

SIGNUM WIRELESS

December 10, 2024

Site Selection & Justification Report Wireless Telecommunications Tower Site

182 Governors Rd E, Brant, ON N3L 3E1

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

Table of Contents

Introduction	3
Purpose - Background & Coverage Requirement	3
Identification & Evaluation of Different Site Location Options	6
Selection & Justification of Preferred Location	7
Proposed Site Location	8
Description of Proposed System.....	9
Justification of Proposed Siting	9
Statement Indicating Need for Tower Height.....	10
Health Canada's Safety Code 6 Compliance	10
Control of Public Access.....	10
Local Environment	10
Transport & NAV Canada Assessment.....	11
Distance to Residential	11
Engineering Practices.....	11
Justification of Preferred Tower Type.....	12
Public Consultation	12
Conclusion	12



Introduction

The on-going increase in the use of personal cellular telephones, smartphones (iPhone, Android) and other wireless devices such as broadband internet hubs for personal, business and emergency purposes requires the development of new wireless telecommunications 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 wireless device, wireless communication is simply not possible.

The use of wireless telecommunications is firmly entrenched into Canadian society and economy. There are more than 30 million Canadian mobile devices being used on a daily basis including, wireless phones, mobile radios, mobile satellite phones and broadband internet devices. Three-quarters of Canadian's have access to a smartphone which demands the use of high-speed mobile data. Most importantly, each year Canadians place more than 6 million calls to 911 or other emergency numbers from their mobile phones.

As part of its on-going commitment to provide high quality wireless services, Signum Wireless has determined that a new wireless telecommunications facility is required in the County of Brant.

This report documents Signum's site selection process, the details of the proposal, its compliance with the County's *Communication tower and communication antenna preferred location protocol* and the applicable Innovation, Science, & Economic Development (ISED) CPC-2-0-03 – Radiocommunication and Broadcasting Antenna Systems.

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

Wireless telecommunications 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 telecommunication carriers 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 call as the user moves from cell to cell.



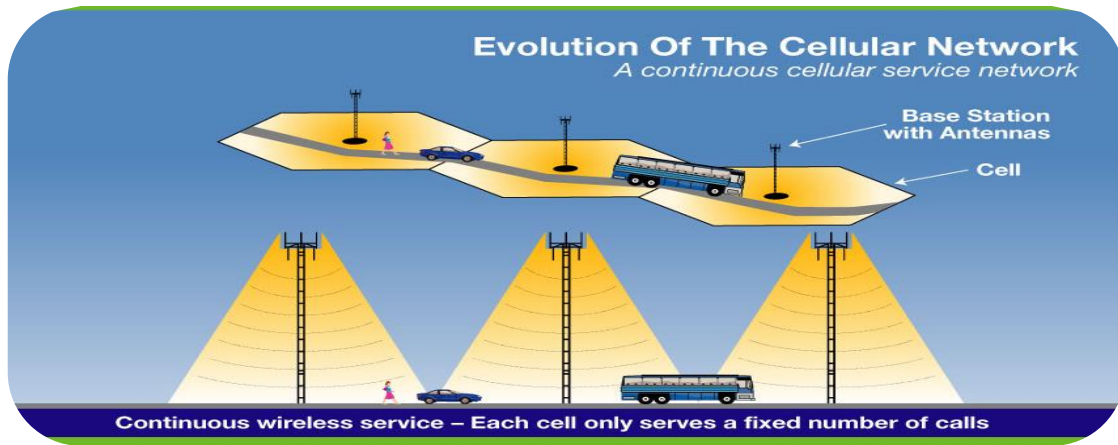


Figure 1

If the station is part of a radio telephone 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.

