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TECHNICAL MEMORANDUM

To:	Livia McEachern, P.Eng.	**RVA:**	226408
From:	Michael Kong, C.E.T. Altaf Hussain, P.Eng.		
Date:	April 10, 2025		
Subject:	Transportation Master Plan – Appendix 8 – Goods Movement Technical Memorandum – City of Welland		

1.0 Introduction

Historically, the City of Welland has served as a hub for commerce due to the first Welland Canal opening in 1829, with further support from the Welland Railway opening in 1856 and the Canada Air Line Railway opening in 1869 (later becoming part of the Great Western Railway in 1871)[1]. In Welland today, the movement of goods is still largely facilitated by the Canal and rail corridors, although the increased traction of the trucking industry has added an additional facet to the goods movement network. According to the Niagara Region Transportation Master Plan (TMP), a substantial increase of truck volumes within the Region is forecasted, with daily truck volumes in Niagara Region expected to grow by 57% from 2011 to 2041. With respect to the Welland TMP study, the goods movement review focuses primarily on optimizing truck routes within the City of Welland.

The trucking industry is an integral component of Ontario's economy, with over 200,000 Ontario residents making their livelihood in the trucking industry, and an estimated 90% of deliveries for consumer products and food stuffs interacting with trucks at some point in their lifecycle (Statistics Canada). In the context of the City of Welland, the anticipated resurgence of industrial-type employment will rely heavily on the truck industry; therefore, facilitating the safe and efficient movement of freight will be a cornerstone of Welland's economic vitality over the next twenty years.

[1] Gayler, H., & Jackson, J. (2015). Welland Canal. In *The Canadian Encyclopedia*. Retrieved from https://www.thecanadianencyclopedia.ca/en/article/welland-canal

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A “truck route” is a corridor that is formally designated for use by certain types of trucks. The network of these corridors is coined the “truck route network” or “goods movement network”—oftentimes used interchangeably although herein referred to as the “goods movement network”. The preparation and implementation of a goods movement network requires meticulous planning, with consideration given to the trucking industry, residents, and the transportation network as a whole.

2.0 The Existing Goods Movement Network

The existing goods movement network, based on the information provided by the City, is comprised of a spine network of provincial and regional corridors with additional infill links being provided in the central Welland area and near industrial/commercial land uses. The existing goods movement network is shown in Figure 1.

