investment and community galvanization however, saw the effective implementation of a downtown revitalization strategy that reversed over 30 years of decline. The City of Evanston, heavily supported by urban and commuter rail, now has four stations in its downtown, all of which have been heavily and successfully redeveloped. It now boasts a walkable, pedestrian-friendly and vibrant downtown, with 40% of its population able to work where they live.

The City proposed zoning codes that allowed for public benefit bonuses on **Floor Area Ratio (FAR)** for developments that would provide affordable units, shared structure parking, and quality public spaces.[1] The City's success could also be traced back to the effective use of **Tax Increment Financing (TIF)** and land swaps that helped fund major high-tech institutions in the area. Public investment also contributed greatly to its success – helping fund the David Street Transportation Center in 1994, which at the time was one of the only transfer points outside of Chicago in the region that had Metra Commuter Rail, CTA Rail and bus service, and Pace suburban bus service. Public investment also helped fund the revitalization of its streetscapes and to improve sewer and water infrastructure.

Image 8.1 - City of Evanston, Illinois
Source: Academic.ru, 2014

Breakdown

- 213,676m^2 of office space downtown
- 111,483m^2 of ground floor commercial spaces:
    - 33.2% retail, 27.6% restaurants, 39.2% services

Financing Mechanisms

Evanston's main transit station falls within the Chicago/Main District TIF district, which was its primary funding source for initial development surrounding the station.[2] The majority of these funds, provided for under the TIF Redevelopment Act, came from incremental property tax revenues. Under this TIF Redevelopment Act, they were also eligible to receive net incremental property taxes from other Redevelopment Project Areas in the city.[3] These funds however, can only be used to help leverage and attract private investment into the area. Private investment was eventually the major funding source for the remainder of the project. A variety of other sources, along with TIF districts and private investment, helped provide the funds required to complete the project. These included: certain local sales or utility taxes, special service area taxes, proceeds of property sales, certain land lease payments, certain Motor Fuel Tax revenues, certain state and federal grants or loans, certain investment incomes, and other general funds from the City allocated when required.[4]

Image 8.2 - City of Evanston, Illinois
Source: The Daily Northwestern, 2013

Program Actions/Improvements	Estimated Costs
Land acquisition assembly, and relocation	$2,500,000
Site Preparation, Including Environmental Remediation, Demolition, and site Grading	$2,500,000
Utility Improvements (Including Water, Public Transit Facilities, Storm, Sanitary Sewer, Service of Public Facilities, and Road Improvements)	$6,000,000
Rehabilitation of Existing Public and Private Structures; Taxing District Capital Improvements	$5,500,000
Public Facilities (including Parking Facilities and Streetscaping)	$4,500,000
Interest Costs Pursuant to the Act	$2,000,000
Professional Service Costs (Including Planning, Legal, Engineering, Administrative, Annual Reporting, and Marketing)	$1,000,000
Job Training	$500,000
Statutory School District Payments	$500,000
TOTAL ESTIMATED TIF BUDGET	$25,000,000

Table 8.2 - Estimated costs of TOD implementation in the City of Evanston

Lessons for the City of Ottawa

- The number of businesses in Evanston's downtown core increased by 27% in 8 years, while vacancy rate for commercial space fell by 6.8%.
- Success can be attributed to effective use of TIF mechanisms, through marketing targeted at high-tech institutions, and through effective implementation of zoning by-laws.
- The City of Ottawa can engage in effective marketing strategies to attract specialized uses to the area.
- A mix of the aforementioned tax mechanisms can allow the city to fund the various infrastructure improvements that are required to attract development into the area.

8.3 - Fruitvale Village, Oakland, California

City Population	406,253
Metro Population (San Francisco-Oakland-Hayward)	4,500,000
Primary Transit Mode	Heavy Rapid Transit (BART)
Developer	Fruitvale Development Corporation
Completion Date	2004
Land Use	Greyfield redevelopment and urban infill

Table 8.3 - Key information for Fruitvale Village

Project Overview

In an attempt to boost ridership and better serve its customers, Bay Area Rapid Transit (BART) proposed the construction of a four- to five-story, concrete, stand-alone parking garage in the early 1990s.[5] The community's response to this proposal was overwhelmingly negative. Representing the interests of the Fruitvale neighborhood, the development team from UC Berkeley convinced BART that a different type of development was needed for the train station.

Development Process

Development that occurred around Fruitvale took the form of a mixed-use transit village that would serve as a catalyst to economically revitalize the whole neighborhood. As part of its revitalization strategy, the Unity Council's Main Street Program organized a design committee which oversaw the development of design guidelines for the facade improvement program.[6] Through the Main Street Program and Community Development Block Grant (CDBG) funding, the council gave technical, monetary, and physical assistance to shops along International Boulevard and nearby commercial streets.

To oversee the Fruitvale Village project, the Unity Council created the Fruitvale Development Corporation (FDC). The scope of the Unity Council's vision for this project required the involvement of many governmental agencies, including the city of Oakland, BART, Alameda County Transit, the Metropolitan Transportation Commission, the Alameda County Congestion Management Agency, and many other governmental organizations.[7]

Image 8.3 - Fruitvale Village, Oakland, Californoa
Source: NNHS Rail Program, 2012

Financial Mechanisms

Originally, to further its planning efforts, the Unity Council applied for and was awarded an $185,000 CDBG from the City of Oakland.[8] Forming a partnership with BART was of paramount importance because it owned most of the land around the station. BART required that the FDC replace all of the parking that would be lost once the transit village was built. The total cost of the replacement parking exceeded $12 million, and included a $7,561,000 grant from the US Department of Transportation, a $4.2 million bond that was part of a larger transportation bond approved by Alameda County voters, and several other grants for surface parking.[9] Additionally, the Unity Council lent BART $975,000 to complete the fifth level of the parking structure in exchange for control of the BART

parking lots between 35th and 37th avenues for development of Fruitvale Village II.[10]

Fruitvale was then included in a Tax Increment Financing (TIF) district so that the project could receive TIF funds. The FDC took out a $4 million Local Initiatives Support Corporation (LISC) bridge loan with these TIF funds. The project also obtained, through the city of Oakland, a US Department of Housing and Urban Development (HUD) Enhanced Enterprise Community economic development initiative grant of $3.3 million, matched by a $3.3 million HUD Section 108 loan.[11] The City of Oakland was also the issuer of $19.8 million in tax-exempt bonds, for which Citibank provided the credit enhancement, thereby lowering the interest rate paid by the FDC. After construction began, the city approved a $4.5 million, 20-year prepaid lease that allowed the FDC to pay down the bonds by $2 million soon after the completion of construction and reduce its interest payments and fees on the bond.[12]

Map 8.1 - Phasing map for Fruitvale Village
Source: NNHS Rail Program, 2012

Site Acquisition Costs	$500,000
Site Improvement Costs	$1,291,931
Construction Costs (parking costs not included)	$39,539,275
Soft Costs	$17,907,643
Development of Health Clinic	$9,760,000
Total Development Costs	~$69,000,000

Table 8.4 - Estimated costs of TOD implementation for Fruitvale Village

Lessons for the City of Ottawa

- Small grants received at the beginning of a project can reap big dividends later on.
- The development of inner-city neighborhoods can offer great development potential.
- Use of Bonds and TIFs for parking facilities can prove useful for the City of Ottawa.
- Deep roots in the community helped the project become accepted by the community.
- Many non-profit associations have a range of skills, expertise, and knowledge of community dynamics that can make them excellent developers and potentially good development partners.
- The start-stop design process caused by financial and funding issues can be a drawback for for-profit developers partnering with non-profit organizations.

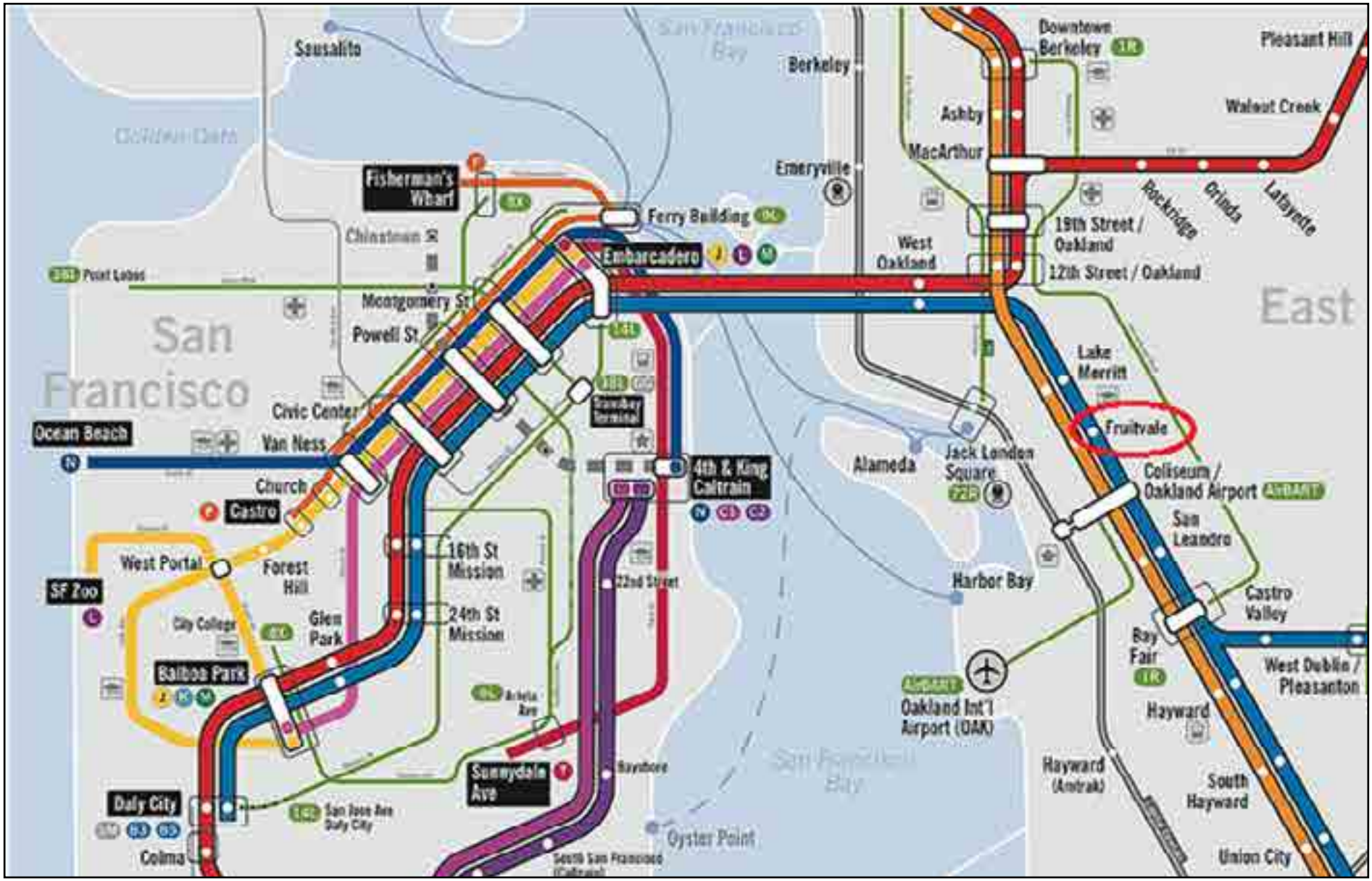


Figure 8.1 - Location of Fruitvale Village relative to the Bay Area
Source: Google Images, 2014

8.4 - GreenStreet, Houston, Texas

City Population	2,200,000
Metro Population (Greater Houston)	6,300,000
Primary Transit Mode	Light rail
Developer	Multiple
Completion Date	2008
Transit Agency	Metropolitan Transit Authority of Harris County
Land Use	Mixed use-office; Retail; Entertainment venue
Development Site	Urban infill and redevelopment

Table 8.5 - Key information for GreenStreet

Project Overview

GreenStreet, formerly known as Houston Pavilions, is a mixed-use development located in downtown Houston, Texas. It is located between Main Street Square Station and Bell Station. The City of Houston saw a transit-oriented development strategy as a method to overcome the increasing growth rates and demand for new housing. The TOD strategy was also seen as a solution to the City's increasing sprawl and congestion problems.

Today, GreenStreet is considered a dynamic, multipurpose project offering a shopping, dining and entertainment integrated with **Class A office** space. GreenStreet is home to the 11 story regional headquarters for NRG Energy, House of Blues, Forever 21, III Forks, McCormick & Schmick's and Lucky Strike.[13] Although the project has some premiere tenants, its overall tenancy rate struggled. In late 2011, the project went into receivership because of a mere 50% occupancy.[14] Houston Pavilions is an example of a development that went against the market and was not financially successful. However, it is a good case study of how financial mechanisms may be used to make various types of public infrastructure improvements.

Below is the project timeline:

- 2004: Project conceptualization started.
- 2007: Houston Pavilions (now known as GreenStreet), METRORail's largest TOD to date, breaks ground.
- 2008: Houston Pavilions opens.
- 2011: Went into receivership.

Map 8.2 - Location of GreenStreet
Source: Google Maps, 2014

Development Process

The developer put together three empty blocks totaling 2.42 hectares adjacent to Houston's downtown. In all, the mixed-use retail, office, and entertainment project consists of 33,445 sq. m of retail and 18,581 sq. m. of office. The public square is located in the center of the development and is surrounded by office uses on two sides. The development has a series of sky-bridges connecting different buildings.

The ultimate vision of the project was to bring increased pedestrian activity to the area. This was accomplished by building a pedestrian-friendly environment, retail stores, and an entertainment area surrounding two light rail stations. There are also a number of cafes, pubs, entertainment venues and a public square. The total cost of the development was

approximately $170 million dollars.[15] It was mainly financed through a **public-private partnership (P3)** funding mechanism. A tax increment reinvestment zone (TIRZ) and development grants from the City of Houston and Harris County assisted the financing of the project. A clear and detailed communication strategy and equity package helped to attract the needed investment.

Financial Mechanisms

The City of Houston implemented a TIRZ to facilitate the development of public infrastructure in the Houston Pavilions area. According to the TIRZ plan for the area: $639,000 was spent on right of way expenses (utilities, curbs, sidewalks, and landscaping); $685,000 was used to upgrade safety lighting, interior way finding, and air rights access connections.[16] Another $4,200,000 was spent on interior pedestrian walkways and public access improvements (landscaping, decorative lighting, graphics, signage, walkway paving, elevator and escalator access).[17] A total of $5,500,000, $3,100,000 and $2,375,000 was allocated for transit streets and facilities, public parking facilities and affordable housing, respectively.[18]

Rights of way	$639,000
Safety lighting; Interior wayfinding; Air rights access connections	$685,000
Interior pedestrian walkways; Public access improvements	$4,200,000
Transit streets and facilities	$5,500,000
Public parking facilities	$3,100,000
Affordable housing	$2,375,000

Table 8.6 - Estimated costs of TOD implementation for GreenStreet

Lessons for the City of Ottawa

- GreenStreet is a good example of how the public realm can be improved through a tax increment reinvestment zone.
- Demonstrates that that a development cannot rely solely on friendly pedestrian environment to create a successful development.
- Project needs to be developed in coordination with a supportive real estate market rather than attempting to go against the market.

Image 8.4 - GreenStreet, Houston, Texas
Source: “About GreenStreet,” n.d.

8.5 - Mockingbird Station, Dallas, Texas

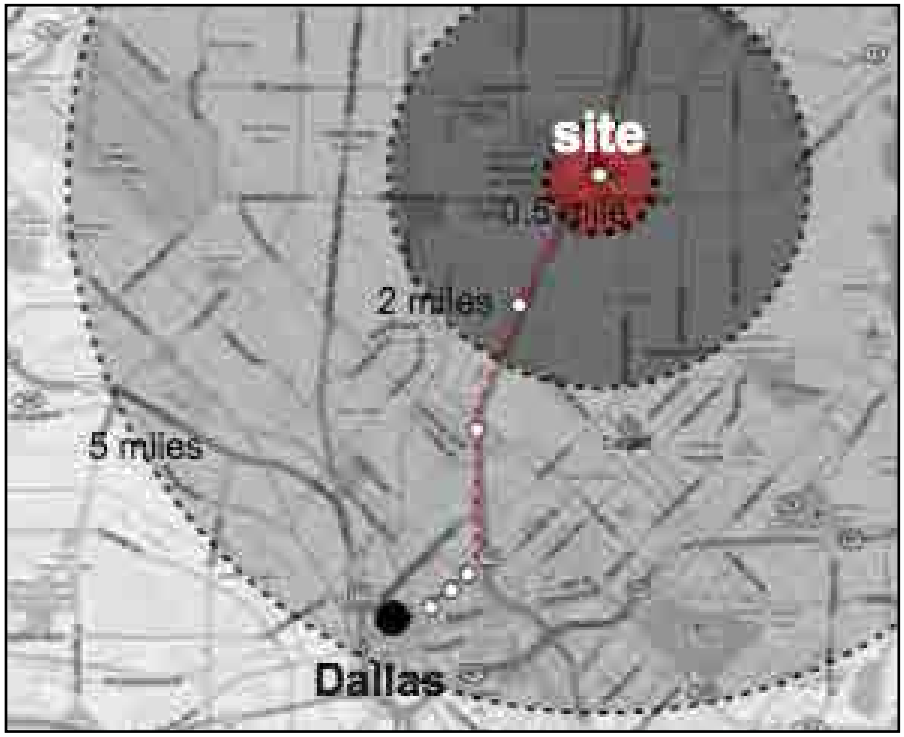
City Population	1,300,000
Metro Population (Dallas-Fort Worth)	6,400,000
Primary Transit Mode	Light rail; Bus
Project Completed	2001
Developer	UC Urban (now Hughes Development, LP)
Zoning	Conventional
Land use	Adaptive reuse; Urban infill; Mixed-use

Table 8.7 - Key information for Mockingbird Station

Project Overview

Mockingbird Station was the first mixed-use project in Dallas to be designed around a multi-modal, rail-based transit hub, connected to transit by a pedestrian bridge.[19,20,21] The private sector began this infill development project in 1997 and completed the project in 2001. This project is located four miles north of Downtown Dallas. The project site is 4 hectares (10 acres) and used high density zoning to develop 46,450m^2 (500,000 square feet) of rentable building area, 48,308m^2 (520,000 square feet) of parking with 1,580 spaces, and 211 loft apartments.[22] This project includes uses such as: retail, office, restaurants, luxury housing, a cinema, and parking.[23]

Market dynamics drove this project.[24] The developers of the project had no initial support from the City or other government agencies, as this was an unprecedented example of high density around transit at this time.[25] Designing Mockingbird Station took special consideration into pedestrian and automobile circulation, without compromising the overall goal of creating a walkable community.[26] The City gave the developers a reduction in required parking, but did not reduce it to the levels of a transit-related development.



Map 8.3 - Location of Mockingbird Station relative to Dallas
Source: University of Texas, 2012

Development Process

Prior to Mockingbird Station, the City did not provide any incentives for TOD and had no prior experience with this type of development.[27] The City did not provide any subsides, TOD Planning, or supportive policies.[28] The developer began by buying up property surrounding the transit station. The purchase of one site specifically, allowed the developer to consolidate parking into one underground space that would act to service the development.

The City of Dallas made no changes to its planning or zoning to facilitate site development, as both parcels of land that were developed to create Mockingbird Station were already zoned as mixed-use.[29] The developer covered almost all the initial costs associated with Mockingbird Station except for federal

contributions towards public infrastructure including off-site pedestrian access.[30] What makes this case study unique is that the City did not offer the developer any incentives, nor was it promoted. Hughes Development spent $600,000 for improvements to public sidewalks, landscaping, and connections to a regional hiking trail.[31] Privately provided pedestrian improvements were supplied by state funding through the Statewide Transportation Enhancement Program Grant.[32] The State of Michigan Employee Pension Fund chose to fund the development so that the organization could study the benefits of TOD. Additionally, the City granted the developer a mixed-use parking reduction credit of 1,600 spaces when 2,200 were required, however the City refused to reduce the number of required spaces any further. The acquisition cost the developer $20,300,000 with a total development cost after construction of $145,100,000.

Image 8.5 - Mockingbird Station, Dallas, Texas
Source: Transit Oriented, 2011

This project has been very successful since its completion date and has encouraged many middle income, car-centric individuals to use transit.[32] Rents have outpaced the market and maintain a higher average than the surrounding area. The retail and office spaces are 88% and 92% occupied. Mockingbird Station is one of the earliest examples of TOD in the southern United States and has received recognition as being one of the best land-use configurations for TOD. Criticisms of the project include the lack of housing options and the weak pedestrian connections (interrupted and narrow sidewalks), which are being addressed with the TOD District Plan.

Financial Mechanisms

Although the City had no TOD Planning, subsidies, or supportive policies at the time of the initial development, in 2008 the City of Dallas established the TOD Tax Increment Financing (TIF) District Plan for stations along their main transit line. Mockingbird Station was identified as one of the key development districts where the City wanted to focus its efforts to create a more developed, connected neighbourhood. In 2013, Mockingbird Plaza Sustainable Development Project was underway as part of the TIF District Plan.[34] These projects focused on streetscape, trail, and bicycle improvements. A bond from the City was used to improve the streetscape and infrastructure along SMU Boulevard. Construction is set to be completed by mid-2015. This funding was broken down as follows: North Central Texas Council of Governments/Regional Transportation Council contributed $1.6 million, $400,000 was contributed privately with agreement for the TIF eligible reimbursement, and $1.04 million was contributed through City bond funding.[35]

Private Investment	
Hughes Development - Public improvements and landscaping	$600,000
Land Acquisition	$20.3 million
Total Project Cost	$145.1 million
TIF District Plan - Mockingbird Plaza Sustainable Development Project	
Regional Transportation Council	$1.6 million
City Bond	$1.04 million
Private Funding with TIF Reimbursement	$400,000

Table 8.8 - Estimated costs of TOD implementation for Mockingbird Station

Image 8.6 - Aerial photo of Mockingbird Station, Dallas, Texas
Source: University of Texas, 2012

Lessons for the City of Ottawa

- Mixed-use nature, optimal market conditions, and private commitment ensured the success of Mockingbird Station.
- Limited initial involvement from City of Dallas.
- Ottawa should consider using parking reduction strategies that reduce required parking, in a way that is similar to Mockingbird Station.
- Infill of greyfield can help concentrate pedestrian movement within the site.
- Similar to Mockingbird Station, Tremblay needs to focus improvements on pedestrian connectivity.
- Using a TIF to fund development around transit will be a way to effectively control development to support transit. and pedestrian uses.

8.6 - Ohlone-Chynoweth Station, San Jose, California

City Population	1,000,000
Metro Population (San Jose-Sunnyvale-Santa Clara)	2,000,000
Primary Transit Mode	Light rail; Bus
Project Completed	2001
Developer	Eden Housing Inc.
Land Use	Residential; Commercial

Table 8.9 - Key information for Ohlone-Chynoweth Station

Project Overview

Ohlone-Chynoweth station is a unique transit-oriented case study because it is a mixed-use affordable housing development connected to both a light rail and bus station. The joint public-private partnership between Santa Clara Valley Transportation Authority (VTA) and Eden Housing Inc. resulted in a transit-oriented development on a former 1,100-space parking lot that now accommodates diverse uses and amenities.[36] This transit-oriented community was part of the VTA's larger efforts to integrate transportation and land use planning into one site, while meeting housing demands in a market where housing prices have increased significantly.[37]

Development Process

The site was identified as an ideal location for a joint development.[38] The transit line offered service to large employment nodes; the VTA had projected the future of the park-and-lot ride could be put to better real-estate use, and lastly the developers of the adjacent sites had plans for multifamily housing developments which reinforced the VTA's goals.[39]

Prior to its development, the station consisted of a park-and-ride parking lot with over 1,000 spaces that was owned by the VTA.[40] VTA leased the lands to Eden Housing Inc. at reduced rates to make the affordable housing and a transit-oriented community possible.[41] The goal for the site was to focus on affordable housing, while providing traditional transit-oriented development amenities, such as commercial retail, community centre, and childcare centres. Since the VTA owned the land, developing this TOD was made possible in an otherwise challenging environment for affordable housing.[42] For this plan to manifest on the ground, the park-and-ride lot was rezoned into a suburban Transit Corridor High Density Residential development that permitted street-level commercial uses and amenities.[43]

Image 8.7 - Ohlone-Chynoweth Station, San Jose, California
Source: Transit Oriented, 2011

Financial Mechanisms

Several financial mechanisms were used to implement Ohlone-Chynoweth, with the total project development cost being over $30 million.[44] This includes federal grants, tax-exempt bonds and loans from the City of San Jose.[45] More specifically, funding from the City paid for permit fees, building and public works fees. The following table breaks down the specific financial mechanism that was used for implementing this project.

Financing Strategy	Amount
Tax-exempt bonds	$14.2 million
City of San Jose Loans (support for affordable housing development)	$5.2 million
Tax credit equity	$10.5 million
Mass Transit Funds (landscaping and station improvements)	$547,000
Federal Transit Administration Grant (reconfigure bus transfer center)	$250,000
Federal Home Loan Bank (affordable housing grant)	$500,000
State Proposition A Funds (reimburse school impact fees)	$350,000

Table 8.10 - Financing strategies for Ohlone-Chynoweth Station

Figure 8.2 - Station map for Ohlone-Chynoweth
Source: Santa Clara Valley Transportation Authority, 2014

Lessons for the City of Ottawa

- The development of an affordable housing transit-oriented community was made possible by San Jose's innovative land use policies, funding mechanisms, and public-private partnerships.[46]
- Similar to the Santa Clara Valley Transportation Authority and the City of San Jose, the City of Ottawa must leverage the benefits of public-private partnerships for the implementation of Tremblay Station.
- This has the potential to provide financial incentive for development to take both within and adjacent to the site.

8.7 - Downtown Plano, Texas

City Population	269,776
Metro Population (Dallas-Fort Worth)	6,400,000
Primary Transit Mode	Light rail; Bus
Project Completed	2005
Developer	Multiple
Transit Agency	Dallas Area Rapid Transit (DART)
Land Use	Residential; Commercial; Recreational
Development Site	Suburban infill and redevelopment

Table 8.11 - Key information for Downtown Plano

Project Overview

Plano's downtown was in decline prior to DART's expansion into the area. The community's local retail businesses were struggling and the built form was in physical decline.[47]
This case study is an example of successful adoption and implementation of transit in a historic town centre. The transit related development activities, public-private partnerships and community support were key in helping revitalize the area. The retail and office components of the project are estimated to be approximately 10,000 m^2 (100,000 sq.ft.) respectively.[48] In all, the 82 hectares TOD project cost in excess of $50 million.[49]

Below is a timeline of the project's milestones:

- 1990: The Downtown Plano Historical Society started to revitalize Downtown area.
- 1999: The City of Plano developed a blueprint plan to help revitalization efforts.
- 1999: The City of Plano established a Tax Increment Finance (TIF) District in Downtown Plano.
- 1999: The downtown task force implemented the Neighborhood Empowerment Zone.
- 2001: The construction of the first East Side Village was completed.
- 2002: Opening of DART`s Plano Station.
- 2005: Downtown Plano project completed.

Map 8.4 - Location of Plano, Texas
Source: Google Maps, 2014

Development Process

Plano's Transit Village Plan was an important document which set a number of goals to revitalize the area through the addition of: 1000 new housing units within 400 m of the rail station; 4645 m^2 (50,000 sq.ft.) of new commercial space; and 3,000 new housing units within 800m of the rail platform. It also helped to support the downtown arts district, restore historical buildings, and to provide reinvestment incentives for businesses and organizations to relocate to Plano's downtown.[50] Plano's Historic Society identified factors which they believed would help revitalize its downtown, including: Plano's "main street," a traditional grid system, and the location of Plano's rail system through the downtown core

A change to Plano's zoning was one method used to attract TOD investments.[51] Several changes were made to the City's downtown zoning regulations making development more pedestrian-friendly as well as financially enticing. This included: wider sidewalks, promoting residential uses around the train

station, increased densities for apartments, full coverage of lots, minimum floor area ratios of 1.0, and reduced parking requirements for new construction and on-street parking.[52] These changes looked to encourage increase human activity and improved pedestrian environments.

Image 8.8 - Light rail transit in Plano, Texas
Source: Dallas Texas Real Estate Blog, 2014

Financial Mechanisms

The City spent bond funds and used TIF to rebuild needed infrastructure. This included: streets, open spaces, utilities, placing electrical utility lines underground, parking and the installation of historic street lighting.[53] These financing mechanisms were also used to plant street trees and renovate Haggard Park.[54] The City also partnered with the school district to repurpose a historical building into a performing arts theatre and office space using TIF funds. The City also provided grants, waived development fees, and worked with developers to create loans with negotiated terms that were more affordable.[55] Another financial incentive used was the Historical Preservation Tax Abatement which offered tax exemptions for properties based on their historical significance.[56]

Lessons for the City of Ottawa

- What makes Plano significant is that like Tremblay, there was no demand on land for development and no competition.
- In order to attract investment, the City removed all fees, lessened regulatory requirements, made attractive amendments to the zoning, and offered financial incentives.
- Similar strategies are recommended for the City of Ottawa to attract initial investment into the area.

8.8 - Successes

Drawing from the 25 detailed case studies in this chapter and Appendix D, it was possible to identify common themes and tools that contributed to successful TOD implementation. Table 8.12 summarizes the various financial tools used in each case study.

By investigating what aspects of each TOD was executed successfully, it became evident that in each case, strong public-private partnerships, as exemplified in Bethesda Row and Metropole, were essential for the development of a coordinated vision for transit-oriented developments. This is a characteristic that is extremely important when it comes to the implementation of a transit-oriented development, as there are usually multiple stakeholders who have a vested interest in the success of the project. A common success factor that results from public-private partnerships is the quality of the site plan.

The most successful projects incorporated useful parking and financial strategies that helped the development process move forward. This was exemplified in both Bethesda Row and Fruitvale Village, where in the former, a 1,000 space garage was built to help offset the cost of the project; this coupled with financing from a **Real Estate Investment Trust (REIT)** served as critical aid to the completion of the project. In the latter example, the collaboration of the City of Oakland, numerous private bodies, and non profit organizations was key to the success of the project. Through tax increment financing and tax exempt bonds from the City, the project was able to be completed.

In addition to this, many of the case studies exemplified the importance of public consultation. Developers and governing bodies displayed initiative in consulting the public and using the information yielded in the process, the developers were able to create a development that was most appropriate in relation to the existing communities. The Uptown District was a great example of this, as the developers utilized a community participation process called “Project Head Start”, which involved local residents in the planning, even before the proposal was created. This act of public consultation proved beneficial, as the developers proposal for the site was chosen.

Projects that incorporated a vision and followed this vision throughout the project were more successful than projects that did not create a long-term vision. Identifying a vision for the site aided in garnering community support from the beginning of the project. These TOD’s were usually implemented in shorter periods of time and were not met by community backlash.

Creation of innovative parking strategies were also a large success factor surrounding transit stations. As an example, Del Mar Transit Station located parking in combined structures at the periphery of the transit site. This allowed for effective circulation of automobiles, but also put pedestrians first throughout the development. Reducing the parking requirements to a reduced level, like the example of Mockingbird Station will allow for increased uses that will support pedestrian activity, while reducing the amount of empty greyfield sites.

8.9 - Challenges

Though the majority of the cases studies that were examined were exemplary of successful TOD implementation, there were challenges that can be used as lessons. Some of the most common challenges that came out of the case studies regarded zoning, as seen in the case study of Metropole in Ottawa, Ontario. This included zoning variances and rezoning proposal processes taken on by developers. One particular challenge that arises with rezoning processes is the suitability

Financial Mechanism	TOD CASES																						
Revenue Sources	Arlington Heights	Bethesda	Collingwood	Court House	Del Mar	Evanston	Fruitvale	Galatyn Park	GreenStreet	Lindbergh	Metropole	Mockingbird	Ohlone-Chynoweth	Orenco	Plano	Pleasant-Hill	Port Credit	Rio Vista	Sheridan	The Crossings	Uptown District	Village de la Gare	Warwick
Bonds							x					x	x		x								x
Grants				x			x	x	x				x	x	x				x				x
REITs		x														x							
Sales Tax	x					x	x						x										
Special Service Area Taxes	x	x			x	x																	
Tax-Increment Financing	x	x				x	x		x	x		x		x	x	x							
Expenditure																							
Land Acquisition		x					x				x			x					x		x		x
Parking Garage	x	x			x		x		x	x					x							x	x
Remediation																				x			
Streetscape	x	x	x		x	x	x	x	x	x	x	x			x		x	x		x	x	x	
Utilities			x	x	x	x	x			x	x				x			x				x	
Organization																							
Business Improvement Development	x									x													
City Development Corporation				x	x		x	x			x	x	x						x	x	x		
Station Development Corporation																							
Transit Development Corporation							x			x			x			x						x	x

*Note: Portland Hills, Nova Scotia and Holland Cross, Ontario excluded from table due to lack of financial information

Table 8.12 - Summary table of revenue sources, expenditures, and organizations

of development with existing residential areas. Examples of suitability concerns include traffic volume increase, types of residential units, and increase in property values. To mitigate this challenge, public consultation, workshops and public open houses were incorporated throughout the development process to discuss the plans and final designs. This was the case in Ottawa with the Metropole development, where existing residents had worries regarding property values and higher traffic volume. Other challenges included adequate phasing of development of specific sites. A major land owner near Rio Vista West Station in California for example, sold off parcels of land to different developers without a clear schedule and phasing plan. What resulted were differing construction schedules and little coordination between individual developers of the site.

8.10 - Implications for Tremblay Station

Many important lessons can be learned from other TODs that were successful in both a downtown and suburban context. Although Tremblay Station is not located in downtown Ottawa, the City as a whole is seeing a growth in its population which will likely result in changing communities and an expanded downtown core. Transit-oriented development generally unfolds over a 10-25+ year time period which means that Tremblay's close proximity to the downtown may be even more relevant in the coming years. As growth occurs, under-utilized and vacant land will likely be the site of infill, resulting in an expanded urban core. This means that Tremblay's location actually presents opportunities for growth, rather than a challenge for intensive development. Case studies that look at these intensified centres then present valuable lessons that may be adopted by the City of Ottawa.

Although other stations along the Confederation line, like Hurdman Station, can be considered to have a more 'ideal' location or greater proximity to the downtown core, Tremblay Station has a unique set of opportunities to work with. There is tremendous potential for the City to collaborate with the private sector in ways that were successfully executed in various case studies. Because much of the land around Tremblay is underdeveloped, there is increased potential for the City to effectively implement the vision set out in the TOD Plan, as compared with other stations where development is already integrated into the built environment.

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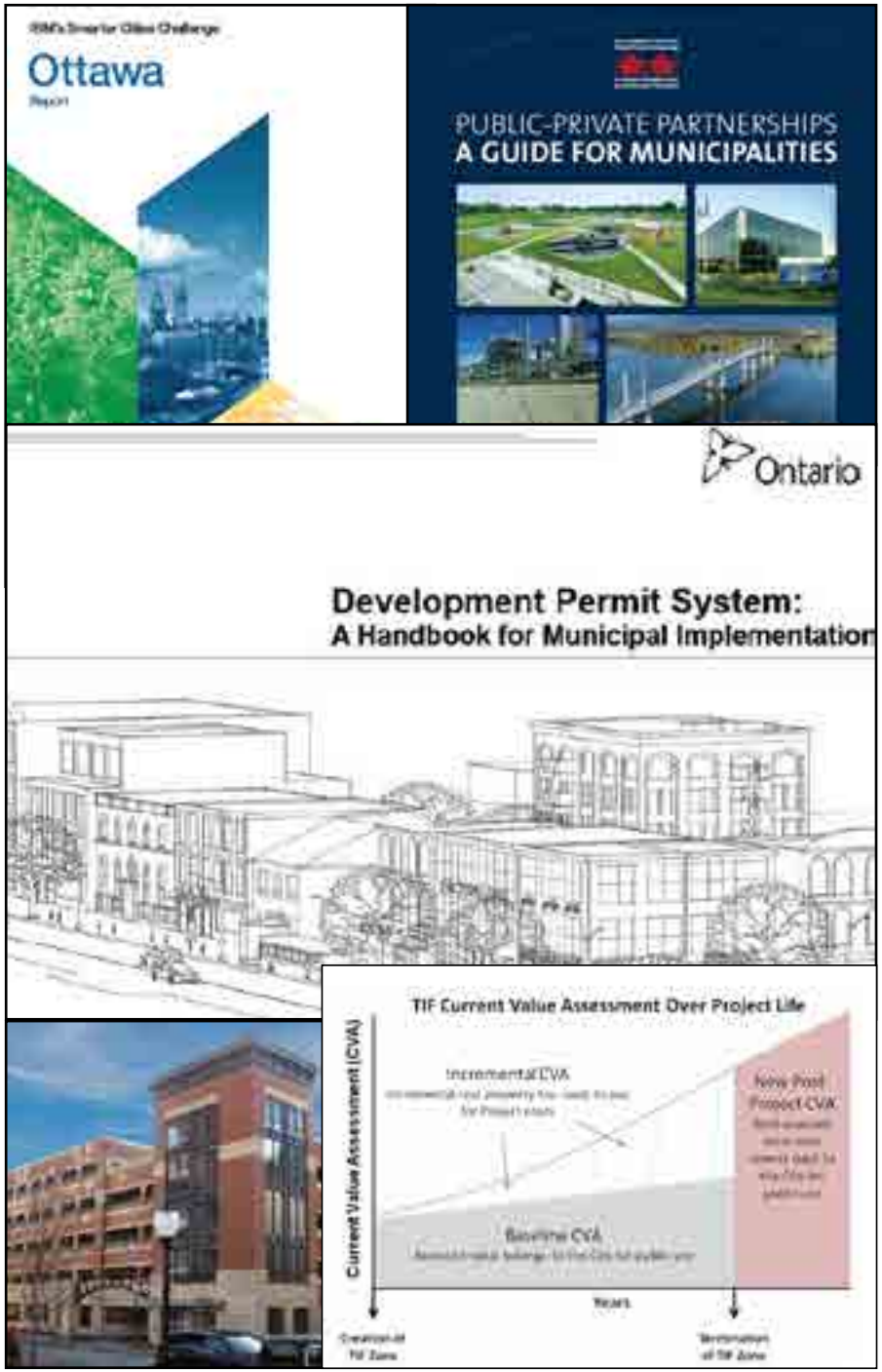

9.0
Implementation Tools

Drawing from the 25 precedent case studies, five key implementation themes have been identified: Financial strategies; Parking strategies; Planning tools; Marketing tools; and Administrative arrangements. This chapter further investigates the potential mechanisms that may be used by the City of Ottawa before making recommendations in Chapter 12.

9.1 - Financial Strategies

Financial strategies make up key components of **transit-oriented development (TOD)** implementation. There are many different financial strategies that can be used to stimulate development. Most commonly, investments in infrastructure and community facilities need to be in place before new private development can occur. This is either because new infrastructure is needed to support additional uses in the surrounding area or to make the location attractive for developers, residents, and workers in a weak real estate market.[1] This can be paid for in a number of ways; either by charging users in the surrounding area a fee (which will generally pay for improvements like sewer, water and wastewater, and parking facilities) or will require local governments to utilize various taxes and fees available to them for public improvements.

The number of entities that can be involved in the financing process can further complicate the provision of the necessary infrastructure and mechanisms to stimulate growth around TOD. These challenges represent the need for continued innovation and creativity to identify the appropriate funding and financing mechanisms to create comprehensive strategies that spur development. The following financial strategies are most relevant to Tremblay Station and include case examples where these financing mechanisms have been implemented.

9.1.1 - Implementation Expenditures

The City of Ottawa should be prepared to invest in the following infrastructure expenditures in order to assume the risk associated with front-end infrastructure costs that often deter developers from investing into an underdeveloped area:[2]

- Land Acquisition, Assembly, and Relocation
- Site Preparation, including Environmental remediation, demolition and site grading
- Utility improvements:
    - Water, public transit facilities, sanitary sewer, service of public facilities and road improvements
- Rehabilitation of existing public and private structures
- Public facilities
    - Including parking facilities, streetscaping, and access improvements for bicyclists, pedestrians, cars, and buses

Should the City of Ottawa invest in these infrastructure improvements, it will serve to enhance not only the Tremblay Station area's appearance, but also capacity for growth. This demonstrates a public commitment to investment in the area and can provide greater incentives for developers to invest, since the City takes on the majority of investment risk for these services.[3] The City will be able to effectively make a return on their investment using value capture mechanisms that can provide both short and long-term value. Investment into other public facilities like parking structures can also provide a steady revenue stream for the City, thereby providing an adequate return of investment over time along with accompanying revenues from higher taxes (that result from new development) and property values. In some American cases, infrastructure improvements led to an increase in property values and subsequently higher tax revenues, which allowed government agencies to leverage future revenues using **Tax Increment Finance (TIF)** proposals to finance a given infrastructure project. [4]

These infrastructure improvements can be paid for either by financing or pay-as-you go. Financing requires that improvements be paid for before the revenue equal to the total cost of the improvement is available, which often requires borrowing against future revenues and issuing bonds that are paid back over a period of time using taxes, user fee payments, or other revenue sources.[5] Alternatively, the pay-as-you go

option requires that improvements only be made once enough revenue is collected to cover the cost of the improvement. The City of Ottawa should consider financing options in order to secure the funds required to make appropriate infrastructure improvements and to have a reliable method of achieving a return on their investment.

9.1.2 - Value Capture

Value capture is a main strategy to provide financing sources for development around transit or directly to the transit authority.[6] Value capture can be a means by which land value increases as a direct result of transit investment and is captured for use by the transit agency or City.[7] Value capture mechanisms are usually established by a local government and sometimes require a vote by local property owners.[8]

Depending on the tool that is used, value capture can entail a number of different financial mechanisms. Value capture can create a special tax or development impact fee, diverting new revenue generated by existing taxes through TIFs, or a revenue-sharing agreement allowing government agencies to share some of the revenue generated by developing publicly owned land through a joint development initiative.[9] Value capture projects usually require a strong real estate market because the mechanism depends on new development or the appreciation of property to generate revenue.[10] However, in the context of Ottawa and Tremblay Station, implementing public infrastructure and creating connections in the area surrounding transit will enhance land values and help to service existing populations in the area. If this value can then be captured, these funds can help to finance other needs that will contribute to making Tremblay Station into a successful TOD, an example being a structured parking garage.