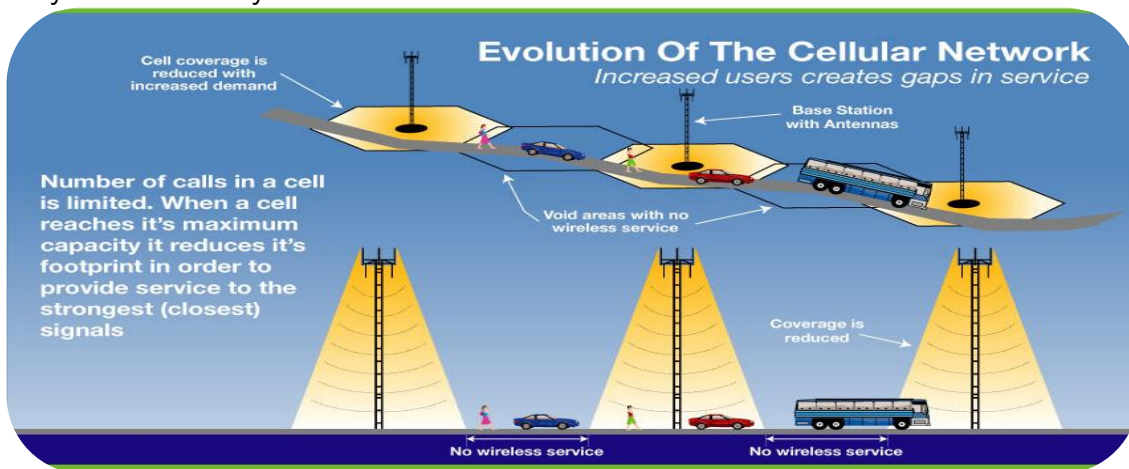


Figure 2

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

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



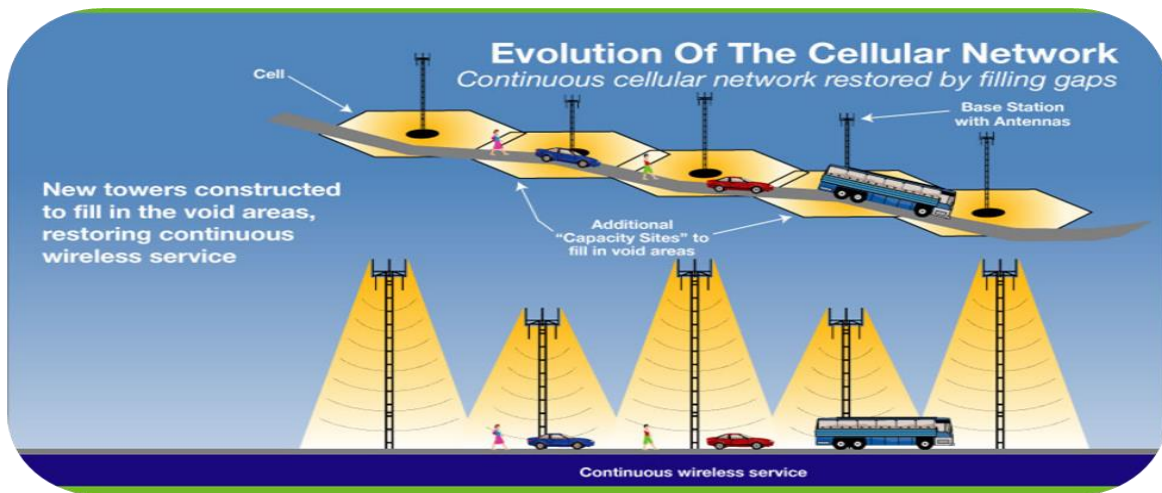


Figure 3

In this case, our clients' Radio Frequency Engineering department(s) have determined the need for a service upgrade to adequately provide continuous coverage and service to their existing and future customer base in the County. Currently, our clients' networks are burdened by a combination of poor voice and data quality, specifically in high-use residential areas, transportation corridors, and international border areas. In some cases, the coverage is so poor that a handset would be unable to place a mobile call at all in the subject location and surrounding area. The result of this situation is on-going customer complaints, high "dropped call" rates, and in extreme circumstances, the potential inability to place a mobile call that may be absolutely critical in an emergency situation.

