



Shared Tower

Municipality of Clarington - Connectivity Project





Table of Contents

1. **Shared Tower Introduction**
 - 1.1. Shared Tower Experience
 - 1.2. Recent Client Experience
 - 1.3. Shared Tower Project Qualifications
2. **Typical Project Lifecycle and Timeline**
3. **Clarington Fire Station 1 - STC0762**
 - 3.1. Clarington Fire Station 1 - STC0762 - Mapping Sketch
 - 3.2. Clarington Fire Station 1 - STC0762 - Renderings Key Map
 - 3.3. Clarington Fire Station 1 - STC0762 - Photo Before
 - 3.4. Clarington Fire Station 1 - STC0762 - Photo After
 - 3.5. Clarington Fire Station 1 - STC0762 Coverage Map Before (bundled with Middle Park, School Property, Lambs Rd.)
 - 3.6. Clarington Fire Station 1 - STC0762 Coverage Map After (bundled with Middle Park, School Property, Lambs Rd.)
4. **Clarington Fire Station 3 - STC0763**
 - 4.1. Clarington Fire Station 3 - STC0763 - Mapping Sketch
 - 4.2. Clarington Fire Station 3 - STC0763 - Renderings Key Map
 - 4.3. Clarington Fire Station 3 - STC0763 - Photo Before
 - 4.4. Clarington Fire Station 3 - STC0763 - Photo After
 - 4.5. Clarington Fire Station 3 - STC0763 – Coverage Map Before
 - 4.6. Clarington Fire Station 3 - STC0763 – Coverage Map After



5. **South Courtice Arena - STC0765**

[5.1. South Courtice Arena - STC0765 - Mapping sketch](#)

[5.2. South Courtice Arena - STC0765 - Renderings Key Map](#)

[5.3. South Courtice Arena - STC0765 - Photo Before](#)

[5.4. South Courtice Arena - STC0765 - Photo After](#)

[5.5. South Courtice Arena - STC0765 - Coverage Map Before](#)

[5.6. South Courtice Arena - STC0765 - Coverage Map After](#)

6. **Middle Park – STC0524**

[6.1. Middle Park - STC0524 - Mapping Sketch - Option 1](#)

[6.2. Middle Park - STC0524 - Mapping Sketch - Option 2](#)

7. **Tyrone Community Centre - STC0766**

[7.1. Tyrone Community Centre - STC0766 - Mapping Sketch](#)

[7.2. Tyrone Community Centre - STC0766 - Renderings Key Map](#)

[7.3. Tyrone Community Centre - STC0766 - Photo Before](#)

[7.4. Tyrone Community Centre - STC0766 - Photo After](#)

[7.5. Tyrone Community Centre - STC0766 – Coverage Map Before](#)

[7.6. Tyrone Community Centre - STC0766 – Coverage Map After](#)



Table of Contents

8. Solina Community Centre - STC0764

[8.1. Solina Community Centre - STC0764 - Location #1 - Mapping Sketch](#)

[8.2. Solina Community Centre - STC0764 - Location #1 - Renderings Key Map](#)

[8.3. Solina Community Centre - STC0764 - Location #1 - Photo Before](#)

[8.4. Solina Community Centre - STC0764 - Location #1 - Photo After](#)

[8.5. Solina Community Centre - STC0764 - Location #2 - Mapping Sketch](#)

[8.6. Solina Community Centre - STC0764 - Location #2 - Renderings Key Map](#)

[8.7. Solina Community Centre - STC0764 - Location #2 - Photo Before](#)

[8.8. Solina Community Centre - STC0764 - Location #2 - Photo After](#)

[8.9. Solina Community Centre - STC0764 - Coverage Map Before](#)

[8.10. Solina Community Centre - STC0764 - Coverage Map After](#)

9. Monopole tower presentation (for all the sites except Clarington Fire Station 3 - STC0763)

[9.1. Monopole tower examples](#)

