



January 29th, 2021

# Site Selection & Justification Report

## Wireless Internet Tower Site

158 Main Street, West Lorne, ON N0L 2P0

TekSavvy Solutions – contracted to:  
FONTUR International  
70 East Beaver Creek Road, Suite 22  
Richmond Hill, ON L4B 3B2

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## Introduction

The on-going increase in the use of broadband internet for personal, business and emergency purposes requires the development of new wireless communications infrastructure. This infrastructure includes new antennas and their support structures which are required meet the demands of increased capacity and broadening service areas. Without antennas in close proximity to the internet device, wireless communication is simply not possible.

The use of broadband internet is firmly entrenched into Canadian society and economy. Canadians currently use more than 30 million wireless devices on a daily basis including, wireless phones, pagers, mobile radios, mobile satellite phones and broadband internet devices.

As part of its on-going commitment to provide high quality internet services, Teksavvy Solutions has determined that a wireless communications facility is required in the Municipality of West Elgin.

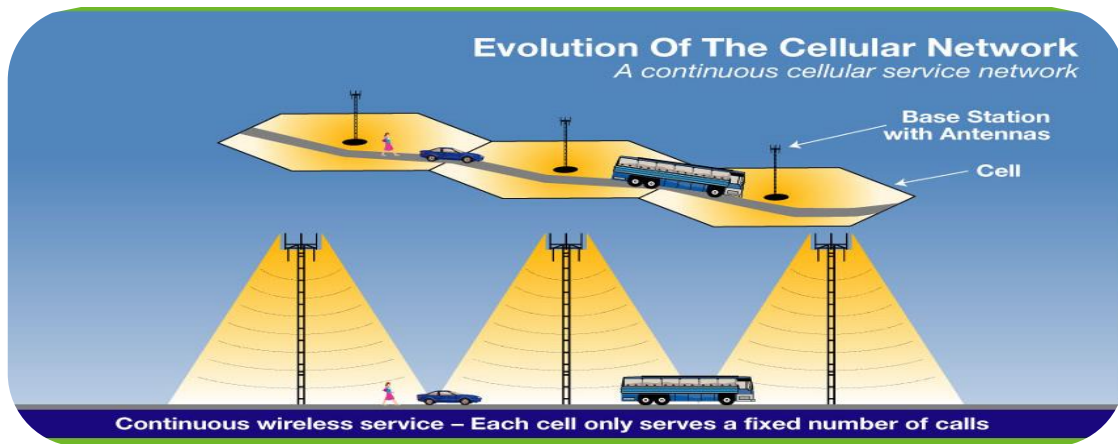
This report documents Teksavvy's site selection process, the details of the structure, the applicable Innovation, Science, and Economic Development, (ISED) provisions, and the compliance of with municipality's protocol for development of towers.

As a general matter, the Teksavvy Solutions site selection process is a balanced exercise that must meet our network coverage objectives, having regard for land use constraints and its obligation to its customers to provide a high quality of service.

Wireless communications facilities are regulated by the Federal Government under ISED and need not follow municipal or provincial planning approvals. However, in recognition of the policy vacuum which exists as a result of that circumstance, ISED requires that wireless communication proponents consult with land use authorities.