There are many different generic models associated with Value Capture.[11] These include:

- Mechanisms that grant development consent for projects that are likely to experience direct or indirect benefit from an infrastructural investment
- Supplementary local taxes on all addresses or a specific type of property that derives special benefits from the new infrastructure such as TIFs, ***Tax Increment Equivalent Grants (TIEGs)***, and Capital Improvement Projects.
- Assembling land for long term investment security or to capture revenue streams through later sale or lease of the property
- Competitive joint venture arrangements with the public sector retaining a long term financial interest

Precedent: Portland, Oregon Downtown Streetcar Corridor Value Capture Strategy

In Portland, Oregon the Downtown Streetcar Corridor was initially designed to redevelop and intensify existing uses along the streetcar line.[12] The implementation of the streetcar line was the catalyst for increasing density and development along this corridor through a mix of residential, commercial, institutional, and other uses. The City was able to finance the entire streetcar line without help from higher levels of government by using innovative financing techniques. The most innovative initiative included increasing existing parking rates along the streetcar corridor by 20 cents per hour.[13] The City then continued to issue bonds that were backed by the increased parking revenue that raised $28.6 million. After raising this initial amount, the City consulted with local property owners and agreed to form a **Local Improvement District** that provided an additional $19.4 million in funding. Tax Increment Financing generated $21.5 million. These three mechanisms generated over 70% of the funds needed for the streetcar line with the remaining $33.65 million obtained from local sources.[14]

This case study is an example of how the City of Ottawa could fund the initial development surrounding Tremblay Station. If the City works with different financial mechanisms to capture the realized value of infrastructure and parking investments, the City can use this funding to finance these essential components to create an environment that supports TOD.

9.1.3 - Tax Increment Financing (TIF)

Most commonly, TIF mechanisms are used to finance local infrastructure, environmental cleanup, or land assembly.[15] TIF is a way to encourage redevelopment through these strategic investments.[16] It is defined by Siemens et al. (2014) as the creation of additional tax revenues based on broadening the tax base instead of raising the rate of taxes or creating additional taxes. In other words, these infrastructural investments are financed by property taxes that result from new private investment and improvement.[17] Higher tax revenues are also a result of increased property valuations from existing developments. TIFs do not require property owners to pay a higher tax rate compared to other properties in the municipality. However, the expectation is that the infrastructural investments will cause the taxes to rise at a higher rate than in other areas due to the increase in property values.[18]

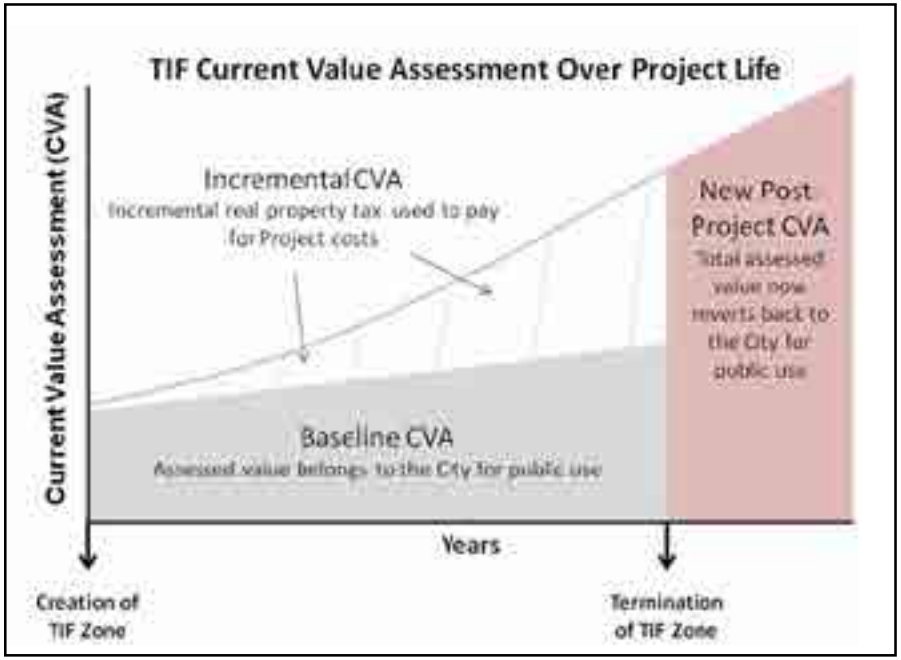

Figure 9.1 - Tax Increment Financing
Source: City of Toronto, 2012

TIF is very common in the United States. Many states already have a legal framework to direct taxes toward this specific financing mechanism.[19] The process of TIF implementation typically includes the following steps[20]:

- An area is identified that is in need of infrastructural improvements with the expectation that these improvements will lead to private sector investment/ development
- An overall assessment of the area's infrastructural needs as well as planning and community facilities is conducted
- An area's base property taxes are determined
- Do a cost-benefit analysis: expected increases in property taxes need to finance the investment costs. The City would usually use a municipal bond to finance the investment (ie. infrastructure)

Precedent: Dallas, Texas Mockingbird Station TOD TIF District Plan

Mockingbird Station in Dallas, Texas is part of a 30-year (2009-2038) TIF plan that has encouraged the development of dense, walkable TODs adjacent to several transit stations.[21] These areas contain large land parcels that are either undeveloped or underdeveloped and would not be developed without public support. The TOD TIF District plan was established in 2008 to aid in the creation of several unique destination stops, in conjunction with constructing facilities that are useful or beneficial to development along the transit line.[22] In 2007, the Tax Code Chapter 311 was also amended to create a reinvestment zone. This Chapter helps to facilitate reinvestment by designating the land within the zone as a reinvestment area if it is connected to and beneficial to the operation of a mass transit system.[23]

Image 9.1 - Mockingbird Station, Dallas, Texas
Source: Transit Oriented, 2011

Within the Mockingbird Station TIF district, three other sub-areas are included which allow station areas to be linked to create a tax increment sharing arrangement that that simulates development in the Lancaster Corridor.[24] Mockingbird Station will provide support for infrastructure and pedestrian connectivity improvements that would not otherwise be attainable in these other sub-districts. The total estimated base taxable real estate revenue value for Mockingbird and Lovers Lane Stations was $111 million in 2010.[25]

Although Mockingbird Station has a lively mixed-use centre and some higher density commercial and hotel uses along the Central Expressway frontage, an older core area of property exists with significant redevelopment challenges.[26] Between Mockingbird and Lovers Lane Stations, surface parking lots, underutilized warehouse facilities, office and retail uses dominate the area. TIF funding requires development to have a minimum of 20% affordable housing for residential uses, that it follow the design guidelines for the TIF district, that it promote jobs for neighbourhood residents, and that development minimize impacts and displacement for the redevelopment of residential uses.[27]

TIF in the Canadian Context

In 2006, the Tax Increment Financing Act (TIFA) was established to allow a municipality to apply for funding from the Province of Ontario. The rules set out by the TIFA establish eligible projects that include:

1. Municipal infrastructure and amenities that aid in:
    - Redevelopment or intensification of an area with existing development
    - Development of an urban growth centre under the Places to Grow Act (2005)
2. Environment remediation
3. Constructing a municipal transit facility

Zones have been created for infrastructural improvements through a municipal loan or grant under Section 28 of the Planning Act.[28] The municipality first has to conduct a feasibility study and submits the study to the minister.[29] After the project receives formal designation and TIF districts are established, the municipality and province enter into an agreement allowing the municipality to direct a portion of the increase in tax revenues to pay back the loan or grant used to fund the infrastructural improvement project.[30]

In Toronto, the City and the Province of Ontario have developed a pilot TIF to support the redevelopment of the West Donlands.[31] Part of the increase in property taxes will be allocated towards financing infrastructure and public improvements along the waterfront.[32] The City of Ottawa has previously considered the use of TIF, however this application is through the use of Tax Increment Equivalent Inducements most commonly referred to as Tax Increment Equivalent Grants (see Section 9.1.6). Implementing a TIF district surrounding Tremblay Station can create value for both the City of Ottawa and the local area. The City would benefit because there is no cost associated with the improvements and the tax revenue increases. The local area would also benefit from the infrastructural improvements that would increase both the valuation of property and business in the area. Local property owners could also apply for funding through a TIEG under a **Community Improvement Plan** (see Section 9.1.5).

9.1.4 - Capital Improvement Plans

Capital Improvement Plans are a financial mechanism that identifies capital projects that are to be funded by the City during the planning and implementation phase of a development.[33] The Capital Improvement Plan clearly outlines the amount of funds that will be expended in each year of the project and how the expenditure will be allocated.[34] This level of funding is key for defining the financial capacity for a project to reach its desired goals.

A Capital Improvement Plan is a traditional financial strategy that is combined with planning initiatives. The City of Ottawa can incorporate a capital improvement plan specific to the implementation and planning of Tremblay Station as a way to induce growth in the area. The Improvement Plan can include capital items that have high costs but have a lifespan of several years such as buildings, utility systems and roadways.[35] A Capital Improvement Plan has the potential to determine the set of projects for a period of time and when carried out will provide a reliable product over a duration of time.[36]

Through the adoption of a Capital Improvement Plan for Tremblay Station there is potential to provide:

- A formal strategy for decision making where the Improvement Plan provides government bodies with a process for planning and budgeting of capital needs
- A link to long range plans whereby the Improvement Plan serves as a connector to land use plans and/or strategic development plans
- A financial management tool where the Capital Improvement Plan is used to prioritize both current and future needs to fit within level of financial resources
- A reporting document where the Capital Improvement Plan presents the proposed projects that will be undertaken during the planning and implementation process

There are several strengths to introducing an Improvement Plan specific to Tremblay Station. They include:

- Attention paid to community goals, needs and financial capabilities;
- Strengthening cooperation and communication between the City of Ottawa, developers and development

agencies;
- Mitigating financial risks by preparing a multi-year Capital Improvement Plan that focuses on phasing and appropriate budgeting for each stage.

Precedent: Arlington, Virginia Court House Station Capital Improvement Plan

Since the inauguration of Court House Station in 1979, a long-range plan has been implemented to improve the entrances and create more connections to the Western end of the station. In 2014, the Arlington County Board approved a $2.7 billion, 10 year Capital Improvement Plan for the fiscal years of 2015-2024.[37] It is a planning document that outlines Arlington's long-range capital investment objectives. This plan focuses on county infrastructure projects and specifically on Court House Station. A total of $1.1 billion of this Capital Improvement Plan fund will go towards improving safety, accessibility, and efficiency for commuters on bike, foot, car, and transit.[38] New entrances have been planned for Court House Station along with elevators to improve accessibility.

Image 9.2 - Court House Station, Arlington, Virginia
Source: Berenbaum, 2013

The City of Ottawa should view a Capital Improvement Plan as a financial blueprint to help prioritize implementation needs surrounding Tremblay Station. A designated Improvement Plan for Tremblay Station should clearly identify the financial factors during the development process, allowing for a smoother transition of long-range plans to implementation while lessening the impact on future budgets.[39]

9.1.5 - Community Improvement Plans

Community Improvement Plans (CIPs) can be used to incentivize development in a defined area through a number of financial mechanisms.[40] CIP's create area specific solutions and are legislated under Section 28 of the Planning Act. There are two steps that council needs to undertake in order to implement a CIP. First, council must identify the boundaries of a community improvement plan area and prepare a corresponding plan. Second, council and the Ministry of Municipal Affairs and Housing must conduct at least one public meeting.[41] There are a number of different financial mechanisms that can support the use of a Community Improvement Plan which are outlined below.

The City of Ottawa's Community Improvement Plans

Currently, the City of Ottawa has two major CIP Programs, the Carling Avenue CIP and the Orleans CIP, and one minor program, the St. Joseph Boulevard CIP. Although both of the major plans have different objectives, each plan provides incentives for property owners.[42] Carling Avenue's CIP focuses on improving business investment, upgrading existing properties, and urban renewal projects.[43] Commercial and employment opportunities are expected to result from the reinvestment. The Orleans CIP's major objective is to draw knowledge-based employers into the area. This CIP was created to increase the job to household ratio and stimulate new investment into existing or new development.[44] Both the Carling Avenue and Orleans CIP's use TIEGs to offset taxes,

which are outlined in more detail in Section 9.1.6.

Figure 9.2 - Applying a Community Improvement Plan
Source: Ministry of Municipal Affairs and Housing, n.d.

City of Toronto Waterfront Community Improvement Plan

The City of Toronto's (2008) Waterfront Community Improvement Plan was enacted by Council in 2008. This plan applies to lands within the East Bayfront, West Don Lands and Port Lands which can be characterized as a mix of industrial, commercial, recreational and vacant uses as well as brownfields. The Waterfront CIP's primary goal is to attract businesses to the Waterfront. It provides financial incentives to remediate and redevelop brownfield lands and support employment uses.[45] It also sets forth a key range of broader city and regional goals, such as: meeting targets stated in Toronto's Official Plan and the Province's Growth Plan for the Greater Golden Horseshoe; intensification of employment areas; promotion of economic development; improvement of the built form; and attracting private sector investment to vacant and underutilized lands.[46]

Image 9.3 - Waterfront in Toronto, Ontario
Source: Ports - The Cruising Guide, n.d.

To help achieve these objectives, the Waterfront CIP offers different incentive programs. Brownfields Remediation Tax Assistance provides tax assistance when employment uses are developed in conjunction with brownfield remediation.[47] This is accomplished by cancelling a portion of the Municipal Tax Increment payable and some or all school taxes (if permitted by the Province). The Development Grant Program, commonly referred to as Tax Increment Equivalent Grants (TIEGs), is also used.[48] Additionally, TIF is also referenced as a financial mechanism for waterfront redevelopment.[49]

9.1.6 - Tax Increment Equivalent Grants (TIEGs)

Tax Increment Equivalent Grants (TIEGs) are used to provide grants or rebates to compensate property owners for part of the property tax increase resulting from new development.[50] Installments are used to pay off the TIEG, usually over a period of 10 years. During year one, 100% of the tax increase

is refunded with the percentage declining over the life of the grant.[51]

City of Toronto: TIEG

As an example, the City of Toronto uses a form of TIEG. Applicants who satisfy the requirements and are constructing or expanding a building can save an average of 60% on incremental municipal property tax over a 10-year period.[52] Property taxes are assessed by Municipal Property Assessment Corporation (MPAC) who determine the increase in property taxes. Based on the increase, the grant is provided. After the building owner pays the annual property taxes, the City refunds the property owner a percentage of the increase in property tax for a 10-year period.[53] This balance declines over the period. To be considered eligible for a grant, the applicant has to satisfy several factors including geographic location and building use, among others.[54]

Ottawa and the use of Tax Increment Equivalent Grants

Both Carling Avenue and Orleans use TIEG through their corresponding CIP's.[55] Projects within these plan areas can apply for eligibility. After annual taxes are collected from eligible property owners, the City reimburses 75% of the increase in property tax. This reimbursement lasts for a period of ten years, similar to the City of Toronto. TIEGs do not apply to greenfield development.[56]

9.1.7 - Other Financial Mechanisms

Grant and Loan Programs

Most provinces in Canada provide grant opportunities that can be used for TOD infrastructure. In Ontario, municipalities have the authority to administer grants or loans to pay a portion or all of the costs that are deemed eligible through the *Ontario Planning Act*.[57] These funds can be administered through a CIP.[58] Financial barriers can be overcome using these grants or loans that allow the municipality to provide incentives. In 2006, the City of Oshawa developed a building permit fee grant program that supplies grants of up to $50,000 to cover fees for residential development in specific areas of the City.[59] Loan programs also work to the benefit of the City and smaller private developers. Barriers to securing financing for these developers can be overcome using City loan programs. The City of Niagara implemented a tax-free loan program through its Downtown CIP.[60]

The City of Ottawa already provides grants and contributions that can help to realize the goals of development surrounding Tremblay Station.[61] Using these grants effectively to incentivize private development will help increase development in the short to medium term.

Development Charges

Development charges are a strategy that assists with paying for the capital costs associated with urban growth.[62] Development charges enable municipalities to receive public infrastructure services for a project that is paid for by the developer.[63] Development charges are mechanisms that are generally established at the municipal level. Charges have the capacity to reduce the costs of developments by intensifying the use of the land, retaining prized areas, reducing the costs of providing new infrastructure throughout the project site and optimizing the use of existing infrastructure.[64] More specifically, development charges can improve the overall efficiency of transit systems and reduce car-based travel.[65]

The City of Ottawa should use their existing Development Charges By-Law as a way to support urban growth within the Tremblay Station area. A strong emphasis on development charges will reinforce both the urban and financial growth of the site by steering the project towards a cost-efficient development.

Local Improvement Charges (LICs)

The City is able to utilize Local Improvement Charges (LICs) in order to help fund public infrastructure improvements. This is achieved by charging property owners that will benefit from these infrastructure improvements.[66] They can cover the costs of improvements like the installation of water and wastewater infrastructure, the improvements or construction of roadways (i.e. paving), sidewalks, curbs, the installation of street lighting, and the construction of traffic calming features in neighbourhoods (i.e. speed bumps, traffic circles).[67] Municipalities can effectively manage these costs by spreading them out over several years to minimize the annual payment that property owners have to make. For example, a municipality can work with a private landowner to provide initial improvements that are mutually beneficial and that help realize goals set out by the City to achieve a particular mandate (i.e. the installation of solar panels to meet the goal of increased efficiency in the City). Improvements made to individual private properties can be partially paid for by the City, with the rest of the costs covered by private landowners.

Municipal Bonds

Municipal bonds can be used to finance the upfront costs associated with TIF. A municipal bond is a type of financial strategy that municipalities adopt when they are interested in funding capital projects within their communities.[68] A bond is a type of secured debt taken on by a corporation or government entity from the public.[69] With a municipal bond, the borrower is required to pay interest throughout the duration of the loan, while the principal amount is repaid over the term of the loan. Considering TIF, the payments are paid off by increasing tax revenues over the term of the loan.

One viable option the City of Ottawa should consider for financing project construction or infrastructure improvements on and around Tremblay Station is municipal bonds. The use of municipal bonds will assist with addressing operational and infrastructure challenges that arise with development of the site.[70] For one, the City will not have to invest any equity into projects on the site and secondly it has the potential to attract investment from other sources outside of local taxpayers.[71]

9.2 - Parking Strategies Associated with Transit-Oriented Developments

One of the most prominent challenges associated with the planning, design, and financial feasibility of transit-oriented developments is the need for parking. This necessity is due to the density of these types of developments and scarcity of open land; it is therefore suggested that “structured parking is often the necessary and appropriate solution to consolidate and maximize the land available for development; however, the cost of structured parking can strain a developer’s pro forma.”[72] Moreover, the amount of space that structured parking can take up could cause a manifestation of political and community opposition within municipalities.[73]

When contemplating parking strategies that could be applicable to a transit-oriented development at Tremblay station in Ottawa, there are numerous strategies that have been used in different cities. As identified by Todd Litman, these include strategies that increase parking facility efficiency; strategies that reduce parking demand; and parking tax reform strategies.[74] In addition to this, he mentions parking maximums as an efficient strategy; however, the City of Ottawa already has by-laws outlining the use of parking maximums.

9.2.1 - Strategies that Increase Parking Facility Efficiency

Shared Parking

Strategies that increase parking efficiency have been discussed as an effective parking management option. Shared parking is one aspect of improved parking efficiency and would require creating a parking area that serves multiple users or destinations.[75] Parking facilities can be shared in multiple ways; firstly, automobiles can share parking spaces rather than being assigned to one. Secondly, shared parking among a number of destinations would allow for the shared use of one parking facility among various uses at different usage peaks on the same site.[76] The literature recommends that projects be designed so shared parking can be easily achieved and modified when needed. Furthermore, shared parking also allows for 20% to 40% more users than in a parking facility that assigns specific spaces. Arlington Heights, a suburb of Chicago, reduced parking spaces by instituting this strategy.[77]

Image 9.4 - Shared parking facility in Arlington Heights, Illinois
Source: Desman Associates, n.d.

Parking Maximums

Parking maximums is another strategy used to improve parking efficiency.[78] Amending bylaws to reduce the number of parking stalls should be considered in TOD station areas, as placing set limits has shown to discourage excessive parking. According to the literature, this can be accomplished by reducing public parking supplies, imposing a special parking tax, and enforcing regulations that limit temporary parking facilities.[79] Furthermore, setting parking maximums can also help achieve specific land-use goals, such as encouraging the use of alternative modes of transportation, compact and high density developments, and attractive streetscapes.[80] Local authorities often hesitate to reduce parking requirements, so it is therefore suggested that the developer show that local parking requirements are being met. The developers of a mixed use project outside of Portland, Oregon demonstrated this by providing pictures of empty parking lots.[81]

9.2.2 - Strategies that Reduce Parking Demand

Mobility Management

Mobility Management (also known as Transportation Demand Management or TDM) is a blanket term for strategies that increase transportation system efficiency by changing types of travel behaviors. It may affect travel frequency, mode, destination, and/or timing (see Figure 9.2). These types of strategies are widespread throughout transit-oriented development; an example of this being the highly successful University of British Columbia TDM program. This program coupled the U-Pass (a discounted travel pass subsidized by the Province that is available to Vancouver's post-secondary students,) with frequent rapid bus services (operated by Translink) and higher parking rates at the main UBC Campus. These TDM initiatives have led to a reduction of 7,500 single occupancy vehicle trips since 1997 and reduced the need for parking spaces, allowing for the redevelopment of some

surface parking lots.[82] As showcased in this example, these types of programs often reduce parking demand and in some instances, car ownership. Additionally, many parking management strategies help reduce vehicle traffic and create more accessible land use patterns or support other mobility management objectives.[83]

Improved Transport Options	Incentives to Shift Mode	Land Use Management	Policies and Programs
Alternative Work Schedules	Bicycle and Pedestrian Encouragement	Car-Free Districts	Access Management
Bicycle Improvements	Congestion Pricing	Compact Land Use	Campus Transport Management
Bike/Transit Integration	Distance-Based Pricing	Location Efficient Development	Data Collection and Surveys
Carsharing	Commuter Financial Incentives	New Urbanism	Commute Trip Reduction
Guaranteed Ride Home	Fuel Tax Increases	Smart Growth	Freight Transport Management
Security Improvements	High Occupant Vehicle (HOV) Priority	Transit Oriented Development (TOD)	Marketing Programs
Park & Ride	Pay-As-You-Drive Insurance	Street Reclaiming	School Trip Management
Pedestrian Improvements	Parking Pricing		Special Event Management
Ridesharing	Road Pricing		Tourist Transport Management
Shuttle Services	Vehicle Use Restrictions		Transport Market Reforms
Improved Taxi Service			
Telework			
Traffic Calming			
Transit Improvements			

Figure 9.3 - Mobility management
Source: Litman, 2006

Financial Incentives
Financial incentives are when travelers are offered financial benefits for reducing their automobile trips. These benefits represent the savings that result from reduced parking demand. The various types of incentives include parking cash-outs, meaning that commuters who are offered subsidized parking can choose cash instead; transit benefits, which means that employees receive a subsidized transit pass; universal transit passes, which means that a group purchases discounted, bulk transit passes for all members.[84] Other incentives include providing discounted or preferential parking for rideshare (carpool) vehicles. Consumers value these options because they provide positive rewards for those who reduce vehicle trips and parking demand.

These types of incentives were strategies used in transit-oriented developments in the City of Chicago, including the Arlington Heights development. More specifically, the amount of money that could be saved by using alternative modes of transportation over a personal vehicle was highlighted in these TODs, and can be seen as a sort of quasi-financial incentive.[85]

9.2.3 - Parking Reform Tax Strategies

Car Free Tax Discount
This is a property tax discount provided to households that do not own an automobile, reflecting the lower roadway and traffic service costs they impose. For example, if municipal roadway maintenance and traffic service costs average $150 annually per vehicle owned in the community, a tax discount up to this amount could be provided to households that do not own a car.

Income Tax Policy Reforms
This means that employee parking subsidies are treated as a taxable benefit, employee parking tax exemptions are limited, or tax exemptions are provided to subsidize other modes, such as employer-provided transit passes. Current tax policies make parking subsidies an attractive employee benefit.

9.2.4 - Financing Parking Infrastructure

Another very important strategy that arises when assessing parking options is finding innovative ways to finance parking infrastructure. When it comes to developing creative approaches to financing parking, North American cities are often found lacking; this is largely due to an expectation of “free parking”, as Donald Shoup explains. This makes financing high density parking one of the most challenging parts of a parking development. Constructing parking spaces costs $3,000 to

$4,000 for a surface parking space, $20,000 to $25,000 for a structure parking space, and $40,000 to $50,000 for an underground parking space (see Tables 9.1 and 9.2). Because of these high costs, cities must develop innovative strategies to offset these expenses. Some of these types of strategies include tax-based incentives, such as cash-in-lieu, municipal investment, and pricing parking.

Minimum	300 Spaces	600 Spaces	900 Spaces
Above Ground ($20,000/stall)	$6,000,000	$12,000,000	$18,000,000
Surface ($3000/stall)	$900,000	$1,800,000	$2,700,000
Underground ($40,000/stall)	$12,000,000	$24,000,000	$36,000,000

Table 9.1 - Estimated minimum costs for parking infrastructure

Maximum	300 Spaces	600 Spaces	900 Spaces
Above Ground ($25,000/stall)	$7,500,000	$15,000,000	$22,500,000
Surface ($4000/stall)	$1,200,000	$2,400,000	$3,600,000
Underground ($50,000/stall)	$15,000,000	$30,000,000	$45,000,000

Table 9.2 - Estimated maximum costs for parking infrastructure

Cash-In-Lieu

This essentially allows developers to buy out of certain parking requirements of their new building in exchange for a payment to the municipality. The financial return received by the municipality can then be used to finance paid parking facilities in place of private spaces or public transit/TOD development. They can be considered as similar to, if not the same as, development charges.[86] An example of this type of strategy was implemented in Oshawa, Ontario. In the early 1990's downtown Oshawa was in a state of decline, with high levels of vacancies and many empty sites that were either contaminated or perceived to be contaminated, creating a major barrier for redevelopment. In response to this challenge, the City borrowed $18M to build an eight story, 750 stall municipal parking structure. The City then remediated the remaining parts of the site which attracted further invest in the downtown by the private sector.[87]

Municipal Investment

Municipalities can invest some or all of the capital required to build structured or underground parking. This could also involve the municipality entering a joint venture with senior levels of government, or with a private developer who could invest in a parking facility as a means of meeting their parking requirements.[88] Once the municipality has repaid its debt, they will continue to generate financial returns from this major asset. New parking facilities can foster new developments on existing surface parking lots, which will in turn, increase the municipality's tax base.[89] A strong example of municipal investment as a strategy comes from St. Catharines, Ontario. This parking garage project received funding from all three levels of government and provides 500 above ground and 100 below ground parking spaces. This parking garage is intended to support a new range of uses, such as a proposed arena downtown.[90]

Parking Pricing

Parking has never been "free" with the often hidden costs being carried by all members of the community. In 1995, a national survey of employer parking capacity in the United States estimated that 84% of the spaces in employer-owned facilities are surface lots, 11% are in above-ground structures and 5% are underground;[91] It was calculated that, on average, a parking space would cost approximately $84/month. Moreover, the 1995 national survey also found only 0.1% of all employers charge for employee parking. Thus, there is very little revenue generated by employee parking. There is no

evidence to suggest that this trend has changed in almost 20 years. Consequently, free parking represents a lost opportunity to generate revenue that has the potential to go a long way toward financing high density parking and/or other important TDM strategies.[92] Though this was an American study, it provides a very good strategy to accumulate funds as a means to finance a parking project that will continue to provide dividends in the future.

An example of this strategy was implemented in Sydney, Australia. In the City a 'Parking Space Levy' of AU$800 per stall is currently applied annually to parking in the central business district (CBD) and AU$400 per stall at other business districts. The levy applies to all privately owned, non-residential off-street parking. It is estimated that the levy raises more than AU $40 million annually, which is dedicated to transportation projects and cannot be used for operating expenses.[93]

9.3 - Planning Tools

This section outlines a variety of municipal planning tools permitted under provincial legislation that can be used to implement the Tremblay Station TOD plan.

9.3.1 - Zoning By-Law

A **zoning by-law** is used to put a TOD plan into effect by exactly stating permitted land uses, lot sizes and dimensions, building heights and setbacks, and parking requirements. The zoning by-law allows for the administration of the TOD plan by requiring that new development proposals comply with its specific requirements. It provides a legal way to manage land use and future development so that it is consistent with the objectives of the TOD plan.[94] Zoning by-laws allow for the screening out of undesirable land uses and development that is incompatible with transit-oriented development, such as drive-throughs, large-format big box retail, heavy industrial uses, and other auto-related uses.[95] TOD-supportive zoning has been a key factor for success in several precedents considered in this report. Downtown Plano, Texas, for example, changed zoning regulations to require increased residential densities, reduced parking requirements, and on-street parking to support TOD goals.[96]

The City of Ottawa has adjusted the zoning by-law to include TD zones within the Tremblay Station study area. These zones establish increased density and permit a wide range of transit-supportive uses (see Chapter 2).

The current zoning by-law could be revised to restrict certain auto-oriented uses, specifically drive-through facilities. In addition, parking structures/garages are only permitted on the same lots as other uses. The City should allow for parking structures/garages on separate lots to encourage consolidated parking among nearby uses. Furthermore, the by-law currently sets a minimum building height requirement of two storeys. In order to ensure future higher density development that is consistent with the vision of the TOD plan, the City should consider increasing this minimum building heights.

Flexible Zoning

While zoning by-laws need to be strict enough to ensure that development conforms to the vision set out in the TOD plan, flexibility in zoning can serve to enhance development potential and attract private investment. Flexible zoning reduces the demand for zoning variances and zoning by-law amendments, thereby creating an attractive area for development. The City of Victoria made zoning flexible for the Selkirk Waterfront Community by allowing developers to:

1. Transfer some floor space allocation for office/ commercial to residential;
2. Use height and massing dimensions, rather than floor

area ratio or floor space ratio, as the main building criteria; and
3. Have some flexibility with density and types of suites.

The major challenge facing the Tremblay Station area is a lack of development interest to transform the area into a TOD. Flexible zoning is one strategy that may help to attract this initial development.[97]

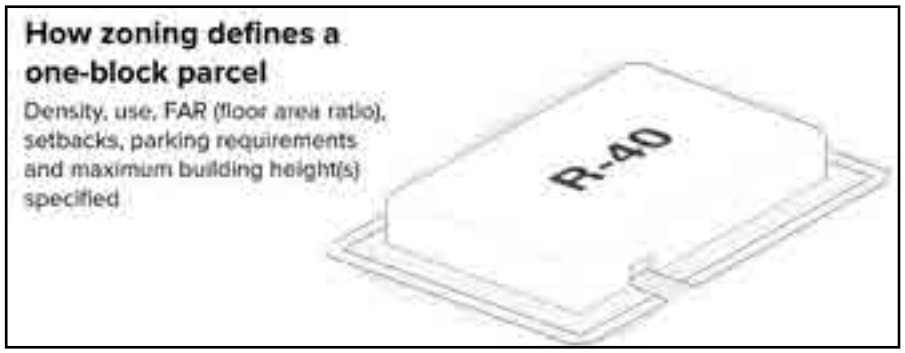

Figure 9.4 - Applying zoning by-laws
Source: Katz & Price, 2006

Interim Use Provisions

Zoning by-laws should also include ***interim use provisions*** to support phasing in TOD development. An interim use provision allows for uses that otherwise may not be permitted in the final phase of development, but may be required for the viability of the initial stages of development. Interim uses should be regularly reviewed to ensure they are reflective of development needs.[98]

In the Tremblay Station area, surface parking should be designated as an interim use in the initial stages of development. Regular review periods should be used to determine when the surface parking supply is no longer justified, at which point, the interim use provision can be removed.

9.3.2 - Site Plan Control

A site plan control by-law is used to ensure that developments are built and maintained in the way that was approved by council to certain standards of quality, sustainable design, and appearance.[99] For areas within a TOD plan area, site plan approval should be based on a development's contribution to TOD principles in addition to its conformance with guidelines or codes. For instance, site plan control can give priority to development that facilitates pedestrian access to transit over development focused on automobile access and parking.[100] Site plan control was utilized in the development of Court House Metrorail Station, Arlington, Virginia which incorporated a comprehensive review process and public meetings with City staff, public, and developers.[101]

A transit-oriented development checklist can be useful when reviewing proposed developments under site plan control. The checklist should measure how proposed developments reflect the vision and objectives of the TOD plan. The City of Edmonton has a TOD Checklist that assigns points out of 35, to proposed developments based on six key principles of TOD:

- Higher density
- Mix of uses
- Transit and cycling
- Streets and walkability
- Parking management
- Urban design and amenities

Projects that score 70 percent or lower require further investigation or redesign before site plan approval is granted.[102] York Region has a similar TOD Implementation Checklist that assesses how well a project incorporates essential TOD elements under six categories:[103]

- Pedestrians
- Built-form
- Parking

- Connections
- Land-use
- Implementation

Figure 9.5 - Applying site plan control
Source: Ministry of Municipal Affairs and Housing, n.d.

The City of Ottawa has a site plan control by-law that covers the entire city. To ensure that developments within the Tremblay Station area reflect the vision of the TOD Plan, a specific TOD checklist should be incorporated into Ottawa's site plan review process for this area.

9.3.3 - Development Permit System (DPS)

A **Development Permit System (DPS)** is a streamlined review and approval system for development that combines zoning, site plan approval, and minor variance processes into a single application and approval procedure. DPS can be applied to an entire municipality or specifically to the area covered by a TOD plan. It allows for variations in height, density, and lot area standards and permits a range of conditions to be imposed. DPS is a municipal approval fast-tracking measure that is used to encourage development by reducing associated processing times. The City of Brampton, Ontario, developed a DPS for its downtown Main Street North Area, an area transitioning from a residential area to a mixed-use neighbourhood. The DPS allowed for expedited changes to take place with a single approval process, thereby supporting new investment and redevelopment while also maintaining the City's vision with unique requirements for the area.[104]

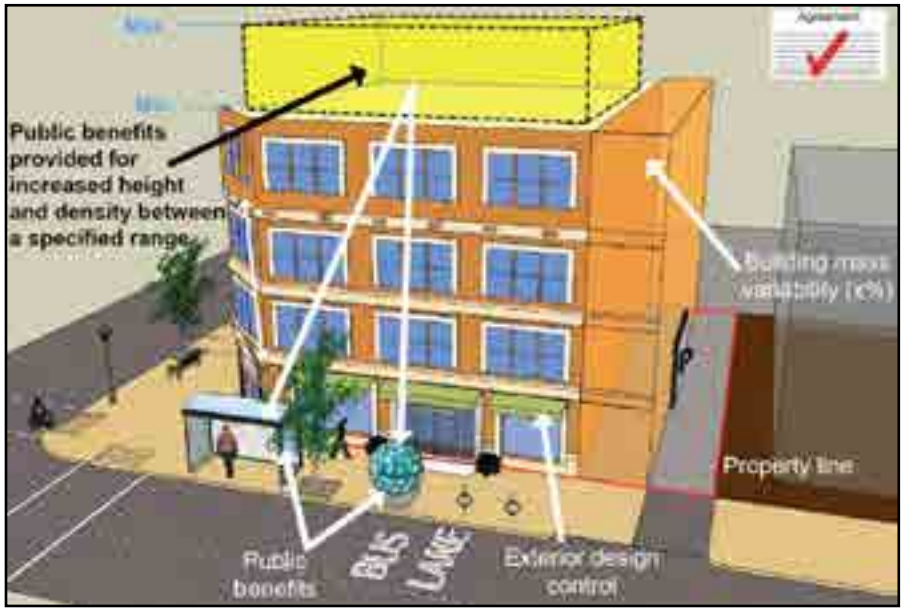

Figure 9.6 - Applying a development permit system
Source: Ministry of Municipal Affairs and Housing, n.d.

The City of Ottawa does not currently have a DPS for the Tremblay Station TOD area, and stakeholders have indicated that the lengthy approval processes hinder development in the area. Developing a DPS for this site could streamline approval processes to create an attractive environment for developers, while also ensuring that any new development and redevelopment is consistent with the TOD plan objectives.

9.3.4 - Design Guidelines

The City of Ottawa has a multitude of guiding documents that address urban design. Urban Design is defined by the City of Ottawa as "the process of applying desired functional and aesthetic parameters to the design of the city and its parts".[105] This process is ongoing and requires a common vision and cooperation. The City of Ottawa's Official Plan (2003) outlines six design objectives that include the following:[106]

- Create unique communities
- Promote quality development
- Enhance safety and accessibility
- Respect established character
- Integrate adaptability and diversity
- Protect natural systems

The Transit-Oriented Development Guidelines (2007) direct design throughout the City for TOD. The purpose of the TOD Guidelines is to "assess, promote, and achieve, appropriate TOD Development within the City of Ottawa".[107] These guidelines are applied to all development that is within a 600 metre radius of a rapid transit station. These guidelines consider all other directing documents including the Official Plan and Zoning By-Law. The urban design guidelines are used to direct the design and review process for subdivision, site plan control, rezoning, and official plan amendments. The guidelines also help to prepare new community design plans or secondary plans for communities that are underdeveloped or are redeveloping. Finally, the guidelines are used to compliment existing community design plans or secondary plans.[108] There are six major sections included in the design guidelines that consist of: land use, layout, built form, pedestrians and cyclists, vehicles and parking, and the streetscape and environment.[109]

Design guidelines may be particularly beneficial should the City decide to redevelop the Ottawa Baseball Stadium. Utilizing this mechanism would allow the City of Ottawa to guide the built form based on the vision outlined in the 2012 TOD Plan.

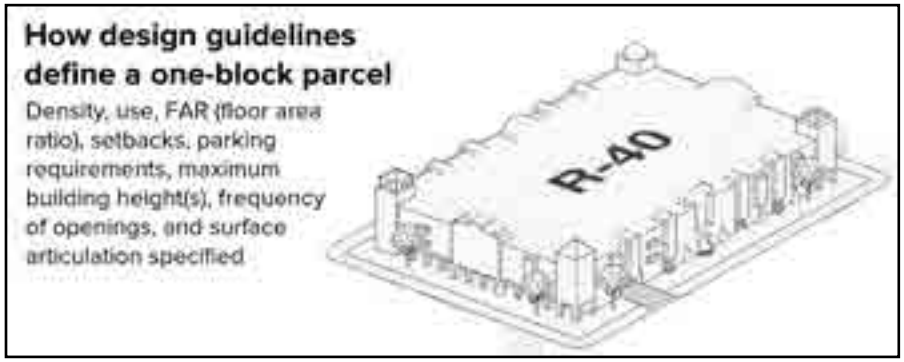

Figure 9.7 - Applying design guidelines
Source: Katz & Price, 2006

9.3.5 - Form-Based Codes

Form-based codes can be used to designate scale, development intensity, shape of public spaces, and interrelationships between buildings to achieve a specific urban form. This tool focuses on the physical character of development and can be used to guide the character of the Tremblay Station area. Land uses are regulated broadly and focus more on the context of the surrounding area. A greater emphasis is placed here on the relationship between buildings and the street, pedestrians and vehicles, and public and private spaces so that development is aesthetically compatible with that of the surrounding area. It can also be used to enhance the existing character or provide a shared, but dramatic change to the community.[110] Form-based codes may be used to make the Tremblay Station study area more attractive for those seeking to work and play in the community. While there is potential for this to be a useful tool in the future, the market is not currently strong enough to support a form-based code in the Tremblay Station area.

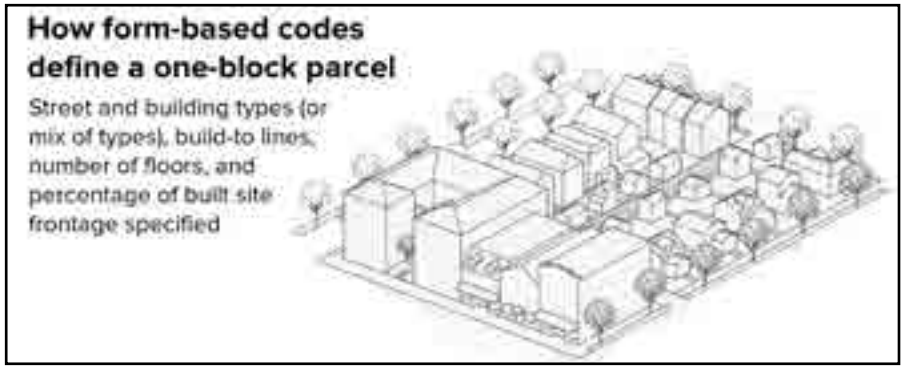

Figure 9.8 - Applying form-based codes
Source: Katz & Price, 2006

9.4 - Administrative Arrangements

9.4.1 - Public-Private Partnerships (P3s)

Public-private partnerships (P3s) are a medium-to-long term collaborative approach between governments and the private sector for the purpose of developing and/or maintaining public infrastructure, projects, or services.

Responsibilities vary from agreement to agreement, but are typically assigned based on whichever party is best suited to fulfill it. In Ontario, municipalities usually assign the design and construction to the private sector along with varying levels of private responsibility for financing, maintenance, and operation.[111] Figure 9.10 illustrates different delivery models of increasing private sector involvement.

The traditional development method utilized by the public sector is the Design-Bid-Build strategy (DBB). Under this structure, the public sector is responsible for the design of the asset, contracting out to the private sector for the construction phase of the development. Contracts are awarded to the most suitable bidders through a competitive tender process. Following completion, operation and maintenance responsibilities are handed back over to the public sector and the asset is paid for in full.