[9.2. Compound examples with cabinets](#)

[9.3. Foundation examples](#)

[9.4. Tower compound & equipment layout](#)



10. Street Works presentation (for illustration)

[10.1. Street Works Example: Port Stanley – STC0400](#)

[10.2. Street Works Example: Port Stanley – STC0401](#)

[10.3. Street Works Example: Port Stanley – STC0402 & 403](#)

[10.4. Street Works Example: Port Stanley – STC0404](#)

[10.5. Street Works Example: STC0412](#)

[10.6. Street Works Example: STC0413](#)

[10.7. Street Works Cabinet System](#)

[10.8. Street Works Footprint](#)

[10.9. Street Works Equipment Layout](#)

11. [How the wireless network works](#)



Shared Tower

1. Shared Tower Introduction



1. **Company Name:** Shared Tower Inc.
2. **Address:** 101-1300 Cornwall Road, Oakville, ON
3. **Website:** Sharedtower.ca
4. **Key Contact(s):** Warren Rafuse & Nilou Nezhat
 - wrafuse@sharedtower.ca
 - nezhath@sharedtower.ca



Shared Tower

1.1. Shared Tower experience



1. Shared Tower is Canada's leading (measured by number of new towers built over the last 10 years) developer of neutral telecommunications and digital infrastructure.
2. Shared Tower builds and acquires towers, small cell infrastructure, and dark fibre and edge colocation facilities, designed to be shared by multiple telecommunications service providers.
3. Shared Tower's entire business is devoted to achieving precisely the objectives of the Municipality of Clarington.
4. The Shared Tower model has repeatedly proven efficient and reliable, generating partnerships with Canada's primary carriers who become licensees of its infrastructure to grow their networks and keep up with the ongoing data usage of their subscribers.