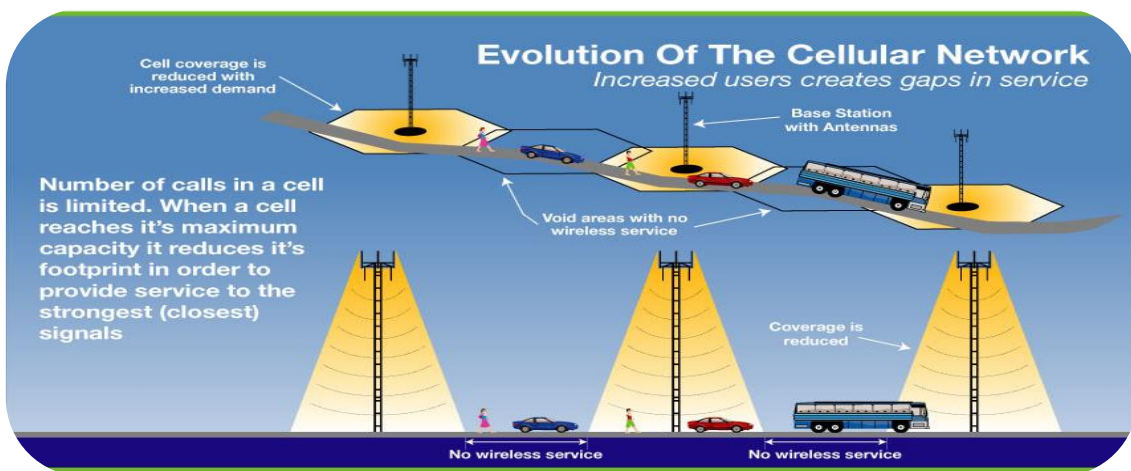
## Purpose - Background & Coverage Requirement

A radio antenna and a tower are the two most important parts of a radio communication system. The antenna is needed to send and receive signals for the radio station. The tower raises the antenna above obstructions such as trees and buildings so that it can send and receive these signals clearly. Each radio station and its antenna system (including the tower) provide radio coverage to a specific geographic area, often called a cell. The antenna system must be carefully located to ensure that it provides a good signal over the whole cell area, without interfering with other stations and can "carry" a signal as the user moves from cell to cell.



**Figure 1**

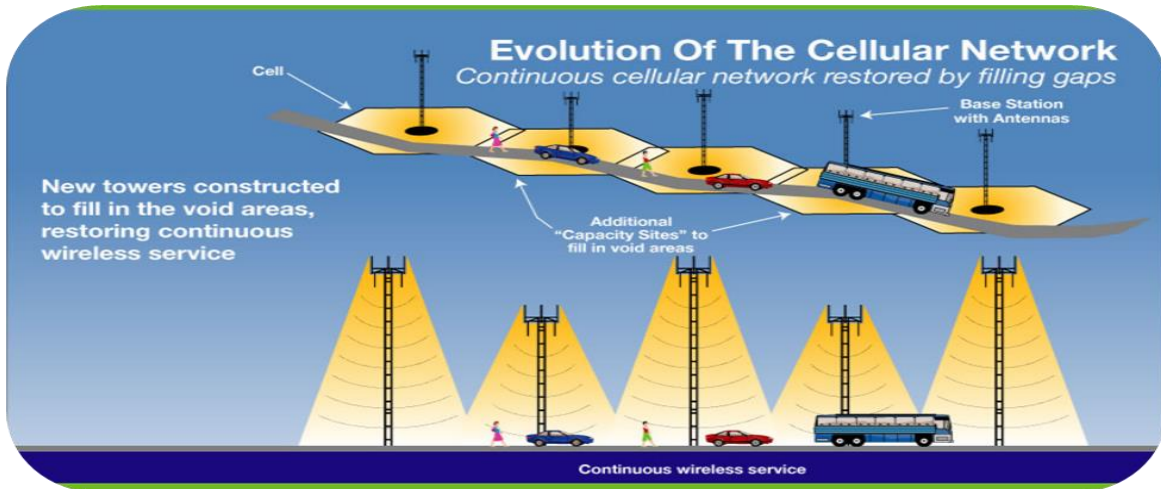
If the station is part of a radio network, the number of stations needed also depends on how many people are using the network. If the number of stations is too small, or the number of users increases people may not be able to connect to the network, or the quality of service may decrease.



**Figure 2**

As the number of users exceeds the capacity of the radio station to receive and send data, the coverage area for the cell shrinks and the shrinkage between cells creates coverage holes.

As demand increases for mobile data and new internet services, additional towers are required to maintain or improve the quality of service to the public and restore contiguous wireless service.