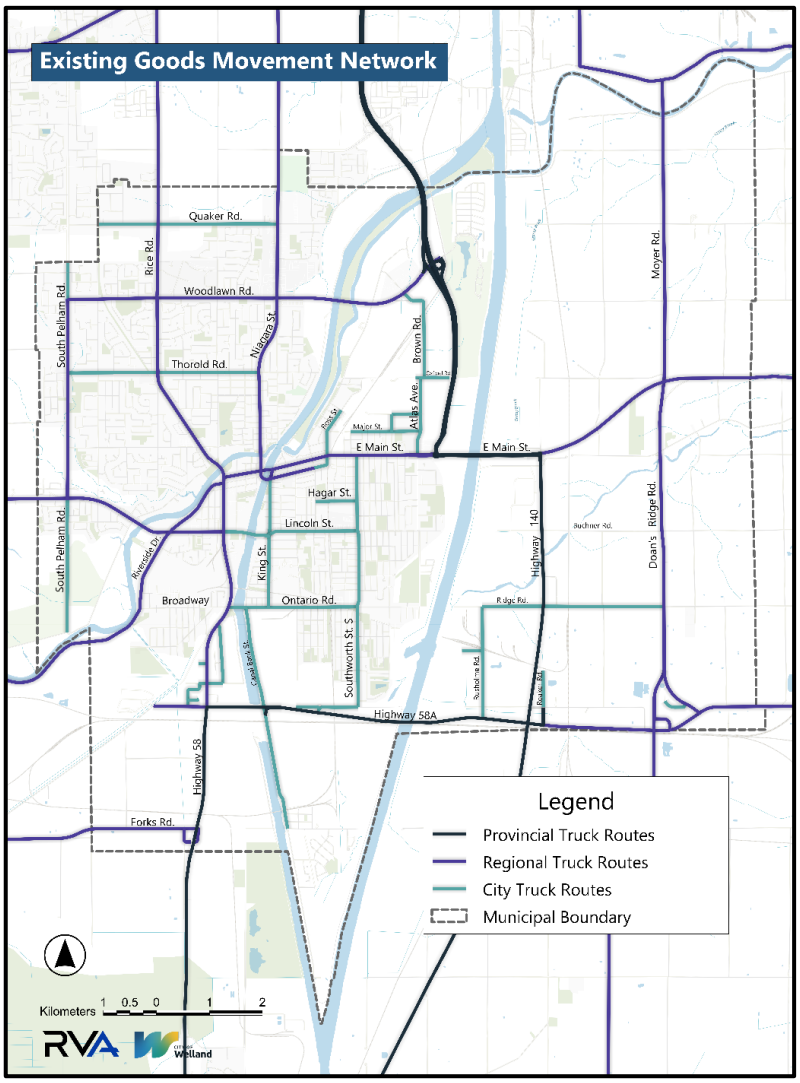

Figure 1 – Existing Goods Movement Network, City of Welland

Signage

The City of Welland utilizes a restrictive signage system through the use of Rb-62 signage (see Figure 2). The restrictive signage method is a common approach for Ontario municipalities, with many other municipalities also adopting a permissive signage system through the use of Rb-61 signage (see Figure 3). In some cases, a hybrid signage system is adopted (i.e., one that utilizes both Rb-61 and Rb-62 signage). For areas where truck traffic is only prohibited during certain times of the day or periods of the year, Rb-62A signage (see Figure 4) can be utilized.

Figure 2 – Rb-62 Signage (Restrictive) – OTM Book 5

Figure 3 – Rb-61 Signage (Permissive) – OTM Book 5

Figure 4 – Rb-62A Signage (Restrictive) – OTM Book 5

3.0 Creating a Goods Movement Network

Purpose

The purpose of designating certain routes for use by trucks is to maximize the needs of the trucking industry while minimizing the adverse impacts to sensitive areas such as residential land uses or corridors with significant pedestrian and cyclist volumes. The intent of the designated network is for truck drivers to utilize designated corridors whenever possible, with the understanding that there are circumstances where it is not possible to do so. An example of this would be an at-home delivery—where in this case, the truck driver can be reasonably expected to utilize the designated truck network for majority of the trip, however, they will likely have to deviate from the designated network to complete the delivery.

In summary, the objective of a goods movement network is not to prohibit the movement of trucks, but rather to: (1) encourage trucks to travel along corridors that are designed for the movement of large vehicles; (2) optimize commerce by keeping goods along corridors with sufficient capacity; (3) enable the growth of Welland's industrial sites and economy; and (4), minimize the unnecessary use of residential streets or sensitive areas by truck drivers.

Methodology

There are numerous factors that could influence the feasibility of a truck route. The transportation characteristics that should be considered include, but are not limited to:

- Existing truck routes
- Adjacent land uses
- Water crossings/bridges
- Roadway classification
- Number of lanes
- Traffic operations
- Pedestrian/cyclist activity
- Noise

Furthermore, a geotechnical investigation should be completed prior to designating a corridor as a truck route to ensure that the subject corridor has the structural integrity to accommodate trucks year-round. In certain cases, it may be appropriate to have corridors that are only designated as truck routes during certain times of the year.

4.0 Adapting the Network

The existing goods movement network was reviewed using the aforementioned factors, in addition to future development and draft land uses from the ongoing Official Plan (OP) Update. This review was completed to ensure that the existing goods movement network will accommodate the future needs of freight vehicles, while also balancing the impacts to potentially sensitive areas. The employment growth areas are shown in Figure 5.