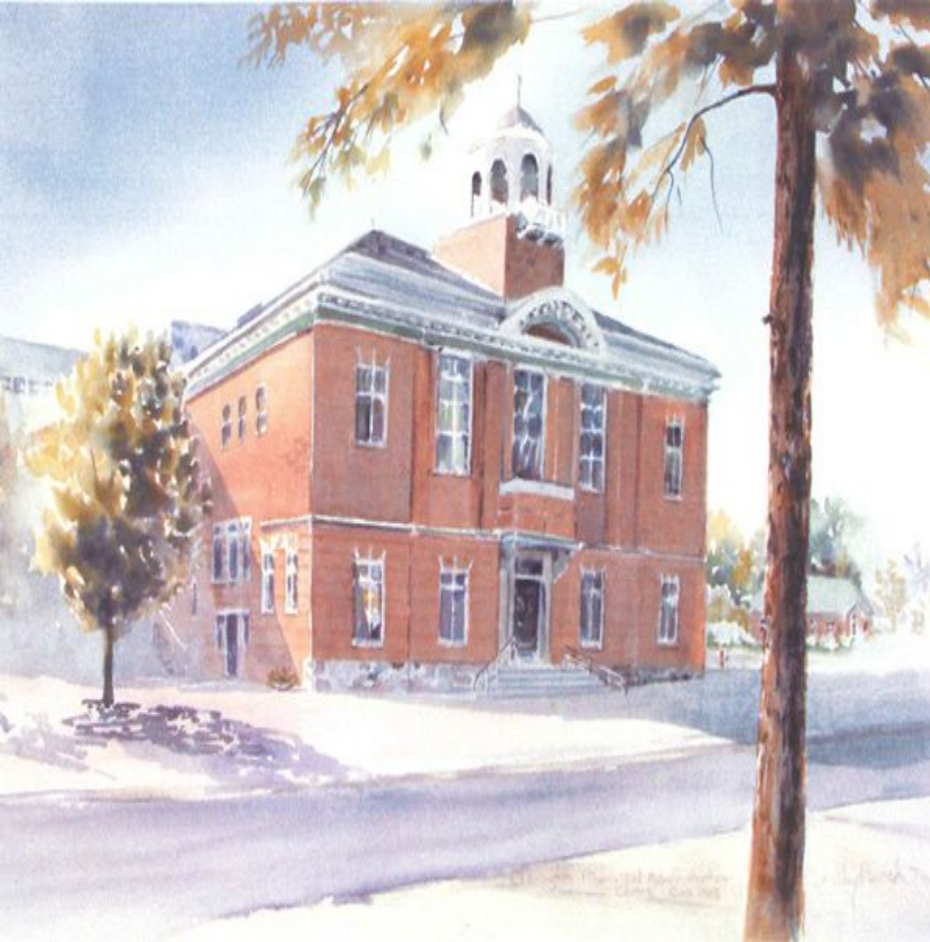
1.2. Recent client experience

Client Name	Nature of Services
Niagara Parks Commission	Successful proponent of an RFP for the improvement of cellular coverage along the Niagara Parks Corridor
Municipality of Central Elgin	Neutral host - telecommunications tower, fibre and baseband collocation infrastructure
Town Of South Bruce Peninsula	Neutral host - telecommunications tower, fibre and baseband collocation infrastructure
Municipality Of Northern Bruce Peninsula	Neutral host - tower infrastructure



Shared Tower

1.3. Shared Tower Project Qualifications



1. The Shared Tower team is collaborative, diligent, and 100% focused on the business of building and operating telecommunication infrastructure.
2. Shared Tower is Canadian owned and controlled, and operates exclusively in Canada.
3. The team comprises resourceful individuals with deep expertise in telecommunications, real estate development, municipal outreach, engineering, construction, finance, and law.
4. Shared Tower is a progressive, equal opportunity employer, committed to rigorously observing the Customer Service Standard of the Accessibility for Ontarians with Disabilities Act, 2005, evolving principles relating to Environmental, Social, and Governance policies, and diversity and inclusion in the workplace.
5. This unwavering commitment enables Shared Tower to approach its projects with a diverse range of perspective and skill, and consolidate its position as Canada's leading neutral telecommunications developer.



2. Typical Project Lifecycle and Timeline

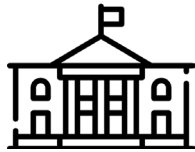
Site Identification



WEEKS 1-3

- Site visit
- Confirmation of location
- Site plan and photo simulations
- Execution of lease

Municipal Consultation



WEEKS 3-15

- Municipal consultation
- Municipal approval

Pre-Construction



WEEKS 15-23

- Pre-construction planning
- Geotechnical survey
- Construction scheduling

Construction



WEEKS 23-26

- Civil construction process

Post Construction



WEEKS 26-28

- Post construction clean up
- Site remediation



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3.1. Clarington Fire Station 1 - STC0762 - Mapping Sketch





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3.2. Clarington Fire Station 1 - STC0762 - Renderings Key Map





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3.3. Clarington Fire Station 1 - STC0762 - Photo Before





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3.4. Clarington Fire Station 1 - STC0762 - Photo After