**Figure 3**

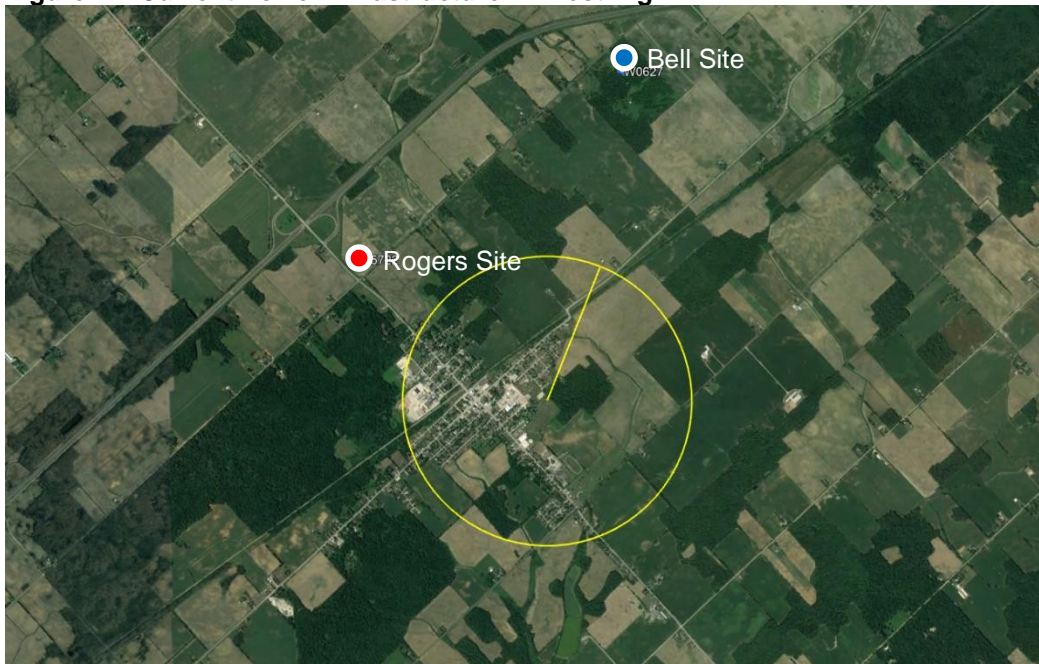
In this case, Teksavvy's Radio Frequency Engineering department has determined the need for a service upgrade to adequately provide continuous coverage and service to their existing and future customer base in the Municipality of West Elgin. Currently, there is a lack of high-speed broadband, and existing services are burdened by a combination of poor data quality and unreliability. In many cases, the internet services are operating at dial-up speed, a standard that has long since been surpassed in other parts of Canada. The result of this situation is on-going customer complaints, high "dropped service" rates, and in extreme circumstances, the potential inability to use the internet service when it may be absolutely critical in an emergency situation.

Teksavvy is committed and mandated by their license to ensure the best coverage and service to the public and private sectors. The existing site in West Elgin is extremely important in terms of providing coverage to an under-served area. Teksavvy wants to provide infrastructure necessary to ensure that both residents and visitors to the area have access to the broadband internet service they are accustomed to in other parts of the country.

Teksavvy's objective for this location is to provide the infrastructure for reliable coverage and capacity into residential, commercial, recreational and agricultural areas in West Elgin. The objective is to have coverage throughout the Municipality of West Elgin, specifically in residential areas where demand wireless broadband internet services is high.

A drive test was conducted by our RF engineers along area roads, such as Graham Road, Main Street, and other small sideroads, for the purpose of determining our coverage objectives. Very weak coverage areas with poor signal strength were found around and along these major roads and sideroads, which generate significant coverage requirements as a result of the density of users and lack of existing coverage.

**Figure 4 – Current Tower Infrastructure in West Elgin**



## Identification & Evaluation of Different Site Location Options

Teksavvy's existing coverage in the Municipality of West Elgin is in need of upgrading. Like all other infrastructure, it must keep up with changes in the ways people use technology, as well as general population growth of the area. **Figure 4** illustrates the existing wireless internet infrastructure in the area of coverage need. (Existing infrastructure is represented by markers on the map.)