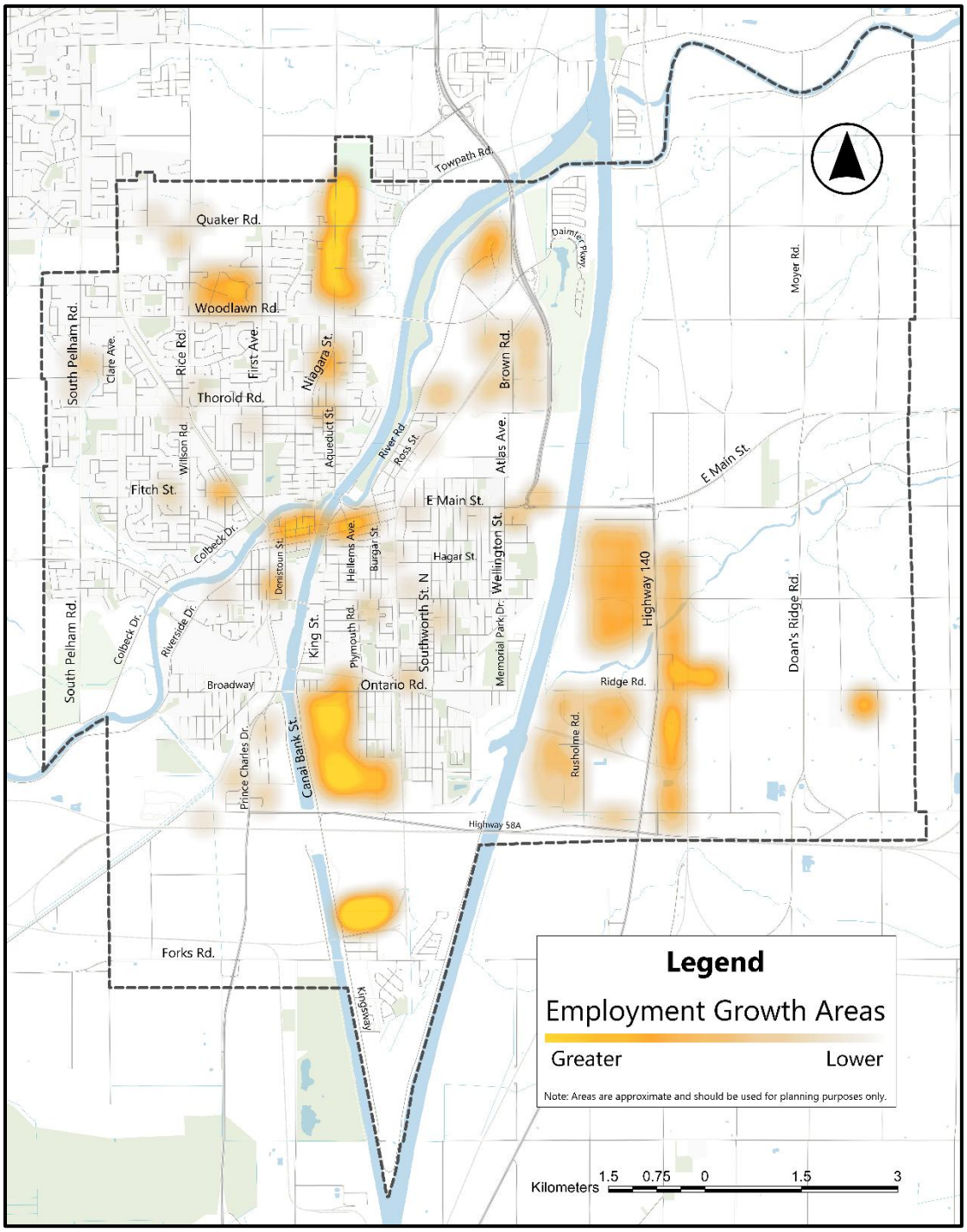

Figure 5 – Employment Growth Areas

5.0 The Proposed Goods Movement Network

Proposed Removals

The review identified that Canal Bank Street, between Highway 58A and Forks Road East, is no longer suitable as a goods movement corridor. The alternative route that should be used to access the Dain City area is the Forks Road bridge connection, which has been re-opened to vehicular traffic as of August 16th, 2024, following its closure in 2018. Moreover, the section of Oxford Road, east of Brown Road, should be removed a goods movement route as the proposed recommendations include a Highway 406 overpass into a residential area.

Proposed Additions

Based on the foregoing removal of Canal Bank Street, it is recommended that the section of Forks Road, east of Highway 58, be designated as a goods movement corridor as a replacement route. Other recommended additions include Buchner Road east of Doan's Ridge Road, both Primeway Drive and River Road north of Woodlawn Road, Power Drive, Clark Street, Provincial Street, Municipal Street, Silverthorn Street, Enterprise Drive, and the western extremity of Ridge Road. These additions are outlined in Table 1 below.

Table 1 – Proposed Additions to the Goods Movement Network, City of Welland

Street	From	To	Times/Days
Buchner Road	Western Limit	Doan's Ridge Road	All Times/Days
Clark Street	Prince Charles Drive South	Eastern Limit	All Times/Days
Enterprise Drive	Highway 140	Ridge Road	All Times/Days
Forks Road	Highway 58	Kingsway	All Times/Days
Municipal Street	Provincial Street	Federal Road	All Times/Days
Power Drive	Southern Limit	Northern Limit	All Times/Days
Primeway Drive	Woodlawn Road	River Road	All Times/Days
Provincial Street	Southern Limit	Northern Limit	All Times/Days
Ridge Road	Western Limit	Doan's Ridge Road	All Times/Days
River Road	Woodlawn Road	Power Drive	All Times/Days
Silverthorn Street	Western Limit	Highway 140	All Times/Days

In addition, there are numerous areas within the Welland that are zoned for industrial/commercial but are yet to be fully developed (i.e., along the Highway 140 corridor,

the lands on the southeast corner of Ontario Road and Canal Bank Street, etc.). In the event that new public roadways are introduced in these areas at the time of development, it is recommended that these roadways are to be designated as goods movement routes.