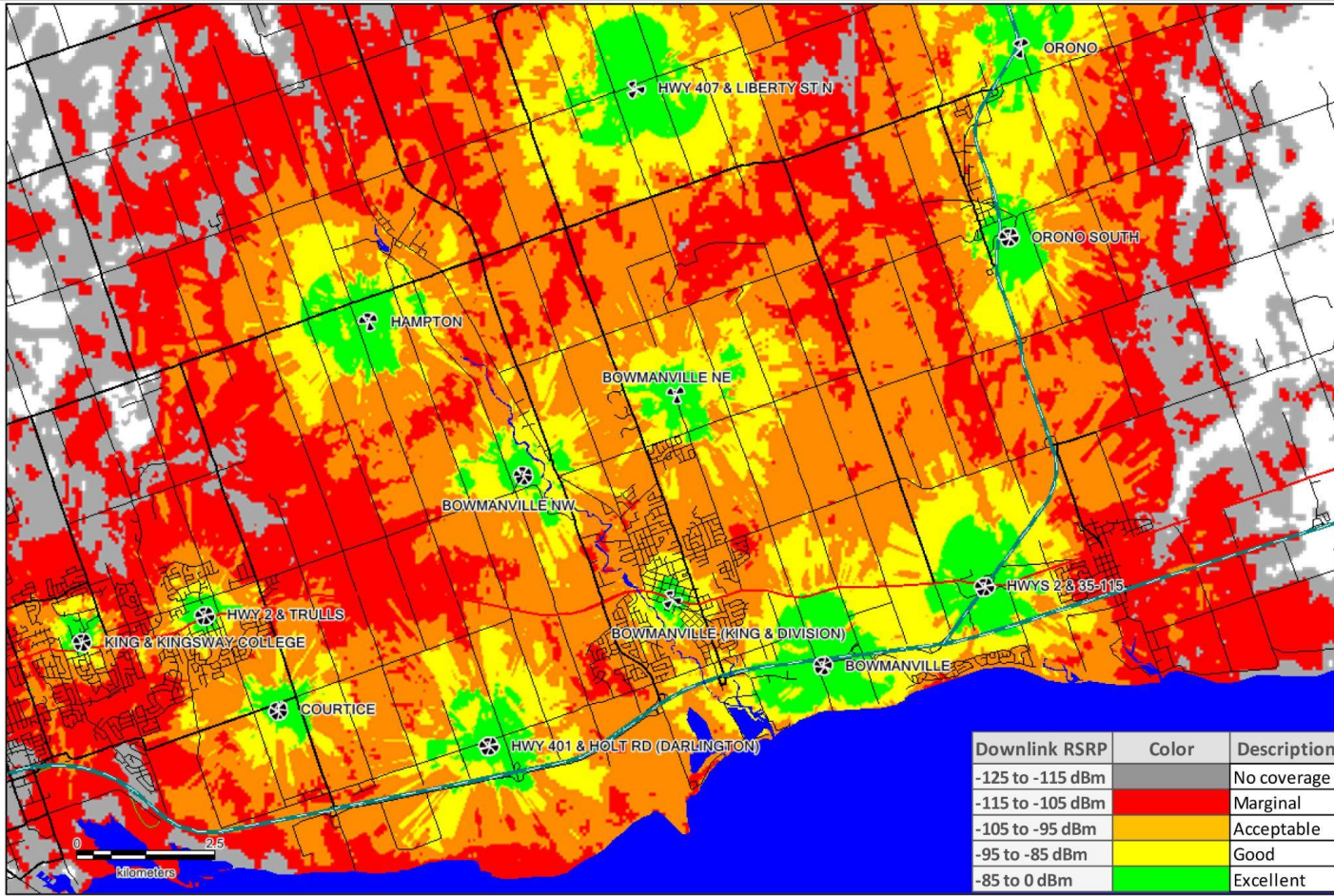




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3.5. Clarington Fire Station 1 - STC0762

Coverage Map Before (bundled with Middle Park, School Property, Lambs Rd.)