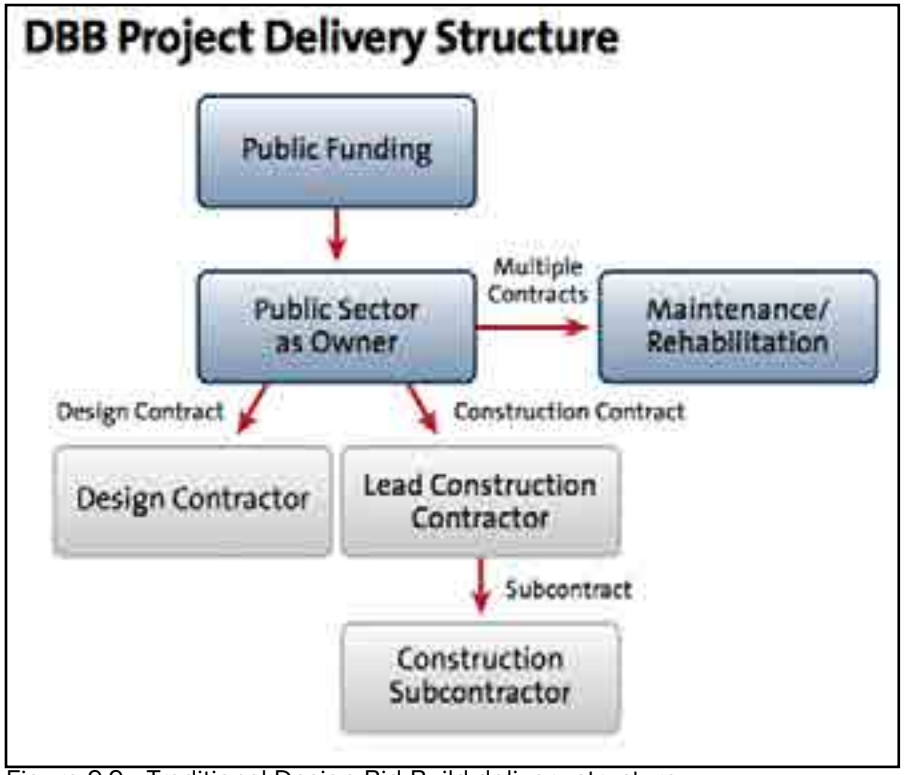

Figure 9.9 - Traditional Design-Bid-Build delivery structure
Source: Canadian Council for Public Private Partnerships, 2011

Models for public-private partnerships suggested by the Canadian Council for Public Private Partnerships follow structures that allow the municipality to transfer some of the financial risks and responsibilities to the private sector at various stages of development. The three most common P3 approaches include: Design-Build-Finance (DBF), Design-Build-Finance-Maintain (DBFM) and Design-Build-Finance-Operate-Maintain (DBFOM). Each of these models include the creation of a **Special Purpose Vehicle**, or **Implementation Agency**, which bring together both public and private project stakeholders to finance and regulate development, and maintenance and operation, depending on the P3 structure being employed.

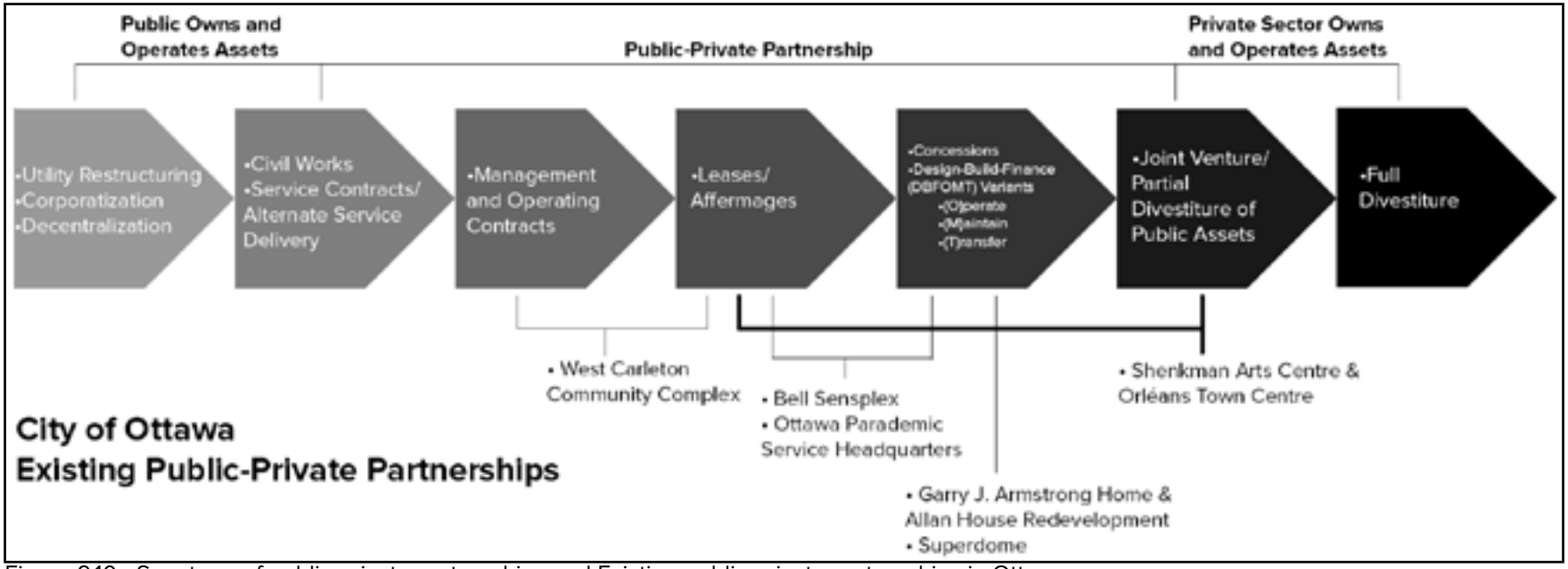

Figure 9.10 - Spectrum of public-private partnerships and Existing public-private partnerships in Ottawa
Adapted from: World Bank, 2014; Canadian Council for Public Private Partnerships,2011; City of Ottawa, 2014

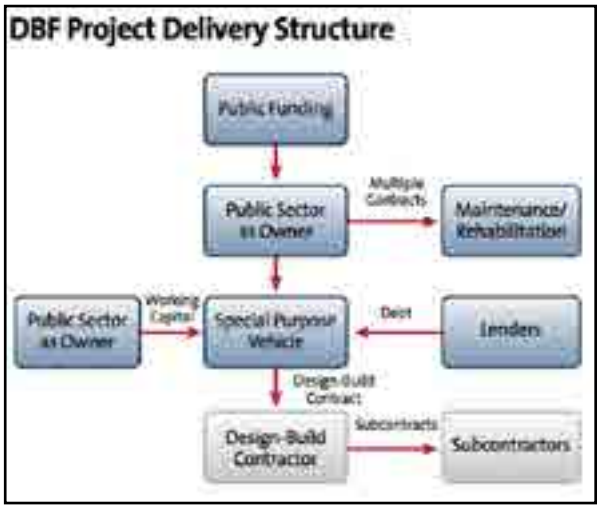

Figure 9.11 - Design-Build-Finance delivery structure
Source: Canadian Council for Public Private Partnerships,2011

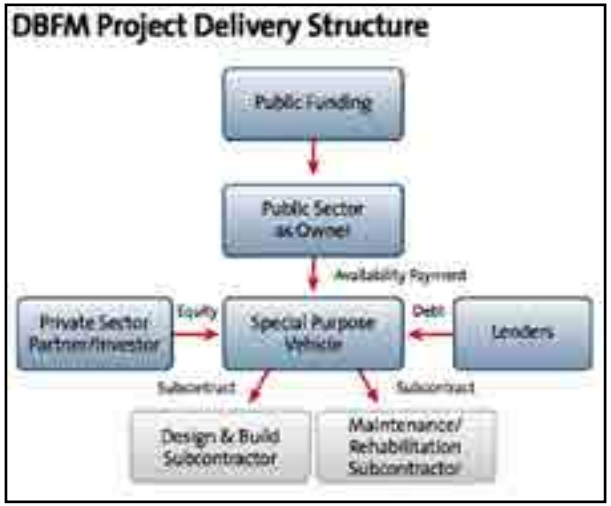

Figure 9.12 - Design-Build-Finance-Maintain delivery structure
Source: Canadian Council for Public Private Partnerships,2011

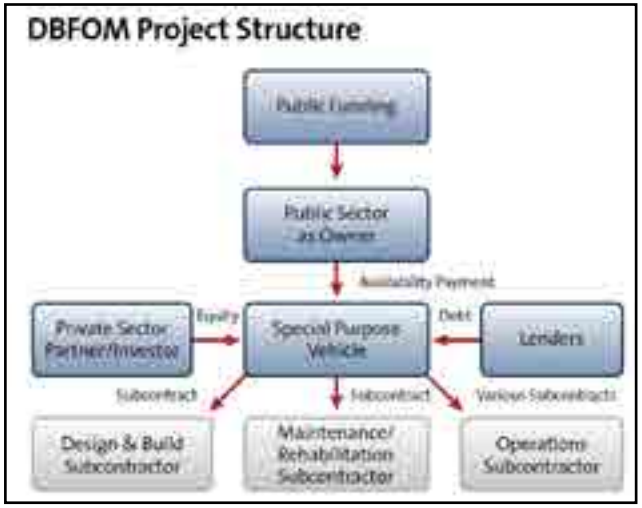

Figure 9.13 - Design-Build-Finance-Operate-Maintain delivery structure
Source: Canadian Council for Public Private Partnerships,2011

Public-Private Partnerships in Ottawa

Public-private partnerships have been recognized by the City of Ottawa as a viable tool for capital project development since at least 2002.[112] In 2013, the City adopted a new Public-Private Partnerships Policy that outlines the procedures for considering, implementing, and monitoring P3s.[113] Since 2002, P3s have allowed the City to develop the Superdome, Bell Sensplex, the expansion of the Ray Friel Recreation Complex, and the Garry J. Armstrong Long-Term Care Home. Other approved P3s include the Allan House redevelopment, Ottawa Paramedic Service Headquarters, Shenkman Arts Centre and Orléans Town Centre, and the West Carleton Community Complex.[114]

Image 9.5 - Bell Sensplex
Source: City of Ottawa, 2014

Most of the existing P3 agreements with the City of Ottawa revolve around Design-Build-Finance-Operate agreements (DBFOs) in which the municipality transfers the responsibility of the design, construction, and operation of an asset to the private sector. DBFOs with the City usually include a clause that has the private sector transfer the land and property to the City at the end of the agreement, essentially turning DBFOs into a financing or land acquisition strategy. The City however, has taken a pragmatic approach to P3s by utilizing different strategies depending on the context (see Figure 9.10).

Public-Private Partnership Precedents

Public-Private Partnerships are a popular strategy for development in and around TODs. Examples of successful P3 implementation for transit-oriented development include Bethesda Row in Bethesda, Maryland and Village de la Gare in Quebec.

Bethesda Row, Bethesda, Maryland

The Bethesda Row development in Bethesda, Maryland, utilized a public-private partnership between the Federal Realty Investment Trust and Montgomery County.[115] The Federal Realty Investment Trust financed the development of a mixed-use residential and commercial hub through a REIT, while the County built publicly-owned and operated parking facilities throughout the area. The public investment in parking structures made the overall project financially feasible, with the County waiving parking requirements for smaller businesses that were able to utilize the public parking structures to meet their customers' needs. The County was able to subsidize the construction of parking facilities through per-hour parking rates and property taxes in the area.

Village de La Gare, Mont-Saint-Hilaire, Québec

In Québec, the Village de La Gare transit-oriented development came about through a unique collaboration between the Town of Mont-Saint-Hilaire, the metropolitan transit authority (AMT), and a private developer – Groupe CBL.[116] The municipality and the AMT acquired a parcel of land from Groupe CBL for a train station and parking area which would function as a multi-modal transportation hub. Development within 500 metres of the train station was intended to enhance services and connectivity and these costs were split between the municipality and Groupe

CBL. The municipality paid for parking lots, shelters, and a linear park with bicycle and pedestrian pathways, in addition to decontaminating land. Groupe CBL's investment paid for the construction of related road and sewer infrastructure and public amenities.

Image 9.6 - Train station with nearby residential uses in Village de la Gare
Source: Diotte, 2007

9.4.2 - Implementation Agencies

Regardless of the P3 structure being utilized for development, public-private partnerships always include the creation of a Special Purpose Vehicle, or Implementation Agency, which carries out the development, maintenance and/or operation of the project, depending on the level of private sector risk. The following are three examples of the types of implementation agencies that have been created or utilized for the management of TOD development projects.

TOD Programs

The creation of a specific TOD Program has had proven success, especially in cities like Portland, Oregon. It has been operational since 1998 and primarily provides the funds required to acquire sites for development and for TOD easements. Once these properties are acquired, it is planned and divided and resold to private developers for construction. Such programs play an implementation-based role that provides incentives in the form of grants to private developers to encourage higher-density, mixed-use projects near transit.[117] It also works to maximize TOD potential by making multi-year investments in catalyst projects and place-making elements.[118]

The program was able to help stimulate the construction of transit villages along the East and Westside Light Rail and on the Interstate MAX as well as the South Corridor.[119] TOD easements have been used in some projects in order to offset the added costs that result from new development with higher densities and improved pedestrian environments. However, because of real-estate economics, TOD projects are not always feasible and are therefore often built over parking so that uses are stacked when the land is more expensive than the structure itself.[120] Prior to receiving funding from the program, projects are evaluated on their public benefit and the level of funding they require. A Regional and Urban Centres Implementation Program was also developed based on Metro's TOD program that used joint development tools to help encourage higher density development projects by the private sector with regional centres, using regional flex funds.[121]

Transit Agencies

Another form of implementation agency is regional transit agencies. Their most dominant role has often been in meeting regional mobility needs however, their local land assets often provide them with unique opportunities to spur development around existing transit stations. VIA Rail's ownership of land near Tremblay Station provides the City with a unique opportunity to partner with the transit agency to redevelop the parcels adjacent to the existing station. Similar efforts in Atlanta, Georgia have proved successful in stimulating development along many of MARTA's (Metropolitan Atlanta Rapid Transit Authority) transit stations. In many ways similar to VIA Rail

and OC Transpo, it resembles a private corporation despite being funded by public revenues. Although MARTA displays private-sector characteristics, the charters that establish transit authorities provide them with various powers typically awarded to public agencies, including but not limited to the ability to finance projects using bonds backed by public revenues.[122] What allowed MARTA to successfully invest in real estate surrounding its transit stations, was its ability to dedicate public revenues to backstop low-interest bonds.[123] This allowed them to finance the project without conforming to conventional lending practices.[124] Additionally, a partnership created with VIA Rail could initiate discussions about the reopening of the tunnel located under VIA Rail's land for enhanced pedestrian connectivity to the north site.

TOD Related Development Intermediary

A **development intermediary** is essentially the establishment of a publicly-run development agency that works to either acquire land and/or realize goals for development on publicly owned land. They are often at the forefront of public-private partnerships and are often publicly funded to invest into land that is slated for development. These kinds of publicly administered development agencies has had proven success in cities like Surrey, BC, and New York City, NY. The City of Surrey established the Surrey City Development Corporation (SCDC) in 2007 to help advance the City's financial and business goals. This was successfully executed by developing a surplus of the City's land holdings by strategically acquiring properties for redevelopment. It acts as a catalyst in real estate development projects on City-owned sites, partners with private sector parties on various partnerships, and provides annual dividends to the City among other duties.

The case of the Hudson Yards Development Corporation (HYDC) in New York is another example of a successful public development agency. Under the HYDC, an Infrastructure Corporation (HYIC) was created to help finance capital improvements to various redevelopment projects in New York. Since its inception in 2007, it has successfully raised $3 billion in proceeds using two bond offerings, which were secured and repaid using a variety of value capture mechanisms related to new real estate developments being undertaken by HYDC.[125] Their largest source of revenue from commercial payments came from 'payments in lieu of taxes' or 'PILOTS'.[126] This PILOT program allowed the NYIDA (the NYC Industrial Development Agency) to purchase land from a developer for a fraction of its value in order to relieve the developer from paying traditional property taxes. A predetermined amount would be paid to the NYIDA for the next 30 years, which would be directly transferred to the HYIC. After the end of this 30-year period, the land would be sold back to the developer for a nominal price and the developer would resume paying normal property taxes. Discounted PILOT rates, which were lower than normal property taxes, provided incentives for developers to partake in the initiative prior to construction of the site.

Image 9.7 - Render of Phase 1, Hudson Yards, New York
Source: Related Companies, 2013

9.5 - Marketing and Communication Tools

Marketing and branding can act as an essential tool for establishing a successful TOD. It was stressed upon repeatedly by stakeholders during the Implementation Workshop that a coherent vision was needed to guide transit-oriented development for the Tremblay Station area. A successful marketing strategy can bring focus to the area as well as draw in private investors.

9.5.1 - IBM's Smarter Cities Challenge Report

Fortunately for Ottawa, a communications and marketing strategy was developed to complement the long-term growth for the identified TOD study areas. In 2012, Ottawa along with 32 other cities, were selected to receive a 'Smarter Cities Challenge' grant from IBM as a part of IBM's citizenship efforts to build a Smarter Planet. In September of 2012, a team of six IBM experts worked to devise recommendations to address some of the challenges identified by the City of Ottawa. Through this, a marketing and communication plan was developed to assist the City's goal of transforming several communities located along the future LRT line into successful transit-oriented developments. The recommendations outlined by IBM's Smarter Cities Challenge Report for Ottawa capitalize on Ottawa's strong foundation for transit-oriented development and population intensification initiatives and advised that the City build upon these strengths and develop a strong vision and message to inspire support for TODs amongst various stakeholders.[127]

Figure 9.14 - IBM's Smarter Cities Challenge Report for Ottawa
Source: IBM, 2012

To achieve this, the City must first identify a champion for the transit-oriented development initiative so that the TOD developments surrounding Train, St. Laurent and Cyrville transit stations will become a rallying point for meeting Ottawa's vision. The goal listed by the IBM report is to shift public mindset from associating transportation as a utility service to transportation as a way of facilitating vibrant communities. The role of the champion is to act as a liaison between internal City departments and stakeholders within the community such as developers and business and community organizations.

The second recommendation outlined in the report is to create market segmentation in order to identify key populations and business segments for bolstering mixed-use development within the TOD study areas. The actions needed for achieving this second recommendation are:

- Create vision profiles for three areas
    - "The City should create demand for mixed-use communities in the selected neighbourhoods by shifting attention from the utility of transportation to a rich vision of vibrant communities"

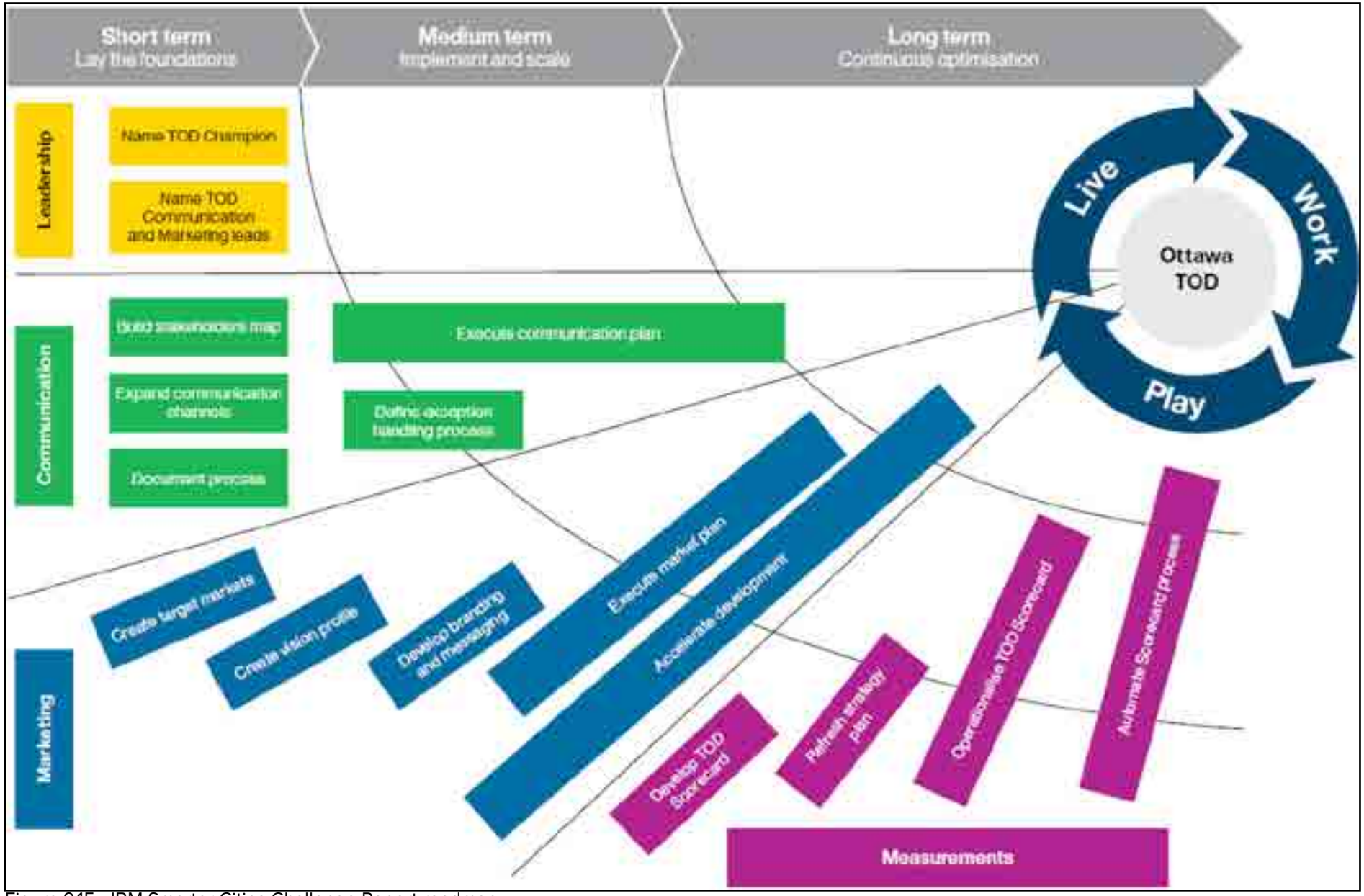

Figure 9.15 - IBM Smarter Cities Challenge Report roadmap
Source: IBM, 2012

- Develop branding and messaging
    - “The City should develop a brand and associated marketing messaging for each TOD community. This step synthesizes the profiles and segmentation into a specific set of messages that personalizes the value of each community to target markets”
- Develop a TOD marketing plan
    - “The City should develop a TOD marketing plan as a stakeholder-centric marketing strategy – including social-media marketing along with television, radio, print, events and other traditional marketing tactics – to engage stakeholders, build awareness and generate excitement”
- Accelerate development by encouraging early entrants
    - “The City should locate and motivate key developers to commence construction of TOD developments through a “race to the finish” implementation that will encourage early entrants with diminishing returns for later adopters”
- Establish a TOD Lead
    - “In order to quickly build demand in Train, St. Laurent and Cyrville, the City should establish a TOD lead role to ensure a proactive approach to coordinating stakeholders and build demand”

The third recommendation is to establish a TOD communications lead to ensure consistent and timely communication between the city and stakeholders. The Communications lead would be directly subject to the TOD champion.

The fourth recommendation is to develop a strategic TOD scorecard to complement the existing TOD plans. The scorecard should be used citywide and for the development areas in order to provide focus to where special attention is needed. The intent of developing the scorecard is to translate strategy into tangible, measurable objectives.

By utilizing the recommendations outlined in the IBM report during development phasing in the Tremblay Station area, some of the challenges outlined in the site’s SWOC analysis can be addressed. Effective branding and marketing will help this TOD node develop a unique vision that complements the vision for the entire Confederation Line corridor. The positive traits highlighted by the marketing plan may aid in distinguishing Tremblay Station from adjacent TOD areas and reduce perceptions of remoteness held by potential developers and residents. Overall, the implementation strategies outlined in this report were devised to complement the IBM’s Smarter Cities Challenge Report for Ottawa. The incorporation of both sets of recommendations would aid in achieving the TOD goals outlined in the City of Ottawa’s TOD Plan.

9.5.2 - City of Ottawa Urban Design Awards

Since 2005, the City of Ottawa has held their Urban Design Awards, celebrating the achievements of designers, architects and developers for their construction projects throughout the city. Over the years, the design awards have evolved to include specific development categories of merit and excellence including: Urban Infill (low-rise and mid to high-rise), Public Places and Civic Spaces, Urban Elements and Student Projects.[128] Some of the past awards recipients include the Canadian War Museum,[129] the Laurier Bridge Reconstruction[130], the Cancer Survivor’s Park,[131] and the Ottawa Convention Centre[132]. The program celebrates achievements in urban design and creates incentive for both the public and private development sectors to strive for innovative construction design.

9.5.3 - Public Consultation

Public consultation is an important tool for guaranteeing communication and understanding between City departments, the public, and key stakeholders.

This is especially relevant for the future Tremblay Station TOD as there are well established neighbourhoods bordering the study area. It is crucial to maintain favourable relations with the wards to the North and South, as well as Eastway Gardens to the East. From the September Stakeholder meeting at the City of Ottawa, general sentiment is currently positive for residents in these communities. Through the subsequent development phases, it is imperative to maintain positive relationships and take into consideration public sentiment in order to guarantee smooth development in the area.

9.6 - Summary of Implementation Tools

A range of strategies have been presented to the City of Ottawa for the effective implementation of the Tremblay Station TOD Plan. While the City already employs a number of these tools, various other strategies have effectively been used by TOD precedents around North America. These tools taken in tandem, can work to realize a successful transit-oriented development for the Tremblay Station area. Table 9.3 summarizes the tools and strategies by breaking them down into four themes: Guiding Future Development, Financing Development, Attracting Development, and Facilitating Development.

Guiding Future Development	**Financing Development**	**Attracting Development**	**Facilitating Development**
Zoning By-Law	Value Capture	Flexible Zoning	Public-Private Partnerships
Interim Use Provisions	Tax Increment Financing	Development Permit System	TOD Related Development Intermediary
Site Plan Control By-Law	Capital Improvement Plans	Mobility Management	TOD Programs
Development Permit System	Community Improvement Plans	Marketing Tools	Transit Agencies
Form Based Code	Tax Increment Equivalent Grants	Community Improvement Plans	Public Consultation
Shared Parking	Grant and Loan Programs	Financial Incentives	
Parking Maximums	Development Charges	Car Free Tax Discount	
Mobility Management	Cash-in-Lieu	Income Tax Policy Reform	
	Parking Pricing		

Table 9.3 - Summary of implementation tools

Although all of these strategies effectively stimulate development around transit, the most relevant approaches for Tremblay Station informed the final recommendations of this report. Relevant approaches for the area include strategies that address current site and market conditions and stakeholder input, tools that are permitted under existing provincial legislation, and strategies that are compatible with existing tools and financial mechanisms currently being employed by the City of Ottawa. These strategies have informed a list of short and long-term recommendations specific to the Tremblay Station area, as outlined in Chapter 11.

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10.0
Demonstration Plan

In order to show how development can be jumpstarted in the area, a demonstration plan was drafted for the parking lot adjacent to the Ottawa Stadium using some of the implementation tools identified in Chapter 9. This demonstration plan is not a design study. Instead, it examines the financial feasibility of developing in the Tremblay Station area.

10.1 - Baseball Stadium Development Proposal

The baseball stadium site at 300 Coventry Road is currently the only property owned by the City in the Tremblay Transit-Oriented Development (TOD) area. The City can develop this site as a strategy to further implement the Tremblay TOD plan. The site currently consists of the Ottawa Baseball Stadium and a 21,000 m^2 surface parking lot of approximately 800 spaces. The parking lot primarily serves the baseball stadium and is also used as overflow parking for the adjacent Ottawa Conference and Event Centre. The City has identified the stadium as a priority use in the area, with a 10-year baseball team contract beginning in 2015. Therefore, it is not currently under consideration for development.

Image 10.1 - Ottawa Baseball Stadium

The parking lot, however, has the potential to be developed in a way that facilitates the use of the stadium, while also supporting TOD in the area. The proposed development is a two-phase project, with phase one consisting of a parking structure and phase two consisting of an office building.

Image 10.2 - Parking lot adjacent to the Ottawa Baseball Stadium
Source: Google Maps, 2013

Figure 10.1 - Two-phased project with office and consolidated parking

10.1.1 - Rezoning

The proposed phases of development will require the existing parking lot portion of the property to be rezoned from its current L2 Major Leisure Facility Zone, to the TD2 Transit-Oriented Development Zone. Office is identified as a permitted use in this zone with a maximum building height of 20 storeys.[1] This zone also permits a parking garage located on the same lot as an office building. For the proposed office building, the TD2 zone requires a minimum of 386 parking spaces at 0.75 per 100 square metres.[2] The stadium requires the replacement of its existing surface parking of 800 spaces.

10.1.2 - Parking Strategy

A shared parking strategy could be implemented allowing for both the office tower employees and baseball stadium guests to use the parking structure at different times. The parking structure would provide the minimum required parking spaces for the office building as per the zoning by-law, while also encompassing the needed parking for the stadium. Since office parking will be used mainly on weekdays during daytime hours, and stadium spaces will be used on game days during weekday evenings and weekends, the parking in the structure can be shared by both office and stadium users. Parking spaces for office employees could be rented monthly for $100 per spot. Parking for stadium events could be set at $20 per space. There is potential for additional revenue from daily users of the parking structure, such as visitors on non-game days, and occasional overflow from the adjacent conference centre.

Strategic parking solutions are a key component of effective transit-oriented development implementation. The development of this parking structure could effectively consolidate parking and maximize municipally owned land by making it available for future development. This facility could improve parking efficiency by providing shared parking that serves multiple users or destinations, including: office and baseball event users.

10.1.3 - Phase 1: Parking Structure

To replace the existing parking and make additional land available for development, a 750 space above-ground parking structure could be built. This five level structure would take up approximately 4500 m^2 (48,000ft^2) of the land. At $22,400 per parking stall, the parking structure would cost approximately $16.8 million. Approximately 100 surface parking spaces on the south side of the stadium would remain after development. The structure would be adjacent to the Queensway and be designed in a flexible manner that allows for easy expansion if necessary. The structure would consolidate parking in the area and also allow the City to capture the value of the land in phase two of the project.

10.1.4 - Phase 2: Office

The second phase is to develop a 15-storey office building. Refer to Table 10.1 for specific building characteristics. The adjacent 13-storey hotel was used as a precedent for the proposed office building height. The construction of the office building would cost approximately $80 million. This building would allow for intensification close to Tremblay Station and has the potential to serve as a catalyst for transit-oriented development in the area. The appropriate design guidelines for the area would be developed at the time of the zoning.

Building Height	55 m (180 ft)
Floor Height	3.66 m (12 ft)
Gross Floor Area	51,450 m^2 (553,803 ft^2)
Floor Area Ratio	2.45
Site Area	21,000 m^2 (226,042 ft^2)

Table 10.1 - Summary of key office building characteristics

10.1.5 - Vacancy Rates

Securing an institutional, federal tenant will be a requirement for development to proceed. The development considers a vacancy rate of 5%, rather than the existing Ottawa office vacancy rate of 10.1%,[3] due to the expectation of a federal tenant. The *Capital Urban Lands Master Plan* established by the National Capital Commission outlines support for the creation of a balanced distribution of federal facilities within Ottawa's urban area that are located close to a number of transit options.[4] This development would therefore represent a federal facility that is in line with this Master Plan.

10.2 - Scenario 1: Municipally Owned

10.2.1 - Financing

Project construction could be financed through a municipal bond. The City would not have to invest any equity into the project, other than the value of the land. Considering the location and nature of this development, as well as the associated timing and costs, the return on the bond is conservatively estimated at 6.5% (prime plus 3.5%).[5] As a comparison, a Government of Ontario Bond maturing in 2029, a similar date to the date of maturity for the City of Ottawa bond is at a coupon value of 6.5%.[6] This rate would be lower than a conventional commercial construction loan estimated at 7%.[7]

Relative to other financing options, a municipal bond has comparatively low risk in the marketplace, especially since the City of Ottawa has a triple-A credit rating. This represents the best possible credit rating in the market place. Therefore, it is a low risk investment from the market perspective. In other words, there is low probability that the City would default on the repayment of the bond. Considering that the Province of Ontario has a lower credit rating of AA,[9] the 6.5% bond value for the City of Ottawa is conservative.

10.2.2 - Project Return

The City is a sponsor of good development in the public interest. This means that the City does not have the same profit motivation as a private developer and would potentially invest in a project even if it were only on a break-even basis. At the same time, any viable development should yield a minimum 15%-20% return on project cost as measured by the Canadian development industry and standard banking practices.[10] If this simple profit objective is set, then this leaves latitude for contingencies such as inflation, shortfalls in lease revenue, unanticipated vacancies, and other associated unexpected costs to the project. Therefore, there is lower probability that the project will not lose money. It is most important to maintain a generous debt service ratio (the cash flow has to be more than enough to service the bond payments) as a buffer to ensure the City does not default on any bond payments.

10.2.3 - Comprehensive Assessment

According to the financial feasibility analysis, the development of the office tower and parking structure would be profitable. Table 10.2 summarizes the key outputs from the financial feasibility analysis. In this scenario, the project will start making money in year 3 and the development could be sold at the end of year 25 at the net selling price of approximately $183 million. Based on a predetermined threshold for the **internal rate of return (IRR)** at 11%, the before tax internal rate of return for the project at 22% demonstrates a sound investment. The **net present value (NPV)** of the project is also positive at $20,881,783 at a **discount rate** of 12%. The full financial feasibility analysis for the municipally owned scenario and their assumptions may be found in Appendices E.2 and E.1 respectively.

Total Project Cost	$151.9 million
Net Operating Income (NOI)	$12 million
NOI at end of Holding Period	$19.3 million
Gross Selling Price	$260 million
Equity Invested (Land Value)	$5.6 million
NPV @ Discount Rate (Before Tax)	$20.8 million
IRR (Before Tax)	22%

Table 10.2 - Summary of key figures from the Municipal Development Pro Forma

10.2.4 - Sensitivity Analysis

A sensitivity analysis was conducted to understand how key variables influence the pro forma budget and/or discounted cash flow. The sensitivity analysis simulates two changes. First, the office rental rate was adjusted. The lowest office rent that could be charged for the project to break even is $25.75/sq.ft. (see Table 10.3). Second, the construction costs were adjusted using a higher estimate from the Altus Construction Guide (2014) at $185/sq.ft. compared to the lower estimate of $144.53 (see Table 3). This sensitivity analysis demonstrates that there is room for fluctuation in the two variables examined.

	Sensitivity Analysis #1	**Sensitivity Analysis #2**
	Office rental rate at $25.75/sq.ft	Office construction costs at $185/sq.ft
NPV @ Discount Rate (Before Tax)	$565,905	$1,744,550
IRR (Before Tax)	12%	13%

Table 10.3 - Net present values and internal rates of return after adjusting office rental rate and construction costs

10.3 - Scenario 2: Private Developer

10.3.1 - Financing

If a private developer were to develop the site, the bank would likely require 25% equity for development financing. Considering the standard interest rate, a construction loan would likely be granted at a rate of 7% (prime plus 4%).[11] Financing over the 25 year operating period is assumed at a rate of 5%. The City could tender the land through a **Request for Proposals (RFP)** to obtain a competitive price.

10.3.2 - Comprehensive Assessment

The development of the site is financially feasible in current market conditions. As illustrated in Table 5, the private sector managed development has an after tax NPV of $6.8 million at a discount rate of 12%. The corresponding IRR is 13%. The development would be positive in year one if the developer was required to invest 25% equity as assumed in the pro forma. The IRR of 13% satisfies the predetermined threshold of 12% (see Table 10.4). The financial feasibility pro forma for the private developer scenario and its assumptions may be found in Appendices F.3 and F.1 respectively.

Total Project Cost	$155 million
NOI	$12 million
NOI at end of Holding Period	$19 million
Gross Selling Price	$298 million
Equity Invested (25% of total project cost)	$38.7 million
NPV @ Discount Rate (After Tax)	$6.8 million
IRR (After Tax)	13%

Table 10.4 - Summary of key figures from the Private Development Pro Forma

10.3.3 - Sensitivity Analysis

A sensitivity analysis was performed to evaluate variations in rental rates and construction costs. The current rental rate per square foot of office space in Ottawa is estimated at $32.75/sq.ft. If a private developer was to develop the site, the lowest rental rate that could be charged is $30/sq.ft. (see Table 5). That means that if the rental rates were to decrease by $2.75, the project would still break even. The construction costs were then adjusted using a higher estimate from the Altus Construction Guide (2014) at $185/sq.ft., compared to the lower $144.53 rental rate. After tax, the NPV is -$8.8 at a discount rate of 12%. The corresponding after tax IRR is 10%. This means that if construction costs were to sharply increase, the project would be challenging to develop and not financially feasible.

Table 10.5 shows that the project would not incur a loss if rental rates were moderately lower at $30 per sq. ft. However, raising the building construction costs presents a significant deficit in project return. This sensitivity analysis demonstrates that there is limited room for fluctuation in the two variables examined, unless the rental rates remain at a similar rate or the construction costs do not rise significantly.

	Sensitivity Analysis #1	**Sensitivity Analysis #2**
	Office rental rate at $30/sq.ft	Office construction costs at $185/sq.ft
NPV @ Discount Rate (After Tax)	$0.9 million	-$8.8 million
IRR (After Tax)	12%	10%

Table 10.5 - Net present values and internal rates of return after adjusting office rental rate and construction costs

10.4 - Public-Private Partnership: Design-Build-Finance-Operate

The City could tender the design, build, and operation of the site through an RFP to obtain a competitive bid and maintain ownership of the land, creating a Design-Build-Finance-Operate (DBFO) public-private partnership. The operator would take on some financial risk, and would typically be paid a fee for the design, build, and operation of the development. The operation fee would be paid over the term of the operating period. This could benefit the developer in terms of project financing using a municipal bond, where less private equity would be required. The City would benefit in terms of expedited project completion and lower project costs.

When the same developer handles the design, build, and operation of a project there are more opportunities for efficiency. This can result in saving both time and money. The private-sector partner acts as the only point of contact and makes the development and management of the project more effective. An additional benefit of DBFO is that the developer acts as a specialized partner with direct knowledge and experience with office developments, which mitigates a significant amount of risk for the City. At this time, private development is feasible in the current market. However, a public-private partnership would provide the benefits described above to both the City and the developer.

10.5 - Potential Future Phases of Development

After the first two phases of development, there is potential for additional development to occur. The remaining land could be developed into a parking structure addition or severed off and sold. In addition, if the stadium is no longer a priority use in the area or is being considered for renovations, this land could be redeveloped.

Chapter Notes

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11.0
Recommendations

The team has developed a set of recommendations specifically for Tremblay Station based on the strategies that made many of the precedents found in Chapter 8 and Appendix D successful. Taking into consideration Tremblay's location to the downtown core, the current market conditions, and the opportunities of the site, the recommendations in the following sections will help to intensify development surrounding Tremblay Station.

11.1 - Structure of the Recommendations and Timeframes

The recommendations outlined in this chapter are organized into 5 categories:

- Guiding future development
- Financing development
- Attracting development
- Facilitating development
- Development proposal

Furthermore, the recommendations are given a timeline of when they are expected to be completed (see Figure 11.1):

- “Quick Wins” are strategies that can be adopted within the next year
- Short-term strategies can be employed within the next 2-5 years
- Long-term recommendations will go beyond 5 years with ongoing development in the area

11.2 - Guiding Future Development

To ensure that future development achieves the vision for intensified land development as set out in the TOD plan for Tremblay Station, the City should:

1. Revise the existing zoning by-law to:
    - Restrict auto-oriented land uses, specifically drive-through facilities.
    - Allow for consolidated parking among uses by permitting parking structures and/or garages on separate lots without being tied to other permitted uses.
    - Designate surface parking as an interim use and evaluate parking demand regularly to determine whether the parking supply is justified.
    - **SHORT TERM recommendation**
    - **Actor: City of Ottawa**
2. Revise the site plan review process for the Tremblay Station area to address specific elements essential to transit-oriented development.
    - Incorporate a TOD checklist into Ottawa’s site plan review process for the area.
    - The checklist should measure how proposed developments reflect the vision and objectives of the TOD plan. Proposed projects scoring low on the checklist should require further investigation or redesign before site plan approval.
    - **QUICK WIN recommendation**
    - **Actor: City of Ottawa**

11.3 - Financing Development

Implementation surrounding the Tremblay Area should occur using the following financial mechanisms:

1. Develop a Capital Improvement Plan to allocate funding for capital improvement projects described in the TOD Plan and to support the phasing and funding strategy outlined in the TOD Servicing Overview.
    - Use municipal bonds as a financial tool within the Capital Improvement Plan to fund infrastructure improvements.
    - **LONG TERM recommendation**
    - **Actor: City of Ottawa**
2. Use Local Improvement Charges or create Tax-Increment Financing District Plans to finance parking, pedestrian connections, and potential land assembly for all areas surrounding TODs.
    - **LONG TERM recommendation**
    - **Actor: City of Ottawa**
3. Establish Parking Charges and utilize funds raised from parking charges in the study area to finance the development of consolidated parking structures.
    - **LONG TERM recommendation**
    - **Actor: City of Ottawa**

11.4 - Attracting Development

To enhance and stimulate development surrounding the Tremblay Station TOD area the following implementation tools should be used:

1. Attract developers by streamlining the planning approval processes.
    - Adopt a development permit system for the Tremblay Station area that reduces review timelines from 120 days to 45 days.
    - **QUICK WIN recommendation**
    - **Actor: City of Ottawa**
2. Incentivize innovative designs that are supportive of transit-oriented uses.
    - Include a TOD specific category within the City of Ottawa's existing Urban Design Awards program to attract design submissions.
    - **QUICK WIN recommendation**
    - **Actor: City of Ottawa**
3. Create a Community Improvement Plan (CIP) for the Tremblay Station Area to attract and incentivize investment.
    - Use financial mechanisms like Tax Increment Equivalent Grants (TIEGs) to offset increased taxes due to infrastructural improvements.
    - **SHORT TERM recommendation**
    - **Actor: City of Ottawa**
4. Develop a stakeholder-centric marketing strategy for stimulating development.
    - Develop a TOD Marketing Plan to build excitement and awareness for available incentives through the use of social media, print, information events, and other traditional marketing tactics.
    - **LONG TERM recommendation**
    - **Actor: City of Ottawa**
5. Personalize the value of Tremblay Station.
    - Use marketing and branding strategies to highlight the uniqueness of living and working in a transit-oriented community.
    - **LONG TERM** recommendation
    - **Actors: City of Ottawa in partnership with future Business Improvement Association**

11.5 - Facilitating Development

To facilitate transit-oriented development around Tremblay Station and along the Confederation Line, the City should:

1. Establish an implementation agency to:
    - Bring together both private and public sectors.
    - Consolidate surface parking into parking garages.
    - Free up land for future transit-oriented development.
    - Support land acquisition to address the unbalanced and fragmented ownership pattern of the Tremblay area.
    - Develop a Transit-Oriented Development Fund to contribute the necessary grants, loans, equity investments, and other forms of financial support for economic development and infrastructure improvements.
    - **SHORT TERM recommendation**
    - **Actors: City of Ottawa and public and/or private partners**
2. Establish Public-Private partnerships for large-scale development projects such as parking garages or redevelopment of the baseball stadium in the future.
    - **LONG TERM recommendation**
    - **Actor: City of Ottawa**

11.6 - Development Proposal

To maximize the use of the municipally-owned property in the Tremblay Station area, the City should redevelop the surface parking lot adjacent to the Ottawa Baseball Stadium by:

1. Rezoning the property from an L2 major leisure facility to the TD2 zone.
    - **SHORT TERM recommendation**
2. Consolidate parking with a five level parking structure adjacent to Highway 417.
    - **SHORT TERM recommendation**
3. Support intensification of the Tremblay Station area by constructing a 15 storey office building.