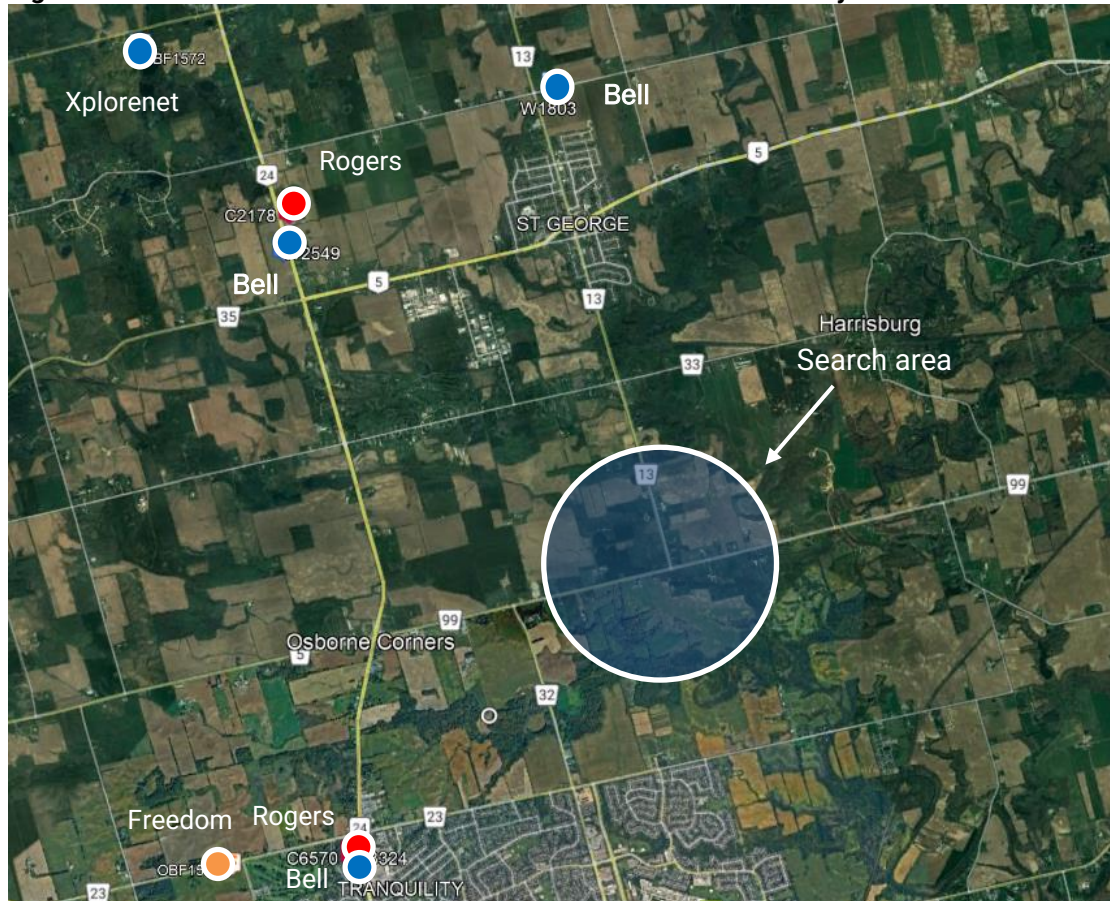
Our clients are committed and mandated by their respective licenses to ensure the best coverage and service to the public and private sectors. The proposed site in the County of Brant is extremely important in terms of providing coverage to an under-served area, and adding capacity to existing networks. Signum Wireless wants to provide infrastructure necessary to ensure that both residents and visitors to the area have access to the service they are accustomed to in other parts of the country.

Signum Wireless' objective for this location is to provide the infrastructure for reliable coverage and capacity into residential, commercial, and agricultural areas near east Paris, or east of Highway 24 and North of Highway 403. The objective is to have coverage throughout the County of Brant, specifically in residential areas and frequently-travelled corridors where demand for signal is high.

A drive test was conducted by some of our clients along area roads, such as Governors Road and St George Road, 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 Telecommunications Infrastructure in Brant County



