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SIGNUM WIRELESS

May 28, 2025

Site Selection & Justification Report

Wireless Telecommunications Tower Site

Town of Niagara-on-the-Lake property Ricardo and Nelson Street

Signum Wireless – contracted to:
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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 Town of Niagara-on-the-Lake.

This report documents Signum's site selection process, the details of the proposal, its compliance with the Town's *Telecommunication Facilities 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.

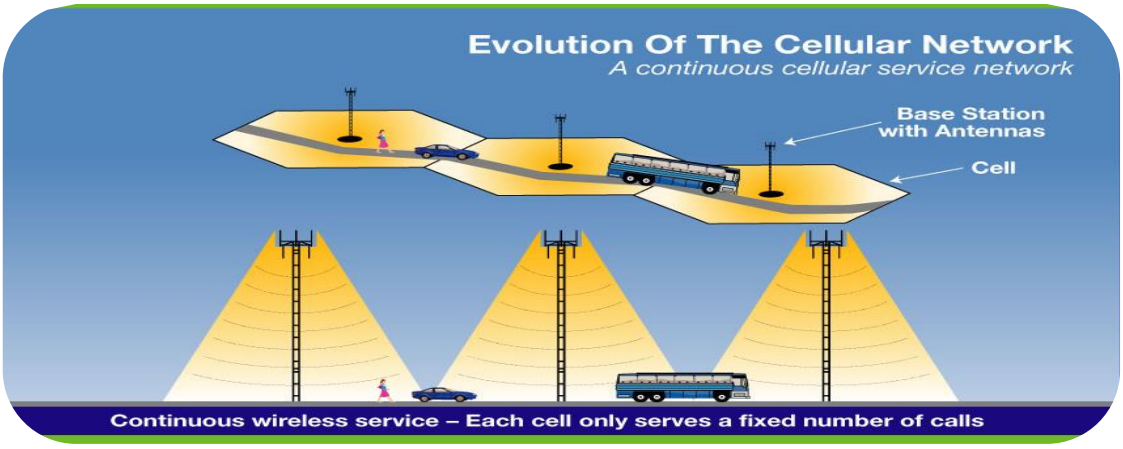


Figure 1

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.

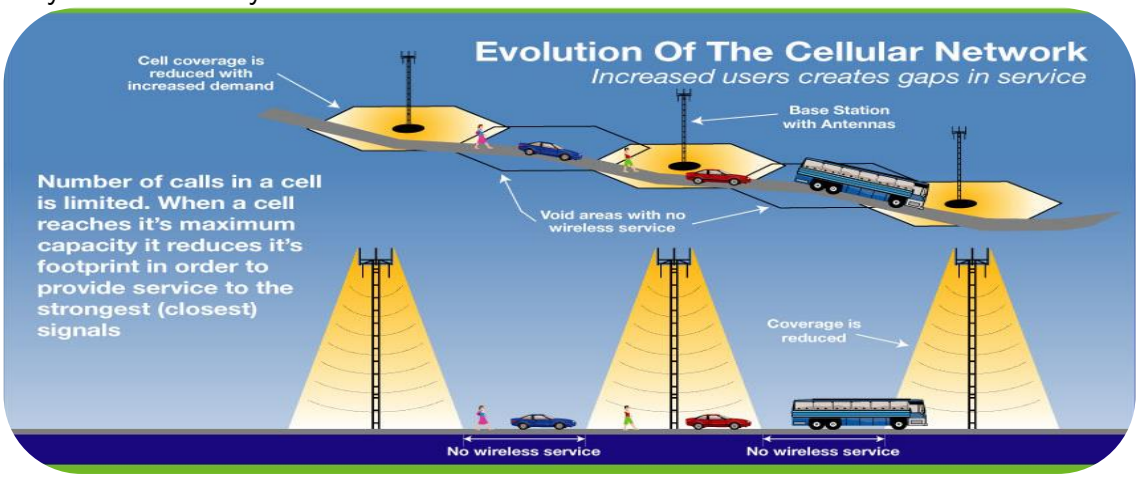


Figure 2

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.