There are three options for developing the land:

1. Municipal Development
    - Secure a federal tenant to ensure stable occupancy.
    - Finance the project using municipal bonds over a 25 year term to decrease risk.
    - Reinvest profit into other initiatives to support TOD around Tremblay Station.
2. Private Development
    - The City of Ottawa should tender the land through a Request for Proposal (RFP) with siting and preliminary Design Guidelines for the site.
    - Reinvest profit from the sale of land into other initiatives to support TOD around Tremblay Station.
3. Public Private Partnership
    - Use a DBF, DBFM, or DBFOM structure. depending on City determined feasibility
    - P3 agency should issue RFP with Design Guidelines for the site.

Developing the parking lot adjacent to the Ottawa Baseball Stadium is a **LONG TERM recommendation** to be carried out by the **City of Ottawa and/or a Private Developer**.

	Guiding Development		Financing Development						Attracting Development						Facilitating Development	
	Zoning Bylaw	Site Plan Review	Capital Improvement Plan	Municipal Bonds	Local Improvement Charges	TOD Fund	Tax Increment Financing	Parking Charges	Marketing and Branding	Community Improvement Plan	Tax Increment Equivalent Grants	TOD Marketing Plan	Development Permit System	Urban Design Awards	Public-Private Partnership	Implementation Agency
Quick Win		X											X	X		
Short Term	X									X	X					X
Long Term			X	X	X	X	X	X	X			X			X	

Figure 11.1 - Recommendations framework

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12.0
Conclusion

The **Transit-Oriented Development (TOD)** plan for the Tremblay Station area sets the stage for redevelopment by creating the regulatory framework for transit-oriented development that is dense, innovative, integrated, and of high-quality urban design. Although the TOD plans for other station areas in central and western Ottawa have stimulated significant development activity, little has been developed near the Tremblay Station in eastern Ottawa, with few active proposals pending. This project aimed to address the implementation of the existing TOD plan. We conducted extensive background research and analyses and in-depth reviews of best practice case studies for TOD implementation to outline a comprehensive list of recommendations for the City of Ottawa to implement at Tremblay Station. The recommendations are centred on five themes: ‘Guiding Development’, ‘Financing development’, ‘Attracting Development’, ‘Facilitating Development’, and ‘Development Proposal’.

12.1 - Guiding Future Development

While the TOD plan, zoning, and site plan control are currently being used by the City to guide future development in the area, improvements can be made to these tools to ensure, with certainty, that all future development in the area is consistent with the goals outlined in the TOD plan. This will also provide evidence to developers that the City is committed to a vision of TOD at Tremblay Station.

12.2 - Financing Development

Our comprehensive review of best practices indicated that employing an appropriate set of financial tools is essential for the effective implementation of a TOD and to stimulate development in the area. Transforming a low-density, auto-oriented area into a TOD will require significant new infrastructure. Employing financial tools such as TIFs, Capital Improvement Plans, and TIEGs can ensure that the City can meet these infrastructure needs.

12.3 - Attracting Development

Attracting and incentivising development in the Tremblay Station area needs to be a priority in order for the implementation of the plan to be realized. The lack of current development interest in the area can be mitigated with efforts to create an attractive environment for developers such as streamlining the development approval process and marketing and branding the area appropriately.

12.4 - Facilitating Development

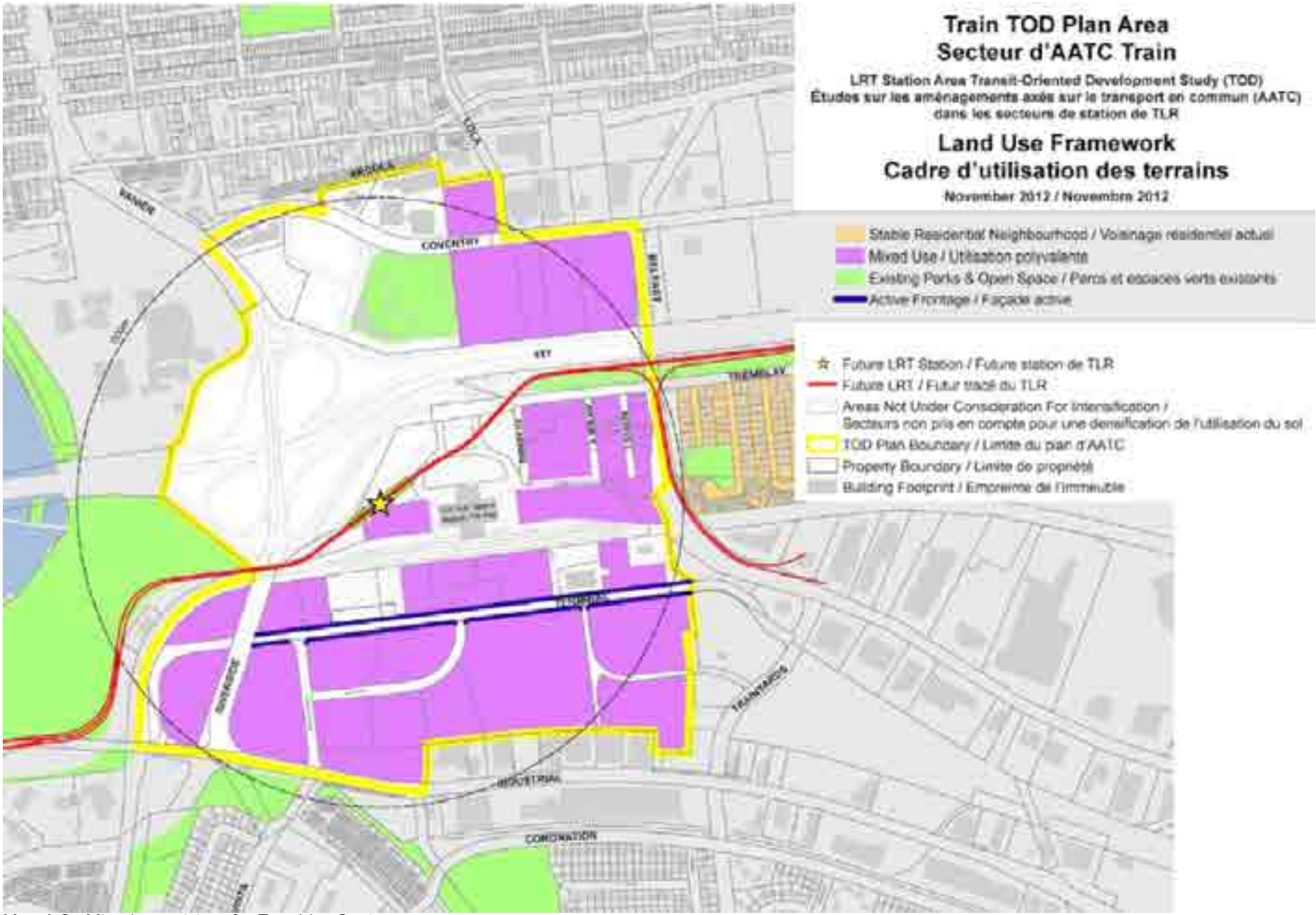
There are also opportunities for the City of Ottawa to facilitate development. Many of the best practice case studies used public private partnerships and/or implementation agencies as a strategy to achieve TOD goals. The City can incorporate these strategies to facilitate development in the Tremblay Station area and for other TOD communities along the Confederation Line in general.

12.5 - Development Proposal

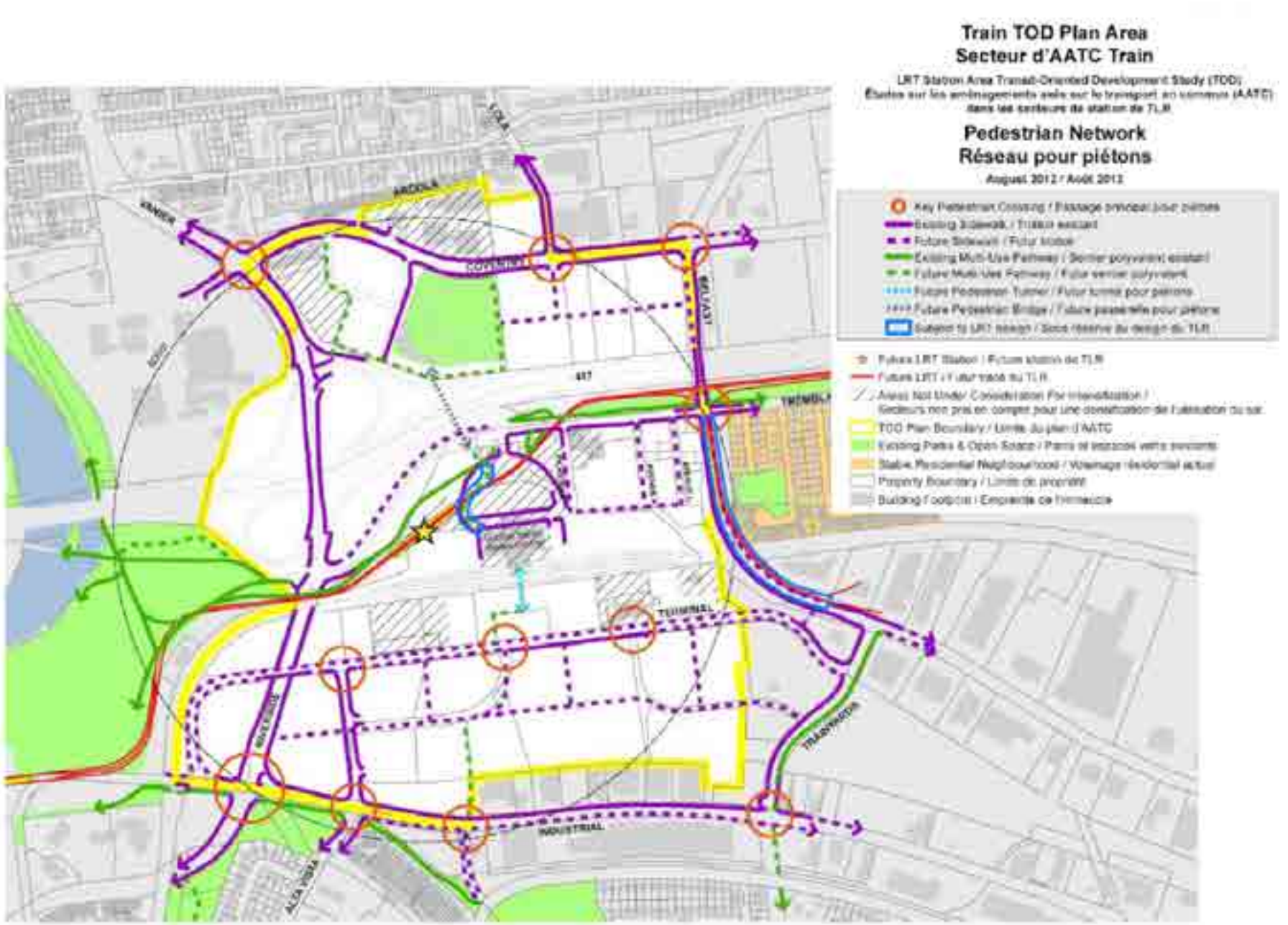
The Ottawa Baseball Stadium and its adjacent parking lot are the only parcels of land the City owns in the area. In order to maximize the use of the parking lot land, a demonstration plan was devised to illustrate the financial feasibility of developing the site. Both the municipally-owned and the privately developed scenarios proved to be viable options; though a third option, a public-private partnership, also remains a possibility. Profits earned from any of these scenarios may be used to reinvest in the area and may spur further development.

Appendix A - Tremblay Station Maps

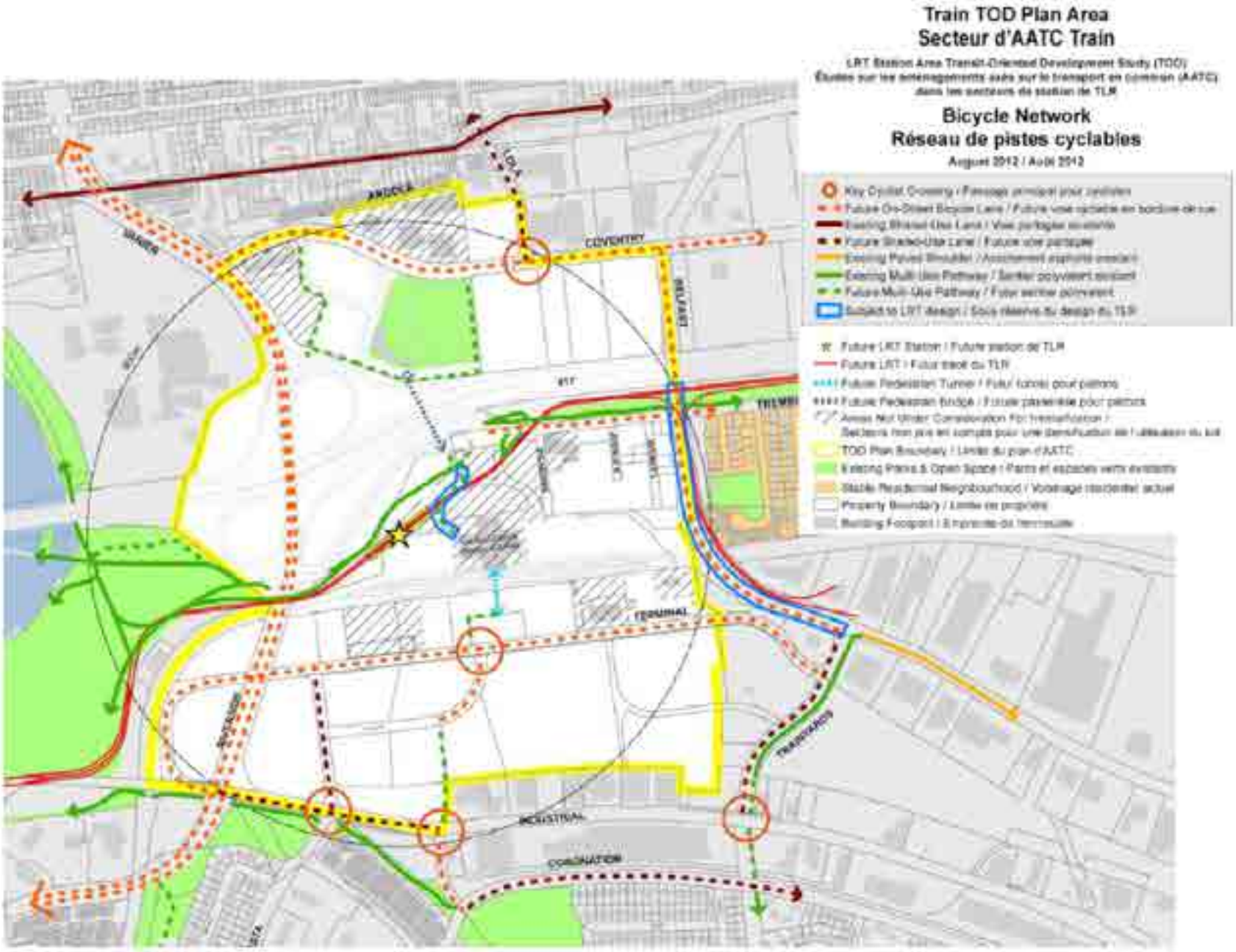
Map A.1 - Tremblay Station study area
Source: City of Ottawa, 2012



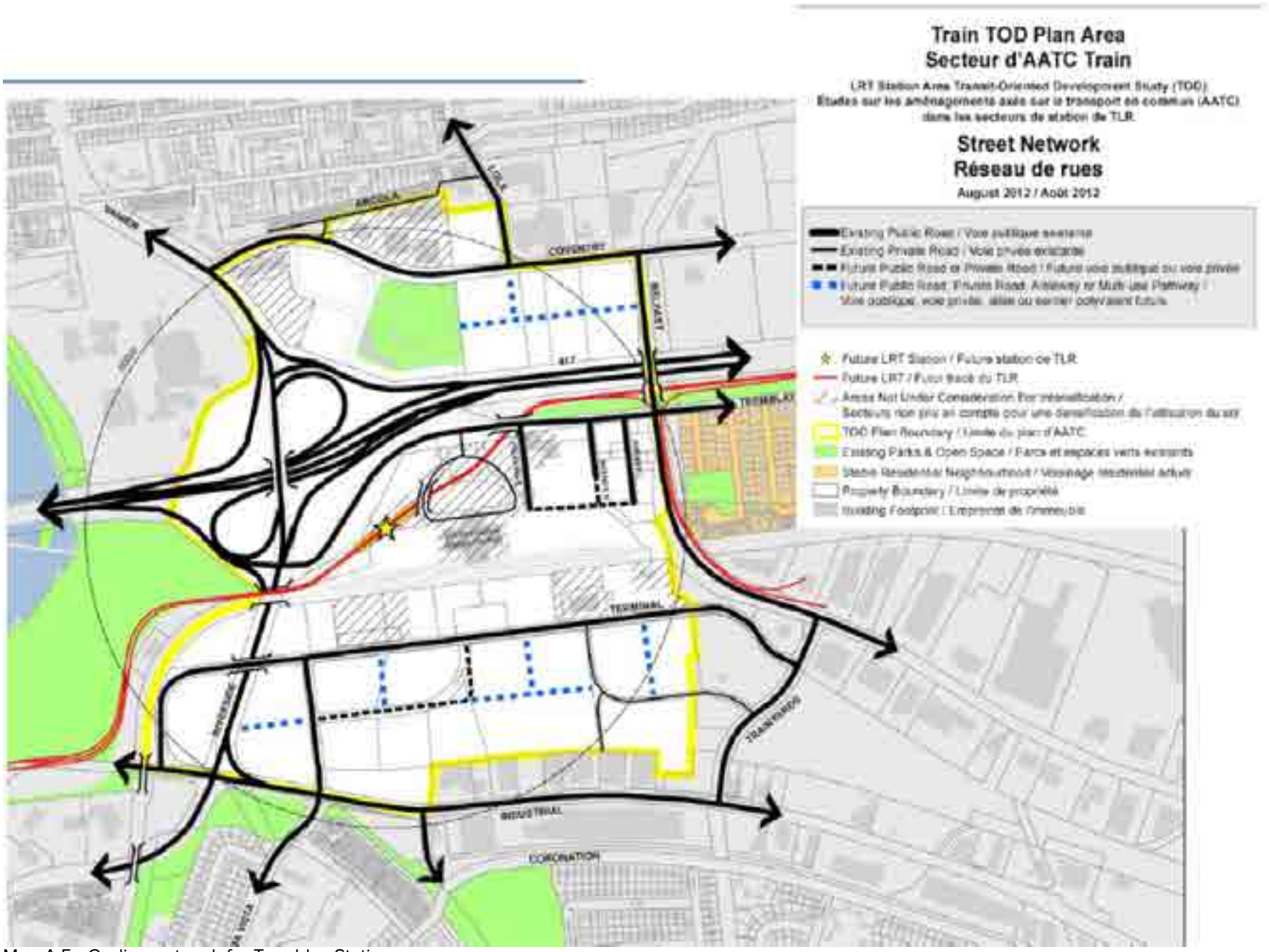
Map A.2 - Mixed-use vision for Tremblay Station
Source: City of Ottawa, 2012



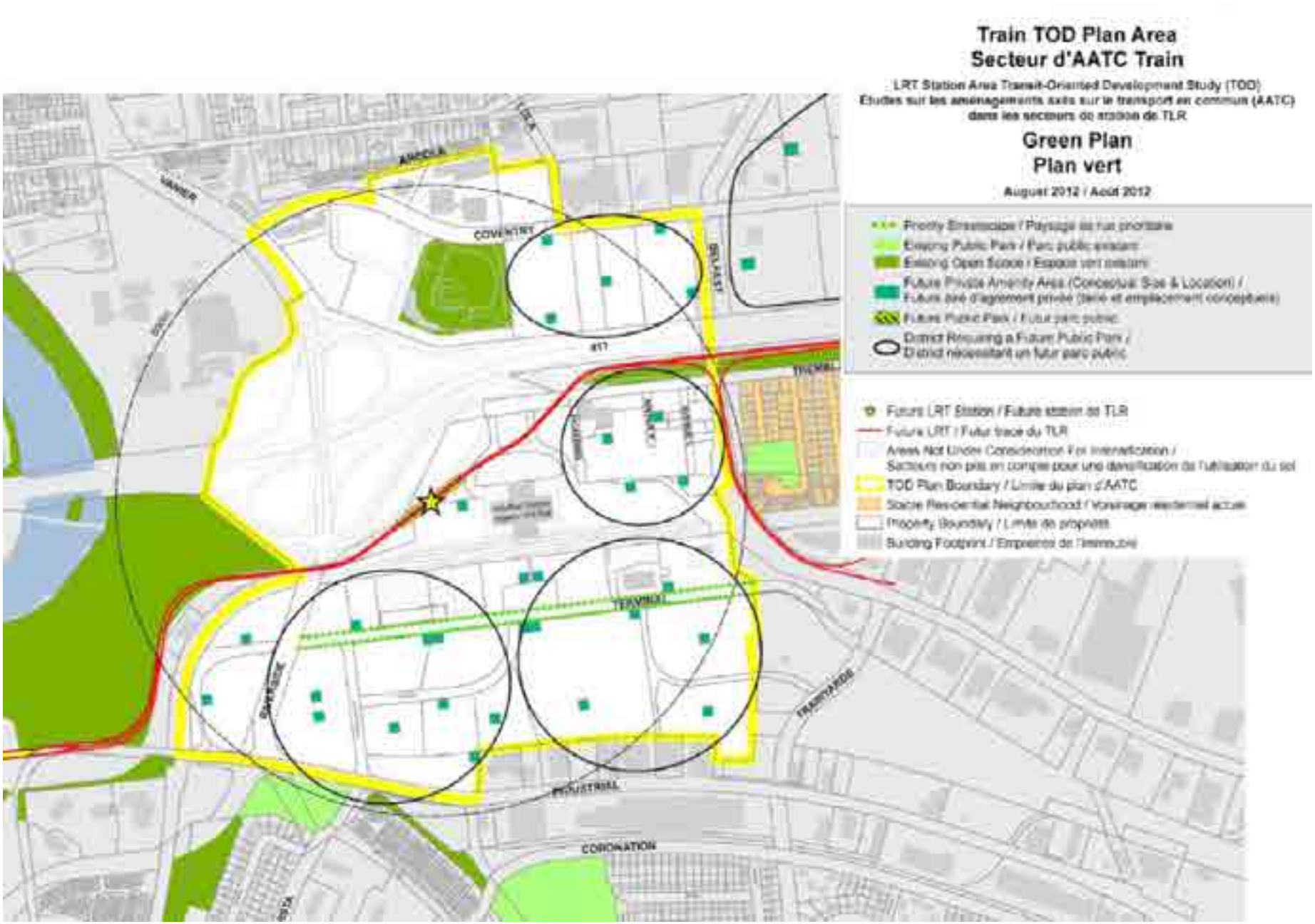
Map A.3 - Pedestrian network for Tremblay Station
Source: City of Ottawa, 2012



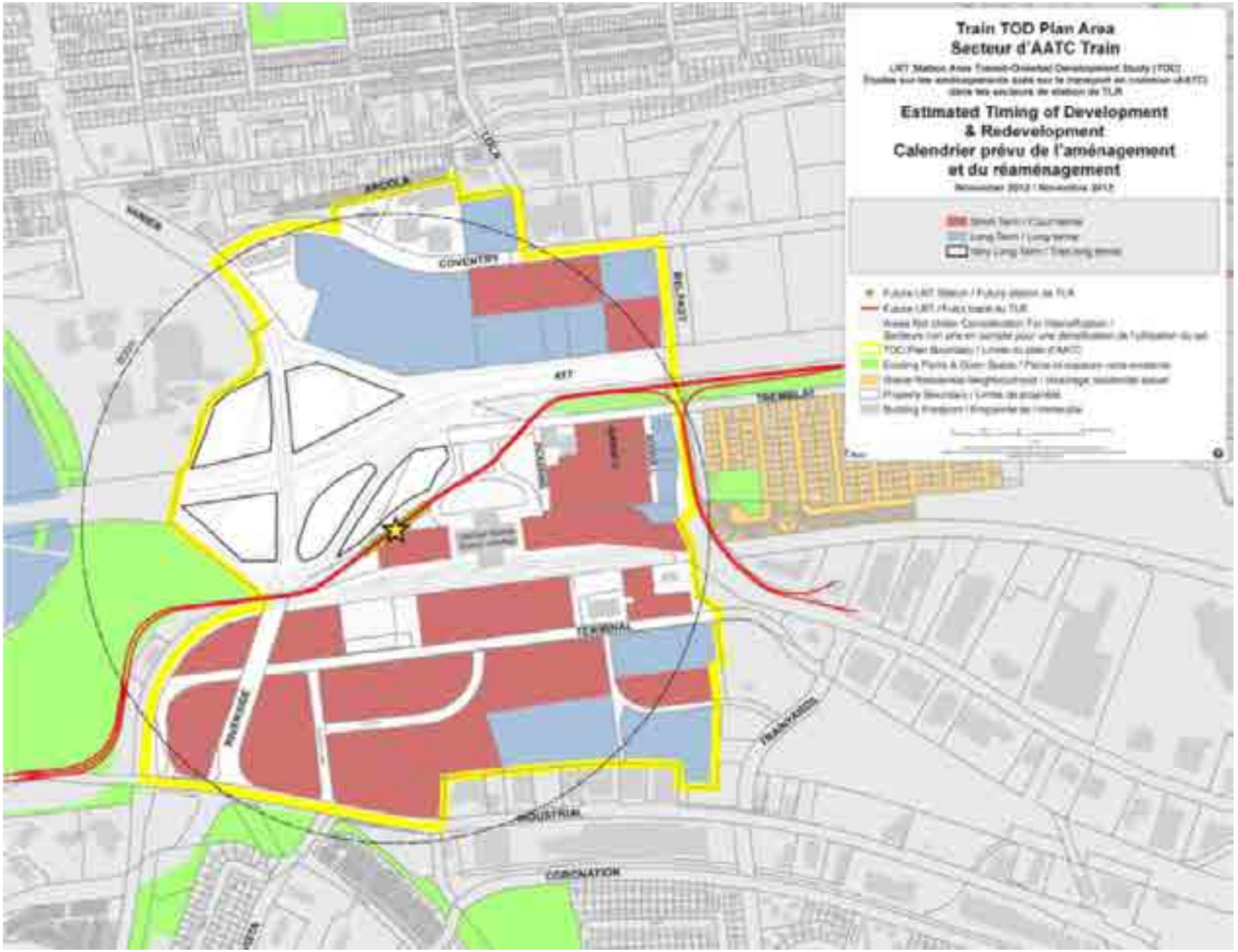
Map A.4 - Cycling network for Tremblay Station
Source: City of Ottawa, 2012



Map A.5 - Cycling network for Tremblay Station
Source: City of Ottawa, 2012



Map A.6 - Green network for Tremblay Station
Source: City of Ottawa, 2012



Map A.7 - Phasing plan for Tremblay Station
Source: City of Ottawa, 2012

0 0.5 1 2 Kilometres 1:20,000

Map A.8 - Ownership map for Tremblay Station

Transit Oriented Development
Tremblay - Property Boundaries

Legend

Parcels

Public Land

- Federal parcels
- NCC parcels
- Ontario parcels
- Ottawa parcels
- Unknown public
- Private Property

Appendix B - Summary of Key Themes and Information from Stakeholder Interviews and the Implementation Workshop

B.1 - Letter of Information and Consent Form

Letter of Information for Interview Participants

Letter of Information for Interview Participants
"Tremblay Station: Ottawa TOD Implementation Study"

This letter provides a comprehensive overview of the Master's research project being conducted by Jessica Jiang, Athena von Hausen, Pegah Tootoonchian, Tom Fehr, Anthony Fotino, Shazeen Tejani, Victoria Coates, Vincent Louie, Jordan Suffel, and Andrew Misiak (hereafter referred to as the project team) under the supervision of Dr. David Gordon, in the School of Urban and Regional Planning at Queen's University in Kingston, Ontario.

Purpose of the Research Study
The purpose of this research study is to examine and understand the context surrounding Tremblay Station and to create an implementation strategy for the station. The Tremblay Station area is approximately 100 hectares in size and is located roughly 4 kilometers east of downtown Ottawa. The City of Ottawa has adopted a series of Transit-Oriented Development (TOD) Plans in support of Phase 1 of its Light Rail Transit (LRT) Project. Tremblay Station is one of the existing Bus Rapid Transit (BRT) Stations, which will be converted into an LRT Station as part of Phase 1 of the Implementation Plan for the Confederation Line. Although the TOD plans have stimulated significant development activity in central and western Ottawa, very little has been developed near transit stations in eastern Ottawa and there are few active proposals. Land has sat idle or undeveloped near the Tremblay Station for decades.

The team will analyze current conditions in the area along the eastern corridor and identify appropriate Canadian and international precedents for good TOD implementation beyond establishing conventional policy and zoning regulations. The project team will analyze plans for specific areas; identify key policies, recommend tools or strategies to ensure successful implementation and prepare a financial strategy for the Tremblay Station area. A phasing plan for the station will also be developed in order to provide the City of Ottawa with a strategic growth and implementation plan, along with a timeline and financial expenditures.

Through interviews with developers and leaders in planning, urban design, and community development in Ottawa, an improved understanding of the study area will be achieved. These insights will be an invaluable contribution to the overall project in terms of developing feasible, rational implementation strategies that fit within the City of Ottawa's vision for Tremblay Station.

Procedures & Privacy
If you volunteer to take part in this research, you will be asked to take part in one interview with the project team. During this interview you will be

asked a set of questions to learn more about your opinions and experiences within the context of Tremblay Station. With your permission, the interview will be tape recorded so that it may be transcribed after the interview by the researcher.

The interview will require 30 to 45 minutes to complete and will be administered at a time and place that is most convenient with your schedule. Upon completion of the research, an electronic copy of the report will be provided to any participants that would like one.

When the interview is complete, the audio recording will be kept in a locked office. Electronic versions of the transcribed interviews will be protected by password on the team's personal laptop. Only the research team and research supervisor will have access to the recorded interview. Upon completion of the research, any hard copies of the transcribed or recorded interviews will be destroyed.

Potential Risks & Discomforts
There are minimal risks associated with this study. At any point, if there is a question that you do not wish to answer, you may refrain from responding. Participants may ask to be anonymized within the report and will be referred to simply by their professional title. There are no foreseeable physical or psychological risks associated with this study. At any point, as a participant you have the right to terminate your involvement in the study. If asked, the research team will not use any of the information that you provided in the research.

Potential Benefits
As a participant in this research study, benefits could be direct or indirect. In your professional capacity, this study will give you the opportunity to reflect on Tremblay Station and potential implementation strategies for the site. You will also have the opportunity to voice your opinion on Tremblay Station. By developing a better understanding of the site, this report will lead to a series of recommendations to further enhance the space and stimulate development around the site.

Participation & Withdrawal
It is your choice if you would like to participate in this research study. If you do volunteer in this research study, you have the ability to withdraw at any time without consequence. You can also choose to refrain from answering a certain question, but still remain in the study. The research team also has the ability to withdraw you from the study; if a situation arises that warrants a withdrawal.

Feedback of Results
When the research is complete, the final report will be available through QSpace, the Queen's Research and Learning Repository at https://qspace.library.queensu.ca.

Concerns or Questions
Any questions about study participation may be directed to Jessica Jiang, Pegah Tootoonchian, or Dr. David Gordon the research supervisor, or Dr. Patricia Collins, Unit REB Chair for the School of Urban and Regional Planning (SURP), Queens University at (613) 533-6000 ext. 77060.

This study has been granted clearance according to the recommended principles of Canadian ethics guidelines, and Queen's policies.

Thank you for your interest in this research study.

Jessica Jiang Masters of Planning Candidate School of Urban and Regional Planning Queen's University Kingston, Ontario, Canada (613)-217-8341 jessica.jiang@queensu.ca	**Pegah Tootoonchian** Masters of Planning Candidate School of Urban and Regional Planning Queen's University Kingston, Ontario, Canada (647)-802-0045 ptootoonchian@me.com
Dr. David Gordon Research Supervisor School of Urban and Regional Planning Queen's University Kingston, Ontario, Canada (613)-533-6000 Ext. 77063 gordond@queensu.ca	**Dr. Patricia Collins** Unit REB Chair School of Urban and Regional Planning Queen's University Kingston, Ontario, Canada (613)-533-6000 Ext. 75060 patricia.collins@queensu.ca

Verbal Consent Form for Interview Participants

Consent Form
"Tremblay Station: Ottawa TOD Implementation Study"

Spoken Script:

You have been asked to participate in a research study conducted by the project team (Jessica Jiang, Athena von Hausen, Pegah Tootoonchian, Tom Fehr, Anthony Fotino, Shazeen Tejani, Victoria Coates, Vincent Louie, Jordan Suffel, and Andrew Misiak) from the School of Urban and Regional Planning at Queen's University and supervised by Dr. David Gordon.

1. I have read the Letter of Information understand the information about the study entitled *Tremblay Station: Ottawa TOD Implementation Study* and any questions have been answered to my satisfaction.

2. I understand that I will be participating in the study called *Tremblay Station: Ottawa TOD Implementation Study*. I understand that this means that I will be asked to engage in an interview that will take approximately thirty to forty-five minutes.

3. I understand that my participation in this study is voluntary and I may withdraw at any time.
   I understand that every effort will be made to maintain the confidentiality of the data now and in the future. Only the researcher will have access to the data. The data may also be published in professional journals or presented at scientific conferences, but any such presentations will be of general findings and will never breach individual confidentiality. Should you be interested, you are entitled to an electronic copy of the findings.

I am aware that if I have any questions, concerns, or complaints, I may contact the researchers Jessica Jiang; jessica.jiang@queensu.ca; or Pegah

Tootoonchian; ptootoonchian@me.com; project supervisor, Dr. David Gordon; gordond@queensu.ca; Director at the School of Urban and Regional Planning, or Dr. Patricia Collins, Unit REB Chair for the School of Urban and Regional Planning (SURP), Queens University at (613) 533-6000 ext. 77060.

	By verbally consenting, I give permission to be recorded by the researcher with a digital recording device.
	By verbally consenting, I request that the final copy of the results be emailed to me at the following address _____.
	By verbally consenting, I request to be anonymized and referred only by my professional title. I understand that this may not keep my identity confidential.
	By verbally consenting, I agree to be contacted for follow-up questions. I understand that I may decline these requests.
	By verbally consenting, I give my consent that the information collected in this study may be used in the future research of the student researcher.

I verbally consent to the above statements and freely consent to participate in this research.

Interview Questions for Professionals

Interview Questions**

General Themes & Questions:

General Questions

- How do you envision the connectivity between the north and south of Highway 417?
- What specific types of investment would you like to attract?
    - Institutional/public/private/residential, etc?
- Do you have any knowledge of current activity in the area?
- Recent property sales in the area?
- What is going on with the baseball diamond?/What are the plans for the baseball diamond?
- Why was the RCMP HQ not included in the study area?
- What are some of the key opportunities and constraints in the area?
- What are the types of issues you have encountered in the area in terms of policy?

    - E.g. What is the extent of variances granted?
- Do you foresee any policy changes in the future?

Questions for Developers

- What is the potential buildability of the site? Any no build zones, lines of sight, visibility, constraints, opportunities, barriers?
- What are your plans for the future?
- How is the site currently being operated?
- Structure of mortgages and leases?
- How do you see your site interacting with the Tremblay LRT?
- What is your history with the area?
- What is the history of the tunnel?

** Questions stated here may be modified further as the project progresses.

B.2 - Summary of Stakeholder Interview Responses

Challenges to Transit-Oriented Development

- Existing big box stores and their provision of excess parking is not conducive to TOD.
- In an ideal situation, the public sector would be the highest priority investor, however, due to lack of funding and other constraints, it is unrealistic to expect that the public sector will stimulate development. The private section will need to stimulate initial development in the area.
- There does not appear to be sufficient demand in the area for residential development. For example, small condos near Cyrville Station took 10 years to sell.
- Terminal Avenue currently has a major BRT route and to facilitate the movement of buses along the road, OC Transpo wants large setbacks from the street. A goal of the TOD plan, however, is to shrink the streets and move buildings closer to the road.
- Transportation in the area is predominantly by car, then by foot, and then by bus. Driving will likely continue to be the most common form of transportation. Driving is encouraged because parking is cheaper than the cost of a bus pass.
- The length of time it takes to secure planning approvals makes it difficult to develop in the area.
- Hurdman Station will likely continue to draw the majority of transit users in the area to this station, rather than Tremblay Station, because it is a major transit node with accessibility to almost every bus route. Development will likely occur around this station before it occurs in the Tremblay Station area.
- The big stores in the Train Yards have parking requirements, so developing inner areas of the site is not an option.
- Existing light industrial uses and the fleet site for Ottawa buses to the east of the study area are unattractive characteristics for development in the area.
- There is limited activity north of Highway 417 including the absence of a firm plan for the Ottawa Stadium.
- There is no market for speculative office and high-rise office buildings. Offices that are moving forward are led by the federal government.
- While meeting job density goals is achievable, it is unlikely that buildings will reach maximum allowable height and density specifications in the Tremblay Station area.
- Some stores, specifically Walmart, are resistant to changing their development pattern because of proven returns on investment.

Development Potential

- TD zoning now allows free standing residential with high heights and density, which will be attractive for developers.
- It is possible that Canada Post might need less space in the future so there is potential that their site will be scaled back, making room for new development
- The vision for the area is to have a balance of live-work-play. Ideally, institutional uses would enter into the area last.
- Since the Tremblay Station will only be approximately 10 to 20 minutes from the University of Ottawa by LRT, there may be an opportunity to develop student housing in the area.
- The north-south connectivity over Highway 417 will be improved with a pedestrian overpass.
- Development will likely stem from private developers and/or the federal government since they own much of the land in the area.

- Ottawa Stadium is likely not a viable long-term use given the history of challenges with past teams. There may be an opportunity to redevelop this site in the future.
- Hotels may be successful in the area because the LRT can essentially bring the Tremblay Station area closer to major convention centres in downtown.
- There is potential for the expansion of the Train Yards shopping centre.
- There is also potential for VIA Rail to develop their parking lots.

History of the Train Yards

- The Train Yards shopping centre site was farmland until the 60s when development started. The private developer purchased an abandoned warehouse on the site and then bought more land in the area as it became available.
- Prior to site remediation, the site was considered 'brownfields' and was contaminated with hydrocarbons/ petrochemicals.
- Developing the site required a lot of work to get the correct planning approvals and zoning in place.
- There was difficulty in attracting tenants but the main reason to locate to the Train Yards was that there was a lack of shopping in the local area.
- A grocery store or Walmart was needed as the anchor tenant to make the shopping centre successful, with Walmart eventually secured as the anchor.
- The centre is now very successful. Walmart is not as relevant as an anchor now due to the abundance of other big stores.
- Additional development near the Train Yards will likely be office, however residential is also a possibility, especially since the TOD plan allows for more density.
- Residents of Eastview Gardens are generally supportive of future LRT development, however there is concern with potential traffic impacts during construction.

Recent and Future Development

- Recent development activity in the area has included:
  - Offices (south of VIA Rail)
  - Train Yards
  - Tremblay LRT
  - 405 Tremblay Road
- The area southwest of VIA Rail is intended to be subdivided in order to be sold off and developed in piecemeal fashion.
- The Tremblay Station area is trending towards a retail/ commercial area.

Confederation Line Implementation

- Over 400 properties were expropriated across the Confederation Line. Expropriation is typically a last resort as negotiations can achieve the same objective with less cost.
  - For example, the City of Ottawa paid for the temporary relocation of a long-established Bank of Nova Scotia to build an LRT exit and a building around it. It was less than the cost of expropriation.
- There is am intention to have some (small) retail integrated with LRT stations. This is dependent on achieving a certain ridership to support retail.
- Blanket upzonings for LRT areas may not have been optimal for enticing developers. It may have been better to have developers fight for their desired rezoning.

B.3 - Summary of Implementation Workshop Comments

Group	Takeaway Comments
1	Vision • Mixed use • Identify unique identity • Connectivity Strategies • Public-Private Partnerships • Mitigation of surface parking requirements • Consolidation of land ownership • Public engagement strategies: open house, surveys, social media, branding • Tax Increment Financing (TIF)
2	Vision • Need to distinguish the study site from other TOD areas • “Destination area” • Commercial Hub • Mixed use area rather than mixed use buildings • Residential development concentrated North of the 417 Strategies • Addressing connectivity across the train tracks is imperative • Increase city land ownership • Public-Private Partnerships

Table C.1 - Comments from workshop groups 1 & 2

Group	Takeaway Comments
3	Vision • Multi-modal transit hub • Employment node and class A office hub • Increased connectivity • Baseball stadium as an entertainment destination • Incorporation of social housing Strategies • Community Improvement Plan • Tax-Increment Financing • Public-Private Partnerships: Trainyards, University of Ottawa • Initial city investment in infrastructure: parking garage, street network • Maintain development charges • Focus on identified priority streetscape
4	Vision • Pedestrian connectivity • Transit village • Incorporation of heritage elements: Via Rail Station • Connections across the 417 and train tracks Strategies • Land Swaps • Build strong connections • Establish transit hub • Incorporate affordable housing

Table C.2 - Comments from workshop groups 3 & 4

Group	Takeaway Comments
5	Vision • Mixed residential and office uses • Office buildings 10-12 storeys • Potential adoption of high-speed rail in the future • Entertainment hub to the South of the 417 – consider casino • Create and “after work hours” desination • Integration of LRT with current Via station Strategies • Public-Private Partnerships: University of Ottawa, Trainyards • All-or-Nothing Development: profit sharing • Proper development phasing • Tax Increment Financing • Rental Incentives • Consolidation of surface parking

Table C.3 - Comments from workshop group 5

Appendix C - Additional Background Research

What is Transit-Oriented Development?

For more than half a century, cities plans have favoured private vehicles due to their ease of use and flexibility.[1] Planning practices embodied this favouritism through the separation of urban functions and development.[2] This combination of dispersed land-uses and reduced accessibility forced people to rely on their personal vehicles to travel long distances between destinations.[3]

More recently, several factors have contributed to the re-evaluation of city landscapes by planners, urban designers, and developers. These factors include frustration with onerous commutes, sprawl, greenhouse gas emissions, discontentment with the need to rely on private vehicles to perform daily activities, and limited residential choices and homeownership opportunities due to rising housing prices.[4] As a result, there is growing interest in retrofitting existing neighbourhoods as well as developing new ones that favour transit-oriented development.