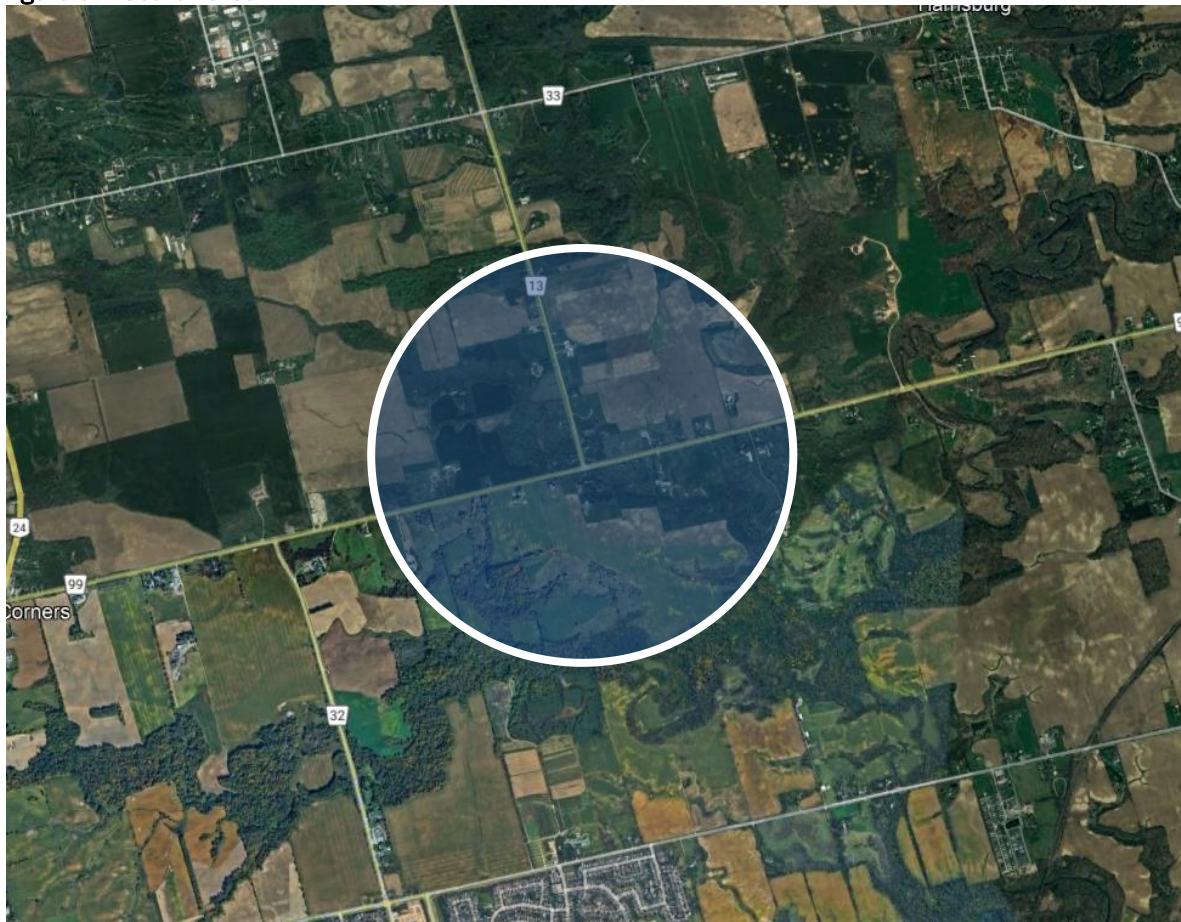
Identification & Evaluation of Different Site Location Options

Our clients' existing coverage in the County 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. As illustrated in the map in **Figure 4**, there is a gap in wireless telecommunications infrastructure in the area of coverage need. (Existing infrastructure is represented by markers on the map.) All existing infrastructure is located at least 4 kilometres away from the centre of the search area. Much of it is concentrated along the Highway 24 corridor—the focus of these sites would be to cover users on the highway rather than rural or commercial areas.

Based on research by each of our clients' respective Radio Frequency Engineering teams, a general search area location was chosen centered on the intersection of Governors Rd and St George Road. A site within the search ring on the map below (**Figure 5**) would, from an engineering point of view, meet the coverage objectives of our clients' networks. Typically, in rural areas, the search area can have a radius of between 600-metres and 1.5 kilometres.



Figure 5 – Search area



A review of existing telecommunications infrastructure within the search area, as shown in Figure 4, confirmed that no existing towers meet our clients' coverage requirements. The nearest installation, a 46-metre Rogers Wireless Lattice Tri-Pole tower, is located approximately 4 km from the centre of the search area. Due to its distance, structural type, and limited height available for additional equipment, it was determined to be unsuitable for co-location. Additionally, the predominance of low-rise structures in the area ruled out the feasibility of a rooftop installation.