Based on research by Teksavvy's Radio Frequency Engineering teams, a general search area location was chosen centered south-east of the intersection of Graham Road and Main Street. A site within the search ring on the map below (**Figure 5**) would, from an engineering point of view, meet the coverage objectives of Teksavvy's engineers. Typically, in rural areas, the search area can have a radius of between 500 and 1000 metres.

**Figure 5 – Search area**



A review of existing internet installations within the search area, as illustrated in **Figure 4**, revealed that there are no other existing towers that would meet Teksavvy's coverage requirements (i.e., within the search area). The nearest built antenna installation is a Rogers 60m self-support tower. Given the structure's distance from the centre of the search area (around 1.5km) and the type of structure, it is not a viable co-location option. As a result, a new purpose-built tower for Teksavvy is required.

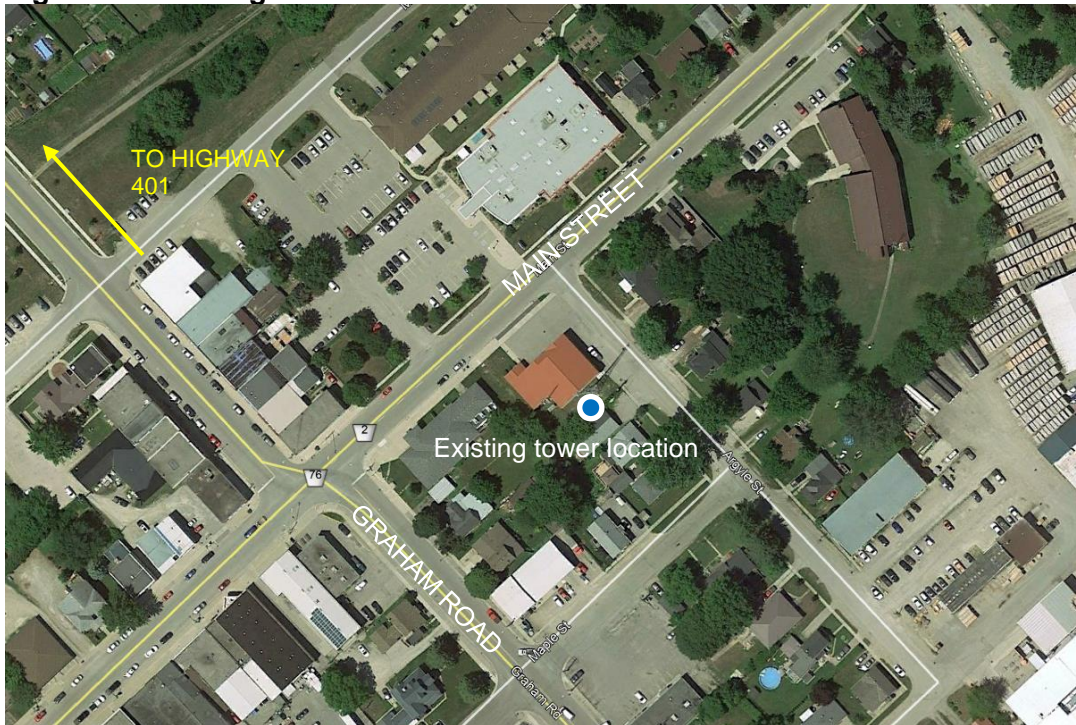
After visiting the search area and reviewing ISED's CPC 2-0-03 Issue 5, located a number of potential sites that would meet engineering requirements as well as the standards outlined in the CPC protocol.

### **Existing Site Location**

The location which Teksavvy created a wireless internet site in West Lorne is municipally known as 158 Main Street, West Lorne, ON.