Transit-oriented development (TOD) is a transit station area that boasts comprehensive development.[5] Comprehensive development typically encompass a mix of uses, and facilitates transit connectivity through urban design.[6] Transit-oriented development provides an opportunity for cities to use transit stations as anchors for existing and future development opportunities.[7] TODs are compact in urban form, they help create walkable neighbourhoods and increases the use of public transportation while reducing dependency on private automobiles.[8] The main attributes that define a TOD are moderate to high-density developments, land-use patterns that include a mix of residential, employment and shopping opportunities, a pedestrian and cycling-friendly urban design, and located within close proximity to major transit hubs.[9]

In addition to comprehensive development around transit stations, a transit-oriented planning approach has the potential to better embody government policies.[10] At its core, transit-oriented development aims to integrate land use planning and transit policies into design and implementation processes as a way to prevent urban sprawl while creating more sustainably developed communities.[11] Land use planning policies have the potential to inform the urban form, design, and strategies that promote compact development, while transit policies inform public transportation and active transportation modes.[12] Appropriate policy is paramount to achieving this mix. This means policies must be prescriptive of defining density, design as well as appropriate types of land uses and the purposes they serve within a neighbourhood or community.[13]

To fully grasp the manifestation of transit-oriented development in current planning practices, it is important to understand its historical context, more specifically where and how the idea emerged. Through understanding the history behind transit-oriented development, planning principles that favour a reduction in car dependency and greater compact developments are front-lined.

History and Evolution of TODs

Transit-oriented development is not a new phenomenon. Although coined and codified by Peter Calthorpe in the 1980s, it has persisted with the establishment of rail and streetcar systems in North America.[14] The first examples of TODs were Garden Suburbs, an idea theorized by Ebenezer Howard and implemented by Raymond Unwin and Barry Parker. These suburbs were characteristic of TODs because they emphasize dwelling density and proximity to the central core, while being heavily connected by railways that lead to the downtown core.

Streetcars were established in Ottawa in 1981, a year before their arrival in other major Canadian cities such as Toronto and Montreal.[15] As these streetcars became widespread in North America, developers sought to use the land surrounding rail stations to promote their real estate holdings.[16] Areas around streetcars were leveraged by real estate developers to provide access to developable open land on the outskirts of cities.[17]

Eventually, population growth began to cluster around streetcar lines as families tried to escape the over-crowded and dirty conditions of the inner city.[18] The clusters were successful due to the heavy reliance on pedestrian access to commuter rail that would provide direct access to jobs in the downtown core. Furthermore, streetcar stops in America were often the site of a collection of small retail vendors that would serve commuters and local residents. This type of development grouping eventually came to be known as streetcar suburbs.

However, as the prominence of the automobile rose in the States, major disinvestment in public transit took place shortly after WWII.[19] Many rail systems were taken apart this time across U.S. cities to better accommodate the automobile. In Ottawa, the streetcar network was dismantled in 1959. The only Canadian city to keep its streetcar tracks intact and operational was the City of Toronto.[20]

Though, as congestion worsened and traffic pollution increased, various public transit systems were planned and built to combat these mal-effects. The San Francisco Bay Area Rapid Transit (BART) system, MARTA in Atlanta, and Metro in Washington are samples responses to these issues. Since the city system were still built to support automobiles, transit stations became characterized by large, sprawling 'park n' ride' parking lots.

Three planning trends began to emerge in the 21st century in the United States: first, reinvestment into America's downtown areas; second, the continued growth of America's suburbs; finally, renewed interest in public transit and transit investment.[21] What brought these trends together in the United States, was the realization that "a substantial market exists for a new form of walkable, mixed-use development around these new rail or rapid bus stations and transit stops".[22] Transit agencies also began to lease their land in order to generate land revenue while reducing reliance on subsidies. Shortly after the 1970s, studies began to show that "localized densities around transit systems could produce positive synergies" and that office uses clustered in these areas could attract high numbers of transit users.[23]

Peter Calthorpe's concept of TOD, brought attention back to investment around transit stations in order to improve the quality of daily life, reduce household expenses, create mixed-income neighbourhoods, and provide a real alternative to traffic congestion.[24] It made the "bold promise of [redefining] the American Dream".[25] Pedestrian-friendly, walkable, and transit-supportive neighbourhoods were promoted as an alternative to the development types preceding it. Transit agencies became avid supporters of this type of development around their stations and began redesigning neighbourhoods to reflect these principles.[26]

TODs have since been seen as much more than an economic driver and revenue generating initiative. Analysts like Robert Cervero, among many, have seen a subtle but significant change in the transit and development landscape.[27] TOD has been identified for its potential for helping increase transit ridership, raise transit investment, address frustrations with congestion and sprawl, and support smart growth and new urbanism movements by adequately linking development and transit.[28] More recently, TOD has given rise to developments known as transit villages, which are considered desirable to the

changing demographic.[29]

TODs and their Implications for Cities

Transit-oriented developments have a range of implications for cities including social, economic, and environmental benefits. For the purposes of this study, location efficiency, economic and financial benefits, livability, and transportation, health, and environmental benefits will be discussed.

Location Efficiency

Location efficiency in the context of transit-oriented developments refers to improved mobility options for residents.[30] It means that people can move throughout a city region without the use of a private automobile, but rather by walking, cycling, and riding public transit. TODs encourage location efficiency by providing quality neighbourhoods with a mixture of land use types, such as: residential, commercial, recreational, and institutional uses. Bartholomew and Ewing state, "this increase in proximity and convenience has been linked to smaller daily activity spaces, shorter daily travel distances, lower average vehicle trip rates, and fewer total vehicle miles of travel".[31] Moreover, location efficiency benefits the disadvantaged. Particularly, it improves the city's equity by increasing mobility and accessibility options for non-drivers, who may be individuals with physical, social or economic disadvantages.[32] Transit oriented development provides residents with better mobility options and access to jobs, services, and goods.

Financial and Economic Benefits

Transit-oriented developments have several financial and economic related benefits. The first is value recapture. According to Litman the general trend shows that there is a close relationship between higher real estate values and proximity to rail stations.[33] Eppli and Tu[34] and Smith and Gihring[35] argue that transit-oriented development increase local property values because of improved accessibility and livability in that area.

Second, TODs generate affordability by reducing transportation costs for households.[36] According to Litman, reductions in vehicle ownership and trips reduce residential and designation parking costs and roadway costs.

Third, there are infrastructure cost savings due to more efficient planning and use of utilities. This is a result of more efficient land use patterns that decrease the amount of land that is exhausted for development.

The fourth economic related benefit of TOD projects are financial returns.[37] TOD projects consist of a variety of private and public development interests with varying expectations on financial returns. According to Belzer and Autler, the best ways of creating an environment that ensures strong financial returns are by capitalizing on location efficiency and implementing a mixed-use strategy. Weinberger finds that light rail can lead to property owners charging higher rents in surrounding commercial properties. Belzer and Autler also indicate that mixed use TOD projects help developments hold value over time and to be more flexible and protected in times of economic uncertainty.[38]

Livability

Transit-oriented development has the potential to improve the overall livability of a community.[39] Livability refers to social and environmental elements that influence quality of life. TODs spur urban redevelopment, improve transportation choices, reduces vehicle traffic, reduce pollution, and improve pedestrian environments. Furthermore, transit-oriented developments improve the local community's health by reducing dependence on private automobiles and encouraging active lifestyles. According to Belzer and Autler, the livability of TOD's refers to

social and environmental factors such as:

- Improved air quality and gasoline consumption;
- Increased mobility choices (pedestrian friendliness, access to public transportation);
- Decreased congestion/commute burden;
- Improved access to retail, services, recreational, and cultural opportunities (including opportunities for youth to get involved in extracurricular activities within the neighborhood);
- Improved access to public spaces, including parks and plazas;
- Better health and public safety (pollution-related illnesses, traffic accidents);
- Better economic health (income, employment).

Transportation, Health and Environmental Benefits

Several research reports find that TODs reduce vehicle traffic and increase transit ridership on public transit systems. Gard found that transit-oriented development increases transit ridership and decreases vehicle trip generation compared with conventional development.[40] As an example, Lund, Cervero and Wilson found that residents living in areas around California public transit stations are more likely to commute using public transportation than the average citizen.[41] This trend also leads to public health benefits because use of public transit involves active modes of transportation, and TOD's have the potential to encourage walking and cycling thereby contributing to improved health conditions.[42] Litman cites a study by MacDonald et al,. that found LRT systems increased walking and reduced users' weight and obesity rates. Additionally, these reductions in automobile use have positive environmental benefits.[43] They are found to reduce energy consumption, greenhouse gas emissions and air pollution. Research shows TOD's reduce short vehicle trips which have high per-kilometer energy consumption and emission rates.

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Appendix D - Additional Precedent Case Studies

D.1 - Arlington Heights, Illinois

City Population	75,000
Metro Population (Chicago)	9,700,000
Primary Transit Mode	Commuter and urban rail
Project Completed	Village, no end date
Developer	Multiple
Zoning	Mixed-use; Residential; Commercial; Industrial
Land Uses	Residential; Office; Retail; Industrial; Entertainment; Hotels

Table D.1 - Key information for Arlington Heights

Project Overview

Arlington Heights is considered an inner-suburb, located 37 kilometres from Chicago. After years of economic downturn, it underwent a revitalization of its commercial, manufacturing and residential areas located close to the LRT Metra Station. A series of Tax Increment Finance (TIF) districts in the 1980s were established and allowed for a mix of uses and higher densities with reduced parking requirements close to the rail station.[1]

One of its major achievements however, is the improved connection between the north and south sides of the central business district.[2] What was an unsafe and almost impossible pedestrian crossing is now an enhanced pedestrian corridor that runs along the railroad tracks and provides ample opportunities for cyclists and pedestrians to access the station and the downtown area safely.[3] Prior to development of the Arlington Town Square, the property in question generated approximately $65,000 in annual property taxes; post-development, it generates $1.5 million in annual property and sales tax.[4]

Image D.1 - Shared parking facility in Arlington Heights
Source: Desman Associates, n.d.

Financing Mechanisms

Arlington Heights was funded using a variety of financing mechanisms that were essential to its development. These mechanisms include TIF, the establishment of a Special Service Area (SSA), Business District (BD), Sales Tax Revenue Sharing, Impact Fees, General Fund, and Other Government Agencies. Although all these funding mechanisms were used to help finance the development, the most relevant to Ottawa are the TIF districts, the SSA, the Sales Tax Revenue Sharing, the Impact Fees, and the General Fees. The Village was able to leverage approximately $50 million in TIF funds, which facilitated $200 million in private investments.[5] These funds were used for the construction of three parking garages, streetscape/sidewalk beautification of all downtown streets, the development of a park, the construction of the train station, new sewers and street pavement, the acquisition of the

Metropolis Performing Arts Theatre, and grants to renovate older buildings in the downtown.[6] The parking garages were paid for specifically using incremental property taxes generated by residents living in the TIF district.[7] A 'Special service area' collected an additional tax on properties located within the SSA boundary that was used to fund public improvements such as streets, sewers, and other public infrastructure, while sales tax revenue sharing was used to attract large sales tax generators to move to the area.[8] Impact fees allowed the village to charge all new residential buildings a fee per dwelling unit paid to the school districts, the park district, and the local library. These funds were then used to help pay for new or improved streets and access in the area. General funds were used to help with improvements in the area by designating a portion of the property taxes that were generated by redevelopment.

Image D.2 - Arlington Heights, Illinois
Source: Completely Maid, n.d.

Lessons for the City of Ottawa

- This is an example of a successful case study whose effective integration of several different components (i.e. Metra Rail, Village Green, Metropolis Performing Arts Centre, etc.) have ensured a variety of uses that keep the downtown alive, as an '18-hour' public space.
- It is also a great example of how public-private partnerships, if developed effectively, can result in substantial investment into and revitalization of underutilized communities outside of the downtown core.
- The City of Ottawa can also utilize similar funding mechanisms for the construction of a garage on the north site in order to absorb parking requirements near Tremblay Station.

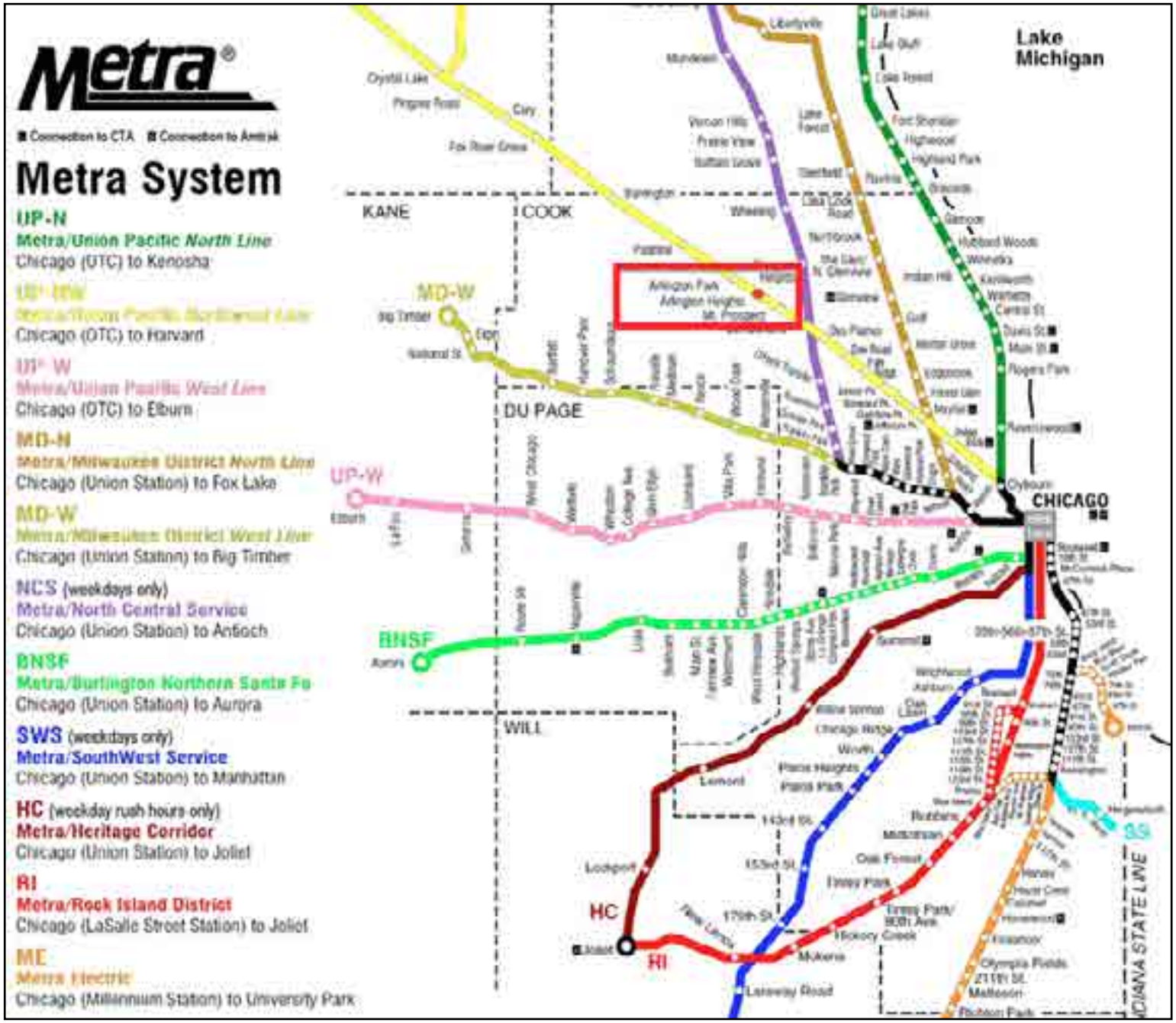


Figure D.1 - Metra System map showing location of Arlington Heights relative to Chicago
Source: Weaver & Bahl, 2011

D.2 - Bethesda Row, Bethesda, Maryland

City Population	63,000
Metro Population	8,500,000
Primary Transit Mode	Metro (Red and Green Line)
Project Completed	2001
Developer	The Federal Realty Investment Trust
Land Uses	Greyfield redevelopment

Table D.2 - Key information for Bethesda Row

Project Overview

Bethesda Row, located near the edge of downtown Bethesda, Maryland, illustrates an example of the redevelopment of a suburban commercial district into a mixed-use, walkable downtown, which is served by public transit. The project is an exemplary model of the benefits of public-private collaboration.[9]

Development Process

The project is located on a site which encompasses 5.5 hectares of land and covers 7 city blocks. It was developed by Federal Realty Investment Trust, a Real Estate Investment Trust (REIT) founded in 1962 that specializes in the acquisition, development, redevelopment, and management of prime retail and mixed-use properties.[10]

Previous uses on the site included warehouses, a cement plant, low-rise office buildings, and small-scale retailers. Surprisingly, almost all of the land was in the hands of a single owner, whose family had long held on to the site. By negotiating with this individual, Federal Realty was able to gain control of the site at an acceptable cost. Federal Realty negotiated long-term ground leases for Phases I, II, and III and bought the land for Phase IV.[11]

The developer worked with the county to ensure that the project complied with the city's downtown master plan. In addition, the developer met with members of the community to address any concerns regarding the effect of national retailers on local business.

Image D.3 - Retail in Bethesda Row
Source: EPA, 2013

Financial Mechanisms

By phasing development over a number of years, Federal Realty was able to mitigate some development risk and create sufficient cash flow to cover subsequent development costs. With its other retail properties, Federal Realty had found that the benefits of its improvements and renovations were accruing to nearby property owners; by building a bigger project, Federal hoped to be able to capture for itself more of the benefits of its hard work.[12]

Financing for all phases of Bethesda Row came from REIT financing, and a parking district created by Montgomery County

served as a critical subsidy for the project. In particular, the 1,000-space garage built by the county at the centre of the development site was essential to the financial feasibility of the project.[13] If Federal Realty had been responsible for providing that amount of parking by itself, the project never would have been built.

The facilities also are supported by a surcharge on property tax assessments for properties that do not provide their own parking, allowing owners of smaller buildings to avoid having to provide their own on-site parking and ensuring that all of the parking in the area is operated and managed in an efficient manner.[14]

Figure D.2 - Phasing plan for Bethesda Row
Source: Urban Land Institute, 2008

Predevelopment costs (Phase 3)	$100,000
Site Improvement Costs (Phase 3)	$1,110,000
Construction Costs (parking costs not included) (Phase 3)	$5,150,000
Soft Costs (Phase 3)	$2,240,000
Total Development Cost for Phase 3	$8,600,000
Total Costs of Entire Development	~$50,000,000

Table D.3 - Estimated costs of TOD implementation for Bethesda Row

Lessons for the City of Ottawa

- The feasibility of the project is greatly enhanced if the local government is willing to make a contribution to infrastructure. In the case of Bethesda Row, the county parking garage was vital to the creation and success of the development.
- In order to ensure support for the project, developers need to pay attention to the concerns of local governments and community residents.
- Developers also must demonstrate their willingness to compromise and adjust the features of the project to accommodate those concerns.
- A supportive regulatory framework is essential to the viability of developments. Particularly for multiphase projects, developers need to work closely with local jurisdictions to ensure that the development regulations are appropriate and sufficiently flexible for the project.

Image D.4 - Shops and patios in Bethesda Row
Source: EPA, 2013

D.3 - Collingwood Village, Vancouver, British Columbia

CMA Population	2,313,328
Primary Transit Mode	Automated light rail transit
Project Completed	2006
Developer	Concert Properties
Zoning	Rezoned for high density residential
Land Use	Residential; Commercial; Institutional
Development Site	Infill and urban redevelopment

Table D.4 - Key information for Collingwood Village

Project Overview

Collingwood Village is an 11.3 hectare high-density, mixed-use urban village centered around Joyce-Collingwood Sky Train Station. The development resulted from discussions between the developer and the City over surplus industrial lands adjacent to Joyce SkyTrain Station.[15] The site was originally owned by Vancouver Land Corporation and later purchased by Concert Properties. This area is similar to the Tremblay TOD study as the lands were previously used for industrial purposes and a rail yard. The total cost of the development was approximately $402 million.[16]

The development has a total of 2,700 residential suites. This is composed of 1,917 condominium units within 11 condominium buildings and 783 rental units within 5 rental buildings.[17] In addition to residential, the City and developer negotiated a number of neighbourhood amenities to establish a complete urban village. It has 6,500 m^2 of non-residential space including a grocery store, a drug store, an elementary school, a 930 m^2 community centre, 650 m^2 of daycare, small-scale retail and a neighbourhood policing centre.[18]

Image D.5 - Aerial photo of Collingwood Village
Source: Concert Properties, 2006

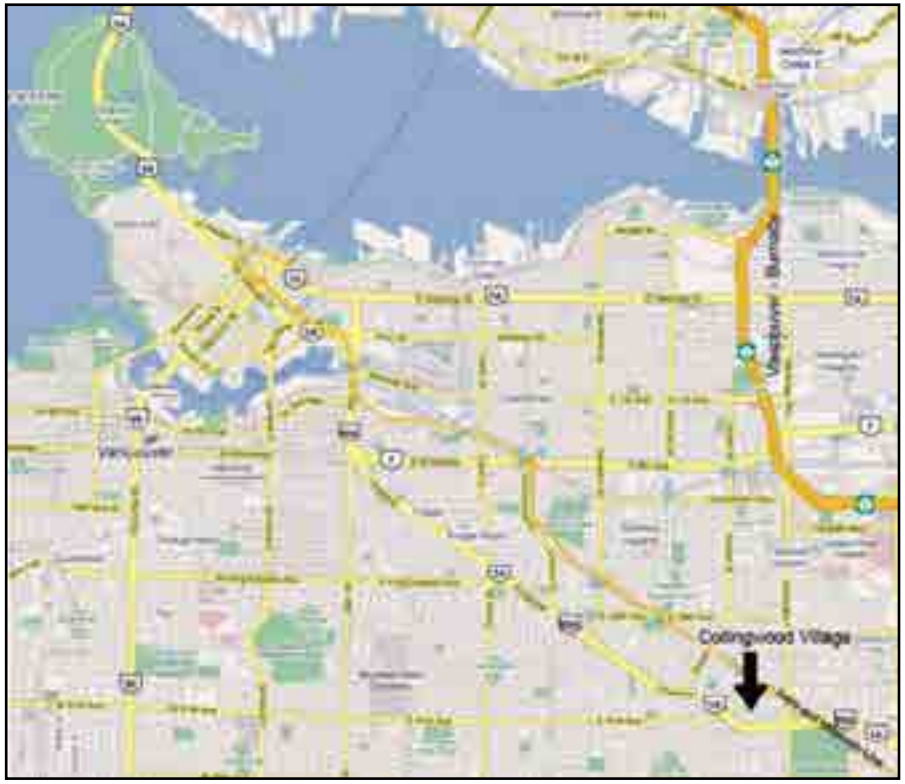
Development Process

The City of Vancouver had little interest in redeveloping the Collingwood Village site when the Expo Line was being planned. Interest only peaked when Joyce-Collingwood Station was finally developed.[19] It took several years for the City to rezone the development site and implement other land use tools to enable and encourage high density development around stations along the Expo Line. These TODs are considered to be high successful because the policies encouraged and supported combined transit supportive densities, good connections to transit, strong pedestrian connectivity and reduced parking requirements.[20]

Scale transitions and urban design initiatives such as mid-rise podiums wrapping high-rise towers that are stepped back from the street helped the development to integrate into the surrounding neighbourhood. The majority of the developments

amenities were paid for by the developer. However, the City spent an additional $5 million on the cost of amenities that included a community centre and a community policing centre.[21]

There was an extensive consultation process that guided the planning, design and development of this project with the City and local community. Much of the consultation was completed through open houses and surveys.[22] In general, it was found that the community was supportive of the project. The main reason for this was due to the commitments the developer made to the project. This related to investments in amenities as well traffic management initiatives.



Map D.1 - Location of Collingwood Village
Source: Google Maps, 2014

Lessons for the City of Ottawa

- From the developer's perspective Collingwood Village is successful because of the development offers a mix of housing types, a strategic phasing plan, the long-term commitment of the developer and the extensive community amenities
- Developer and City negotiated down parking requirements in Phase I. These numbers were further reduced after completion of Phase I.
- Urban design elements: commercial uses located closer to transit station, community services located further away from transit station, buffering between residential and public transit uses, and compatible scale of developments.

Image D.6 - Collingwood Village from Joyce-Collingwood Station
Source: City of Vancouver, 2012

D.4 - Court House, Arlington, Virginia

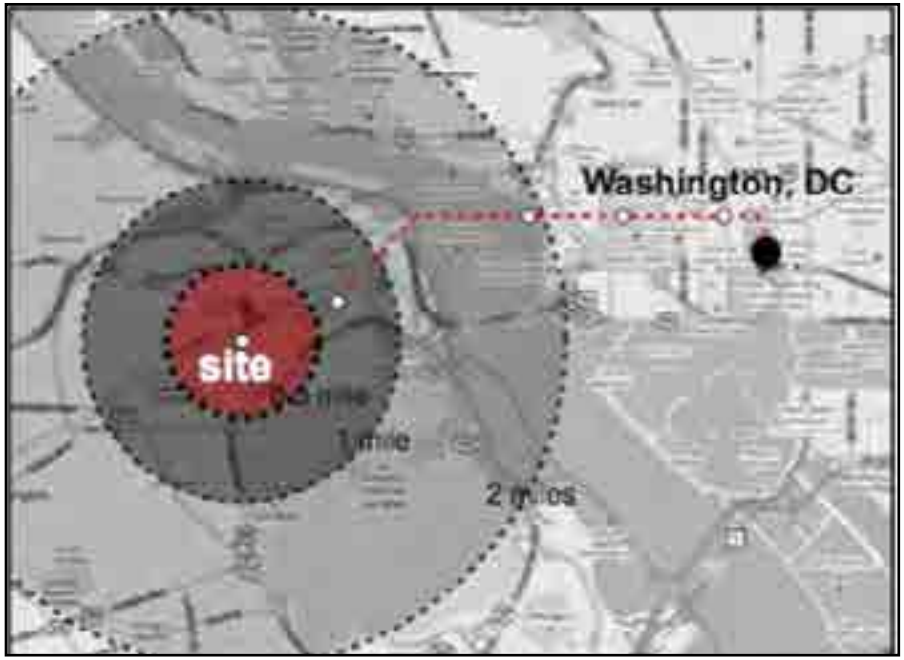
County Population	210,000
Primary Transit Mode	Light rail; Bus
Project Completed	On-going
Developer	Multiple
Zoning	Incentive zoning; General land-use plan
Land Use	Greyfield redevelopment; Urban infill

Table D.5 - Key information for Court House

Project Overview

Arlington has over four decades of experience with TOD application. Court House Metrorail Station is located along the Metrorail corridor along with 5 other TOD projects. The site is approximately 97 hectares (240 acres) in size. This corridor was one of the early access routes to Washington, changing from an auto-dependent suburb to a TOD in nearly 20 years.[23] The development of the Court House Metrorail Station occurred incrementally, changing from low density to high density in a series of residential and office high rises. The Station currently houses the County's courts, administrative offices, and police department, as well as a farmer's market, cinema, Courthouse Plaza, and pedestrian mall with shops and restaurants.[24]

The general land-use plan that was prepared by the City of Arlington was instrumental in setting the policy framework to facilitate TOD projects.[25] This plan was site-specific in that it addressed policies on land uses, transportation, urban design, and open space. This plan was a policy document that guided and provided vision for future development and governed the area in a 400 metre radius of the Court House Station. The plan was originally developed in 1981 and revised in 1993 to respond to changing market trends. Reinforcing the vision of an urban government centre, the addendum planned for underground parking, a civic plaza, and performing arts centre.[27] The revised strategy focused high-density mixed-use development around the transit station and recommendations were made to improve existing urban design strategies within the plan. These guidelines focused on developing the original vision of an institutional district.



Map D.2 - Location of Court House Station relative to Washington, DC
Source: University of Texas, 2012

Development Process

The development process involved the following steps:

- Planning for a regional transit system through extensive public consultation and included development concepts such as:
  - Closely spaced transit stations
  - High and medium density development around stations
  - Mixed use with strong emphasis placed on residential

    - Preserve and invest in already established neighbourhoods
- Adoption of a corridor wide General Land Use Plan based on previously approved development goals
- Creation of sector plans to create distinctive 'urban villages' with an overall vision for each station area including desired public improvements, locations for retail and urban design standards
- Use of a comprehensive site plan review process using public meetings with City staff, citizens, County Commissioners, and developers

The later addition of high density residential with affordable housing and retail space to the existing commercial and office space contributed to the diversification of uses in the area. Between 1960-2005, 57 projects were developed surrounding Court House Station.[28]

As Court House Station opened in 1979, a long-range plan has been implemented to improve the entrances to the station to create more connections to the Western end of the station.[29] In 2014, the Arlington County Board approved a $2.7 billion, 10 year Capital Improvement Plan (CIP) for the fiscal years of 2015-2024. The CIP is a planning document that outlines Arlington's long-range capital investment objectives. This plan focuses on county projects in infrastructural improvements and specifically on Court House Station.[30] $1.1 billion of this CIP will go towards improving safety, accessibility, and efficiency for commuters on bike, foot, car, and transit. New entrances have been planned for Court House Station along with elevators to improve accessibility.[31]

The most positive achievement of Court House Station is the multimodal connection it provides in proximity to Washington, DC. Not only did the location of the site lead to its success, but also the comprehensive planning approach using the Corridor Plan helped to synchronize development. Amendments to the General Plan and Sector Plans also helped the City to respond to the changing market. Lastly, public participation in the early stages of the planning and design process reduced the risk of slowing down the development process.

Image D.7 - Court House Station
Source: Metrolinx, 2014

Lessons for the City of Ottawa

- Incremental development over a long period of time set the stage for success of the Court House Station.
- Revisions due to market trends of the master plan helped to create a more transit centred environment.
- A strong vision also helped to guide development and control what types of uses were implemented in the area.
- Synchronizing and planning for distinct incremental development around each station will benefit Tremblay Station.
- Comprehensive site plan review and diversification of uses including the integration of residential into the site will help accommodate the 24/7 activity needed for a successful TOD at Tremblay Station.

D.5 - Del Mar Transit Village, Pasadena, California

City Population	143,667
Primary Transit Mode	Light rail; Bus
Project Completed	2006
Developer	Multiple
Zoning	Unknown
Land Use	Urban infill/redevelopment

Table D.6 - Key information for Del Mar Transit Village

Project Overview

Located on the Metro Gold Line, Del Mar Transit Station is one of 13 stations between Pasadena and downtown Los Angeles.[32] In total the line covers 22 kilometres (13.7 miles). The area was previously auto oriented and was largely used by commercial and industrial companies. Originally fragmented, the area is now a major hub and is contributing to the revitalization of surrounding neighbourhoods.[33] The Transit Village is a civic plaza that encourages tourists to use the light rail system to visit the historic downtown area. A bridge over the rail right-of-way creates the pedestrian gateway into the village. The Transit Village is across from an Olmsted designed park, a quarter-mile from the downtown, immediately adjacent to the new light-rail line, and situated at the end of one of the regions major freeways.[34] The site is 1.38 hectares (3.4 acres) and is surrounded by a plaza with residential and commercial uses bisected by the light-rail line. Density requirements of 100 units per acre kept the development consistent with the existing built form of the area.[35] The site is in close proximity to many pedestrian friendly streets. The opportunities were addressed and maximized to focus on pedestrian movement throughout the site.36 Two underground parking lots are were located at either end to avoid on-site congestion.[37]

Map D.3 - Location of Del Mar Transit Village relative to Los Angeles
Source: University of Texas, 2012

Development Process

This project was developed through a private and public partnership between various agencies.[38] This joint partnership between the City, Transit Authority, and various private developers helped to build the rail line, which was a public initiative. The on-site transit parking was funded privately. A significant portion of the site was publicly owned by Los Angeles County Metropolitan Transportation Authority (Metro), which made revitalization easier and gave the option of leasing the site.[39] The process started in 2002 and was completed in 2006.

Financial Mechanisms

The City was not involved in any financial capacity. Metro owned the land surrounding the station, however the City did later purchase the parking structure from Metro at a very good rate using a variety of funding sources including the now

defunct Redevelopment Tax Increment Fund.[40]

More recently, the City implemented a Traffic Reduction and Transportation Improvement Fee that requires any new development to pay a fee that goes towards municipal transportation improvements to address new traffic generated by development. These fees go towards enhancing street capacity, improving intersections and traffic signals, and most notably, increasing the frequency of service on Pasadena Area Rapid Transit.[41] If a developer demolishes an existing residential building, the developer will only be a charged fee for additional new units on top of the pre-existing units. The fees for net new development are $2,729.64 per new residential unit, $9.49 per square foot of retail, $4.09 per square foot of office, and $3.41 per square foot of industrial use.[42] The development fee is waived for any affordable housing units built.

Image D.8 - Transit stop at Del Mar Transit Village
Source: Moule & Polyzoides, 2014

Conclusion

The design of Del Mar Transit Village is centred on linking and complimenting the surrounding residential neighbourhoods. Enhancing the pedestrian streetscape was also one of the major foci to encourage residents to walk to transit.[43] Coordination with other transit modes has encouraged more traffic through the site.[44] This station was integrated into the development of both retail and residential spaces and was centred on a strong vision. These aspects of the design and implementation contributed to the station's success.

Lessons for the City of Ottawa

- Del Mar Transit Village benefitted from the public-private partnership that enabled development around the rail station and the linkages and connectivity created by the projects design.
- The public partnership between the City of Pasadena and Metro Transit Authority allowed the City to acquire the land to build parking for the station at a reduced rate. Both public and private concessions made this project achievable.
- The project also had a strong vision from the start that supported mixed-use around the transit station and was backed by community support.
- In the context of Ottawa, the City does not own large portions of land surrounding the station. However, the City can concentrate on creating connectivity between the transit station and existing development. As time progresses, expansion of the station into surrounding areas will take place and the City will need to be engaged with private developers to be able to concentrate land uses in a way that supports Tremblay Station as a TOD.
- Del Mar Transit Station's parking structures are also an alternative for Tremblay Station. As a large percentage of the land is greyfield, there is the potential to conglomerate some of the existing parking into an

above/below grade structure. This tactic will help create room for more engaging uses that stimulate pedestrian interaction on the site.

Image D.9 - Density in Del Mar Transit Village
Source: Moule & Polyzoides, 2014

D.6 - Galatyn Park, Richardson, Texas

Metro Population	101,400
Primary Transit Mode	Light rail
Project Completed	On-going/Station built 2002
Developer	Multiple
Zoning	Amended conventional zoning
Land Use	Suburban/urban infill

Table D.7 - Key information for Galatyn Park

Project Overview

Galatyn Park is the first TOD in Richardson, Texas and resulted from a joint private/public partnership through the City of Richardson, Galatyn Park Corporation, and private developers.[45] The mixed-use station provides gathering and open spaces to make it into a destination stop. While the master plan for the area has progressed overtime, the vision to create a district with a mix of private development and civic space has remained constant.[46] Richardson is known for its high-tech industry with 50 technology companies per square mile along an 11-mile stretch and is also home to the University of Texas at Dallas.[47] Richardson is only 24 kilometres (15 miles) from downtown Dallas and has direct access to the Dallas Fort-Worth International Airport.

The corporate campus is the major focus within the development with more than 74,322 square metres (800,000 square feet) of office area. However, design strategies and uses have created more for the station.[48] Centred on a technology theme, the station incorporates the Charles W. Eisemann Centre for the Performing Arts, which is owned by the City of Richardson. Accompanying the performing arts centre is the Renaissance Hotel and Convention Centre along with The Venue, which is a mixed-use multifamily development and was added later to the master plan.[49] Parking for all of the developments around Galatyn Station are located adjacent to the station but there are no designated parking areas for commuter park and ride use. The City has invested over $5 million in improvements to enhance the streets and public plaza. A pedestrian connection through the site was created by a 3.2 hectare (8 acre) trail and open space system provided by the Galatyn Park Corporation and Woodland Preserve. This trail system connects to the larger 35 kilometres (22 mile) Spring Creek Nature Area system.[50]

Map D.4 - Location of Galatyn Park relative to Dallas
Source: University of Texas, 2012

Development Process

The City of Richardson began the development process by identifying partners and creating a design concept for the site. The City then proceeded to pass an ordinance that allowed a TOD with a focus on residential use. The City specifically focused on the implementation of a residential component because of the recognition that a 24/7 environment is essential to create a mixed-use community.[51] This zoning was applied

to 12.44 acres surrounding the Galatyn Park Station. Over a period of almost 10 years, development of the site took place incrementally. The following is a timeline of the development process:

- 1997 Galatyn Park Station is announced by the City of Richardson
- 1998 The hotel development partner is chosen
- 1999 The City passes the ordinance to allow for the TOD with residential focus
- 2001 The hotel opens to the public
- 2002 Galatyn Station opens for light rail transit
- 2002 The performing arts centre is completed and opened to the public
- 2007 1 million square feet of office space for the Blue Cross and Blue Shield starts construction
- 2008 The residential component of the site is completed and opened

Conclusion

The order of development has contributed to isolating different uses within the site. The function of these uses is very separate from one another and contributes to a lifeless centre area.[52] The only residential component of the site sits alone, as another zoned 8 acre residential area sits empty. If this site were developed, the space would become enclosed and would contribute to an overall feeling of visual connectivity. There is also a lack of options to park and take transit, as there is no designated parking structure for park and ride users.

Lessons for the City of Ottawa

- The strong vision that directed this project from the beginning was one of the most successful parts of the Galatyn Station development. The areas master plan has evolved, but the vision has remained constant and has supported the area to grow into the distinct district that it has become today.
- Tremblay station would benefit from a stronger overall vision to make it distinct and different from other surrounding stations. By garnering community input into this process, the station would have a stronger direction for the future.
- Galatyn Station's close proximity to the Dallas Fort-Worth International Airport gives a successful example of a TOD that has benefitted due to its location. Tremblay Station is about 15 minutes from the Ottawa Airport, which will attract urbanites who value this close connection.
- The incremental nature of the project and the diversity in uses overtime is something for the City of Ottawa to consider when thinking about how to successfully develop Tremblay Station over a longer period of time.

Map D.5 - Master plan for Galatyn Park
Source: University of Texas, 2012

D.7 - Holland Cross, Ottawa, Ontario

CMA Population	883,391
Primary Transit Mode	Bus
Project Completed	2005
Developer	Multiple
Land use	Residential mixed-commercial

Table D.8 - Key information for Holland Cross

Project Overview

Holland Cross is a mixed use project located at 1560 Scott Street in Ottawa. It contains 18,200 square meters of ground floor retail and upper-level offices, and nearby residential towers with 638 units.[53] The Holland Cross office complex consists of two, 8-storey office buildings. There is a third, low-rise office building at the southern area of the property. The single storey parking garage provides 760 vehicular parking spaces. In terms of transportation, Holland Cross borders Parkdale Avenue is a north-south arterial road which connects the Sir John A. Macdonald Parkway in the north, with Highway 417 and Carling Avenue in the south. Several local OC Transpo bus routes provide frequent service to Holland Cross.

Development

Holland Cross is considered to be a product of the development of Tunney`s Pasture Transitway station. It is located approximately 250m away from Tunney's Pasture Transitway station, making it walkable for employment and retail uses. It is believed that without this bus Holland Cross would not have been built. Between 1989 and 1993, Tunney's Pasture (including Holland Cross) spurred the development of 393 mid- and high-rise units.[54] According to a February 2014 Zoning By-Law Amendment and Site Plan Control Application prepared by Fotenn consultants, there are plans for an addition to the Holland Cross office building.[55] This includes replacing the existing single storey portion of the complex. This would make use of existing infrastructure including the parking garage and retail concourse at-grade.

Image D.10 - Holland Cross, Ottawa, Ontario
Source: Treasury Board of Canada, n.d.

Lessons for the City of Ottawa

- Mixed-use office and retail uses developed in close proximity to major transportation node

D.8 - Lindbergh Station, Atlanta, Georgia

City Population	540,900
Metro Population	5,500,000
Primary Transit Mode	Heavy rail; Light rail; Bus
Developer	Multiple
Zoning	Special public interest zone (created for Lindbergh Transit District); Commercial Residential Distrct
Land Use	Residential; Retail; Office; Hotel
Cost	$500 million from private sector; $100 million from MARTA for station and station improvements

Table D.9 - Key information for Lindbergh Station

Project Overview

In 1997, plans were announced to develop a large-scale, mixed-use project that would be the largest redevelopment plan in the city's history.[56] Local actors and authorities collaborated to develop a series of transportation and land use projects and strategies that would help form a vision for the city that would then inform the vision for the project. This 19-hectare site was previously low-density strip development on land that was owned by MARTA (Metropolitan Atlanta Rapid Transit Authority), much of it being used as park-and-ride facilities.

Under the Federal Transportation Authority (FTA)'s joint development policy in 1997, MARTA took the initiative to develop the area immediately surrounding the stations and worked with the private sector to finance the project. MARTA contributed $100 million while $500 million was contributed by the private sector for station and station improvements.[57] MARTA played a proactive role in the place-making process and effectively used the public land under its ownership for development. MARTA successfully prepared a plan through a competitive-bid process in order to select a master developer for the project. The agency contributed the land to be developed while the developer saw the project through the development construction phase and acquired a 99-year ground lease on the property developed. It also used non-traditional financing mechanisms like tax increment financing (TIF), a capital improvement plan, a business improvement district, and a public improvement district, among others in order to help finance the project.

Image D.11 - Lindbergh Station, Atlanta, Georgia
Source: Cooper Carry, n.d.