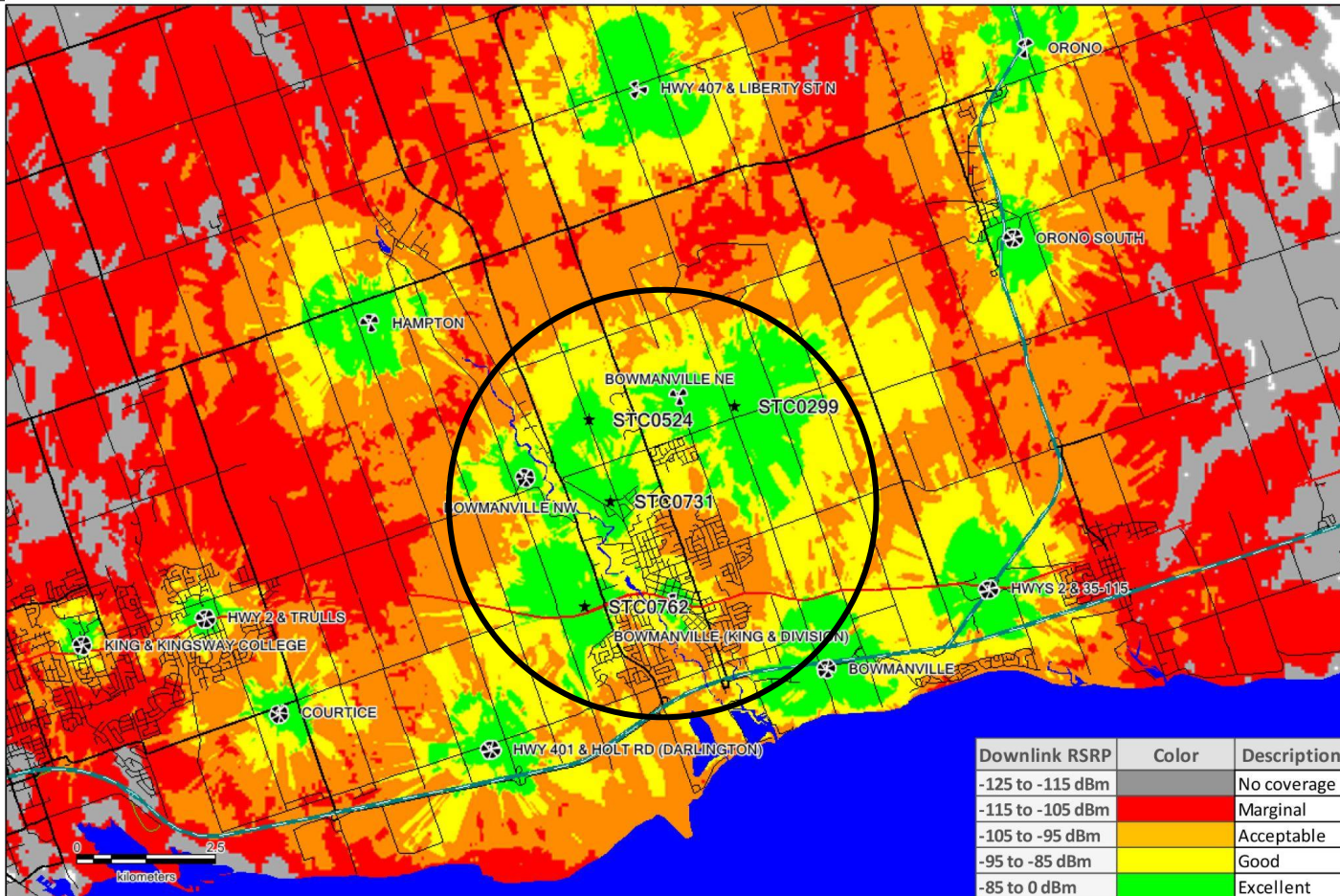




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3.6. Clarington Fire Station 1 - STC0762

Coverage Map After (bundled with Middle Park, School Property, Lambs Rd.)