The property's legal description is PT LT 17-18 PL 107 ALDBOROUGH AS IN WL1537 & WL1346 & PT 1 11R6954 T/W E389601; WEST ELGIN

**Figure 6 – Existing location**



The site itself is located approximately 50 metres south-east of Main Street and 60 metres north-west of Maple Street.

The geographic coordinates for the site are as follows;

Latitude (NAD 83) N 42° 36' 14.40"

Longitude (NAD 83) W 81° 36' 19.95"

Teksavvy's existing tower accommodates wireless antennas for the purpose of providing wireless broadband internet coverage and network capacity. To the end user, this translates into Teksavvy's 4G/LTE-based broadband internet network, with speeds of up to 25 Mbps. Compared to current services this is a vast improvement.

Towers are limited in terms of both allowable space and engineering capacity. Each antenna array requires a separation of vertical space, so they do not cause interference with each other.

Teksavvy strongly supports co-location on existing towers and structures and designed the tower to accommodate future carriers on the tower. The use of existing structures minimizes the number of new towers required in a given area and is generally a more cost-effective way of doing business. In this particular case, Teksavvy was unable to find a co-locatable structure within their search area.

As a result, a new tower was built. Although it is not as ideal as co-location, this additional tower will allow for future co-location and reduce tower proliferation for the Municipality of West Elgin.

## Description of Existing Tower

The existing system for this location is a self-support internet tower that is 44.5 metres in height. The site occupies a compound area of approximately 10m x 10m. The tower is located within a secure fenced-in compound, with a 2.4-metre high chain-link fence topped with barbed wire. The compound includes an electronically-monitored walk-in radio equipment cabinet.

Teksavvy has installed antenna and microwave equipment. The tower provides wireless internet services for subscribers to Teksavvy's services.

## Justification of Existing Siting

Prevalent in our search area of West Elgin are agricultural uses, single-family homes and forested areas. The existing tower has been sited on a municipal property with fewer residential uses nearby. In addition to financial compensation to the municipality, this location also borders an existing industrial area in order to respect the local environment and to mitigate any potential impacts. Most notably, this location is central to West Lorne which will allow the tower to provide reliable internet service to the township.

## Statement Indicating Need for Tower Height

The existing tower has been designed at a height of 44.5 metres. Due to the large coverage and capacity hole currently in our Teksavvy's network in this area of West Elgin, this height is required to provide optimal coverage to the area, and to connect via line-of-sight (LOS) to other surrounding towers in the network.

A self-support tower at a height of 44.5 metres also allows for two or more carriers or other broadcasters would be able to install their equipment on the tower. For the Municipality of West Elgin, this is an added benefit, as it works to reduce the number of towers required in this area in the future.

## Health Canada's Safety Code 6 Compliance

Teksavvy and our clients attest that the radio antenna system described in this report will comply with Health Canada's Safety Code 6 limits, as may be amended from time to time, for the protection of the general public including any combined effects of additional carrier collocations and nearby installations within the local radio environment.

## Canadian Environmental Assessment Act and Conservation Authority

Teksavvy attests that the radio antenna system described in this notification package is not subject to the *Canadian Environmental Assessment Act*.

If, as part of the evaluation process, a permit will be required from the local Conservation Authority, Teksavvy will work with the Conservation Authority to ensure any potential environmental impacts are mitigated.