Financing Mechanisms

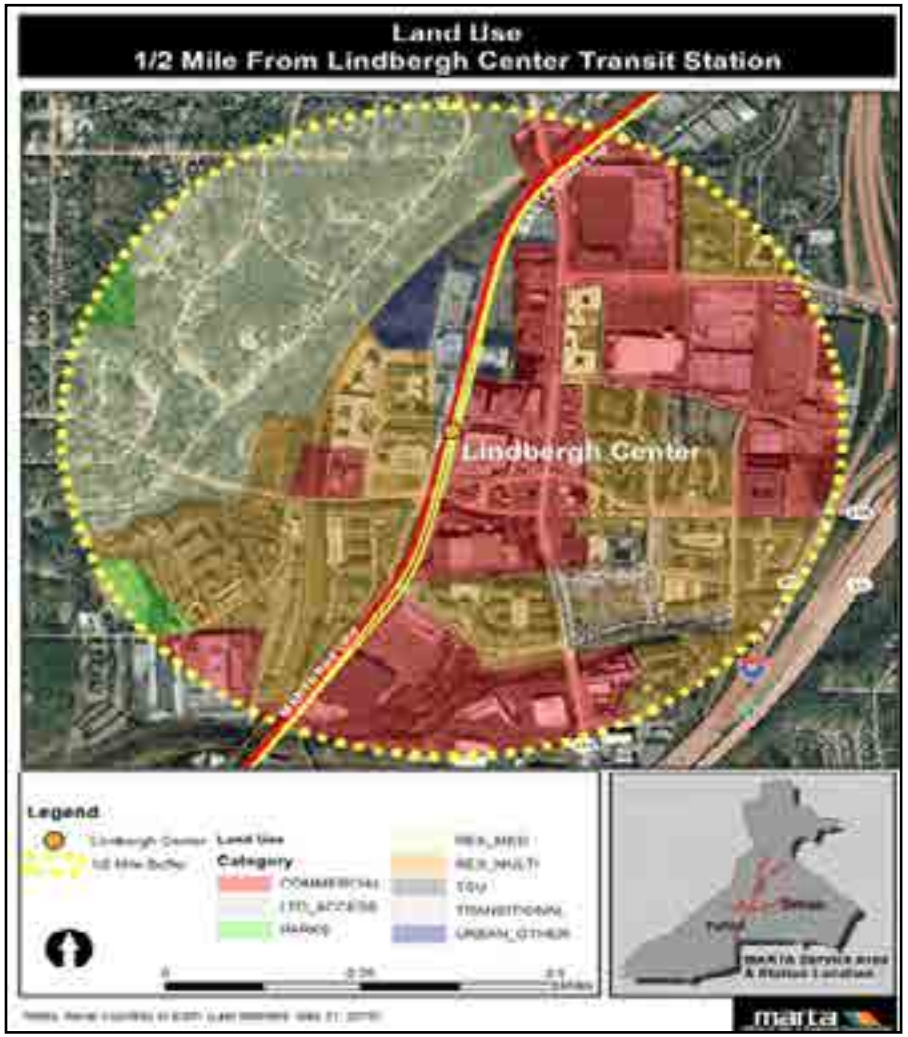
Lindbergh Station is a strong example of how public transit agencies can be at the forefront of development. The project was entirely financed by MARTA, including but not limited to the project's streetscape and sewer improvement, and the construction of structured parking facilities which helped absorb the project's front-end capital requirements. This provides increased incentives for developers since these costs are often high-risk and pose the greatest opportunity for capital loss. In return for these investments, MARTA distributed 99-year ground leases on their property to various development

agencies and were able to ensure conformity with their overarching Master Plan.[59] MARTA was able to secure the $81 million required to finance the front-end capital costs by simply using a majority vote with its Board of Directors.[60] It was able to do so easily because transit authorities are able to apply for federal funding that covers around 80% of its total costs. In addition to this, it is able to receive a 20% match from local funding.[61]

Image D.12 - Aerial photo of Lindbergh Station
Source: Cooper Carry, n.d.

Lessons for the City of Ottawa

- Many lessons can be learned from the financial and organizational model adopted by Lindbergh station, which lead to a successful partnership between public and private stakeholders.
- It initiated change in high-density and mixed-use in what was formerly a low-density development surrounded by major arterial roadways and freeways.[62]
- This case study may serve to showcase how development can occur around TODs without substantial municipal investment, an option that may be appealing to the City of Ottawa.



Map D.6 - Land use plan for Lindbergh Station
Source: MARTA, n.d.

D.9 - Metropole, Ottawa, Ontario

CMA Population	883,391
Primary Transit Mode	Bus rapid transit
Completion Date	2004
Developer	Minto
Land Use	Greyfield redevelopment and infill

Table D.10 - Key information for Metropole

Project Overview

Since its beginnings in 1982, the Transitway has increased in size, to six routes and 37 stations, and in ridership. The Westboro Transit station is only one stop from the Tunney's Pasture transit hub, a federal government employment node that is well-served by the Transitway.[63]

The arrival of the Transitway in 1982 improved public transit service. When it was completed, parcels of land were still available along the transit corridor. Because of the disappearance of some light industry near the transit corridor, in addition to existing vacant land, has made way for higher-density residential development.

Redevelopment around the Westboro station has occurred incrementally, with a surge in development in the past five years. The area was already a well-developed residential neighbourhood and land along the Transitway offered space for additional infill development.[64]

Image D.13 - High-rise condominium in Metropole
Source: Williams, 2003

Development Process

The development is about six km (3.7 mi.) west of downtown. Comprised of a 32-storey condominium tower and 68 townhouses, Metropole takes full advantage of the site's proximity to and view of the Ottawa River. Ottawa's Transitway (rapid bus network) abuts the south side of the site, with the Westboro Station less than 200 metres from the site.[65]
The private developer, Minto, chose this site, as it offered proximity to the river, giving residents views of the river and downtown Ottawa, as well being close to amenities such as parks, public transit and a walkable shopping district.[66] A strong real-estate market, especially in condominium sales, allowed Minto to make the most of the site by building a high-rise tower. The project was consistent with City of Ottawa plans and policies, which encouraged higher density near transit nodes. The transit station had been in place for several years and the

adjacent area has gradually been intensifying, which made this site perfect.[67]

The project includes 153 condominium apartments in the tower, ranging in size from 90 to 240 m^2 (970 to 2,600 sq. ft.) and 68 townhouses of approximately 165 m^2 (1,800 sq. ft.) each.[68] Most units were sold within a year of completion and the project met Minto's profit expectations. The success of the project suggests that new consumer markets accept a more urban lifestyle, which includes high rise living, a pedestrian friendly environment, and public transit use.[69]

The City of Ottawa was flexible on zoning and parking, requiring only 1 space per unit in buildings that are within 400m of a transit station. It worked with the developer and adjoining property owners to establish a pedestrian path through the site to the station.[70]

Lessons for the City of Ottawa

Metropole residential tower and townhouses is a unique project in terms of both site planning and design. It is an example of innovative site usage and new architectural design elements in high-rise residential development in Ottawa. Similarly, it provides an example of mixed housing types, with a combination of high-rise apartments and townhouses.

Metropole project shows, transit-oriented development on a neighbourhood-wide scale works best when neighbouring developments and property owners can work co-operatively to succeed at providing proper connections to transit and nearby services. From a developer's standpoint, Metropole is a successful residential development project in terms of design, marketability and profitability. In this regard, development of the Metropole site included attention to amenities such as safe, easy access to transit and other community services necessary to support the general principles of TOD.

Figure D.3 - Master plan for Metropole
Source: CMHC, 2007

D.10 - Orenco Station, Portland, Oregon

City Population	580,000
Metro Population (Portland)	2,300,000
Primary Transit Mode	Light rail
Project Completed	2002
Developer	PacTrust, LP; Costa Pacific Homes
Zoning	Town Centre
Land use	Residential; Live-work units; Commercial; Retail

Table D.11 - Key information for Metropole

Project Overview

Known as the "Silicon Forest" of transit-oriented development, Orenco Station is an early example of a city investing in a light rail networks as a means of re-connecting the sprawling suburbs with the urban city.[71] Orenco Station is a master-planned community that has established a quality designed network of narrow, local streets that are walkable, catering to the needs of both pedestrians and residents. Uses on this site include uses such as: loft apartments, townhouses, live-work units, retail, single detached housing and high-tech offices.[72]

Development Process

As part of the Portland Metro Area 2040 Plan this site, originally zoned for industrial use, was subdivided to accommodate development of Orenco Station. The development of a zoning ordinance customized for the site specifically identified the site as a "station community residential village".[73] The 2040 Plan established a gradient of residential density targets at varying distances from Orenco station while simultaneously mandating mixed-use development.[74] For the project to manifest into a liveable transit-oriented development, a zoning ordinance was customized by the City labeling the site as a "station community residential village".[75]

Image D.14 - At-grade shopping around Orenco Station
Source: University of Texas, 2010

Financial Mechanisms

Partial funding for Orenco Station was through the federal Full Funding Agreement as part of the Hillsboro LRT extension. This agreement stipulated high-density zoning around transit stations in exchange for $520,276,986 in federal transit funds. In terms of residential development, the total cost of the development process was a total of $76,300,000. The follow table breaks down the implementation costs of Orenco Station:

Development Process	Total Amount
Site Acquisition	$5.4 million
Site Improvement	$12 million
Construction	$45.8 million
Soft Costs	$13.1 million

Table D.12 - Estimated costs of TOD implementation for Orenco Station

To further incentives development and implementation of this project, Orenco Station was subsidized with a $500,000 federal Congress Mitigation Air Quality grant for pedestrian enhancements to LRT station crossing.[79] Additionally, Hillsboro provided over $1,000,000 from the Traffic Impact Fund (TIF) to support investments in infrastructure.[80]

Image D.15 - Residential uses around Orenco Station
Source: University of Texas, 2010

Lessons for the City of Ottawa

- Successfully orienting development around mixed-use to establish a transit supportive community.
- Utilizing several funding mechanisms and public-private partnerships to support implementation

Figure D.4 - Transit station map showing location of Orenco
Source: Pacific Realty Associates, n.d.

D.11 - Pleasant Hill-Contra Costa Centre, Walnut Creek, California

City Population	67,000
Primary Transit Mode	Light rail
Project Completed	2010
Land Use	Residential; Commercial; Live-work units; Offices

Table D.13 - Key information for Pleasant Hill-Contra Costa Centre

Project Overview

Prior to the inception of the Contra Costa Centre Transit Village in the mid-1970, Pleasant-Hill was a semi-rural, low single-family neighbourhood.[81] Following the implementation of the station, surrounding neighbourhoods around the Pleasant-Hill Contra Costa Centre Station began taking suburban form while simultaneously attracting long-distance commuters. This combined with significant amounts of parking spaces, close proximity to a major expressway and train services established this site as a commuter park-and-ride function.[82]

Development Process

Originally an area that was dominated by agriculture, the Contra Costa transit-oriented development underwent several implementation plans before the City of Walnut Creek approved plans for a transit-oriented development district surrounding Pleasant Hill Bay Area Rapid Transit System (BART). In the early stages, Pleasant Hill-Contra Costa Transit Village was dominated by vehicular traffic with very few pedestrian amenities.[83] The development process included increasing density of office, retail, housing and institutional uses.[84] At the same time significant consideration was given to transportation and circulation; maximizing use of public transit for residents and businesses. This was addressed with the multi-modal transportation and pedestrian designs.[85]

Image D.16 - Aerial photo of Pleasant Hill-Contra Costa Centre
Source: CNU, 2009

Financial Mechanisms

Implementation of Contra Costa was made possible through several financial mechanisms, including tax-increment financing (TIF) and public-private partnerships.[86] A transit agency, Contra Costa County Redevelopment Agency, became an equity partner with BART to assemble the land, finance infrastructure, amenities and affordable housing and in return BART provided the agency with 75% of ground lease revenue.[87] The structured parking, streets and public spaces were funded with TIF through the agency, with $30 million allocated to the parking structure. A real estate investment trust contributed $6 million for the transit replacement parking and a total of $40 million for rental apartments.[88]

Financial Strategy	Total Amount
Tax Increment Financing	$30 million
Real Estate Investment Trust	$6 million
Transit Agency	75% of ground lease revenue

Table D.14 - Estimated costs of TOD implementation for Pleasant Hill-Contra Costa Centre

Image D.17 - Plaza in Pleasant Hill-Contra Costa Centre
Source: CNU, 2009

Lessons for the City of Ottawa

- Combining development and financial strategies to build value over time that can be reinvested to further develop the transit-oriented community.
- Establishing a transit agency focusing specifically on transit-oriented development around Tremblay Station.

D.12 - Portland Hills, Dartmouth, Nova Scotia

Population	67,573
Primary Transit Mode	Bus rapid transit
Project Completed	2004-2008
Developer	Clayton Developments
Zoning	Town centre
Land Use	Residential; Commercial

Table D.15 - Key information for Portland Hills

Project Overview

In 2002, the Halifax Regional Municipality Transit Strategy identified a rapid transit corridor to downtown Halifax as a project that was necessary for relieving regional roads from congestion.[89] The Regional Municipality introduced a mixed-traffic express bus service with limited stops from suburban communities to downtown Halifax. Bus rapid transit was identified as the most feasible both in terms of technology and finances.[90]

Development Process

Prior to intensified development and the bus rapid transit, the site was an undeveloped greenfield.[91] The development of Portland Hills took place in two phases. Land uses on the site include: single detached units, townhouse units, low-rise buildings, multi-tenant commercial retail area, and community park. Clayton Developments ability to recognize the target market and consult surrounding residents contributed to a successful development of this site as transit-oriented.

Transit-supportive strategies included paved pedestrian connection to the transit station followed by denser forms of developments that were closer to existing and planned transit corridors.[92]

During the planning and development of the Portland Hills, Metro Transit purchased the site from the developer as a site for the Portland Hills MetroLink Station. In effect, the station location was selected after the planning and Phase I and II of the development of Portland Hills.

Image D.18 - Bus rapid transit in Portland Hills
Source: CMHC, 2014

Lessons for the City of Ottawa

- Incorporate quality housing types, open space networks, and commercial areas with accessible connections to the transit node.
- Consideration of environmental conditions and the surrounding neighbourhoods to maintain consistency throughout the TOD.

D.13 - Port Credit Village, Mississauga, Ontario

City Population	713,443
CMA Population	5,400,000
Primary Transit Mode	Commuter rail (GO Train); Bus (Mississauga Transit)
Project Completed	2005
Developer	FRAM Building Group and Slokker Canada
Land Use	Residential; Mixed commercial (office and retail)
Development Site	Suburban infill and redevelopment

Table D.16 - Key information for Port Credit

Project Overview

The Port Credit area can be characterized as a having a village "feel". It is a live-work area defined by public plazas, restaurants, small scale retail shops, office spaces. The development is a five minute walk to GO Transit, a major commuter rail. It is also well serviced by The City of Mississauga's public transit.

Port Credit Village is located on the former St. Lawrence Starch lands which used to function as a heavy industrial site for the manufacturing and distribution of starch and glucose products. This use created a disconnect between the town's residential and market areas. There are many aspects of this site that make it an attractive location for a development. The primary driver behind the development of this property was its location.[93] The developer was attracted to the site because of its prime lake frontage and it is within a historic neighbourhood of Mississauga. Below is a timeline featuring major events:

- 1997: Development was referred to OMB and interim decision was given.
- 1998:FRAM/Slokker purchased property from St. Lawrence Starch Company.
- 2000:OMB approved the proposed development and planning documents.
- 2001: Development started
- 2005: Completion and occupancy

Map D.7 - Location of Port Credit
Source: Google Maps, 2014

Development Process

The development met the City's planning objectives for the redevelopment of this site. The City and developer worked together to create a high quality waterfront park that reclaimed and provided public access to the water's edge. The developer and the City invested $1.2 million and $3.4 million respectively into the park.[94] Furthermore, Port Credit's east and west village were connecting and offered a mix of land uses whose urban design and architecture integrated well into the existing community.

Public participation was also a vital aspect of this project.[95] Initially the surrounding community was staunchly opposed to

the size and density of the project. However, following the OMB ruling ratepayers associations, the City, and developer worked together through the planning, design and development stages of the project to ensure the final product was successful and addressed the concerns of the community.

Financial Mechanisms

There were no funds provided by the municipal, principal or federal levels of governments. As earlier discussed, the developer contributed $1.5 million towards the development of a publically accessible park along the waterfront.[96]

Figure D.5 - Master plan for Port Credit
Source: CMHC, 2007

The total development cost of the project cost approximately $160.7 million which, included: $20.3 million to acquire the property, 17.8 million for site improvements, 97.8 million that covered construction costs and 24.9 million for soft costs.[97] According to the ULI case study, the amount of equity Slokker was required to contribute was higher than normal because lenders were doubtful about the success of this project.[98] This uncertainty was attributed to the fact that there were no comparable projects built in the surrounding Toronto area. FRAM and Slokker used standard lending tools for this project. They obtained a construction loan from the Bank of Nova Scotia that required 65% in presales.[99] A mezzanine loan was not needed.

FRAM and Slokker's rate of return for the first phase exceeded 20%.[100] For the subsequent phases returns were near 30% due to increases in land values.[101]

Lessons for the City of Ottawa

- Municipal policies encouraged transit oriented-supportive densities and land uses near GO Stations.
- The developer and City worked together to ensure that the development's built form integrated well with the surrounding neighbourhood while maintaining a financially viable project.
- The developer and City worked together to create an attractive urban design.
- The development offered a product that met market demands.
- Engagement of all stakeholders in the planning, design and development of the project.
- Strategic municipal investment in public realm.

D.14 - Rio Vista West Station, San Diego, California

City Population	1,356,000
Primary Transit Mode	Light rail; Bus
Project Completed	2006
Developer	CalMat Properties Co. & Greystone Development Company
Zoning	Mixed-use
Land Uses	Retail; Residential; Office

Table D.17 - Key information for Rio Vista West Station

Project Overview

Completed in 2006, Rio Vista West is 38 hectares in size and is strategically located along the San Diego Trolley's Blue Line in the Mission Valley area and is approximately a 15-20 minute light rail ride from the downtown and other major employment centres. It is one of San Diego's first TOD projects and potentially one of the most transit-friendly suburbs in California. The first phase of the project was a standard shopping centre, soon followed by a residential development along the LRT line, one-quarter mile from the station.[102] The specific breakdown of the site as a whole is:

- Over 1,000 residential units
- 30,193 square metres of retail development
- 15,329 square metres of office space

Development Process

Its developmental process has provided a unique set of lessons for other TOD projects in North America. The major landowner and master developer, CalMat Properties (a subsidiary of CalMat Co, a major construction materials producer), undertook the master planning process, built the site's basic infrastructure, and sold the retail, residential, and mixed-use components of the site to other developers who would then assume responsibility of the design and construction of those parcels of land.[103] This resulted in challenges with uncoordinated individual developer's phasing and differing construction times.

Five distinct planning areas formed within the site: Urban Residential/Mixed-Use Core, Retail Center, Urban Residential, Courtyard Residential, and Riverfront Residential.

Figure D.6 - Master plan for Rio Vista West Station
Source: California Department of Transportation, n.d.

Financing Mechanisms

This project was entirely funded by private investment and all components of the project were market-driven.[104] All residential units are market-rate and all infrastructure and street improvements were undertaken and financed by the private developer, CalMat Properties.

Lessons for Ottawa

- Although the project has often been criticized for its lack of coordination among individual developers, a strong sense of leadership and adherence to the overarching vision and Master Plan are what make this project successful.
- It is also an excellent example of horizontal TOD growth versus vertical TOD growth, allowing it to remain dense at a pedestrian-scale.
- Its integration of various uses also allow it to be a complete community within easy access of an LRT line, providing direct access to other amenities as required.
- It provides important lessons for phasing in order to ensure that residential and retail development is phased appropriately in order to effectively attract development.[105]
- It also points to the importance of having a dedicated developer that is committed to financing and developing the full project to reduce reliance on municipal investments.

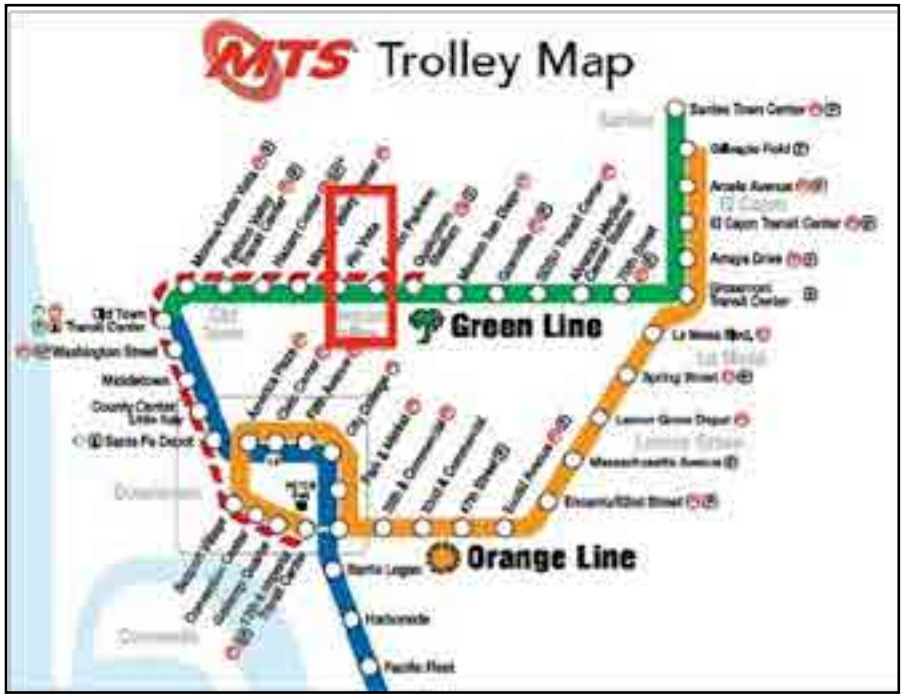


Figure D.7 - Trolley station map for Rio Vista West Station
Source: California Department of Transportation, n.d.

Image D.19 - Rio Vista West Station
Source: Inam, 2012

D.15 - Sheridan Station Area Plan, Denver, Colorado

City Population	610,345
Primary Transit Mode	Light rail
Developer	N/A
Completion Date	Adopted in 2009
Zoning	Sheridan Station Area Plan
Land Use	Suburban/urban infill, redevelopment, new construction

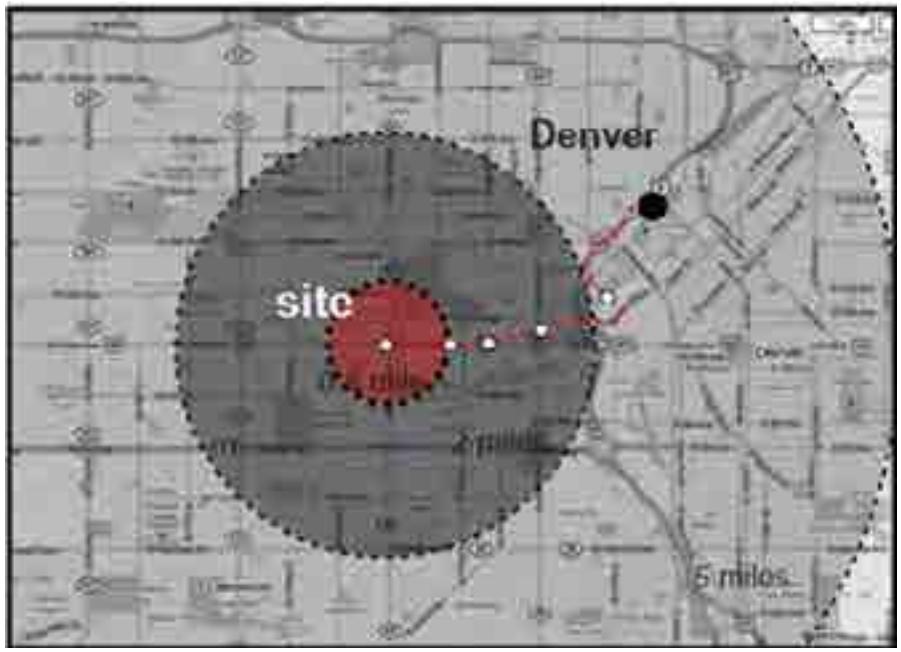
Table D.18 - Key information for Sheridan Station

Project Overview

In collaboration, the City of Denver and the surrounding community developed a plan in 2009 addressing the 800 metre radius surrounding Sheridan Station. This light rail station is one of 57 new transit stations added as park of the FasTrack Program in the Denver metropolitan area.[106] The station is one of 11 proposed stations along the West Corridor Rail Line, which runs between the City of Lakewood and downtown Denver. Opened in April 2013, the Sheridan Station Area Plan has influenced development surrounding the station.[107] Located at the border of two jurisdictions (Denver and Lakewood), a greenbelt cuts through the station and is part of the regional trail and park system.[108]

Development Process

The Sheridan Station Area Plan is still being realized and is going through a number of steps to effectively implement the plan. A 62-unit affordable housing apartment building for families has successfully developed around the station that required efforts from both public and private partners.[109] Large portions of the station area have been rezoned to match the form and context-based zoning code. This includes recommendations for increasing livability, reducing automobile dependence, and creating development that supports transit use. [110] The Sheridan Station Area Plan compliments many of the existing plans from Public Works and collaboration between various departments within the City has helped to make this approach successful.[111]



Map D.8 - Location of Sheridan Station relative to Denver
Source: University of Texas, 2012

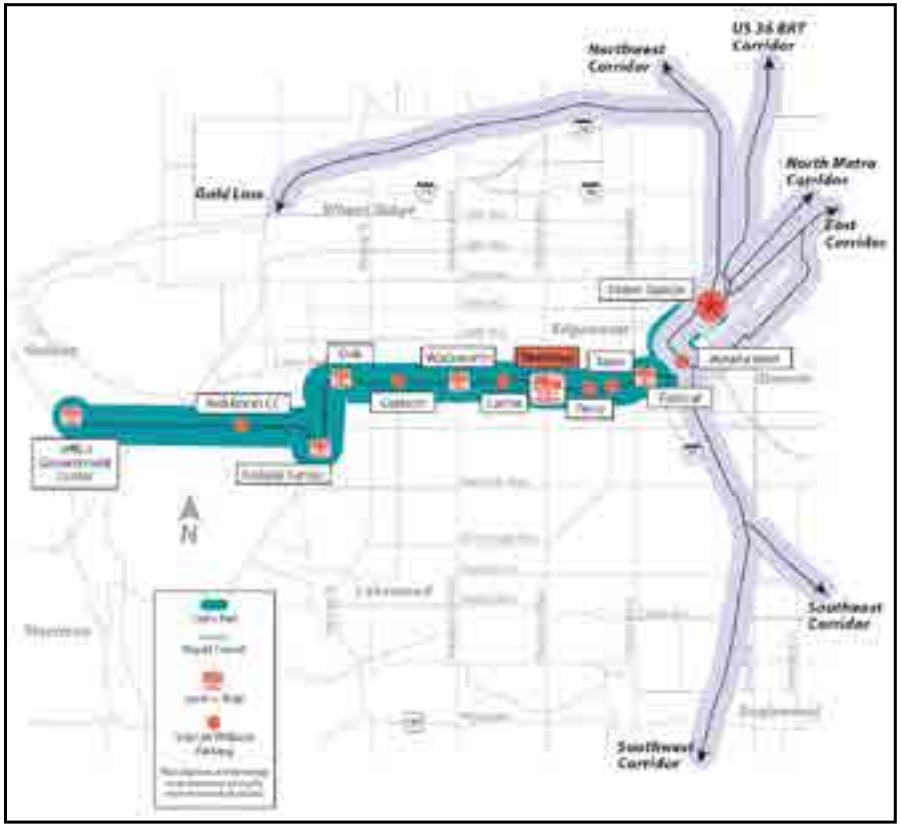
Financing & Planning

Denver, Colorado has created a TOD Fund through the FastTracks Plan, which is one of the most ambitious transit expansion plans in the United States.[112] The fund totals $15 million, which will expand to $30 million in 2014. The fund is made up of the following support: $1.5 million from the Urban Land Conservatory, $2.5 million of local funding, $4.5 million of Foundation and Housing Finance Agency Support, and finally, $5.5 million of Senior Lender Support.

Denver plans to build 122 new miles of rail lines to complement the existing system. There is high demand in Denver for housing that is near transit, so the fund was created to also

address preserving affordable housing near existing and future transit stops.[113] The TOD Fund is an acquisition fund and operates as a line of credit to the Urban Land Conservatory (ULC), a well-capitalized non-profit agency. The fund has a multi-tier risk/return structure with the City of Denver accepting the greatest risk after ULC's equity.[114] Capital has been invested in the fund with a 10-year commitment. ULC partners with joint venture partners to develop affordable housing where developers put together permanent financing for the development. This typically happens through Low Income Housing Tax Credits and/or tax-exempt bonds.[115] This fund was utilized to purchase Jody Apartments the mixed-income housing project near Sheridan Station. ULC manages this fund to acquire land near stations in order to provide affordable housing.

In 2014, the City of Denver adopted the TOD Strategic Plan to address development around transit stations. The Plan specifically addresses Sheridan Station to implement new and improved public sidewalks as a catalytic public project.[116] The City estimates that this project will cost between $1-$2.5 million to complete and has submitted this project for funding from the Metropolitan Planning Organization (MPO) and the Denver Regional Council of Governments (DRCOG) for Transportation Improvement Program Funding.[117] Additionally, the 20 Minute Neighbourhood Strategy has been funded by the DRCOG and addresses implementation projects and strategies to create the building blocks for a '20-minute neighbourhood' surrounding Sheridan Station.[118] This 20-minute neighbourhood seeks to eliminate the need for personal vehicles and create an environment that is centered on public transit and walking that is all within a 20-minute walk. This plan is a joint initiative from the City of Lakewood and the City of Denver as the Station sits on the border of these two Cities.[119]



Map D.9 - Station map for Sheridan Station
Source - City of Denver, 2006

Conclusion

Although the project has yet to be fully implemented, the case study illustrates how a City can implement development surrounding TOD by creating transit expansion plans with various public and private partners. This area plan will take more time to realize because the plan was only implemented six years ago, and the corresponding financial funding in 2013. The Sheridan Station Area Plan provides an example of a strategic transit oriented district plan that uses a mix of land uses, essential services, housing options, community participation, and context sensitive design to inform a specific plan for the area. Jody Apartments with 62 multifamily units and new zoning have been the first examples of how the plan has

influenced this growing TOD.

Lessons for the City of Ottawa

- This case study is important for Tremblay Station because of the consideration of connections to the green belt. Tremblay Station is located very close to a large recreational green space, which could be positively integrated into the Tremblay site if the proper connections were made to the transit station.
- The first development of 62 residential units is an example of how many agencies can work together to acquire and develop a site in a way that supports transit. This type of approach may be useful for the City of Ottawa due to the ownership constraints that the City currently faces.

Figure D.8 - Sheridan Station Area Plan
Source: City of Denver, 2009

D.16 - The Crossings, Mountain View, California

City Population	74,066
Primary Transit Mode	Commuter Rail and San Mateo Transit Buses
Developer	TPG Development
Completion Date	1999
Land Use	Greyfield Redevelopment and Urban Infill

Table D.19 - Key information for The Crossings

Project Overview

The Crossings, located in the city of Mountain View, 50 kilometres south of San Francisco, transformed a failing 1960s auto-oriented mall into a vibrant neighborhood that offers a variety of transportation choices.[120] The 7 hectare infill project, developed by TPG Development, demolished the original shopping mall and replaced it with homes, retail shops, and a daycare centre, all oriented toward the new San Antonio Avenue Caltrain commuter rail station.[121]

When the original mall failed, the city proposed reclassification of the site from retail to residential. Citizens asked for low densities with open space. Public education programs convinced the community that higher density was appropriate for a transit-oriented site.[122]

Development Process

The developer's original proposal was for a more auto-oriented, mixed-use development; however, the city rejected the proposal, and the design firm of Calthorpe Associates was hired by the city to conduct community design meetings, which resulted in their final plan.[123]

Construction began in 1994 and was completed by 1999. The development features high-density housing averaging 74 units per net hectare, compared to an average overall density of 17 to 25 units per net hectare in the rest of the city.[124] Using on-street parking places to meet minimum parking requirements allowed more land to be used for homes, increasing overall density.

The residences are diverse and include single-family bungalows, smaller cottages, townhouses, and condominium apartments.[125] Although priced at market rates, the compact design makes the units relatively affordable in the high-cost Silicon Valley real estate market.

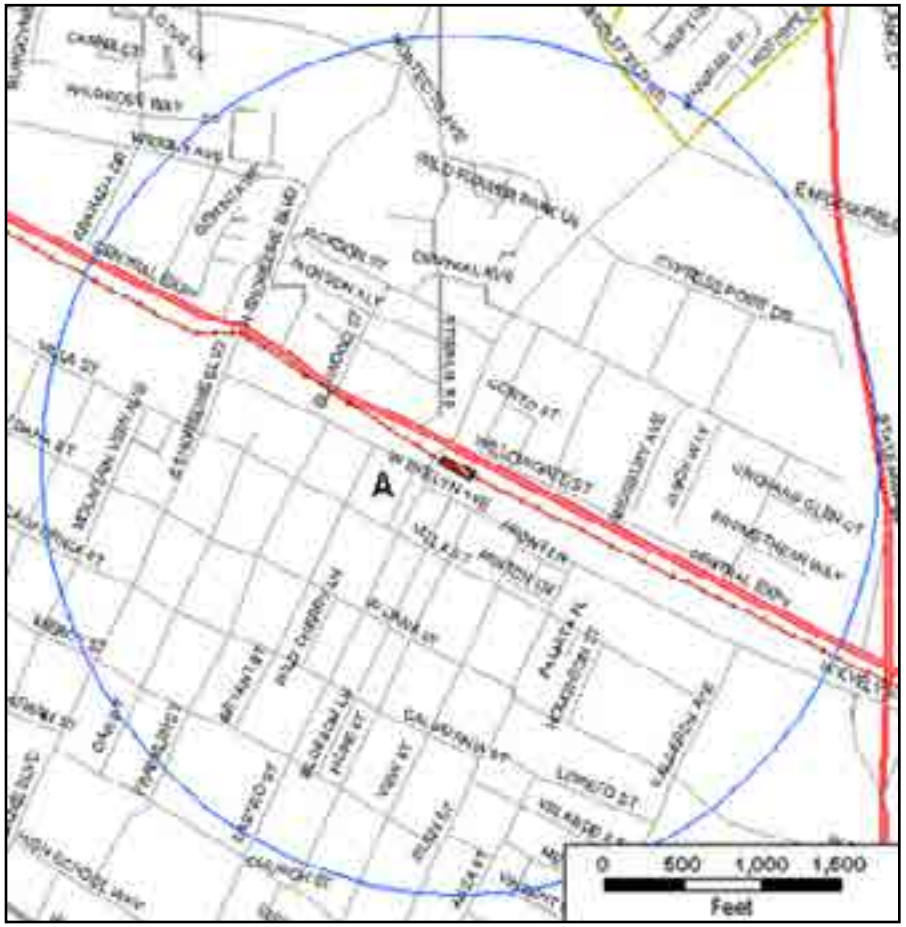
The final result is 102 small-lot single-family houses, 30 row houses facing the train station, 99 row houses (smaller and more compact) fronting on the entry road leading to the station platform and 128 condominium units.[126]

Image D.20 - Residential development adjacent to The Crossings
Source: EPA, n.d.

Lessons for the City of Ottawa

- The Crossings is an excellent example of Mountain View's transit-oriented development plans, as it not only provides a variety of residential and retail, and met parking requirements, but it connects nearby communities through pedestrianism and public transit.
- In 2002, the American Planning Association gave the city the Outstanding Planning Award for Implementation for its transit-oriented development program that produced communities like The Crossings.
- Despite this, after a decade-long effort to make the San Mateo area more transit oriented, the train service will soon be reduced at this station. Peak-hour headways, which was every 15 minutes, will soon be about twice that long.

Image D.21 - The Crossings, Mountain View, California
Source: EPA, n.d.



Map D.10 - Location of The Crossings
Source: EPA, n.d.

D.17 - Uptown District, San Diego, California

Metro Population (Chicago)	1,356,000
Primary Transit Mode	Bus
Land Use	Greyfield Redevelopment
Developer	Oliver McMillan/ Odmark and Thelan
Completion Date	1990

Table D.20 - Key information for Uptown District

Project Overview

The Uptown District in San Diego, California, demonstrates how redeveloping abandoned retail centres, or greyfields, can help revive and reconnect communities. The project, a successful 5.7 hectare mixed-use, high-density development in the city's Hillcrest neighborhood, was built on the site of an abandoned department store and its surrounding parking lot.[127]

The City of San Diego purchased the site in 1986 with the intent of building a new library but subsequently decided to keep the library downtown.[128] With input from citizen groups such as Uptown City Planners and the Hillcrest Business Association, the city council decided instead to issue a request for proposals for the acquisition and development of the site. The winning bidder (Oliver McMillan/ Odmark and Thelan) then went back to the community to refine the design features.[129]

Image D.22 - Uptown District, San Diego, California
Source: EPA, n.d.

Development Process

Oliver McMillan/Odmark and Thalen developed design themes based on photos from the surrounding neighborhoods of Hillcrest, Mission Hills, University Heights, and North Park. They utilized a community participation process called "Project Head Start", which involved local residents in the planning, even before the proposal was created. Because of the way the developers used public participation techniques, their proposal was chosen.[130]

The Uptown District was developed as a TOD due to the easy access to bus stops on University Avenue. Accordingly, the district was developed as a compact, pedestrian-friendly development. Parking spaces are limited, as to encourage people to walk and bike.[131] Because of this, the almost 6 hectare site has emerged as a vibrant and pedestrian oriented neighbourhood.

Image D.23 - Bus transit in the Uptown District
Source: EPA, n.d.

Financial Mechanisms

The city of San Diego purchased the 6 hectare site for 9 million dollars. The city subsequently issued a request for proposals (RFP), including specific land uses. A proposal by the development team of Oliver McMillan/Odmark and Thalen was selected as the winning concept. The city sold the land to the developers for 10.5 million dollars, subject to the requirements laid out by the RFP. [132]

Lessons for Ottawa

- A strong positive relationship between the developer and city, coupled with the understanding that only specific land uses would be suitable for the site, made for an efficient development process.
- In the case of Ottawa, the roles are reversed where a developer owns the majority of the land south of the railway; however, the Uptown District case study can act as guide, regarding how positive relationships between the city and developer can go a long way.

Map D.11 - Transit map of San Diego
Source: MTS Regional Transit

Image D.24 - Uptown District, San Diego, California
Source: EPA, n.d.

D.18 - Village de la Gare, Mont-Saint-Hilare, Québec

Population	18,200
Primary Transit Mode	Commuter rail; Regional bus service
Project Completed	2002-2012
Developer	Groupe Cooke Bombardier Lesage, Inc. (Groupe CBL)
Land Use	Residential; Commercial; Recreational; Institutional
Development Site	Infill and urban redevelopment

Table D.21 - Key information for Village de la Gare

Project Overview

The 73 hectare project is considered to be the first master planned transit oriented development in Quebec. The site was originally a sugar refinery, owned by a Lantic Sugar Ltd. It was bought by Groupe Cooke Bombardier Lesage, Inc (Groupe CBL) in 2006. Groupe CBL did not have immediate plans to develop the site. However, the development began after a commuter rail service to Montreal was introduced in 2002. This project is the result of a public-private partnership between the municipality, the metropolitan transit authority and a private developer. Agence métropolitaine de transport (AMT) and Town of Mont-Saint-Hilaire negotiated to buy a portion of Groupe CBL's land for a train station and parking area. The train station is part of a multi-modal transportation hub which includes a regional and local bus service. Below is a timeline of major events:

- 1994: Groupe CBL purchased the property from Lantic Sugar Ltd.
- 1995: Metropolitan Transportation Agency (AMT- Agence metropolitaine de transport) was established.
- 2000: AMT established a commuter line servicing the South Shore.
- 2002: Commuter rail service was extended to Mont-Saint-Hilaire. Development project started.

Map D.12 - Location of Village de la Gare
Source: CMHC, 2007

The development consists of a combination of single-family detached homes, duplexes, townhouses and multi-unit buildings. The project includes 1,000 residential units, with the variety of each housing types.[133] It also includes approximately 2,300 m2 (24,750 sq. ft.) of commercial space, a primary school, public open space, and pedestrian pathways.[134]

Development Process

AMT purpose as an organization was to shape development around new transit nodes such as Mont-Saint-Hilaire. Development within 500m of the train station intended to enhance services to residents and increase pedestrian and transit usage. The municipality played a key role in enhancing the pedestrian environment to support this initiative. They added parking lots, shelters, paid for a linear park with bicycle and pedestrian pathways. The city also decontaminated land and constructed required infrastructure. Groupe CBL invested approximately $6 million to cover construction of the related

road and sewer infrastructure and public amenities, including: lighting and sidewalks ($2 million), landscaping and tree planting ($300,000).[135] These improvements are believed to have attracted private development into the area.

Public participation was also a vital aspect of this project. Initially the surrounding community was staunchly opposed to the size, mix of uses, and introduction of the train station to the area.[136] Residents were fearful that a development of this size would significant increase traffic into the area.[137] Public engagement was a key tool in lessening concerns.

Figure D.9 - Land use plan for Village de la Gare
Source: CMHC, 2007

Lessons for the City of Ottawa

- Municipality should invest in providing access to train station. Sidewalks, linear parks, cycling and pedestrian pathways are strategic infrastructure improves used to lure private development.
- Developers understood history of Saint-Therese and ensured development was appropriate to the area.
- The creation of a commercial centre and town-like atmosphere has encouraged walkability of the area. It has attracted families and young couples to move to the area.
- The street system has been arranged to lessen impact on adjacent local streets which are in close proximity to the train station.
- Street layout has been established to fit in with the area's existing grid.

Image D.25 - Residential development within proximity of Mont-Saint-Hilaire rail stop
Source: EPA, n.d.

D.19 - Warwick Station, Warwick, Rhode Island

City Population	81,971
State Population (Rhode Island)	1.052 million
Primary Transit Mode	Commuter rail, T.F. Green Airport, Bus, Car Rental
Project Completed	Plan adopted in 2011
Developer	Multiple
Zoning	Mixed-use
Land Uses	Mixed-use commercial; Residential; Office; Industrial; Institutional

Table D.22 - Key information for Warwick Station

Project Overview

Warwick Station, located within the City of Warwick in Rhode Island, is currently undergoing redevelopment to create a pedestrian-oriented, mixed-use and compact neighbourhood. It is currently surrounded by industrial and manufacturing uses. What makes this TOD unique is the seamless integration of commuter rail and bus systems with Providence's most active airport. It includes the creation of over 139,354 square metres of office, hotel, residential, and retail on 38 hectares of land in the heart of the city along Jefferson Boulevard.[138] It is located 19 kilometres south of Providence, Rhode Island and is currently the nation's closest intercity rail-to-air link and has consequently been identified as one of the state's highest economic development priorities. Interlink, what it is now known as, opened in 2010 that features a new rail station, a 365 metre moving skywalk to the Airport terminal and access to bus service. What makes this project unique is that the land being used to build the station was purchased by RIDOT (Rhode Island Department of Transportation) using the funds available in the Transportation Equity Act for the 21st Century (TEA-21).[139] All surrounding land parcels are still privately-owned however, many of these are included in Warwick's Master Plan as potential future acquisition for economic development.