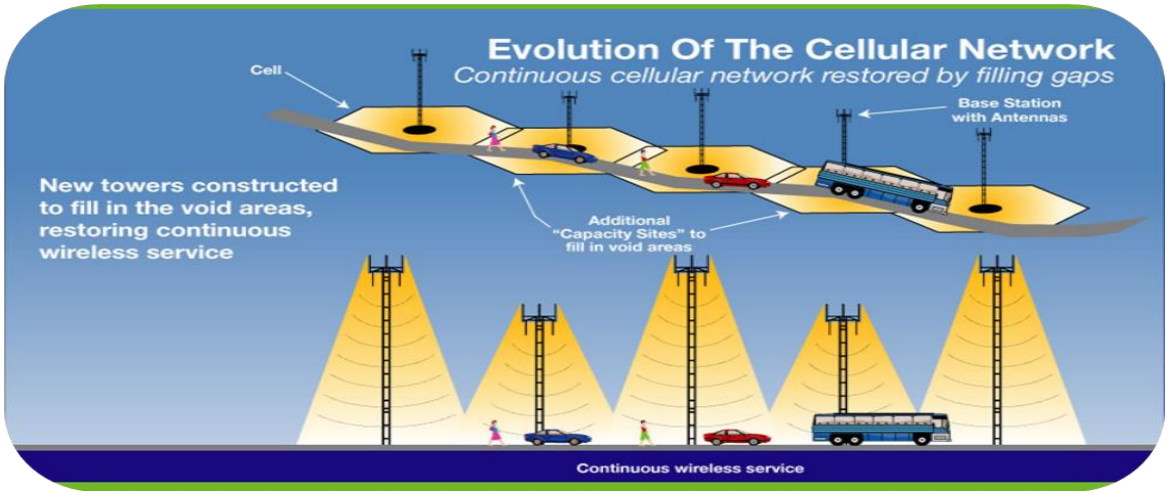


Figure 3

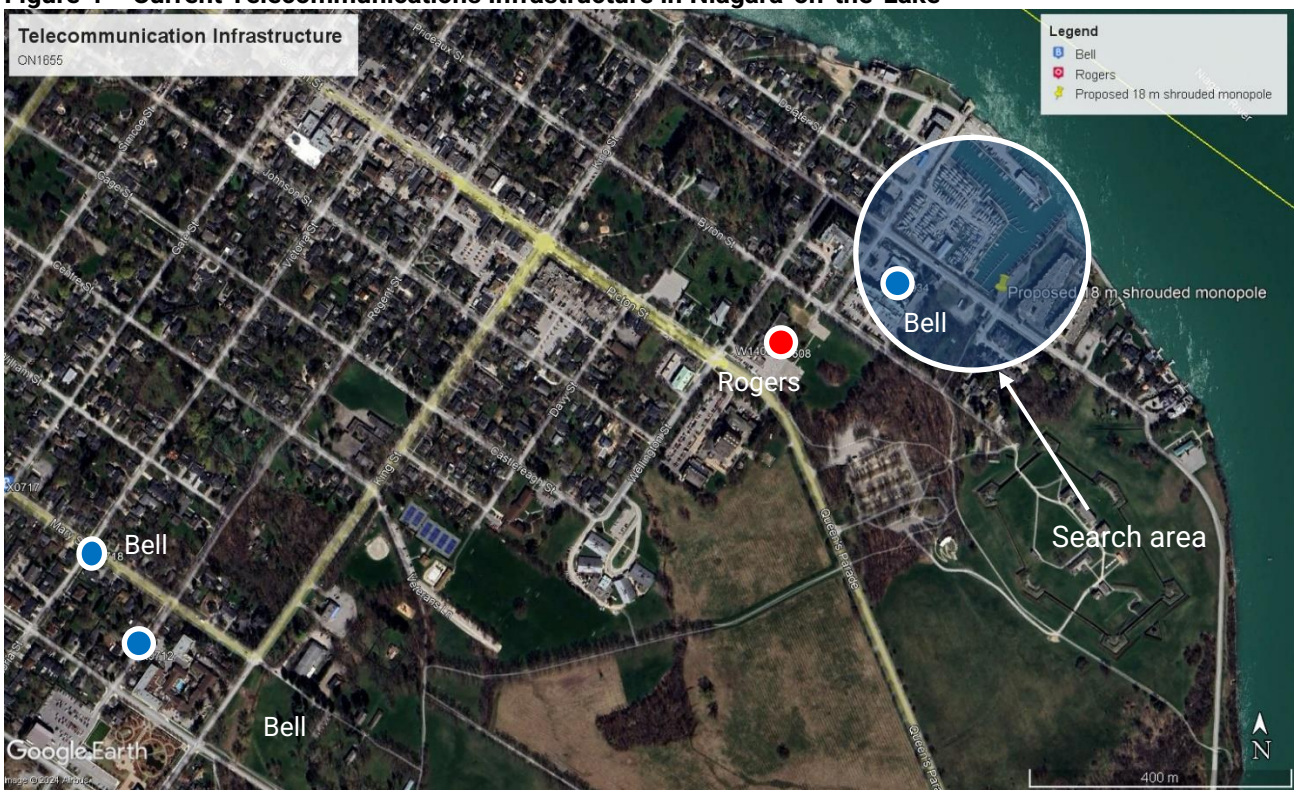
In this case, our clients' Radio Frequency Engineering department(s) have determined the need for a service upgrade to adequately provide continuous coverage and service to their existing and future customer base in the Town of Niagara-on-the-Lake. Currently, our clients' networks are burdened by a combination 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 Town of Niagara-on-the-Lake is extremely important in terms of providing coverage to an under-serviced 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's objective for this location is to provide the infrastructure for reliable coverage and capacity into residential areas near Niagara-on-the-Lake, or north of Queens Parade and east of King Street. The objective is to have coverage throughout the North-east area of Niagara-on-the-Lake, 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 Ricardo Street, 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 because of the density of users and lack of existing coverage.