Following a site visit and an assessment of ISED's CPC 2-0-03 Issue 5 and the County's *Communication Tower and Communication Antenna Preferred Location Protocol*, several potential sites were identified that met both engineering requirements and protocol standards. To secure a site, property owners within the search area were approached to gauge interest in hosting the tower. Signum Wireless employs a first-come, first-served approach when selecting a location, advancing with the first property owner who expresses interest. In this case, the owner of 182 Governors Road was the first to respond positively, and the application proceeded with this location.

Selection & Justification of Preferred Location

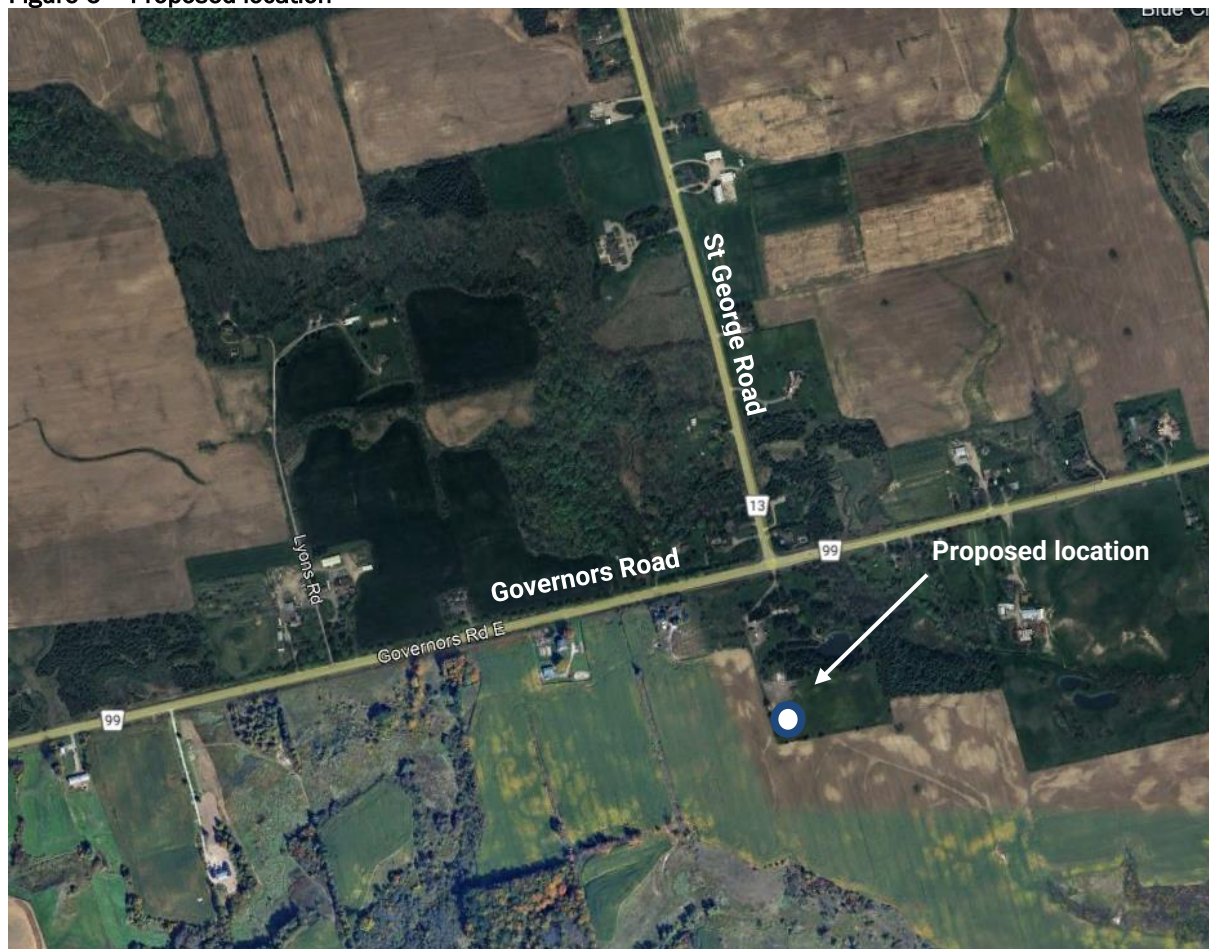
Proposed Site Location

The location which Signum Wireless proposes for a wireless telecommunications site in Brant County is on the property municipally known as 182 Governors Road (**Figure 6**).