The redevelopment plan was unanimously adopted in 2011 and is currently under construction. Phase 1 will see 111,148 square metres of office space created while future phases will include the construction of a large parking garage for rental fleets and commuters, a 320-room hotel, and 3902 square metres of additional space. An additional 93,000-185,806 square metres of mixed-use development is possible for the surrounding areas, located within short walking distance of the Interlink facility.

Figure D.10 - Conceptual plan for Warwick Station
Source: City of Warwick, 2014

Breakdown

- 40-45% for office and hotel space
- 10-20% for retail and entertainment; and
- 40-45% for residential

Financing Mechanisms

The total cost of the project is estimated to be around $225. million and will be funded using a variety of sources and mechanisms.[140] The majority of the funding will come from FHWA (Federal Highway Administration) and a TIFIA loan (Transportation Infrastructure Finance and Innovation Act), which will cover 40% and 19% of the total costs respectively. [141] Additional funding will come from revenue bonds (16%), State grants (10%), and Customer Facility Charges (15%).[142] Customer Facility Charges are charges that rental car companies (currently occupying the Airport parking garage, and to later occupy the newly erected, multi-purpose parking garage) charge per transaction that in this case, were used to help pay off the costs of the project.[143]

Figure D.11 - Conceptual designs for Warwick Station
Source: City of Warwick, 2014

Lessons for the City of Ottawa:

- Although Warwick Station's redevelopment is still ongoing, it provides an excellent example of how varied funding mechanisms can come together to effectively pay for a project of this size, using almost entirely public funding.
- Additionally, it presents similar challenges faced by the City of Ottawa with regards to land ownership adjacent to and surrounding the station.
- The City should consider also identifying these parcels of land in their TOD Plan as having potential for future acquisition, in order to create a cohesive, long-term vision for Tremblay Station as a mobility hub.

Map D.13 - Planned area for Warwick Station
Source: City of Warwick, 2012

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Appendix E - Public Development Proposal Pro Forma

E.1 - Public Development Proposal Pro Forma Assumptions

Underlying Assumptions						
Development Characteristics						
Site Area (sq ft):	226,042	21,000	sq. m.	**5.19**	acres	**164** linear metres
Floor Area Ratio:	**2.45**	**FAR**				
Maximum Gross Building Area (sq ft.)	553,803	51,450	sq. m.	**36,920**	sq. ft. per floor @ 15 floors	
Building Efficiency	85.0%					
Useable Area (sq ft.)	470,732	31382	sq. ft. per floor including 85% efficency			
% Office Space (including fitness centre) (sq ft.)	100.0%	470,732				
Rentable Area (sq ft.)		470,732				
Baseball Stadium Parking Replacement		700	stalls	Assumption: Replaces current surface parking		
Office Parking Rqmt, one space per unit	0.75	400	stalls	Assumption: As per Ottawa Zoning Bylaw Section 101 (0.75 per 100 m sq.)		
Total Parking Determined		750	stalls	Assumption: There will be shared parking between the office building and the stadium		

Value Assumptions: Parking				
Parking Type	**Number of units**	**Rate Per Space**	**Annual Total**	
Office Monthly	400	100	**$480,000**	Assumption: Interview with Souchen, R. (2014). Rate of $100/month.
Event	750	20	**$1,050,000**	Assumption: 70 game season at $20/game. City of Ottawa (2014) Lease Summary.
		Total	**$1,530,000**	
Vacancy (%)	0.00%			Assumption: A vacancy rate is not included because parking numbers are already low.
Operating Expenses, % NOI	25.00%			Assumption: Interview with City of Ottawa (2014c).
Capitalization Rate (%)	7.00%			Assumption: Interview with City of Ottawa (2014b).

Value Assumptions: Office			
Rentable Area, Office	470,732	sq.ft.	
Office Rental Rate	**$32.50**		Assumption: Colliers International (2014). Ottawa Q2 Office Report.
Vacancy, Office	**5.00%**		Assumption: Colliers International (2014). Ottawa Q2 Office Report for Class A Office.
Operating Expenses, as % NOI (for office)	25.00%		Assumption: Interview with City of Ottawa (2014c).
Marketing Cost, %	5.00%		Assumption: Interview with City of Ottawa (2014c).
Capitalization Rate	6.50%		Assumption: Colliers International (2014). Q1 Canada Cap Rate Report.

Construction Cost Assumptions				
Servicing Connections (roads etc)	$1,350.00	linear m.	$221,400.00	Assumption: Interview with City of Ottawa (2014b).
Shallow Utilities	$425.00	linear m.	$69,700.00	Assumption: Interview with City of Ottawa (2014b).
Offsite services (% of roads and services)	15%		$33,210.00	Assumption: Interview with Andrew, J. (2014).
Sub-Total Hard Costs			**$324,310.00**	
Engineering Design/Constuction	15% of HC	15.0%	$48,646.50	Assumption: Interview with City of Ottawa (2014b).
Additional Soft Costs	25% of HC	25.0%	$81,077.50	Assumption: Interview with City of Ottawa (2014b).
Legal Survey	$25,000.00		$25,000.00	Assumption: Interview with City of Ottawa (2014b).
Sub-Total Hard & Soft Costs			**$479,034.00**	
Contingency	10%	10.0%	$47,903.40	Assumption: Interview with City of Ottawa (2014b).
Development Charges	$10,826,846.70		$10,826,846.70	Assumption: City of Ottawa (2014) Development Charge Rates of $19.55/per sq. ft.
Total			**$11,353,784.10**	
General Construction Cost Assumptions				
Off Site Costs			$33,210.00	
On Site Costs (demolition, site prep, preload, services, landscaping)			$69,700.00	Assumption: Total from: landscaping, clearing/grading, and shallow utilities
Servicing connections			$221,400.00	Assumption: Calculated using servicing connections
Office Cost/sq.ft.			$144.53	Assumption: Quote from RS Means (2014) online construction cost generator.
Parking Cost/Stall			**$22,400.00**	Assumption: Fehr & Peers avg stall (320 sq. ft), Altus Construction $22,400/spot.
Office, TI/sq.ft.(Tenant Improvement)			$32.50	
Planning Time (months)		months	12	
Construction Time (months)		months	18	

Financing Assumptions		
Construction Financing Assumptions		
Constuction Loan, Loan to Cost Ratio (%)	100.00%	Assumption: Interview with City of Ottawa (2014b).
Construction Loan, City Bond Rate (%)	6.50%	Assumption: Interview with City of Ottawa (2014b) 5% +1.5% for risk.
Financing Structure		
Stated Annual Interest Rate (%)	6.50	
Amortization Period (years)	25	
Mortgage Constant	14.03%	

Value on Completion			
Parking			
Gross Income Potential		$1,530,000	
Less: Operating Expenses		(382,500)	
Net Rental Income		**$1,147,500**	
Estimated Value			
Capitalization Rate (%)		7.0%	Assumption: Interview with City of Ottawa (2014b).
Indicated Value on Completion		$16,392,857	
Office			
Gross Income Potential		$15,298,805	
Less: Vacancy		(764,940)	
Less: Operating Expenses		(3,633,466)	
Net Operating Income		**$10,900,399**	
Estimated Value			
Capitalization Rate (%)		6.5%	Assumption: Colliers International (2014). Ottawa Q2 Office Report.
Indicated Value on Completion		$167,698,441	
Total Value on Completion		$184,091,298	
Less: Marketing costs	5.0%	(9,204,565)	
Equals Net Sales Proceeds		**$174,886,733**	

Project Cost				
Land	**Area sq.ft.**	**Cost/sq.ft.**		
Appraised Value	226,042	**$25.00**	**$5,650,000**	Assumption: City of Ottawa (2014) assessed value of the 300 Coventry Road site.
Total Land Value			**$5,650,000**	
Construction + Development Costs				
Construction Costs				
Offsite Costs			$33,210	
On Site Costs			$69,700	
Servicing connections			$221,400	
Building			$80,041,133	
Parking			$16,800,000	Assumption: Calculated based on the total required # of stalls x the amount per stall.
Tenant Improvements			$15,298,805	
Sub-total			$112,464,248	
Contingency (% Project Costs)		**10.0%**	$11,246,425	
Total Construction Cost			**$123,710,673**	
Development Costs				
Total Soft Costs (assume to be 25% of total construction costs less contingency)		25.0%	**$28,116,062**	
Total Project Costs			**$151,826,735**	

Key Short Term Indicators	
Profit on a Hypothetical Sale at Completion of Development	
Value on completion and sale	$174,886,733
Less Project Costs	$151,826,735
Equals Profit - $'s	$23,059,998
Profit - %	15.19%
NOI/Project Cost	
NOI	$12,047,899
Project Cost	$151,826,735
NOI/Cost (%)	7.94%
Cash on Cash, Investor Holds	
Project Cost	**$151,826,735**
Take Out Financing	**$151,826,735**
Equity (Land Value)	5,650,000
Net income	$12,047,899
Less mortgage payments	$12,334,773
Cash flow	$(286,874)
Cash flow/equity (%)	-5.08%

E.2 - Public Development Proposal Pro Forma Discounted Cash Flow

Discounted Cash Flow Analysis																	
Revenues																	
Annual % Escalation re: Gross Revenue	% Annual Escalation	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Gross Income	2.00%		16,828,805	17,165,381	17,508,689	17,858,863	18,216,040	18,580,361	18,951,968	19,331,007	19,717,627	20,111,980	20,514,220	20,924,504	21,342,994	21,769,854	22,205,251
Less: Vacancy	2.00%		(764,940)	(780,239)	(795,844)	(811,761)	(827,996)	(844,556)	(861,447)	(878,676)	(896,249)	(914,174)	(932,458)	(951,107)	(970,129)	(989,532)	(1,009,322)
Less: Operating Expenses	2.00%		(4,015,966)	(4,096,286)	(4,178,211)	(4,261,775)	(4,347,011)	(4,433,951)	(4,522,630)	(4,613,083)	(4,705,344)	(4,799,451)	(4,895,440)	(4,993,349)	(5,093,216)	(5,195,081)	(5,298,982)
Net Operating Income			12,047,899	12,288,857	12,534,634	12,785,326	13,041,033	13,301,854	13,567,891	13,839,248	14,116,033	14,398,354	14,686,321	14,980,048	15,279,649	15,585,242	15,896,946
CCA Building			6,073,069	5,830,147	5,596,941	5,373,063	5,158,141	4,951,815	4,753,742	4,563,593	4,381,049	4,205,807	4,037,575	3,876,072	3,721,029	3,572,188	3,429,300
CCA Fixtures			899,714	863,725	829,176	796,009	764,169	733,602	704,258	676,088	649,044	623,083	598,159	574,233	551,264	529,213	508,044
Interest			9,827,963	9,660,077	9,480,948	9,289,822	9,085,896	8,868,313	8,636,157	8,388,454	8,124,162	7,842,169	7,541,291	7,220,263	6,877,735	6,512,267	6,122,323
Taxable Income			0	0	0	0	0	0	0	211,114	961,778	1,727,295	2,509,296	3,309,480	4,129,621	4,971,574	5,837,279
x Tax Rate (15% Federal +11.5% Provincial)			0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265
Income Tax Payable			0	0	0	0	0	0	0	55,945	254,871	457,733	664,963	877,012	1,094,350	1,317,467	1,546,879
NET OPERATING INCOME			**12,047,899**	**12,288,857**	**12,534,634**	**12,785,326**	**13,041,033**	**13,301,854**	**13,567,891**	**13,839,248**	**14,116,033**	**14,398,354**	**14,686,321**	**14,980,048**	**15,279,649**	**15,585,242**	**15,896,946**
Debt Payments			12,334,773	12,334,773	12,334,773	12,334,773	12,334,773	12,334,773	12,334,773	12,334,773	12,334,773	12,334,773	12,334,773	12,334,773	12,334,773	12,334,773	12,334,773
Before Tax Cash Flow			(286,874)	(45,916)	199,861	450,554	706,260	967,081	1,233,118	1,504,476	1,781,261	2,063,581	2,351,548	2,645,275	2,944,876	3,250,469	3,562,173
Income Tax Payable			0	0	0	0	0	0	0	55,945	254,871	457,733	664,963	877,012	1,094,350	1,317,467	1,546,879
After Tax Cash Flow			(286,874)	(45,916)	199,861	450,554	706,260	967,081	1,233,118	1,448,530	1,526,389	1,605,848	1,686,585	1,768,263	1,850,526	1,933,002	2,015,295
TOTAL RETURN			**(286,874)**	**(45,916)**	**199,861**	**450,554**	**706,260**	**967,081**	**1,233,118**	**1,448,530**	**1,526,389**	**1,605,848**	**1,686,585**	**1,768,263**	**1,850,526**	**1,933,002**	**2,015,295**
BUILDING																	
Undepreciated Balance: Start			$151,826,735	145,753,666	139,923,519	134,326,578	128,953,515	123,795,375	118,843,560	114,089,817	109,526,225	105,145,176	100,939,369	96,901,794	93,025,722	89,304,693	85,732,505
x CCA Rate			4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Maximum CCA			$6,073,069.41	5,830,147	5,596,941	5,373,063	5,158,141	4,951,815	4,753,742	4,563,593	4,381,049	4,205,807	4,037,575	3,876,072	3,721,029	3,572,188	3,429,300
CCA Taken			$6,073,069.41	5,830,147	5,596,941	5,373,063	5,158,141	4,951,815	4,753,742	4,563,593	4,381,049	4,205,807	4,037,575	3,876,072	3,721,029	3,572,188	3,429,300
Closing Balance			$145,753,666	139,923,519	134,326,578	128,953,515	123,795,375	118,843,560	114,089,817	109,526,225	105,145,176	100,939,369	96,901,794	93,025,722	89,304,693	85,732,505	82,303,205
FIXTURES																	
Undepreciated Balance: Start			$22,492,850	$21,593,136	$20,729,410	$19,900,234	$19,104,224	$18,340,055	$17,606,453	$16,902,195	$16,226,107	$15,577,063	$14,953,981	$14,355,821	$13,781,588	$13,230,325	$12,701,112
x CCA Rate			4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Maximum CCA			$899,714	$863,725	$829,176	$796,009	$764,169	$733,602	$704,258	$676,088	$649,044	$623,083	$598,159	$574,233	$551,264	$529,213	$508,044
CCA Taken			$899,714	$863,725	$829,176	$796,009	$764,169	$733,602	$704,258	$676,088	$649,044	$623,083	$598,159	$574,233	$551,264	$529,213	$508,044
Closing Balance			$21,593,136	$20,729,410	$19,900,234	$19,104,224	$18,340,055	$17,606,453	$16,902,195	$16,226,107	$15,577,063	$14,953,981	$14,355,821	$13,781,588	$13,230,325	$12,701,112	$12,193,067
$213,627,954 M Bond Loan: 6.5%: 25 yr Am																	
Mortgage payments (Principal & interest)		**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**
Mortgage payments (Interest portion)			9,827,963	9,660,077	9,480,948	9,289,822	9,085,896	8,868,313	8,636,157	8,388,454	8,124,162	7,842,169	7,541,291	7,220,263	6,877,735	6,512,267	6,122,323
Mortgage payments (Principal repayments)			2,506,810	2,674,696	2,853,825	3,044,951	3,248,877	3,466,460	3,698,616	3,946,319	4,210,611	4,492,604	4,793,482	5,114,510	5,457,038	5,822,506	6,212,450
ENDING BALANCE		**$151,826,735**	**149,319,925**	**146,645,229**	**143,791,404**	**140,746,453**	**137,497,576**	**134,031,116**	**130,332,500**	**126,386,181**	**122,175,570**	**117,682,966**	**112,889,485**	**107,774,975**	**102,317,937**	**96,495,431**	**90,282,981**

RETURN ANALYSIS	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Equity (loss) - Land Value	(5,650,000)															
Before-Tax Cash Flows from Operations		(286,874)	(45,916)	199,861	450,554	706,260	967,081	1,233,118	1,504,476	1,781,261	2,063,581	2,351,548	2,645,275	2,944,876	3,250,469	3,562,173
Cash Flow from Sale before Tax																
Total Before-Tax Cash Flow	(5,650,000)	(286,874)	(45,916)	199,861	450,554	706,260	967,081	1,233,118	1,504,476	1,781,261	2,063,581	2,351,548	2,645,275	2,944,876	3,250,469	3,562,173
Before-Tax IRR	**22%**															
Discount rate	12%															
Net present value	**21,028,231**															
Equity (loss) - Land Value	(5,650,000)															
After-tax Cash Flows from Operations		(286,874)	(45,916)	199,861	450,554	706,260	967,081	1,233,118	1,448,530	1,526,389	1,605,848	1,686,585	1,768,263	1,850,526	1,933,002	2,015,295
Cash Flow from Sale after Tax																
Total After-Tax Cash Flow	(5,650,000)	(286,874)	(45,916)	199,861	450,554	706,260	967,081	1,233,118	1,448,530	1,526,389	1,605,848	1,686,585	1,768,263	1,850,526	1,933,002	2,015,295
After-Tax IRR	**20%**															
Discount rate	12%															
Net present value	**15,091,765**															

Year 16	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22	Year 23	Year 24	Year 25	
22,649,356	23,102,343	23,564,390	24,035,678	24,516,391	25,006,719	25,506,854	26,016,991	26,537,330	27,068,077	
(1,029,509)	(1,050,099)	(1,071,101)	(1,092,523)	(1,114,374)	(1,136,661)	(1,159,394)	(1,182,582)	(1,206,234)	(1,230,358)	
(5,404,962)	(5,513,061)	(5,623,322)	(5,735,789)	(5,850,504)	(5,967,515)	(6,086,865)	(6,208,602)	(6,332,774)	(6,459,430)	
16,214,885	16,539,183	16,869,967	17,207,366	17,551,513	17,902,544	18,260,594	18,625,806	18,998,323	19,378,289	
3,292,128	3,160,443	3,034,025	2,912,664	2,796,158	2,684,311	2,576,939	2,473,861	2,374,907	2,279,911	
487,723	468,214	449,485	431,506	414,246	397,676	381,769	366,498	351,838	337,765	
5,706,264	5,262,340	4,788,686	4,283,311	3,744,089	3,168,755	2,554,890	2,012,046	1,320,714	583,082	
6,728,771	7,648,186	8,597,770	9,579,885	10,597,021	11,651,801	12,746,996	13,773,401	14,950,864	16,177,532	
0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	0.265	
1,783,124	2,026,769	2,278,409	2,538,670	2,808,210	3,087,727	3,377,954	3,649,951	3,961,979	4,287,046	
16,214,885	**16,539,183**	**16,869,967**	**17,207,366**	**17,551,513**	**17,902,544**	**18,260,594**	**18,625,806**	**18,998,323**	**19,378,289**	
12,334,773	12,334,773	12,334,773	12,334,773	12,334,773	12,334,773	12,334,773	12,334,773	12,334,773	12,334,773	
3,880,112	4,204,410	4,535,194	4,872,593	5,216,740	5,567,771	5,925,822	6,291,033	6,663,550	7,043,516	
1,783,124	2,026,769	2,278,409	2,538,670	2,808,210	3,087,727	3,377,954	3,649,951	3,961,979	4,287,046	
2,096,988	2,177,641	2,256,785	2,333,924	2,408,530	2,480,043	2,547,868	2,641,082	2,701,571	2,756,470	
2,096,988	**2,177,641**	**2,256,785**	**2,333,924**	**2,408,530**	**2,480,043**	**2,547,868**	**2,641,082**	**2,701,571**	**2,756,470**	
82,303,205	79,011,077	75,850,634	72,816,609	69,903,944	67,107,786	64,423,475	61,846,536	59,372,675	56,997,768	
4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	
3,292,128	3,160,443	3,034,025	2,912,664	2,796,158	2,684,311	2,576,939	2,473,861	2,374,907	2,279,911	
3,292,128	3,160,443	3,034,025	2,912,664	2,796,158	2,684,311	2,576,939	2,473,861	2,374,907	2,279,911	**$97,108,878.26**
79,011,077	75,850,634	72,816,609	69,903,944	67,107,786	64,423,475	61,846,536	59,372,675	56,997,768	54,717,857	
$12,193,067	$11,705,345	$11,237,131	$10,787,646	$10,356,140	$9,941,894	$9,544,219	$9,162,450	$8,795,952	$8,444,114	
4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	
$487,723	$468,214	$449,485	$431,506	$414,246	$397,676	$381,769	$366,498	$351,838	$337,765	
$487,723	$468,214	$449,485	$431,506	$414,246	$397,676	$381,769	$366,498	$351,838	$337,765	**$14,386,500**
$11,705,345	$11,237,131	$10,787,646	$10,356,140	$9,941,894	$9,544,219	$9,162,450	$8,795,952	$8,444,114	$8,106,349	
12,334,773	**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**	**12,334,773**	
5,706,264	5,262,340	4,788,686	4,283,311	3,744,089	3,168,755	2,554,890	2,012,046	1,320,714	583,082	
6,628,509	7,072,433	7,546,087	8,051,462	8,590,683	9,166,017	9,779,883	10,322,727	11,014,059	11,751,691	
83,654,472	**76,582,039**	**69,035,952**	**60,984,490**	**52,393,807**	**43,227,789**	**33,447,907**	**23,125,180**	**12,111,120**	**359,429**	

Year 16	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22	Year 23	Year 24	Year 25
3,880,112	4,204,410	4,535,194	4,872,593	5,216,740	5,567,771	5,925,822	6,291,033	6,663,550	7,043,516
									247,682,669
3,880,112	4,204,410	4,535,194	4,872,593	5,216,740	5,567,771	5,925,822	6,291,033	6,663,550	**254,726,185**
2,096,988	2,177,641	2,256,785	2,333,924	2,408,530	2,480,043	2,547,868	2,641,082	2,701,571	2,756,470
									219,808,825
2,096,988	2,177,641	2,256,785	2,333,924	2,408,530	2,480,043	2,547,868	2,641,082	2,701,571	**222,565,295**

Sale Calculation

Sale Price: End of Year 25	7.50%	258,377,186
Based on Year 25 NOI		
Less: Commission	4%	10,335,087.44
Adjusted Sale Price		248,042,099
Less: Remaining Balance on Mortgage		359,429
Cash from Sale before Tax		247,682,669
Taxes		
Adjusted Sale Price		248,042,099
Less: Remaining Book Value		62,824,206
Total Taxable Gain		185,217,893
Total depreciation taken		111,495,379
Recapture tax	25%	27,873,844.69
Capital Gain		73,722,514
Tax on capital gain	50%	-
Total tax from Sale		27,873,845
Cash from Sale before Tax		247,682,669
Cash from Sale after Tax		**219,808,825**

E.3 - Public Development Proposal Pro Forma Financing

Costs			Mortgage	Int. rate	Int. only	Equity
Land	5,650,000	0.00%	0	0.00%	0	5,650,000
Development	123,710,673	100.00%	123,710,673	6.50%	8,041,194	0
	129,360,673		123,710,673		8,041,194	5,650,000
	129,360,673		123,710,673			5,650,000

Mortgage Constant - Calculated

Mortgage Amount	**$123,710,673**
Interest Rate	6.50%
Amortization Period - yrs	25

Mortgage Constant Calculated

		MO.		Annual
Monthly Payment	**$1,446,305**	**1.169%**	**12**	**14.03%**
Months	12			
Total Payment - 1 Year	**$17,355,660**			
Years	25			
Total Payment - 25 Yr	**$433,891,500**			
Amount of Interest Paid	**$310,180,827**			

E.3 - Public Development Proposal Pro Forma Amortization

Interest Rate	**6.50%**	**25 Year Amortization Schedule**											
Term	**25**	Effective Annual Rate		6.70%									
Amount	**$151,826,735.14**	Monthly Payment		$1,027,897.74									
Year/Payment	1	2	3	4	5	6	7	8	9	10	11	12	**Total Per Year**
Interest	825,148	824,049	822,945	821,835	820,719	819,597	818,468	817,334	816,193	815,047	813,894	812,734	**$9,827,962.84**
Year 1 Principle	202,750	203,848	204,953	206,063	207,179	208,301	209,429	210,564	211,704	212,851	214,004	215,163	**$2,506,810.08**
Year/Payment	13	14	15	16	17	18	19	20	21	22	23	24	
Interest	811,569	810,397	809,219	808,035	806,844	805,646	804,442	803,232	802,015	800,792	799,561	798,325	**$9,660,077.13**
Year 2	216,329	217,501	218,679	219,863	221,054	222,251	223,455	224,666	225,883	227,106	228,336	229,573	**$2,674,695.79**
	25	26	27	28	29	30	31	32	33	34	35	36	
	797,081	795,831	794,574	793,310	792,039	790,762	789,477	788,186	786,887	785,582	784,269	782,950	**$9,480,947.80**
Year 3	230,817	232,067	233,324	234,588	235,858	237,136	238,421	239,712	241,010	242,316	243,628	244,948	**$2,853,825.12**
	37	38	39	40	41	42	43	44	45	46	47	48	
	781,623	780,289	778,948	777,599	776,243	774,880	773,510	772,132	770,746	769,354	767,953	766,545	**$9,289,821.84**
Year 4	246,275	247,609	248,950	250,299	251,654	253,017	254,388	255,766	257,151	258,544	259,945	261,353	**$3,044,951.08**
	49	50	51	52	53	54	55	56	57	58	59	60	
	765,129	763,706	762,275	760,836	759,390	757,935	756,473	755,003	753,525	752,038	750,544	749,042	**$9,085,895.83**
Year 5	262,768	264,192	265,623	267,062	268,508	269,963	271,425	272,895	274,373	275,859	277,354	278,856	**$3,248,877.09**
	61	62	63	64	65	66	67	68	69	70	71	72	
	747,531	746,013	744,486	742,951	741,407	739,855	738,295	736,726	735,149	733,564	731,969	730,366	**$8,868,312.51**
Year 6	280,366	281,885	283,412	284,947	286,491	288,042	289,603	291,171	292,749	294,334	295,929	297,531	**$3,466,460.40**
	73	74	75	76	77	78	79	80	81	82	83	84	
	728,755	727,134	725,505	723,867	722,220	720,565	718,900	717,226	715,543	713,851	712,150	710,440	**$8,636,157.24**
Year 7	299,143	300,763	302,393	304,031	305,677	307,333	308,998	310,672	312,354	314,046	315,747	317,458	**$3,698,615.68**
	85	86	87	88	89	90	91	92	93	94	95	96	
	708,720	706,992	705,253	703,506	701,749	699,982	698,206	696,420	694,624	692,819	691,004	689,179	**$8,388,454.10**
Year 8	319,177	320,906	322,644	324,392	326,149	327,916	329,692	331,478	333,273	335,079	336,894	338,718	**$3,946,318.82**
	97	98	99	100	101	102	103	104	105	106	107	108	
	687,345	685,500	683,645	681,781	679,906	678,021	676,126	674,220	672,304	670,378	668,442	666,495	**$8,124,161.82**
Year 9	340,553	342,398	344,252	346,117	347,992	349,877	351,772	353,678	355,593	357,519	359,456	361,403	**$4,210,611.10**
	109	110	111	112	113	114	115	116	117	118	119	120	
	664,537	662,569	660,590	658,600	656,600	654,589	652,567	650,534	648,490	646,435	644,368	642,291	**$7,842,169.40**
Year 10	363,361	365,329	367,308	369,297	371,298	373,309	375,331	377,364	379,408	381,463	383,529	385,607	**$4,492,603.52**
	121	122	123	124	125	126	127	128	129	130	131	132	
	640,202	638,102	635,991	633,868	631,734	629,588	627,430	625,261	623,080	620,887	618,683	616,466	**$7,541,291.42**
Year 11	387,696	389,796	391,907	394,030	396,164	398,310	400,468	402,637	404,818	407,010	409,215	411,432	**$4,793,481.50**
	133	134	135	136	137	138	139	140	141	142	143	144	
	614,237	611,997	609,744	607,479	605,202	602,912	600,610	598,296	595,969	593,629	591,277	588,912	**$7,220,263.08**
Year 12	413,660	415,901	418,154	420,419	422,696	424,986	427,288	429,602	431,929	434,269	436,621	438,986	**$5,114,509.83**

	145	146	147	148	149	150	151	152	153	154	155	156	
	586,534	584,143	581,739	579,323	576,893	574,450	571,994	569,524	567,042	564,545	562,035	559,512	**$6,877,734.89**
Year 13	441,364	443,755	446,158	448,575	451,005	453,448	455,904	458,373	460,856	463,352	465,862	468,386	**$5,457,038.03**
	157	158	159	160	161	162	163	164	165	166	167	168	
	556,975	554,424	551,859	549,281	546,688	544,082	541,461	538,826	536,177	533,514	530,836	528,143	**$6,512,266.94**
Year 14	470,923	473,474	476,038	478,617	481,209	483,816	486,437	489,071	491,721	494,384	497,062	499,754	**$5,822,505.97**
	169	170	171	172	173	174	175	176	177	178	179	180	
	525,436	522,715	519,978	517,227	514,461	511,680	508,884	506,072	503,246	500,404	497,547	494,674	**$6,122,322.94**
Year 15	502,461	505,183	507,919	510,671	513,437	516,218	519,014	521,825	524,652	527,494	530,351	533,224	**$6,212,449.98**
	181	182	183	184	185	186	187	188	189	190	191	192	
	491,786	488,882	485,962	483,026	480,075	477,108	474,124	471,125	468,109	465,077	462,028	458,963	**$5,706,263.66**
Year 16	536,112	539,016	541,936	544,871	547,823	550,790	553,773	556,773	559,789	562,821	565,870	568,935	**$6,628,509.26**
	193	194	195	196	197	198	199	200	201	202	203	204	
	455,881	452,783	449,668	446,535	443,386	440,220	437,037	433,837	430,619	427,383	424,131	420,860	**$5,262,340.11**
Year 17	572,017	575,115	578,230	581,362	584,511	587,677	590,861	594,061	597,279	600,514	603,767	607,037	**$7,072,432.80**
	205	206	207	208	209	210	211	212	213	214	215	216	
	417,572	414,266	410,942	407,601	404,241	400,862	397,466	394,051	390,618	387,166	383,695	380,206	**$4,788,686.19**
Year 18	610,326	613,632	616,955	620,297	623,657	627,035	630,432	633,847	637,280	640,732	644,202	647,692	**$7,546,086.73**
	217	218	219	220	221	222	223	224	225	226	227	228	
	376,697	373,170	369,624	366,058	362,473	358,869	355,245	351,601	347,938	344,255	340,552	336,829	**$4,283,310.79**
Year 19	651,200	654,728	658,274	661,840	665,425	669,029	672,653	676,296	679,960	683,643	687,346	691,069	**$8,051,462.13**
	229	230	231	232	233	234	235	236	237	238	239	240	
	333,085	329,322	325,538	321,733	317,908	314,063	310,196	306,308	302,400	298,470	294,519	290,547	**$3,744,089.46**
Year 20	694,812	698,576	702,360	706,164	709,989	713,835	717,702	721,589	725,498	729,428	733,379	737,351	**$8,590,683.46**
	241	242	243	244	245	246	247	248	249	250	251	252	
	286,553	282,537	278,500	274,440	270,359	266,256	262,130	257,982	253,812	249,619	245,403	241,165	**$3,168,755.48**
Year 21	741,345	745,361	749,398	753,457	757,539	761,642	765,768	769,915	774,086	778,279	782,494	786,733	**$9,166,017.44**
	253	254	255	256	257	258	259	260	261	262	263	264	
	236,903	232,619	228,311	223,980	219,625	215,247	210,845	206,420	201,970	197,496	192,998	188,476	**$2,554,890.31**
Year 22	790,994	795,279	799,587	803,918	808,272	812,651	817,052	821,478	825,928	830,402	834,900	839,422	**$9,779,882.61**
	263	264	265	266	267	268	269	270	271	272	273	274	
	192,998	188,476	183,929	179,357	174,761	170,140	165,494	160,822	156,126	151,404	146,656	141,883	**$2,012,045.88**
Year 23	834,900	839,422	843,969	848,540	853,137	857,758	862,404	867,075	871,772	876,494	881,242	886,015	**$10,322,727.04**
	275	276	277	278	279	280	281	282	283	284	285	286	
	137,083	132,258	127,407	122,529	117,625	112,694	107,737	102,753	97,742	92,703	87,638	82,545	**$1,320,713.73**
Year 24	890,814	895,640	900,491	905,369	910,273	915,203	920,161	925,145	930,156	935,194	940,260	945,353	**$11,014,059.19**
	287	288	289	290	291	292	293	294	295	296	297	298	
	77,424	72,275	67,099	61,895	56,662	51,402	46,112	40,794	35,447	30,072	24,667	19,233	**$583,081.79**
Year 25	950,474	955,622	960,799	966,003	971,235	976,496	981,786	987,104	992,450	997,826	1,003,231	1,008,665	**$11,751,691.13**

Appendix F - Private Development Proposal Pro Forma

F.1 - Private Development Proposal Pro Forma Assumptions

UNDERLYING ASSUMPTIONS								
Development Characteristics								
Site Area (sq ft):	226,042		21,000	sq. m.	**5.19**	acres	**164**	linear metres
Floor Area Ratio:	**2.45**	**FAR**						
Maximum Gross Building Area (sq ft.)	553,803		51,450	sq. m.	**36,920**	sq. ft. per floor @ 15 floors		
Building Efficiency	85.0%							
Useable Area (sq ft.)	470,732		31382	sq. ft. per floor including 85% efficency				
% Office Space (sq ft.)	100.0%		470,732					
Rentable Area (sq ft.)			**470,732**					
Baseball Stadium Parking Replacement			700	stalls	Assumption: Replaces current surface parking.			
Office Parking Rqmt, one space per unit	0.75		386	stalls	Assumption: As per Ottawa Zoning Bylaw Section 101 (0.75 per 100 m sq.)			
Total Parking Determined			750	stalls	Assumption: There will be shared parking between the office building and the stadium			

Value Assumptions: Parking				
Parking Type	**Number of units**	**Rate Per Space**	**Annual Total**	
Office Monthly	386	100	**$463,200**	Assumption: Based on interview with City of Ottawa (2014b). Rate of $100/month.
Event	750	20	**$1,050,000**	Assumption: 70 game season at $20/game. City of Ottawa (2014) Lease Summary.
		Total	**$1,513,200**	
Vacancy (%)	0.00%			Assumption: A vacancy rate is not included because parking numbers are already low
Operating Expenses, % NOI	25.00%			Assumption: Interview with City of Ottawa (2014c).
Capitalization Rate (%)	7.00%			Assumption: Interview with City of Ottawa (2014b).

Value Assumptions: Office		
Rentable Area, Office	470,732	sq.ft.
Office Rental Rate	**$32.75**	Assumption: Colliers International (2014). Ottawa Q2 Office Report.
Vacancy, Office	**5.00%**	Assumption: Colliers International (2014). Ottawa Q2 Office Report for Class A Office.
Operating Expenses, as % NOI (for office)	25.00%	Assumption: Interview with City of Ottawa (2014c).
Marketing Cost, %	5.00%	Assumption: Interview with City of Ottawa (2014c).
Capitalization Rate	6.50%	Assumption: Colliers International (2014). Q1 Canada Cap Rate Report.

Construction Cost Assumptions				
Servicing Connections (roads etc)	$1,350.00	linear m.	$221,400.00	Assumption: Interview with City of Ottawa (2014b).
Shallow Utilities	$425.00	linear m.	$69,700.00	Assumption: Interview with City of Ottawa (2014b).
Offsite services (% of roads and services)	15%		$33,210.00	Assumption: Interview with Andrew, J. (2014).
Sub-Total Hard Costs			**$324,310.00**	
Engineering Design/Constuction	15% of HC	15.0%	$48,646.50	Assumption: Interview with City of Ottawa (2014b).
Additional Soft Costs	25% of HC	25.0%	$81,077.50	Assumption: Interview with City of Ottawa (2014b).
Legal Survey	$25,000.00		$25,000.00	Assumption: Interview with City of Ottawa (2014b).
Sub-Total Hard & Soft Costs			**$479,034.00**	
Contingency	10% of HC	10.0%	$47,903.40	Assumption: Interview with City of Ottawa (2014b).
Development Charges	$10,826,846.70		$10,826,846.70	Assumption: City of Ottawa (2014) Development Charge Rates of $19.55/ per sq. ft.
Total			**$11,353,784.10**	
General Construction Cost Assumptions				
Off Site Costs			$33,210.00	
On Site Costs (demolition, site prep, preload, services, landscaping)			$69,700.00	Assumption: Total from: landscaping, clearing/grading, and shallow utilities
Servicing Connections			$221,400.00	Assumption: Calculated using servicing connections
Office Cost/sq.ft.			$144.53	Assumption: Quote from RS Means (2014) online construction cost generator.
Parking Cost/Stall			**$22,400.00**	Assumption: Fehr & Peers avg stall (320 sq. ft), Altus Construction $22,400/spot.
Office, TI/sq.ft.(Tenant Improvement)			$32.75	
Planning Time (months)		months	12	
Construction Time (months)		months	24	

Financing Assumptions		
Construction Financing Assumptions		
Project Loan, Loan to Cost Ratio (%)	75.00%	Assumption: Interview with City of Ottawa (2014b).
Project Loan, Interest Rate (%)	7.00%	Assumption: Interview with City of Ottawa (2014b).
Financing Structure		
Stated Annual Interest Rate (%)	5%	
Amortization Period (years)	25	
Mortgage Constant	7.04%	

Value on Completion			
Parking			
Gross Income Potential		$1,513,200	
Less: Operating Expenses		(378,300)	
Net Rental Income		**$1,134,900**	
Estimated Value			
Capitalization Rate (%)		7.0%	Assumption: Interview with City of Ottawa (2014b).
Indicated Value on Completion		$16,212,857	
Office			
Gross Income Potential		$15,416,488	
Less: Vacancy		(770,824)	
Less: Operating Expenses		(3,661,416)	
Net Operating Income		**$10,984,248**	
Estimated Value			
Capitalization Rate (%)		6.5%	Assumption: Colliers International (2014). Ottawa Q2 Office Report.
Indicated Value on Completion		$186,448,429	
Total Value on Completion		$202,661,286	
Less: Marketing costs	5.0%	(10,133,064)	
Equals Net Sales Proceeds		**$192,528,222**	

Project Cost				
Land	**Area sq.ft.**	**Cost/sq.ft.**		
Purchase Price	226,042	**$25.00**	**$5,650,000**	Assumption: City of Ottawa (2014) assessed value of the 300 Coventry Road site.
Propery Transfer Tax			**$109,475**	Assumption: Ottawa Real Estate Board Land Transfer Calculator.
Other Closing Costs at 4%			**$226,000**	Assumption: Includes environmental assessment, conveyance, legal, property tax, etc
Total Land Value			**$5,985,475**	
Construction + Development Costs				
Construction Costs				
Offsite Costs			$33,210	
On Site Costs			$69,700	
Servicing Connections			$221,400	
Building			$80,041,133	
Parking			$16,800,000	Assumption: Calculated based on the total required # of stalls x the amount per stall.
Tenant Improvements			$15,416,488	
Sub-total			$112,581,931	
Contingency (% Project Costs)		**10.0%**	$11,258,193	
Total Construction Cost			**$123,840,125**	
Development Costs				
Total Soft Costs (25% of total construction costs less contingency)		25.0%	**$25,330,935**	
Total Project Costs			**$155,156,534**	
Less Equity		25%	**$38,789,133.51**	
Total Project Costs For Financing			**$116,367,401**	

Key Short Term Indicators	
Profit on a Hypothetical Sale at Completion of Development	
Value on completion and sale	$192,528,222
Less Project Costs	$116,367,401
Equals Profit - $'s	$76,160,821
Profit - %	65.45%
NOI/Project Cost	
NOI	$12,119,148
Project Cost	$116,367,401
NOI/Cost (%)	10.41%
Cash on Cash, Investor Holds	
Project Cost	**$116,367,401**
Take Out Financing	**$116,367,401**
Equity	**38,789,134**
Net income	$12,119,148
Less mortgage payments	$8,190,833
Cash flow	$3,928,315
Cash flow/equity (%)	10.13%

F.2 - Private Development Proposal Pro Forma Construction Loan

						Lease Up							
Development Costs	**Data**	**Total**	**Time Zero**	**Year 0 Total**	**Year 1 Total**	**Quarter 1**	**Quarter 2**	**Quarter 3**	**Quarter 4**	**Quarter 5**	**Quarter 6**	**Quarter 7**	**Quarter 8**
Land	**5,985,475**	5,985,475	5,985,475										
Land Carry													
Construction Hard Costs	**123,840,125**	123,840,125		123,840,125		30,960,031	30,960,031	30,960,031	30,960,031				
Soft Costs	**25,330,935**	25,330,935	8,443,644.85	8,443,645	8,443,645	2,110,911.21	2,110,911	2,110,911	2,110,911	2,110,911	2,110,911	2,110,911	2,110,911
Total Development costs, excluding Construction loan interest and operating reserves		155,156,534	14,429,120	132,283,769	8,443,645	33,070,942	33,070,942	33,070,942	33,070,942	2,110,911	2,110,911	2,110,911	2,110,911

Office: Operating Income (Loss) During Lease-Up													
Months of Reach Stabilized Occupancy	0												
Square Feet Leased per Quarter	470732			0	470732					470732	470732	470732	470732
Stabilized Vacancy	5%			0	5%					5%	5%	5%	5%
Gross Potential Rent for Quarter (from pro forma NOI)	3,854,122	15,416,488		0	15,416,488					3,854,122.06	3,854,122.06	3,854,122.06	3,854,122.06
Vacancy Loss ($)		(770,824)		0	(770,824)					(192,706)	(192,706)	(192,706)	(192,706)
Adjusted Gross Rent		14,645,664		0	14,645,664					3,661,416	3,661,416	3,661,416	3,661,416
Total Revenue		14,645,664		0	14,645,664								
Operating Expenses	25%	(3,661,416)		0	(3,661,416)					(963,531)	(963,531)	(963,531)	(963,531)
Net Operating Income		**10,984,248**		0	10,984,248					**2,697,885**	**2,697,885**	**2,697,885**	**2,697,885**

Parking: Operating Income (Loss) duing Lease-Up													
Months of Reach Stabilized Occupancy	0												
Spaces Leased per Quarter	386			0	1544					386	386	386	386
Overall Vacancy Rate				0	0%					0%	0%	0%	0%
Gross Potential Rent for Quarter (from pro forma NOI)	378,300	1,513,200		0	1,513,200					378,300	378,300	378,300	378,300
Vacancy Loss ($)		-		0	-					-	-	-	-
Adjusted Gross Rent		1,513,200		0	1,513,200					378,300	378,300	378,300	378,300
Total Revenue		1,513,200		0	1,513,200								
Operating Expenses	25%	(378,300)		0	(378,300)					(94,575)	(94,575)	(94,575)	(94,575)
Net Operating Income		**1,134,900**		**0**	**1,134,900**					**283,725**	**283,725**	**283,725**	**283,725**