Figure 4 – Current Telecommunications Infrastructure in Niagara-on-the-Lake



Identification & Evaluation of Different Site Location Options

Our clients' existing coverage in Niagara-on-the-Lake 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.) The closest telecommunications infrastructure is a Bell Mobility rooftop antenna located at 155 Byron St. While this structure technically meets the required height, its coverage primarily serves the Queen's Landing Hotel and surrounding areas. The proposed Signum tower is specifically designed to extend coverage north of Ricardo St., addressing a distinct need in this underserved area. Therefore, colocation on the existing Bell rooftop antenna is not a viable solution to meet these coverage requirements.

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 Ricardo and King 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 our clients' networks. Typically, in semi-urban areas, the search area can have a radius of between 300 and 1000 metres.

Figure 6 – Search area

A review of existing telecommunications installations within the search area, as illustrated in **Figure 4,** revealed that there are no existing towers that would meet our clients' coverage requirements (i.e., within the search area). The nearest existing infrastructure is a 42-meter Rogers Communications telecommunications tower, located 330 meters away at 176 Wellington St. adjacent to the Niagara-on-the-Lake Hospital. This tower already hosts numerous antenna systems from both Rogers and Bell Mobility, making it highly utilized. Given that Safety Code 6 regulations require a minimum separation of 3-5 meters between antenna systems to ensure safe and effective operation, the remaining usable height on this tower is limited to around 15 meters. This restricted height is insufficient to provide the coverage needed for our intended service area. Additionally, the Rogers tower is primarily dedicated to servicing the immediate hospital area and nearby businesses and residents, limiting its ability to extend coverage to other areas. The proposed Signum tower, therefore, is essential to deliver the improved network capacity needed for residents, travelers, and residents along Ricardo Street and the Niagara-on-the-Lake Sailing Club.

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

Selection & Justification of Preferred Location
Proposed Site Location

The location which Signum Wireless proposes for a wireless telecommunications site in Niagara-on-the-Lake is on the municipally property on Ricardo Street and Nelson Street. (**Figure 6**).

The property's legal description is: PCL STREETS-1 SEC M17; NELSON ST PL M17, PLAN M17 IS NOT A PLAN OF SUBDIVISION WITHIN THE MEANING OF THE PLANNING ACT ; NIAGARA ON THE LAKE.