The property's legal description is: PT LT 41 CON 1 BRANTFORD AS IN A491021; S/T A40262; COUNTY OF BRANT

Figure 6 – Proposed location



The site itself is located approximately 265 metres North of Governors Road and 297 metres North of St George Road.

The geographic coordinates for the site are as follows;

Latitude (NAD 83) N 43° 12' 33.1"

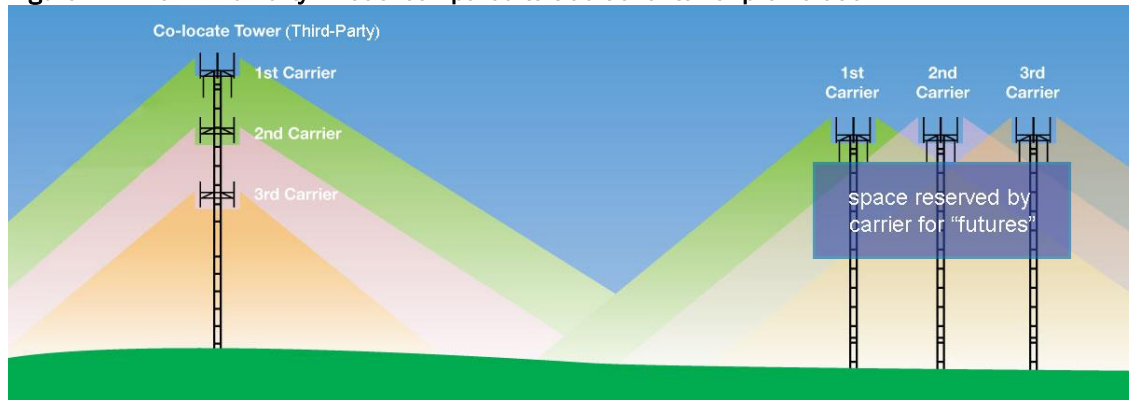
Longitude (NAD 83) W 80° 14' 23.2"

Signum Wireless' proposed tower will accommodate wireless antennas for the purpose of providing wireless communications coverage and network capacity. To the end user, this translates into our clients' suite of wireless technologies such as cellular phone coverage, Smartphone device coverage (i.e.: iPhone, Android devices) as well as wireless internet coverage utilizing USB or Hotspot internet products. Depending on the signal strength, and the amount of data being downloaded, the regular user should not see a difference between this and a fibre line.

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.



Figure 7 – The “Third-Party” model compared to traditional tower proliferation



Signum Wireless 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. It also allows the County to reduce the potential for tower proliferation by multiple carriers needing space for their equipment (Figure 7). The proposed tower is designed to support and indeed encourage a number of additional carriers.

Description of Proposed System

The proposed system for 182 Governors Road is a Self-Support communications tower that is 40 metres in height. A fenced-in compound would also be constructed, and would occupy a ground compound area of approximately 144 square metres.

Our clients propose to install antenna and microwave equipment. The tower would initially provide wireless voice and data services for subscribers to our clients’ networks.

Justification of Proposed Siting

Prevalent in our search area of the County of Brant are rural uses, as well as single-family housing. The proposed tower has been sited on a rural residential property to respect the local environment and mitigate potential impacts, while maximizing the distance from nearby residential areas. The location was carefully chosen to provide enhanced wireless coverage for the surrounding agricultural and rural communities, ensuring that both existing and future residents, as well as businesses, have reliable access to high-speed data and cellular coverage.

There are a few small properties that would be compatible with the tower use—however, the owners of these properties were approached and only one other land owner was interested in hosting the tower. Placing the tower further south or east would put it closer to existing sites, interfering with their coverage and reducing the viability of the proposed tower as a co-locatable structure. The tower is proposed on what we determined to be the best location from a coverage viability and land use perspective.

In selecting this location, we also considered the surrounding land use, minimizing any potential conflicts with sensitive areas such as natural heritage features, parks, or future



development zones. The siting of the tower ensures that it will not only address current coverage gaps but also support future network expansion without causing unnecessary disruption to the surrounding community. This careful consideration of both technical and environmental factors makes this site the most appropriate choice for the proposed infrastructure.