Total Net Operating Income		**12,119,148**			**12,119,148**					**2,981,610**	**2,981,610**	**2,981,610**	**2,981,610**
Combined Cash Flow during Development Period before Interest		(143,037,386)	(14,429,120)	(132,283,769)	3,675,503	(33,070,942)	(33,070,942)	(33,070,942)	(33,070,942)	870,699	870,699	870,699	870,699

Construction Loan Balance & Interest Calculation		Data	Total	Time Zero	Year 0 Total	Year 1 Total	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5	Quarter 6	Quarter 7	Quarter 8
Maximum Loan Balance	Assume 75% of Development Cost	116,367,401												
Equity Sources		38,789,134	38,789,134	5,985,475	32,803,659	0	32,803,659	0	0	0	0	0	0	0
Equity Account Ending Balance				5,985,475	38,789,134	38,789,134	38,789,134	38,789,134	38,789,134	38,789,134	38,789,134	38,789,134	38,789,134	38,789,134
Construction Loan Account														
Beginning Balance							0	271,961	33,926,404	68,169,800	103,012,456	105,123,367	107,234,278	109,345,189
Loan Draw														
Construction Draw							267,284	33,070,942	33,070,942	33,070,942	2,110,911	2,110,911	2,110,911	2,110,911
Operating Deficit							0	0	0	0	-	0	0	0
Trial Balance							267,284	33,342,904	66,997,347	101,240,743	105,123,367	107,234,278	109,345,189	111,456,101
Additional Equity Required							0	0	0	0	0	0	0	0
Ending balance before interest							267,284	33,342,904	66,997,347	101,240,743	105,123,367	107,234,278	109,345,189	111,456,101
Average Loan Balance							133,642	16,807,432	50,461,876	84,705,272	104,067,911	106,178,823	108,289,734	110,400,645
Total Construction Loan Interest = 7%							4,677	583,501	1,172,454	1,771,713	1,839,659	1,876,600	1,913,541	1,950,482
Interest accrued during construction period							4,677	583,501	1,172,454	1,771,713	0	0	0	0
Interest accrued during operating period							0	0	0	0	1,839,659	1,876,600	1,913,541	1,950,482
Interest paid during operating period							0	0	0	0	1,839,659	1,876,600	1,913,541	1,950,482
Trial ending balance							271,961	33,926,404	68,169,800	103,012,456	105,123,367	107,234,278	109,345,189	111,456,101
Additional equity required							0	0	0	0	0	0	0	0
Ending Balance							271,961	33,926,404	68,169,800	103,012,456	105,123,367	107,234,278	109,345,189	111,456,101
Total Additional Equity Required							0	0	0	0	0	0	0	0
Cash Flow After Interest											1,141,952	1,105,011	1,068,070	1,031,129

Summary	
Capital Costs	
Total Development Costs, excluding Interest	155,156,534
Interest Accrued during Construction	11,112,626
Total Capital Costs	166,269,160
Depreciable Basis	
Total Capital Costs	166,269,160
Land Cost	5,985,475
Depreciable Basis (capital cost minus land)	160,283,685
Operating Reserve	
Operating Loss During Lease-up	-
Interest Accrued during Operating Period	7,580,281
Interest Paid during Operating Period	7,580,281
Total Operating Reserve Funded by Construction Loan	-
Total Project Cost (capital costs plus operating reserve)	166,269,160
Positive Cash Flow after Interest	4,346,160
Total Project Cost after First-Year Operations	161,923,000
Cash Proceeds from Permanent Loan Takeout	
Permanent Mortgage Amount	**116,367,401**
Construction Loan Ending Balance	**107,109,940**
Cash Proceeds from Permanent Loan Takeout	9,257,460

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F.3 - Private Development Proposal Pro Forma Discounted Cash Flow

Discounted Cash Flow Analysis																	
Revenues																	
Annual % Escalation re: Gross Revenue	% Annual Esca-lation	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Gross Income	2.00%		16,929,688	17,268,282	17,613,648	17,965,921	18,325,239	18,691,744	19,065,579	19,446,890	19,835,828	20,232,545	20,637,195	21,049,939	21,470,938	21,900,357	22,338,364
Less: Vacancy			(846,484)	(863,414)	(880,682)	(898,296)	(916,262)	(934,587)	(953,279)	(972,345)	(991,791)	(1,011,627)	(1,031,860)	(1,052,497)	(1,073,547)	(1,095,018)	(1,116,918)
Less: Operating Expenses	2.00%		(4,039,716)	(4,120,510)	(4,202,920)	(4,286,979)	(4,372,718)	(4,460,173)	(4,549,376)	(4,640,364)	(4,733,171)	(4,827,835)	(4,924,391)	(5,022,879)	(5,123,337)	(5,225,803)	(5,330,319)
NET OPERATING INCOME			**12,043,488**	**12,284,358**	**12,530,045**	**12,780,646**	**13,036,259**	**13,296,984**	**13,562,923**	**13,834,182**	**14,110,866**	**14,393,083**	**14,680,945**	**14,974,563**	**15,274,055**	**15,579,536**	**15,891,126**
CCA Building			4,654,696	4,468,508	4,289,768	4,118,177	3,953,450	3,795,312	3,643,500	3,497,760	3,357,849	3,223,535	3,094,594	2,970,810	2,851,978	2,737,899	2,628,383
CCA Fixtures			900,655	864,629	830,044	796,842	764,969	734,370	704,995	676,795	649,723	623,735	598,785	574,834	551,840	529,767	508,576
Interest			5,791,445	5,668,688	5,539,650	5,404,011	5,261,432	5,111,558	4,954,017	4,788,415	4,614,341	4,431,361	4,239,019	4,036,837	3,824,310	3,600,911	3,366,082
Taxable Income			696,691	1,282,532	1,870,582	2,461,615	3,056,408	3,655,744	4,260,412	4,871,212	5,488,952	6,114,452	6,748,547	7,392,083	8,045,926	8,710,960	9,388,086
x Tax Rate (15% Federal +11.5% Provincial)			26.5%	26.5%	26.5%	26.5%	26.5%	26.5%	26.5%	26.5%	26.5%	26.5%	26.5%	26.5%	26.5%	26.5%	26.5%
Income Tax Payable			184,623	339,871	495,704	652,328	809,948	968,772	1,129,009	1,290,871	1,454,572	1,620,330	1,788,365	1,958,902	2,132,170	2,308,404	2,487,843
Net Operating Income			12,043,488	12,284,358	12,530,045	12,780,646	13,036,259	13,296,984	13,562,923	13,834,182	14,110,866	14,393,083	14,680,945	14,974,563	15,274,055	15,579,536	15,891,126
Debt Payments			8,190,833	8,190,833	8,190,833	8,190,833	8,190,833	8,190,833	8,190,833	8,190,833	8,190,833	8,190,833	8,190,833	8,190,833	8,190,833	8,190,833	8,190,833
Before Tax Cash Flow			3,852,655	4,093,525	4,339,212	4,589,813	4,845,426	5,106,151	5,372,091	5,643,349	5,920,033	6,202,250	6,490,112	6,783,731	7,083,222	7,388,703	7,700,294
Income Tax Payable			184,623	339,871	495,704	652,328	809,948	968,772	1,129,009	1,290,871	1,454,572	1,620,330	1,788,365	1,958,902	2,132,170	2,308,404	2,487,843
After Tax Cash Flow			3,668,032	3,753,654	3,843,508	3,937,485	4,035,478	4,137,379	4,243,081	4,352,478	4,465,460	4,581,920	4,701,747	4,824,829	4,951,051	5,080,299	5,212,451
TOTAL RETURN			**3,668,032**	**3,753,654**	**3,843,508**	**3,937,485**	**4,035,478**	**4,137,379**	**4,243,081**	**4,352,478**	**4,465,460**	**4,581,920**	**4,701,747**	**4,824,829**	**4,951,051**	**5,080,299**	**5,212,451**
BUILDING																	
Undepreciated Balance: Start			116,367,401	111,712,705	107,244,196	102,954,428	98,836,251	94,882,801	91,087,489	87,443,990	83,946,230	80,588,381	77,364,846	74,270,252	71,299,442	68,447,464	65,709,566
x CCA Rate			4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Maximum CCA			4,654,696	4,468,508	4,289,768	4,118,177	3,953,450	3,795,312	3,643,500	3,497,760	3,357,849	3,223,535	3,094,594	2,970,810	2,851,978	2,737,899	2,628,383
CCA Taken			4,654,696	4,468,508	4,289,768	4,118,177	3,953,450	3,795,312	3,643,500	3,497,760	3,357,849	3,223,535	3,094,594	2,970,810	2,851,978	2,737,899	2,628,383
Closing Balance			111,712,705	107,244,196	102,954,428	98,836,251	94,882,801	91,087,489	87,443,990	83,946,230	80,588,381	77,364,846	74,270,252	71,299,442	68,447,464	65,709,566	63,081,183
FIXTURES																	
Undepreciated Balance: Start			22,516,386	21,615,731	20,751,102	19,921,058	19,124,215	18,359,247	17,624,877	16,919,882	16,243,086	15,593,363	14,969,628	14,370,843	13,796,010	13,244,169	12,714,402
x CCA Rate			4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Maximum CCA			900,655	864,629	830,044	796,842	764,969	734,370	704,995	676,795	649,723	623,735	598,785	574,834	551,840	529,767	508,576
CCA Taken			900,655	864,629	830,044	796,842	764,969	734,370	704,995	676,795	649,723	623,735	598,785	574,834	551,840	529,767	508,576
Closing Balance			21,615,731	20,751,102	19,921,058	19,124,215	18,359,247	17,624,877	16,919,882	16,243,086	15,593,363	14,969,628	14,370,843	13,796,010	13,244,169	12,714,402	12,205,826
$116,367,401 Loan: 5%; 25 yr Am																	
Mortgage payments (Principal & interest)		**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**
Mortgage payments (Interest portion)			5,791,445	5,668,688	5,539,650	5,404,011	5,261,432	5,111,558	4,954,017	4,788,415	4,614,341	4,431,361	4,239,019	4,036,837	3,824,310	3,600,911	3,366,082
Mortgage payments (Principal repayments)			2,399,387	2,522,145	2,651,182	2,786,822	2,929,401	3,079,275	3,236,816	3,402,418	3,576,492	3,759,472	3,951,814	4,153,996	4,366,522	4,589,922	4,824,751
ENDING BALANCE		**$116,367,401**	**113,968,013**	**111,445,869**	**108,794,686**	**106,007,864**	**103,078,463**	**99,999,189**	**96,762,373**	**93,359,955**	**89,783,463**	**86,023,991**	**82,072,177**	**77,918,181**	**73,551,658**	**68,961,736**	**64,136,985**
RETURN ANALYSIS		**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**	**Year 11**	**Year 12**	**Year 13**	**Year 14**	**Year 15**
Equity (loss)		(38,789,134)															
Before-Tax Cash Flows from Operations			3,852,655	4,093,525	4,339,212	4,589,813	4,845,426	5,106,151	5,372,091	5,643,349	5,920,033	6,202,250	6,490,112	6,783,731	7,083,222	7,388,703	7,700,294
Cash Flow from Sale before Tax																	
Total Before-Tax Cash Flow		(38,789,134)	3,852,655	4,093,525	4,339,212	4,589,813	4,845,426	5,106,151	5,372,091	5,643,349	5,920,033	6,202,250	6,490,112	6,783,731	7,083,222	7,388,703	7,700,294
BEFORE-TAX IRR		**16%**															
Discount rate	**12**	%															
NET PRESENT VALUE		**22,599,384**															
Equity (loss)		(38,789,134)															
After-tax Cash Flows from Operations			3,668,032	3,753,654	3,843,508	3,937,485	4,035,478	4,137,379	4,243,081	4,352,478	4,465,460	4,581,920	4,701,747	4,824,829	4,951,051	5,080,299	5,212,451
Cash Flow from Sale after Tax																	
Total After-Tax Cash Flow		(38,789,134)	3,668,032	3,753,654	3,843,508	3,937,485	4,035,478	4,137,379	4,243,081	4,352,478	4,465,460	4,581,920	4,701,747	4,824,829	4,951,051	5,080,299	5,212,451
AFTER-TAX IRR		**13%**															
Discount rate	**12**	%															
NET PRESENT VALUE		**6,816,174**															

Year 16	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22	Year 23	Year 24	Year 25	
22,785,131	23,240,834	23,705,651	24,179,764	24,663,359	25,156,626	25,659,759	26,172,954	26,696,413	27,230,341	
(1,139,257)	(1,162,042)	(1,185,283)	(1,208,988)	(1,233,168)	(1,257,831)	(1,282,988)	(1,308,648)	(1,334,821)	(1,361,517)	
(5,436,926)	(5,545,664)	(5,656,578)	(5,769,709)	(5,885,103)	(6,002,805)	(6,122,862)	(6,245,319)	(6,370,225)	(6,497,630)	
16,208,949	**16,533,128**	**16,863,791**	**17,201,066**	**17,545,088**	**17,895,989**	**18,253,909**	**18,618,987**	**18,991,367**	**19,371,194**	
2,523,247	2,422,317	2,325,425	2,232,408	2,143,111	2,057,387	1,975,091	1,896,088	1,820,244	1,747,435	
488,233	468,704	449,956	431,957	414,679	398,092	382,168	366,881	352,206	338,118	
3,119,238	2,859,766	2,587,018	2,300,316	1,998,946	1,682,158	1,349,162	1,058,687	693,793	310,230	
10,078,230	10,782,341	11,501,392	12,236,385	12,988,351	13,758,353	14,547,488	15,297,331	16,125,124	16,975,412	
26.5%	26.5%	26.5%	26.5%	26.5%	26.5%	26.5%	26.5%	26.5%	26.5%	
2,670,731	2,857,320	3,047,869	3,242,642	3,441,913	3,645,963	3,855,084	4,053,793	4,273,158	4,498,484	
16,208,949	16,533,128	16,863,791	17,201,066	17,545,088	17,895,989	18,253,909	18,618,987	18,991,367	19,371,194	
8,190,833	8,190,833	8,190,833	8,190,833	8,190,833	8,190,833	8,190,833	8,190,833	8,190,833	8,190,833	
8,018,116	8,342,295	8,672,958	9,010,234	9,354,255	9,705,157	10,063,076	10,428,155	10,800,534	11,180,362	
2,670,731	2,857,320	3,047,869	3,242,642	3,441,913	3,645,963	3,855,084	4,053,793	4,273,158	4,498,484	
5,347,385	5,484,975	5,625,089	5,767,592	5,912,342	6,059,193	6,207,992	6,374,362	6,527,377	6,681,878	
5,347,385	**5,484,975**	**5,625,089**	**5,767,592**	**5,912,342**	**6,059,193**	**6,207,992**	**6,374,362**	**6,527,377**	**6,681,878**	
63,081,183	60,557,936	58,135,618	55,810,193	53,577,786	51,434,674	49,377,287	47,402,196	45,506,108	43,685,864	
4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	
2,523,247	2,422,317	2,325,425	2,232,408	2,143,111	2,057,387	1,975,091	1,896,088	1,820,244	1,747,435	
2,523,247	2,422,317	2,325,425	2,232,408	2,143,111	2,057,387	1,975,091	1,896,088	1,820,244	1,747,435	**$74,428,971.44**
60,557,936	58,135,618	55,810,193	53,577,786	51,434,674	49,377,287	47,402,196	45,506,108	43,685,864	41,938,429	
12,205,826	11,717,593	11,248,890	10,798,934	10,366,977	9,952,298	9,554,206	9,172,037	8,805,156	8,452,950	
4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	
488,233	468,704	449,956	431,957	414,679	398,092	382,168	366,881	352,206	338,118	
488,233	468,704	449,956	431,957	414,679	398,092	382,168	366,881	352,206	338,118	**$14,401,554.58**
11,717,593	11,248,890	10,798,934	10,366,977	9,952,298	9,554,206	9,172,037	8,805,156	8,452,950	8,114,832	
8,190,833	**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**	**8,190,833**	
3,119,238	2,859,766	2,587,018	2,300,316	1,998,946	1,682,158	1,349,162	1,058,687	693,793	310,230	
5,071,595	5,331,067	5,603,815	5,890,516	6,191,886	6,508,675	6,841,671	7,132,146	7,497,040	7,880,602	
59,065,390	**53,734,323**	**48,130,509**	**42,239,993**	**36,048,106**	**29,539,431**	**22,697,760**	**15,565,615**	**8,068,575**	**187,972**	

Year 16	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22	Year 23	Year 24	Year 25
8,018,116	8,342,295	8,672,958	9,010,234	9,354,255	9,705,157	10,063,076	10,428,155	10,800,534	11,180,362
									285,909,669
8,018,116	8,342,295	8,672,958	9,010,234	9,354,255	9,705,157	10,063,076	10,428,155	10,800,534	**297,090,031**
5,347,385	5,484,975	5,625,089	5,767,592	5,912,342	6,059,193	6,207,992	6,374,362	6,527,377	6,681,878
									190,095,110
5,347,385	5,484,975	5,625,089	5,767,592	5,912,342	6,059,193	6,207,992	6,374,362	6,527,377	**196,776,988**

Sale Calculation		
Sale Price: End of Year 25	6.50%	298,018,377
Based on Year 25 NOI		
Less: Commission	4%	11,920,735
Adjusted Sale Price		286,097,642
Less: Remaining Balance on Mortgage		187,972
Cash from Sale before Tax		285,909,669
Taxes		
Adjusted Sale Price		286,097,642
Less: Remaining Book Value		50,053,261
Total Taxable Gain		236,044,381
Total depreciation taken		88,830,526
Recapture tax	25%	22,207,631.51
Capital Gain		147,213,855
Tax on capital gain	50%	73,606,927
Total tax from Sale		95,814,559
Cash from Sale before Tax		285,909,669
Cash from Sale after Tax		**190,095,110**

F.4 - Private Development Proposal Pro Forma Financing

Costs			Mortgage	Int. rate	Int. only	Equity
Development	**$155,156,534.06**	**75%**	**116,367,401**	**5%**	**$5,818,370.03**	**$38,789,133.51**
	$155,156,534.06		$116,367,400.54		$5,818,370.03	$38,789,133.51
	$155,156,534.06		$116,367,400.54			$38,789,133.51

Loan to Value Ratio			Debt Coverage Ratio	
Land	75%	**4,237,500**	Construction	1.20%
Project	75%	**139,836,321**	Monthly Payment	10,997,867
			Present Value	**$157,112,381**

Mortgage Constant - Calculated

Mortgage Amount	**$116,367,401**
Interest Rate	5.00%
Amortization Period - years	25

		Mortgage Constant Calculated		
		MO.		Annual
Monthly Payment	**$682,569**	**0.587%**	**12**	**7.04%**
Months	12			
Total Payment - 1 Year	**$8,190,833**			
Years	25			
Total Payment - 25 Years	**$204,770,819**			
Amount of Interest Paid	**$88,403,419**			

F.5 - Private Development Proposal Pro Forma Amortization

Interest Rate	**5.00%**	**25 Year Amortization Schedule**											
Term	**25**	Effective Annual Rate		5.12%									
Amount	**$116,367,400.54**	Monthly Payment		$682,569.40									
Year/ Payment	1	2	3	4	5	6	7	8	9	10	11	12	**Total Per Year**
Interest	487,161	486,347	485,530	484,709	483,884	483,056	482,225	481,390	480,552	479,710	478,865	478,016	**$5,791,445.37**
Year 1 Principle	195,408	196,222	197,040	197,861	198,685	199,513	200,344	201,179	202,017	202,859	203,704	204,553	**$2,399,387.41**
Year/ Payment	13	14	15	16	17	18	19	20	21	22	23	24	
Interest	477,164	476,308	475,449	474,586	473,719	472,849	471,975	471,097	470,216	469,332	468,443	467,551	**$5,668,688.16**
Year 2	205,406	206,261	207,121	207,984	208,850	209,721	210,594	211,472	212,353	213,238	214,126	215,019	**$2,522,144.62**
	25	26	27	28	29	30	31	32	33	34	35	36	
	466,655	465,755	464,852	463,945	463,034	462,119	461,201	460,278	459,352	458,422	457,488	456,550	**$5,539,650.45**
Year 3	215,914	216,814	217,717	218,625	219,536	220,450	221,369	222,291	223,217	224,148	225,081	226,019	**$2,651,182.33**
	37	38	39	40	41	42	43	44	45	46	47	48	
	455,608	454,663	453,713	452,760	451,802	450,840	449,875	448,905	447,932	446,954	445,972	444,987	**$5,404,010.93**
Year 4	226,961	227,907	228,856	229,810	230,767	231,729	232,695	233,664	234,638	235,615	236,597	237,583	**$2,786,821.85**
	49	50	51	52	53	54	55	56	57	58	59	60	
	443,997	443,003	442,004	441,002	439,995	438,985	437,970	436,951	435,927	434,900	433,868	432,831	**$5,261,431.84**
Year 5	238,573	239,567	240,565	241,567	242,574	243,585	244,600	245,619	246,642	247,670	248,702	249,738	**$2,929,400.94**
	61	62	63	64	65	66	67	68	69	70	71	72	
	431,791	430,746	429,697	428,643	427,585	426,522	425,456	424,384	423,309	422,228	421,144	420,054	**$5,111,558.13**
Year 6	250,779	251,824	252,873	253,926	254,984	256,047	257,114	258,185	259,261	260,341	261,426	262,515	**$3,079,274.65**
	73	74	75	76	77	78	79	80	81	82	83	84	
	418,960	417,862	416,759	415,652	414,539	413,423	412,301	411,175	410,044	408,909	407,768	406,623	**$4,954,016.59**
Year 7	263,609	264,707	265,810	266,918	268,030	269,147	270,268	271,394	272,525	273,661	274,801	275,946	**$3,236,816.19**
	85	86	87	88	89	90	91	92	93	94	95	96	
	405,474	404,319	403,160	401,996	400,827	399,653	398,474	397,290	396,101	394,908	393,709	392,506	**$4,788,414.93**
Year 8	277,096	278,250	279,410	280,574	281,743	282,917	284,096	285,279	286,468	287,662	288,860	290,064	**$3,402,417.85**
	97	98	99	100	101	102	103	104	105	106	107	108	
	391,297	390,083	388,865	387,641	386,412	385,178	383,939	382,695	381,445	380,190	378,931	377,665	**$4,614,340.78**
Year 9	291,272	292,486	293,705	294,929	296,157	297,391	298,631	299,875	301,124	302,379	303,639	304,904	**$3,576,492.00**
	109	110	111	112	113	114	115	116	117	118	119	120	
	376,395	375,119	373,838	372,552	371,260	369,963	368,660	367,352	366,039	364,720	363,396	362,066	**$4,431,360.66**
Year 10	306,174	307,450	308,731	310,018	311,309	312,606	313,909	315,217	316,530	317,849	319,174	320,504	**$3,759,472.12**
	121	122	123	124	125	126	127	128	129	130	131	132	
	360,730	359,389	358,043	356,691	355,333	353,969	352,600	351,225	349,845	348,458	347,066	345,668	**$4,239,018.93**
Year 11	321,839	323,180	324,527	325,879	327,237	328,600	329,969	331,344	332,725	334,111	335,503	336,901	**$3,951,813.85**
	133	134	135	136	137	138	139	140	141	142	143	144	
	344,265	342,855	341,439	340,018	338,591	337,158	335,718	334,273	332,822	331,365	329,901	328,432	**$4,036,836.63**
Year 12	338,305	339,714	341,130	342,551	343,979	345,412	346,851	348,296	349,747	351,205	352,668	354,138	**$4,153,996.14**

	145	146	147	148	149	150	151	152	153	154	155	156	
	326,956	325,475	323,987	322,493	320,992	319,486	317,973	316,454	314,928	313,396	311,858	310,313	**$3,824,310.31**
Year 13	355,613	357,095	358,583	360,077	361,577	363,084	364,597	366,116	367,641	369,173	370,711	372,256	**$4,366,522.47**
	157	158	159	160	161	162	163	164	165	166	167	168	
	308,762	307,205	305,641	304,070	302,493	300,910	299,319	297,722	296,119	294,509	292,892	291,268	**$3,600,910.73**
Year 14	373,807	375,365	376,929	378,499	380,076	381,660	383,250	384,847	386,450	388,061	389,678	391,301	**$4,589,922.05**
	169	170	171	172	173	174	175	176	177	178	179	180	
	289,638	288,001	286,356	284,706	283,048	281,383	279,712	278,033	276,347	274,655	272,955	271,248	**$3,366,081.61**
Year 15	392,932	394,569	396,213	397,864	399,522	401,186	402,858	404,536	406,222	407,915	409,614	411,321	**$4,824,751.17**
	181	182	183	184	185	186	187	188	189	190	191	192	
	269,535	267,814	266,085	264,350	262,608	260,858	259,101	257,336	255,564	253,785	251,999	250,204	**$3,119,238.18**
Year 16	413,035	414,756	416,484	418,219	419,962	421,712	423,469	425,233	427,005	428,784	430,571	432,365	**$5,071,594.60**
	193	194	195	196	197	198	199	200	201	202	203	204	
	248,403	246,594	244,777	242,953	241,121	239,282	237,435	235,580	233,718	231,848	229,970	228,084	**$2,859,765.77**
Year 17	434,166	435,975	437,792	439,616	441,448	443,287	445,134	446,989	448,851	450,722	452,600	454,486	**$5,331,067.00**
	205	206	207	208	209	210	211	212	213	214	215	216	
	226,190	224,289	222,379	220,462	218,536	216,603	214,661	212,712	210,754	208,788	206,814	204,832	**$2,587,018.27**
Year 18	456,379	458,281	460,190	462,108	464,033	465,967	467,908	469,858	471,816	473,781	475,756	477,738	**$5,603,814.51**
	217	218	219	220	221	222	223	224	225	226	227	228	
	202,841	200,842	198,835	196,819	194,795	192,763	190,722	188,673	186,615	184,548	182,473	180,390	**$2,300,316.48**
Year 19	479,728	481,727	483,735	485,750	487,774	489,806	491,847	493,897	495,955	498,021	500,096	502,180	**$5,890,516.29**
	229	230	231	232	233	234	235	236	237	238	239	240	
	178,297	176,196	174,086	171,967	169,840	167,704	165,558	163,404	161,241	159,069	156,887	154,697	**$1,998,946.49**
Year 20	504,272	506,373	508,483	510,602	512,729	514,866	517,011	519,165	521,329	523,501	525,682	527,872	**$6,191,886.29**
	241	242	243	244	245	246	247	248	249	250	251	252	
	152,498	150,289	148,071	145,844	143,608	141,362	139,107	136,843	134,569	132,285	129,993	127,690	**$1,682,157.84**
Year 21	530,072	532,280	534,498	536,725	538,962	541,207	543,462	545,727	548,001	550,284	552,577	554,879	**$6,508,674.94**
	253	254	255	256	257	258	259	260	261	262	263	264	
	125,378	123,056	120,725	118,384	116,033	113,673	111,302	108,922	106,532	104,132	101,722	99,301	**$1,349,161.67**
Year 22	557,191	559,513	561,844	564,185	566,536	568,897	571,267	573,647	576,037	578,438	580,848	583,268	**$6,841,671.10**
	263	264	265	266	267	268	269	270	271	272	273	274	
	101,722	99,301	96,871	94,431	91,980	89,519	87,048	84,567	82,075	79,573	77,061	74,538	**$1,058,687.16**
Year 23	580,848	583,268	585,698	588,139	590,589	593,050	595,521	598,002	600,494	602,996	605,509	608,032	**$7,132,145.61**
	275	276	277	278	279	280	281	282	283	284	285	286	
	72,004	69,460	66,906	64,340	61,765	59,178	56,580	53,972	51,353	48,723	46,082	43,430	**$693,793.06**
Year 24	610,565	613,109	615,664	618,229	620,805	623,392	625,989	628,597	631,216	633,847	636,488	639,140	**$7,497,039.72**
	287	288	289	290	291	292	293	294	295	296	297	298	
	40,767	38,093	35,407	32,711	30,003	27,284	24,554	21,812	19,059	16,294	13,518	10,730	**$310,230.28**
Year 25	641,803	644,477	647,162	649,859	652,566	655,285	658,016	660,758	663,511	666,275	669,051	671,839	**$7,880,602.50**

Appendix G - Final Presentation and Q&A

G.1 - Final Presentation Summary

On December 2nd, 2014, the project team presented their implementation strategy for Tremblay Station to City of Ottawa staff, councillor representatives, professional planners, stakeholders, and planning students. The 30 minute presentation took place at Ottawa City Hall and was conducted by Thomas Fehr, Jordan Suffel, and Shazeen Tejani. Additional time was allocated for feedback and addressing questions regarding the findings. The following section summarizes the presentation structure and content, and the questions that followed.

The goal of the presentation was to inform the audience on the final implementation strategies and recommendations developed by the project team. The presentation clearly highlighted the distinction between planning and implementation, and defined success in terms of transit-oriented development, as informed by North American precedents. A brief site background and SWOC analysis were provided to address how the city could mitigate challenges and capitalize on existing and future opportunities.

Following the background context, the presenters introduced the team's implementation strategies which were divided into four themes: Guiding Future Development; Financing Development; Incentivizing Development; and Facilitating Development. The recommended implementation strategies can be found in Chapter 11.

Image G.1 - Presenting at Ottawa City Hall

To demonstrate how the recommended strategies can work in a site specific context, a financial demonstration plan was presented to the attendees. The presentation concluded with a projected implementation timeline, which clearly outlined the 'Quick Wins','Short-Term', and 'Long-Term' recommendations available to the City of Ottawa.

G.2 - Questions and Answers

The office-building site is almost as large as a City block—have you put any thought into connections/shortcuts through the site?

Our configuration focused building frontage on Conventry Road. Specific design of the block was not considered as the scope of our project focused on implementation strategies. However, when looking at the site and its functionality, additions to the parking structure and the potential for phase two of an additional office building was considered. Connections through the site would likely connect the pedestrian bridge to the parking structure and through the site to the office building and Conventry Road. This site will fill the void between the baseball stadium and other connecting uses surrounding the site.

Image G.2 - Addressing questions from the audience

The project seems to bring in office-oriented development and a parking structure (which comes first in terms of development?) Given that activities (ie. the stadium) will be limited to weekends, how does that prevent people from driving or relying on automobiles?

The parking structure will only add 50 additional parking spaces to the site. The structure will serve to provide parking for both the stadium and the office building as a multifunction use. The parking structure and office building could be built in one or two phases, depending on the developer and the market. The structure may seem contradictory however, it allows the City to capture the value of the land and consolidate existing parking in the area. Therefore, density will increase and the City could use this site as a bus transit hub (as suggested by a City of Ottawa staff member during the Q&A period). Many of the precedents examined used higher parking costs to deter automobile use. This strategy could be used through paid parking. This payment structure has been incorporated into the Pro Forma with $100 monthly parking for office users and $20 event parking for stadium users. Daytime public parking fees could also be incorporated into the parking structure revenue scheme. Transit-oriented development also does not happen quickly; overtime parking requirements may not be as high and uses can be adjusted, however the current demand has to be considered as the structure could be used by multiple property owners around the site if demand were to decrease. An additional comment from City staff pointed to the zoning requirements for minimum density but no minimum parking obligations. Again there is a sweet spot; if parking costs are more than a monthly bus pass then people will be more likely to take transit.

There is also an opportunity to add an additional use to the site. Currently there is no bus transit hub in the area. Buses still need to get to the LRT station. The baseball stadium site could

be used as a transit hub with a direct pedestrian connection over Highway 417. The community to the north of the Tremblay site needs transit access to the LRT line and this bus transit hub could provide this connection. Parking can be used as a mechanism to influence usage and LRT activity.

With regards to development streamlining and shortening the timeline of this process, what are some suggestions or ways to shorten review time?

We recommend that the City of Ottawa adopt a Development Permit System (DPS) that combines the zoning, site plan, and minor variance processes into one application and approval process, and allows for variations from minimum and maximum standards for height, density, and lot area. It delegates the approval authority to a committee set up by City council, rather than the planning department, who permits a range of conditions to be imposed before development approval. The use of a DPS reduces the approval timeline from 120 days to 45 days. In addition, once a DPS is in effect, third party appeals cannot be made to the Ontario Municipal Board, which also serves to the streamline the approval process.

In case studies that streamlined development applications, did you consider how the planning legislation in these jurisdictions might differ from Ontario legislation?

While we looked at a variety of examples from across Canada and the United States, we ensured our recommended implementation strategies focus only on the use of tools that are currently permitted under provincial legislation. To streamline development approvals in order to promote growth, Ontario Regulation 608/06 enables local municipalities to use the Development Permit System (DPS). The project team considered the City of Brampton's (Ontario) use of DPS as an example for how the City of Ottawa would be able to streamline the development approval process in the Tremblay Station area. Brampton developed a DPS for its downtown Main Street North Area, an area transitioning from a residential to mixed-use neighbourhood. The DPS allowed for expedited changes to take place with a single approval process, thereby supporting new investment and redevelopment in the area.

The TOD checklist in Edmonton is regularly used as a negotiating tool, how do you see a checklist like this working for the City of Ottawa?

The TOD checklist is primarily intended to guide future development as part of the City's existing site plan review process. The City of Ottawa would have to tailor the checklist to match the priorities for development surrounding Tremblay Station as outlined in the TOD Plan. The benefit of adding a checklist to the review process is that it measures whether proposed development will meet the objectives of the TOD

Image G.3- Addressing questions from the audience

Plan and thereby ensures that new development is transit-oriented. While it would be possible for Ottawa to also use a TOD checklist as a negotiating tool with developers, it is not its intended use as a part of the recommended strategies for implementing the Plan. The existing zoning allows a great deal of flexibility for developers, limiting the need for negotiation. In addition, the current market conditions would need to improve before the checklist would be an effective negotiation tool.

Considering examples from the United States, which ones had assistance at the state level? We put a lot of emphasis on the City of Ottawa, how can responsibilities be pushed higher up?

The team looked at various case studies that had federal level support. Most notably, Sheridan Station in Denver, Colorado has more recently applied for state and federal funding to stimulate development around transit. A newly implemented TOD Plan (2014) identifies improvements to streetscapes and pedestrian connections surrounding the station. This project has been submitted for funding from the Metropolitan Planning Organization (MPO) and the Denver Regional Council of Governments (DRCOG) for Transportation Improvement Program Funding. Additionally, the 20 Minute Neighbourhood Strategy has been funded by the DRCOG and addresses implementation projects and strategies to create the building blocks for a '20-minute neighbourhood' surrounding Sheridan Station.

The team examined a number of precedent case studies for this project, what case study was the most successful in promoting development surrounding a TOD?

Fruitvale Station was one of our exemplary case studies, as it used many of the financial mechanisms that we included to in our presentation (TIFs, grants, bonds, and a parking garage as a means to finance parts of the project). Additionally, it was one of the most successful case studies because of its use of Implementation Agencies. The project was made possible through the cooperation and collaboration of a multitude of different stakeholders including BART, Alameda County Transit, Metro Transit Commission, Alameda County Congestion Management Agency, FDC, and Unity Council.

If there is no city money or provincial contributions, will private developers not develop if there is no financial push? Do cities have to get involved?

It is highly recommended that Cities get involved. However, the City of Ottawa does not have to contribute money directly into the site area if Tax Increment Financing is used. In the majority of American case studies, Tax Increment Financing led to successful development around the stations. In order to still provide incentives for development through infrastructural improvements, TIF can be used without contributing towards additional City debt. Without a shift in market conditions, development will take a significant amount of time to realize around Tremblay Station without City involvement. These market conditions may also change once the LRT is fully installed and functioning. A number of American case studies were fully financed and developed by private developers but only once market conditions were favourable to do so.

Glossary

Bus Rapid Transit (BRT): A high quality, high capacity rapid transit system that, in many ways, improves upon traditional rail transit systems. A BRT system generally has specialized design, services and infrastructure to improve system quality and remove the typical causes of delay. Sometimes described as a "surface subway", BRT aims to combine the capacity and speed of light rail or metro with the flexibility, lower cost and simplicity of a bus system.

Capital Improvement Plans: Financial mechanism that identifies capital projects that are to be funded during the planning and implementation phase of a development. It outlines the amount of funds that will be expended in each year of the project and how the expenditure will be allocated.

Capitalization rate (Cap rate): Determined by dividing the property's net operating income by its purchase price. Generally, high cap rates indicate higher returns and greater perceived risk.

Class A Office: Most prestigious buildings competing for premier office users with rents above average for the area. Buildings have high quality standard finishes, state of the art systems, exceptional accessibility, and a definite market presence.

Class B Office: Buildings competing for a wide range of users with rents in the average range for the area. Building finishes are fair to good for the area. Building finishes are fair to good for the area and systems are adequate, but the building does not compete with Class A at the same price.

Class C Office: Buildings competing for tenants requiring functional space at rents below the average for the area.

Community Improvement Plan (CIPs): A plan that sets a range of local and/or regional planning and economic development goals. It can be used to incentivize and stimulate development in a defined area. It may include a combination of different financial programs that can be used for public open space, facade improvements, and brownfield remediation

Development Intermediary: The establishment of a publicly-run development agency that works to either acquire land and/or realize goals for development on publicly owned land.

Development Permit System (DPS): A land use planning tool which helps to promote development, enhance environmental protection and facilitate key priorities, including: community building, brownfield redevelopment, greenspace preservation and environmental protection. Site plan, minor variance, and zoning processes are combined into one application and approval process.

Discount rate: The interest rate used to calculate the present value of future cash flows. It is the interest rate used to calculate an amount where one would be indifferent between receiving a dollar now and a dollar in the future.

Financial feasibility: The outcomes of a study which investigates whether a project is viable after taking into consideration all probable revenues and expenses. It is typically used to evaluate whether or not the project meets a lender's criteria for financing

Floor Area Ratio (FAR): The ratio of the gross floor area of a building to the area of the land it is built on.

Form-based code: A means of regulating development to achieve a specific urban form. Form-based codes create a predictable public realm by controlling physical form primarily, with a lesser focus on land use, through municipal regulations.

Greenbelt: A 203.5 square kilometres crescent of land within the boundaries of the City of Ottawa, in which real estate development is strictly controlled.

Gross Density: Measure of dwelling unit or job concentration within a defined area that includes lands set aside for transportation uses.

Gross Floor Area (GFA): The sum of the areas of each storey of a building, structure or part thereof, above or below established grade, excluding storage below established grade and a parking structure above or below established grade, measured from the exterior of outside walls, or from the mid-point of common walls.

Holding period: The length of time a developer is going to keep ownership over the development

Implementation Agency: An agency that carries out the development, maintenance, financing and/or operation of the project, depending on the mandate of the agency being employed.

Interim use provision: A provision within a zoning by-law that permits a specific land use for the time being. Interim use provisions are often used to support phasing of development.

Internal Rate of Return (IRR): the relationship between the present value of the cash flows and the amount of capital that is invested. IRR is the discount rate at which the present value of the future cash flows equals the initial investment. Developers typically look for an IRR between 11-15%. IRR gives the return on investment in a percentage.

Local Improvement District: When a group of local property owners split the costs of infrastructure improvements within a given area. These improvements include, but are not limited to streetscaping, the construction of sidewalks, and the installation of stormwater management systems.

Light Rail Transit (LRT): A system of railways usually used for medium-capacity local transportation in urban areas. Light rail transit lines are more segregated from street traffic than streetcars, but less so than are heavy rail lines.

Net Floor Area: The usable floor area of a building, for the function intended, which is based on the gross floor area (GFA) of the building minus sub-areas of the building such as parking garages, walls, and stairwells.
Net Operating Income (NOI): The income earned from operations after all expenses are subtracted from gross revenue.

Net Present Value (NPV): the difference between the discounted value of the finished project and its development costs. NPV represents the developer's profit. The value must be positive in order to justify an investment.

Public-Private Partnership (P3): A medium-to-long term collaborative approach between governments and the private sector for the purpose of developing and/or maintaining public infrastructure, projects, or services.

Request for Proposal (RFP): A solicitation made often through a bidding process, by an agency or company interested in procurement of a commodity, service or valuable asset, to potential suppliers to submit business proposals.

Real Estate Investment Trust (REIT): A REIT is a company that owns, and in most cases, operates income-producing real estate. REITs own many types of commercial real estate, ranging from office and apartment buildings to warehouses, hospitals, shopping centers, and hotels. The REIT structure was designed to provide a real estate investment structure similar to the structure mutual funds provide for investment in stocks. In Canada REITs are required to be configured as trusts and are not taxed if they distribute their net taxable income to shareholders.

Sensitivity analysis: a technique used to calculate the outcome of a decision if a situation in the development project turns out to be different. This is done by changing key assumptions in the pro forma.

Site plan control by-law: Site plan control is a form of development control provided to municipalities by Ontario's Planning Act. No one can undertake any development which is subject to site plan control unless the City has reviewed and approved certain plans. Once the plans are approved, a site plan agreement is generally executed.

Special purpose vehicle: A subsidiary of a company which is bankruptcy remote from the main organisation (i.e. protected even if the parent organisation goes bankrupt). The actions of a SPV are usually very tightly controlled and they are only allowed to finance, buy and sell assets. The purpose of a Special-Purpose Vehicle is to allow the parent company to make highly leveraged or speculative investments without endangering the entire company. If the SPV goes bankrupt, it will not affect the parent company.

Strengths, Weaknesses, Opportunities, Challenges (SWOC): A SWOC analysis is a structured planning method used to evaluate the strengths, weaknesses, opportunities and challenges involved in a project. It involves specifying the objective of the project and identifying the internal and external factors that are favorable and unfavorable to achieve that objective.

Tax Increment Financing (TIF): are used to finance local infrastructure, environmental cleanup, or land assembly. TIF is a way to encourage redevelopment through these strategic investments. TIF is defined as the creation of additional tax revenues based on broadening the tax base instead of raising the rate of taxes or creating additional taxes.

Tax Increment Equivalent Grant (TIEG): used to provide grants or rebates to compensate property owners for part of the property tax increase resulting from new development. Instalments are used to pay off the TIEG, usually over a period of 10 years. During year one, 100% of the tax increase is refunded with the percentage declining over the 10 year period.

Transit-Oriented Development (TOD): A mixed-use residential and commercial area designed to maximize access to public transport, and often incorporates features to encourage transit ridership.

Zoning By-Laws: Legal devices employed by municipal governments to designate and regulate permitted uses on defined areas of land.

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