Figure 6 – Proposed location

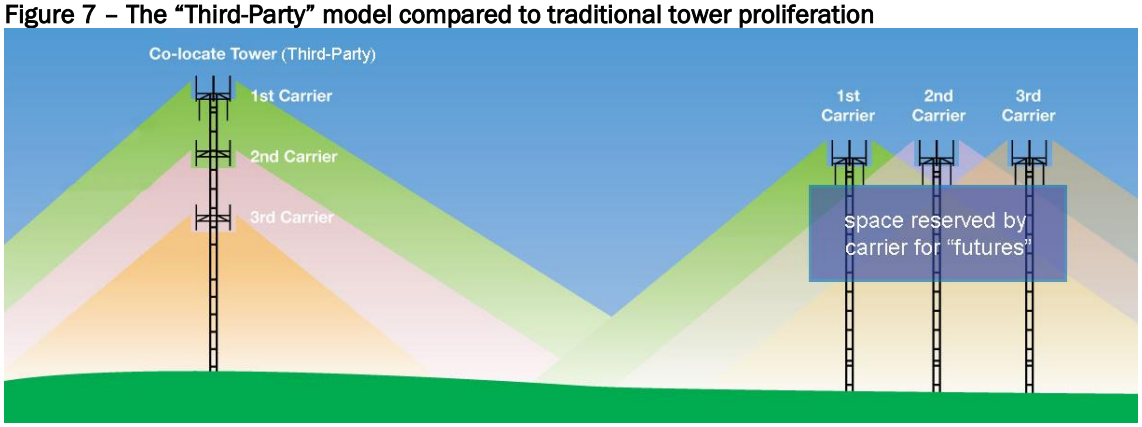
The site itself is located approximately 30 metres North of Ricardo Street and 300 metres East of Wellington Street.

The geographic coordinates for the site are as follows;
Latitude (NAD 83) N 43° 15' 14.6"
Longitude (NAD 83) W 79° 03' 45.2"

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 Town 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 the municipal property at Ricardo and Nelson Street is a Monopole communications tower that is 18 metres in height. A fenced-in compound would also be constructed and would occupy a ground compound area of approximately 31 square metres. The proposed Monopole Tower will be shrouded as to comply with Section 4.1 of the towns Telecommunication Facilities protocol as it is in a settlement area.

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.

Compliance to Town Protocol

Please see below chart in response to protocol compliance:

Protocol Section	Response
Section 4.1	The proposed telecommunications tower complies with local requirements through thoughtful design and strategic site selection. While co-location on an existing facility was prioritized, no suitable structures were found within the coverage area, as the nearest viable antenna lacked the height and design needed to support broader network requirements. Additionally, rooftop or wall-mounted installations were ruled out because nearby buildings are too low to provide

	adequate coverage. To meet visual standards for settlement areas, the tower will be a shrouded monopole, chosen specifically for its minimal aesthetic impact. Though a Comprehensive Plan was not explicitly mentioned, the tower's 18-meter height is designed to accommodate additional carriers in the future, minimizing the need for further structures and aligning with broader long-term infrastructure planning goals. This proposal ensures compliance with municipal guidelines by balancing functional, visual, and strategic considerations.
Section 4.2	The proposed antenna system complies with the Town's guidelines for sensitive locations while aligning with the preference for telecommunications facilities on municipal land. Although new towers are generally discouraged in residential and settlement areas, the proposal meets specific requirements in Section 4.1, including prioritizing co-location options and using a shrouded, minimal-impact monopole design. Environmental considerations were also addressed, as the site does not encroach on any significant wetlands, woodlands, or other protected natural areas. Additionally, there are no significant heritage resources in the vicinity, and the location does not fall within "sensitive" areas as identified in the Town's Official Plan. Selecting a municipal property for the tower supports the Town's preference for telecommunications infrastructure on its own lands, ensuring both alignment with local policy and minimal impact on the surrounding community.
Co-location – 172 Wellington St	The proposal confirms that co-location options were thoroughly analyzed, with specific attention given to the two nearest telecommunications facilities: a rooftop antenna system at 155 Byron Street and a 42-metre monopole located at the Niagara-on-the-Lake Hospital on Wellington Street. While the rooftop antenna meets the necessary height requirements, it primarily serves the Queen's Landing Hotel and immediate surroundings, making it unsuitable for extending coverage north of Ricardo Street into the target area. The 42-metre hospital tower, located approximately 330 metres from the proposed Signum tower site, is currently operating at near capacity with multiple existing installations from Rogers and Bell Mobility. Freedom Mobile Inc., the carrier proposing to co-locate on the new Signum tower, cannot be accommodated on the hospital structure due to insufficient remaining antenna space. Safety Code 6 regulations, which require a minimum 3–5 metre separation between antennas, leave only approximately 15 metres of usable vertical space, an amount inadequate to meet Freedom's service objectives for the area. Moreover, this tower's height and existing allocations are already