Shared Tower

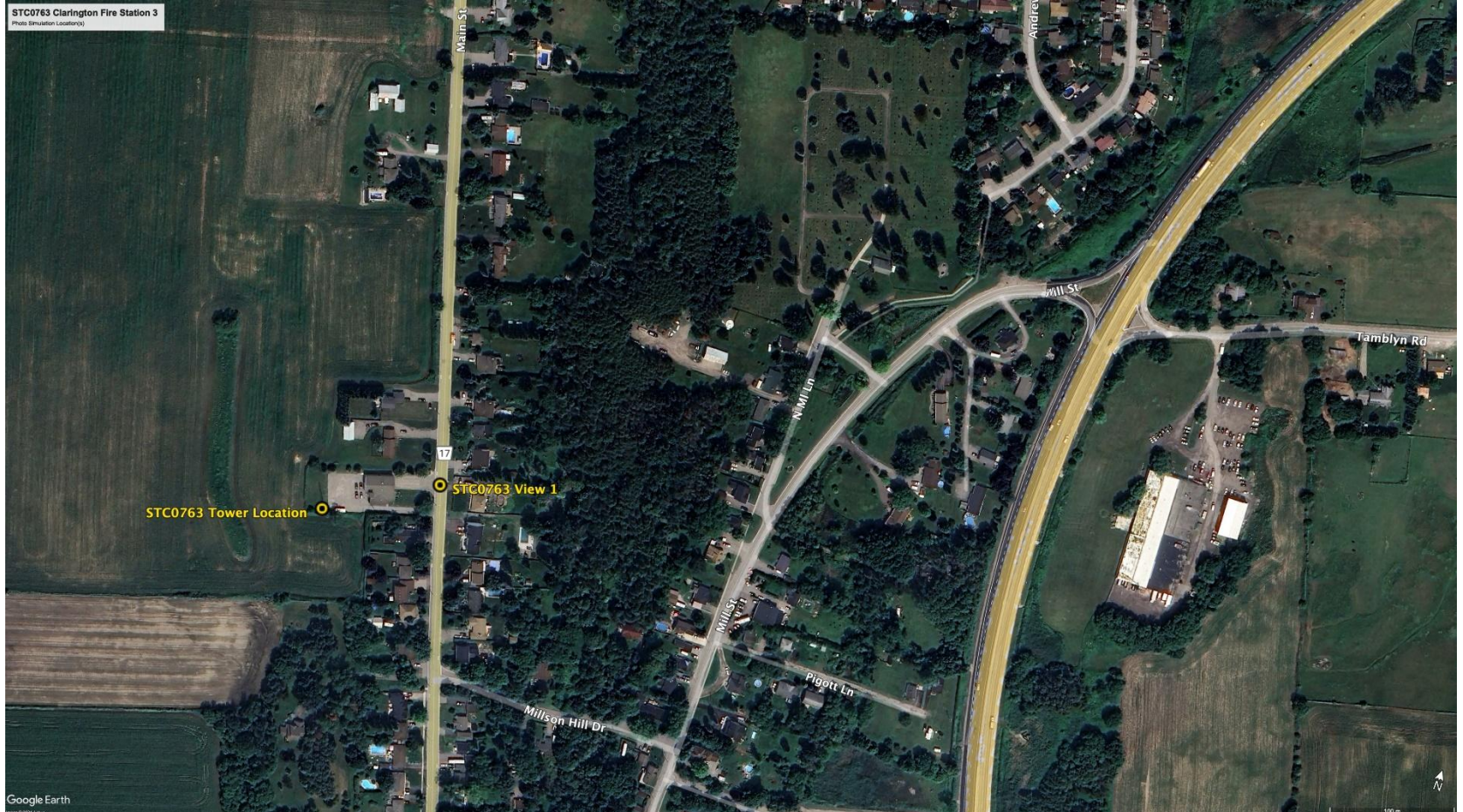
4.1. Clarington Fire Station 3 - STC0763 - Mapping Sketch