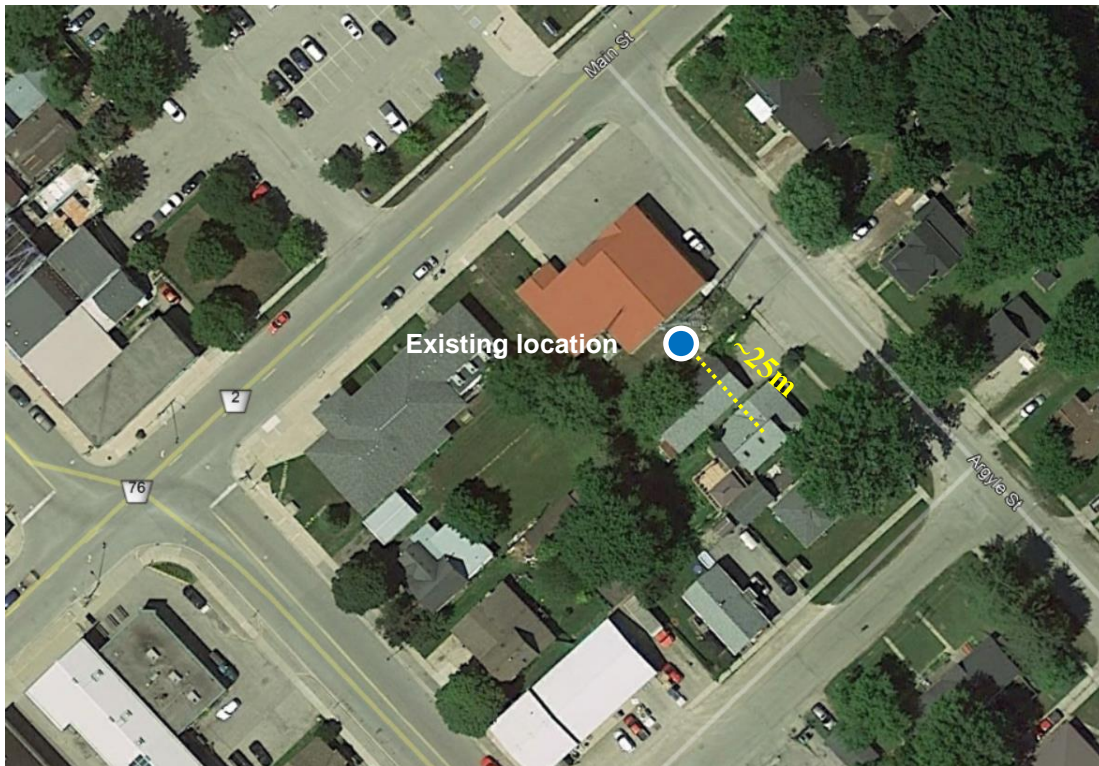
## Transport & NAV Canada Assessment

Teksavvy attests that the radio antenna system described in this package will comply with Transport Canada / NAV Canada aeronautical safety requirements. Teksavvy has made all necessary applications to Transport Canada and NAV Canada.

## Distance to Residential

The nearest residential dwelling to the existing tower is on the south side of Argyle Street, approximately 25 metres south-east of the existing location (**Figure 7**).

**Figure 7 – Distance to nearest residential**



## Engineering Practices

Teksavvy attests that the radio antenna system described in this package will be constructed in compliance with the National Building Code of Canada and comply with good engineering practices including structural adequacy.

## Justification of Preferred Tower Type

Due to the demand for improved broadband internet services in the area, there is a great need for new wireless signal in the search area. As a result, Teksavvy has designed a self-support tower. This design, in addition to the existing height of the tower (44.5m) should allow the Municipality of West Elgin to minimize the number of towers

required in the area in the future, as it maximizes co-location capability while respecting the sensitive nature and aesthetic value of the local area.

## Conclusion

Canadians as a whole are becoming more dependent on broadband internet for personal, business, and emergency purposes. In many areas of the country, “broadband” is defined as more than 50 Mbps, while in many areas of West Elgin, only dial-up speeds are available. To that end, an improvement upon the current internet coverage in this area of the Municipality of West Elgin would be a benefit to the community.

Teksavvy believes the existing tower:

- Is in a location technically suitable to meet our network requirements;
- Is a design that complies with ISED’s CPC 2-0-03 Protocol and:
- Is a development compatible and appropriate with surrounding uses, and will have limited impact on existing land uses in the vicinity.

Teksavvy is committed to effective municipal consultation. Should you have any questions or require further information regarding our proposal, please do not hesitate to contact the undersigned.

Yours truly,

Taylor Chiu  
FONTUR International Inc.  
Consultant for Teksavvy