	primarily dedicated to servicing the hospital and adjacent commercial zones. In addition to the current capacity constraints, there is increasing concern that the hospital tower may be decommissioned in the near future, as the site lease is approaching its expiry. To proactively address potential service disruptions, the proposed Signum tower has been designed to include sufficient structural capacity to accommodate multiple carriers in the event that the hospital tower is dismantled. The Planning Justification Report concludes that existing infrastructure is insufficient in both height and capacity to support the required upgrades. Accordingly, a new tower installation is necessary to meet the growing coverage and connectivity demands in this area. This analysis confirms that co-location was actively explored and ruled out based on technical limitations and long-term network resiliency considerations.
Search Area	In alignment with the Town's Comprehensive Telecommunications Plan, which suggests a typical search radius of 300 to 1000 meters in semi-urban areas, the proposal establishes a search area within these parameters. The chosen radius was carefully calculated to meet the necessary coverage objectives for the target region, specifically addressing service gaps in high-demand residential zones and travel corridors in Niagara-on-the-Lake. This search area was determined based on engineering assessments to ensure optimal placement and service quality, justifying its alignment with the Town's recommended range for semi-urban installations.
Section 4.5.1	The proposal aligns with Section 4.5.1 of the Protocol, which requires telecommunications facilities to use colors that blend with the surrounding landscape and public realm. Currently, a neutral color scheme is planned for the tower to ensure minimal visual impact and compatibility with the local environment. However, we are fully prepared to adjust the color scheme in accordance with any specific preferences the Town may have to further enhance compliance with the Protocol.
Section 4.5.3	The proposal adheres to Section 4.5.3 of the Town's Telecommunication Facilities Protocol, which requires that new equipment shelters incorporate architectural treatments sensitive to the surrounding landscape and public realm. The proposed equipment shelter will be wrapped in a neutral, non-reflective finish that visually integrates with the natural surroundings and maintains a low-profile aesthetic. In line with standard industry practice, detailed architectural drawings of the shelter will be prepared following municipal concurrence and submitted to the Town prior to construction. We

	respectfully request that the submission of these drawings be included as a condition in the Town's Letter of Concurrence to ensure transparency and continued compliance with the Protocol.
Section 4.5.4	The proposal complies with Section 4.5.4 of the Protocol, which requires screening and access restrictions that are sensitive to the surrounding landscape and public realm. Existing vegetation around the site will be preserved wherever possible, with supplementary plantings incorporated as needed to support visual integration. A neutral-coloured vinyl fence is proposed around the compound to ensure compatibility with the natural surroundings while maintaining durability and low visual impact. Razor wire is not included in the design, thereby avoiding aesthetic disruption. As is standard practice, detailed fencing specifications—including elevations, gate locations, and materials—will be submitted to the Town following municipal concurrence and prior to construction. We request that this submission be included as a condition in the Town's Letter of Concurrence to ensure continued alignment with the Protocol's design expectations.
Section 4.5.5	Based on the additional information provided, the proposed wireless telecommunications tower appears to comply with Section 4.5.5 of the Town's Telecommunication Facilities Protocol regarding vehicular access and parking. The tower will be located on municipal property at the intersection of Ricardo and Nelson Street, which ensures suitable access to public streets as required by the protocol. Regarding parking, while the tower will occupy two existing parking spaces in the municipal lot, this arrangement still meets the requirement that parking spaces be provided on-site and not within a road allowance. The fact that the construction process will not disturb the remaining parking area or access is an additional positive aspect, as it minimizes disruption to existing infrastructure. Overall, the proposal seems to adhere to the protocol's requirements for vehicular access and on-site parking, balancing the need for telecommunications infrastructure with the preservation of existing parking facilities.
Section 9.0	To address the public consultation requirements set out in Section 9.0 of the Town's Telecommunication Facilities Protocol for the proposed wireless telecommunications tower in Niagara-on-the-Lake, Signum Wireless will undertake a comprehensive public consultation process. The process will begin with coordinating a tentative date for the Public Open House with the Town to ensure no conflicts with other Town meetings. Notification materials will be distributed within a specified circulation area around the proposed site, including mailed notifications to residents and businesses, and public notices in local newspapers.