Proposed Conditional Additions

The proposed recommendations of the TMP include a connection between Downs Drive and Oxford Road. Concurrently with this implementation, it is recommended to designate Ross Street between Bruce Street and Downs Drive, as well as Oxford Road between Ross Street and Atlas Avenue, as goods movement corridors.

Signage

Based on the context of Welland's spine network of regional and provincial truck routes with minimal infiltration into the residential areas, it is recommended that the City maintain a restrictive system. For potentially sensitive areas such as Ross Street, the City may utilize Rb-62A signage to restrict truck activity at certain times of the day.

Timing of Implementation

It is understood that the proposed corridors are largely existing routes, some of which are exhibiting signs of wear-and-tear (i.e., Ross Street). It is recommended that the upgrades to commercial vehicle standard be implemented at the time of road re-construction along each corridor.

The foregoing recommendations are illustrated in Figure 6, and the existing and proposed Goods Movement Routes are shown in Table 2.

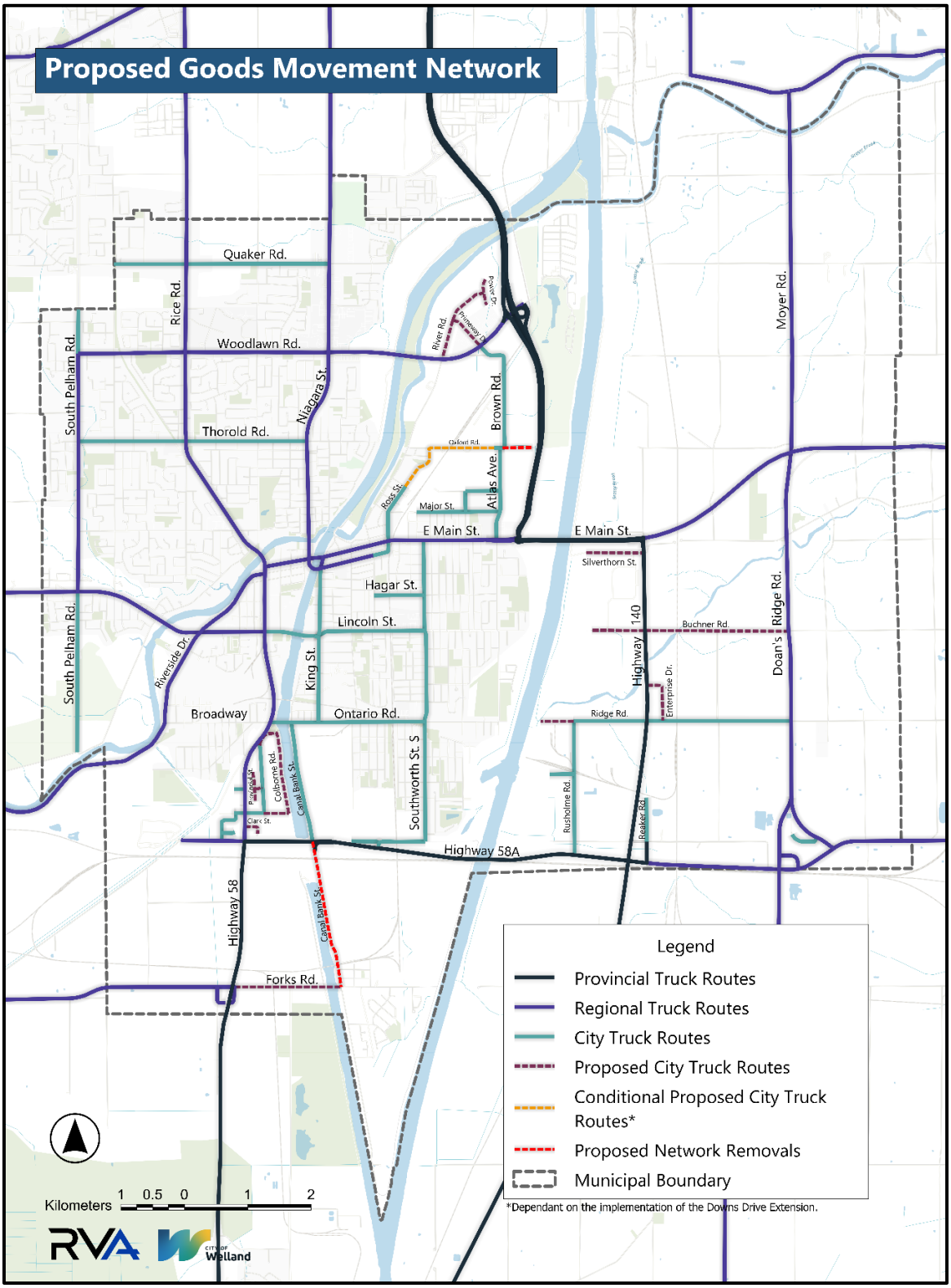

Figure 6 – Proposed Goods Movement Network

Table 2 – Existing and Proposed Goods Movement Routes, City of Welland

Street*	From	To	Times/Days
Atlas Avenue	Major Street	Oxford Road	All Times/Days
Belmont Street	Western Limit	Prince Charles Drive South	All Times/Days
Brown Road	Oxford Road	Woodlawn Road	All Times/Days
Buchner Road*	**Western Limit**	**Doan's Ridge Road**	**All Times/Days**
Canal Bank Street	Townline Tunnel Road	Ontario Road	All Times/Days
Centre Street	Harold Avenue	Atlas Avenue	All Times/Days
Clark Street*	**Prince Charles Drive South**	**Eastern Limit**	**All Times/Days**
Crowland Avenue	Lincoln Street	East Main Street	All Times/Days
Darte Drive	Vaughan Road	Eastern Limit	All Times/Days
Enterprise Drive*	**Highway 140**	**Ridge Road**	**All Times/Days**
Federal Road	Shaw Street	Prince Charles Drive South	All Times/Days