Shared Tower

4.2. Clarington Fire Station 3 - STC0763 - Renderings Key Map



4.3. Clarington Fire Station 3 - STC0763 - Photo Before



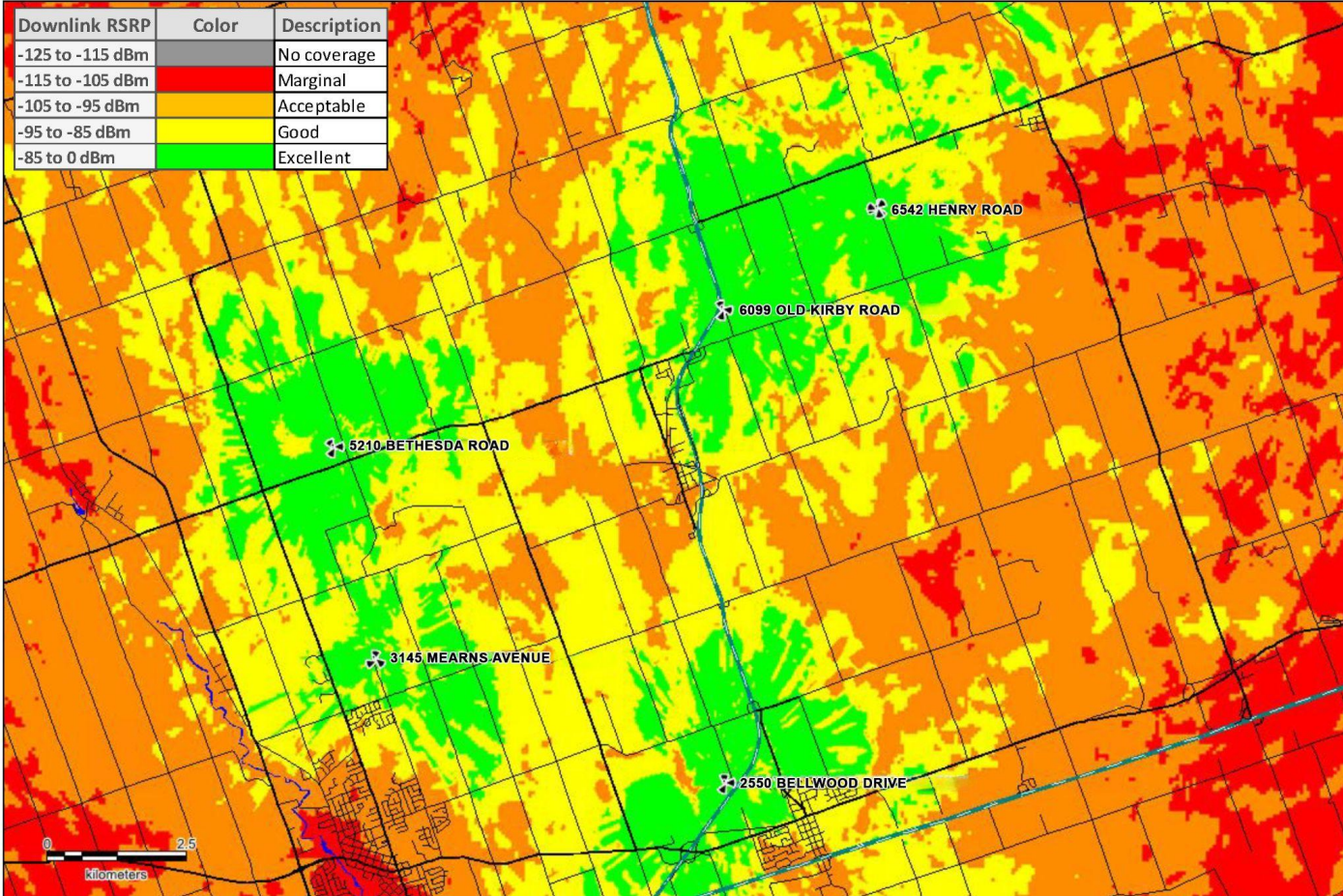
4.4. Clarington Fire Station 3 - STC0763 - Photo After