	Signage will also be erected in the vicinity to inform the public about the project and the upcoming consultation. During the Public Open House, detailed information displays and presentations will be provided, and representatives will be available to answer questions and gather feedback. The event will include mechanisms for attendees to submit their comments and suggestions, ensuring transparency and community engagement throughout the process. This structured approach will help Signum Wireless meet the protocol's requirements and foster a collaborative environment with the local community.

Justification of Proposed Siting

The proposed telecommunications tower has been strategically sited on municipally owned property in the north-east area of Niagara-on-the-Lake to address existing service deficiencies while aligning with established planning principles. The site is characterized by residential and recreational land uses, including single-family housing, making reliable and high-quality wireless communication an essential utility for the community. Locating the tower on municipal property demonstrates adherence to the Town's preference for telecommunications infrastructure on publicly owned lands, ensuring consistency with local policies and enabling coordinated land-use management. Additionally, the chosen site maximizes separation from nearby residential uses to minimize potential impacts on community character and visual aesthetics.

This location was selected to meet current and future connectivity demands within a defined service gap. By improving wireless capacity and coverage, the tower will enhance telecommunications reliability for residents, businesses, and public services. The improved infrastructure will support critical emergency services, ensuring uninterrupted communication during urgent situations. The proposed design also incorporates co-location capacity for multiple carriers, promoting efficient use of infrastructure and reducing the likelihood of tower proliferation in the area.

The siting and design of the tower prioritize compatibility with the surrounding landscape and adherence to best practices in telecommunications planning. The shrouded monopole design minimizes visual intrusion and aligns with the Town's protocols for settlement areas. Furthermore, the project contributes to the Town's overall connectivity goals by providing essential services to an underserved area, fostering economic vitality, and supporting the community's quality of life. This proposal reflects a balanced approach to meeting technical, social, and environmental considerations while aligning with municipal objectives for sustainable infrastructure development.

Statement Indicating Need for Tower Height

The proposed tower has been designed at a height of 18 metres. Due to the large coverage and capacity hole currently in our clients' network in this area of Niagara-on-the-Lake, this height is required to provide optimal coverage to the area, and to "pass on" calls and other uses effectively to surrounding towers in the network.

A Monopole tower at a height of 18 metres also means that three or more carriers or other broadcasters would be able to install their equipment on the tower. For the Town of Niagara-on-the-Lake 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

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 radio antenna system described in this notification package is not subject to the *Impact Assessment Act*.

As the subject property is not regulated by the Upper Niagara Peninsula Conservation Authority (NPCA), we do not anticipate the development requiring a permit.

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 Town of Niagara-on-the-Lake as soon as they become available.

Figure 8 – Distance to nearest residential

Distance to Residential

The nearest residential dwelling to the proposed tower is on the east side of Nelson Road, approximately 50 metres east of the proposed location (Figure 8).

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 Monopole tower. This design, in addition to the proposed height of the tower (18m) should allow the Town of Niagara-on-the-Lake to minimize the amount of towers required in the Town 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 the circulation of information and a public open house, will be held in accordance with the town'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 Town of Niagara-on-the-Lake 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 Town of Niagara-on-the-Lake telecommunication 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.
Consultant for SIGNUM Wireless Towers Inc.