Statement Indicating Need for Tower Height

The proposed tower has been designed at a height of 40-metres. Due to the large coverage and capacity gap currently affecting our clients' network in this area of Brant County, this height is essential to provide optimal coverage and ensure effective handoff of calls and data between surrounding towers in the network.

In addition, the 40-metre height of the self-supporting tower allows for sufficient vertical space to accommodate multiple carriers and broadcasters, including the County of Brant's equipment. This shared-use design is a significant benefit, as it reduces the need for additional towers in the area in the future, promoting a more efficient and sustainable approach to infrastructure development. By providing space for the County's equipment, the tower helps to meet both local and regional connectivity needs while minimizing environmental and visual impact.

Health Canada's Safety Code 6 Compliance

Signum Wireless 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.

Control of Public Access

The site facility would include a locked, alarmed and electronically monitored mechanical equipment shelter. Fencing would be installed around the base of the tower and equipment shelter(s) and would include one locked gate access point.

Local Environment

Signum Wireless attests that the proposed telecommunications tower is not subject to the Canadian Environmental Assessment Act.

The subject property includes areas regulated by the Grand River Conservation Authority (GRCA), specifically steep slopes near the pond and extending northward. While these areas fall under GRCA jurisdiction, the proposed tower is located outside of the regulated steep slope area. Signum Wireless will continue to work with GRCA to ensure full compliance with applicable policies and requirements.

The proposed tower is situated within 120m of identified Natural Heritage System features, including the pond and adjacent woodland, which are located approximately 70m or more from the site. While this distance falls within the County's Natural Heritage System setback



guidelines, the tower has been strategically sited to avoid direct encroachment on these features and minimize any potential ecological impacts. Additionally, the self-collapsible design of the tower ensures that, in the unlikely event of structural failure, impacts would be confined to the immediate vicinity of the site, preserving the integrity of nearby natural features. To further mitigate risks, the proposal includes adherence to best practices in sustainable site development and design.

In summary, the tower location respects the intent of the County's Natural Heritage System policies by balancing the need for critical telecommunications infrastructure with environmental stewardship. A detailed site analysis and setback evaluation demonstrate that the proposed development minimizes disruption to local ecological systems and maintains appropriate buffers from key natural features.

Transport & NAV Canada Assessment

Signum Wireless attests that the radio antenna system described in this notification package will comply with Transport Canada / NAV Canada aeronautical safety requirements. Signum Wireless has made all necessary applications to Transport Canada and NAV Canada. Both agencies have yet to complete their review of the proposed installation. Signum Wireless will endeavor to provide the results of each respective assessment to the City of London as soon as they become available.

Distance to Residential

The nearest residential dwelling to the proposed tower is on the south side of Governors Road, approximately 220 metres north-east of the proposed location (Figure 8).

Figure 8 – Distance to nearest residential



Engineering Practices

Signum Wireless attests that the radio antenna system described in this notification 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 dearth of existing telecommunication facilities in the area, and the demand for improved wireless services, there is a great need for new wireless signal in the search area. As a result, Signum Wireless has designed a self-support tower. This design, in addition to the proposed height of the tower (40m) should allow the County to minimize the amount of towers required in the County of Brant in the future, as it maximizes co-location capability while respecting the sensitive nature and aesthetic value of the local area.

Public Consultation

Signum Wireless is committed to effective public consultation. As a result, a full public consultation process, including a circulation of information and a public open house, will be held in accordance with the County's policy.

Conclusion

Canadians as a whole are becoming more dependent on wireless products for personal, business, and emergency purposes. In many areas of the country, more than half of all 9-1-1 calls are now made via a mobile phone. To that end, an improvement upon the current wireless coverage in this area of the County of Brant would be a benefit to the community.

Signum Wireless believes the proposal:

- Is in a location technically suitable to meet our clients' network requirements;
- Is a design that complies with ISED's CPC 2-0-03 policy and the County of Brant's protocol guidelines; and
- Is a development compatible and appropriate with surrounding uses, and will have limited impact on existing land uses in the vicinity.

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

Yours truly,



Lucas Cuff, Municipal Planner
FONTUR International Inc.
On contract to Signum Wireless