Federal Road	Federal Road	Colborne Road	All Times/Days
Forks Road*	**Highway 58**	**Kingsway**	**All Times/Days**
Hagar Street*	Burgar Street	Crowland Avenue	All Times/Days
Harold Avenue	Major Street	Centre Street	All Times/Days
Humberstone Road	Townline Tunnel Road	Southworth Street South	All Times/Days
Humberstone Road	Western Limit	Humberstone Road	All Times/Days
Major Street	Myrtle Avenue	Atlas Avenue	All Times/Days
Municipal Street*	**Provincial Street**	**Federal Road**	**All Times/Days**
Nidels Crescent	Western Limit	Doan's Ridge Road	All Times/Days
Ontario Road	Prince Charles Drive South	Southworth Street	All Times/Days
Oxford Road	Atlas Avenue	Brown Road	All Times/Days
Power Drive*	**Southern Limit**	**Northern Limit**	**All Times/Days**
Primeway Drive*	**Woodlawn Road**	**River Road**	**All Times/Days**
Provincial Street*	Southern Limit	Northern Limit	All Times/Days
Quaker Road	Clare Avenue	Niagara Street	All Times/Days
Reaker Road	Netherby Road	Northern Limit	All Times/Days
Ross Street*	**Burgar Street**	**Bruce Street**	**7:00AM – 7:00PM**

Street*	From	To	Times/Days
Rusholme Road	Townline Tunnel Road	Ridge Road	All Times/Days
Shaw Street	Vaughan Road	Colborne Road	All Times/Days
Silverthorn Street*	**Western Limit**	**Highway 140**	**All Times/Days**
South Pelham Road	Woodlawn Road	Municipal Boundary	All Times/Days
South Pelham Road	River Road	Webber Road	All Times/Days
Southworth Street North	Ontario Road	Lincoln Street	All Times/Days
Southworth Street South	Humberstone Road	Ontario Road	All Times/Days
Thorold Road	South Pelham Road	Niagara Street	All Times/Days
Udine Avenue	Western Limit	Rusholme Road	All Times/Days
Vaughan Road	Townline Tunnel Road	Shaw Street	All Times/Days
Wellington Street	East Main Street	Major Street	All Times/Days
Proposed Removals			
Canal Bank Street	**Townline Tunnel Road**	**Forks Road East**	**All Times/Days**
Oxford Road	**Brown Road**	**Eastern Limit**	**All Times/Days**

**Proposed addition or modification to Times/Days*