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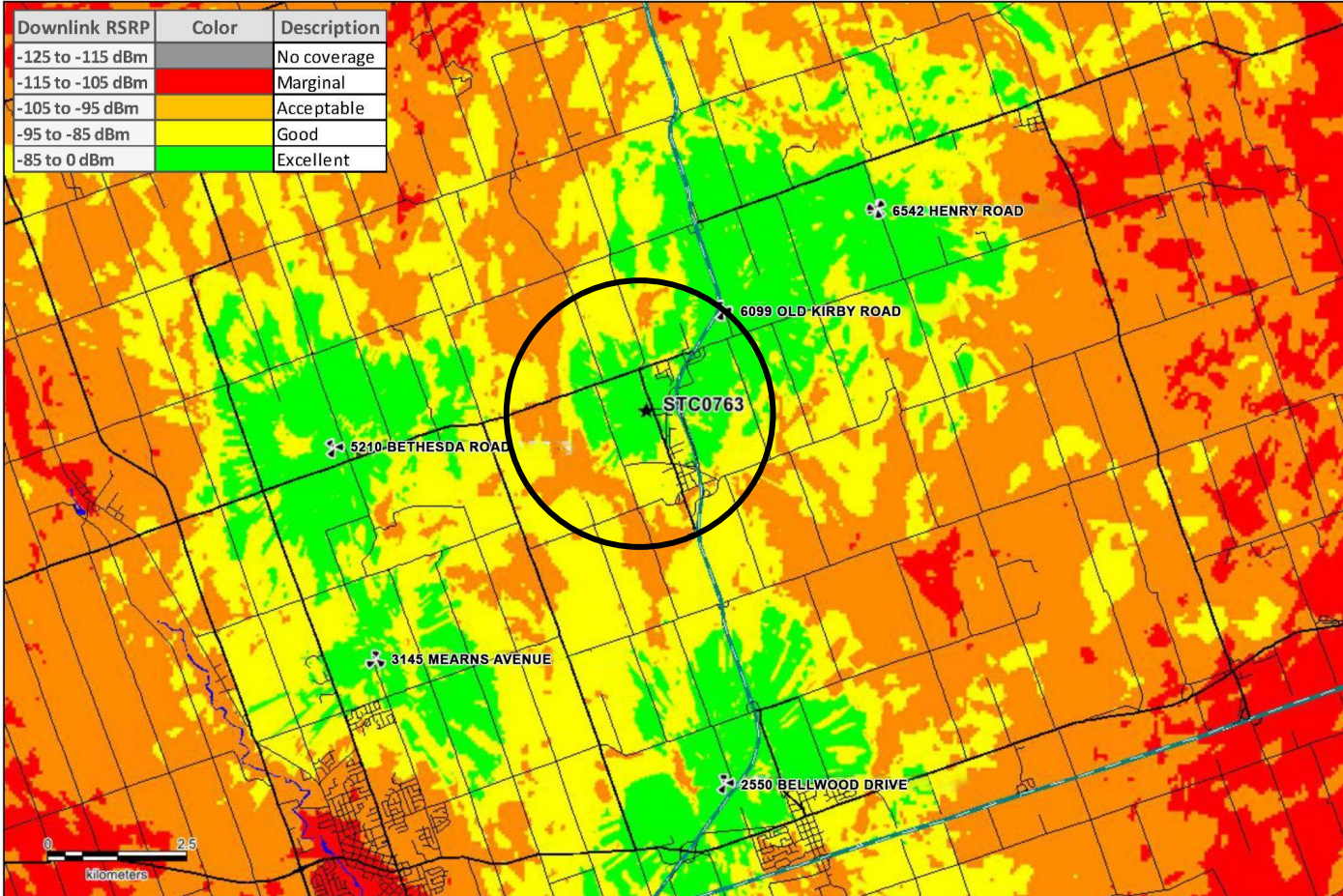
4.5. Clarington Fire Station 3 - STC0763 - Coverage Map Before





Shared Tower

4.6. Clarington Fire Station 3 - STC0763 - Coverage Map After





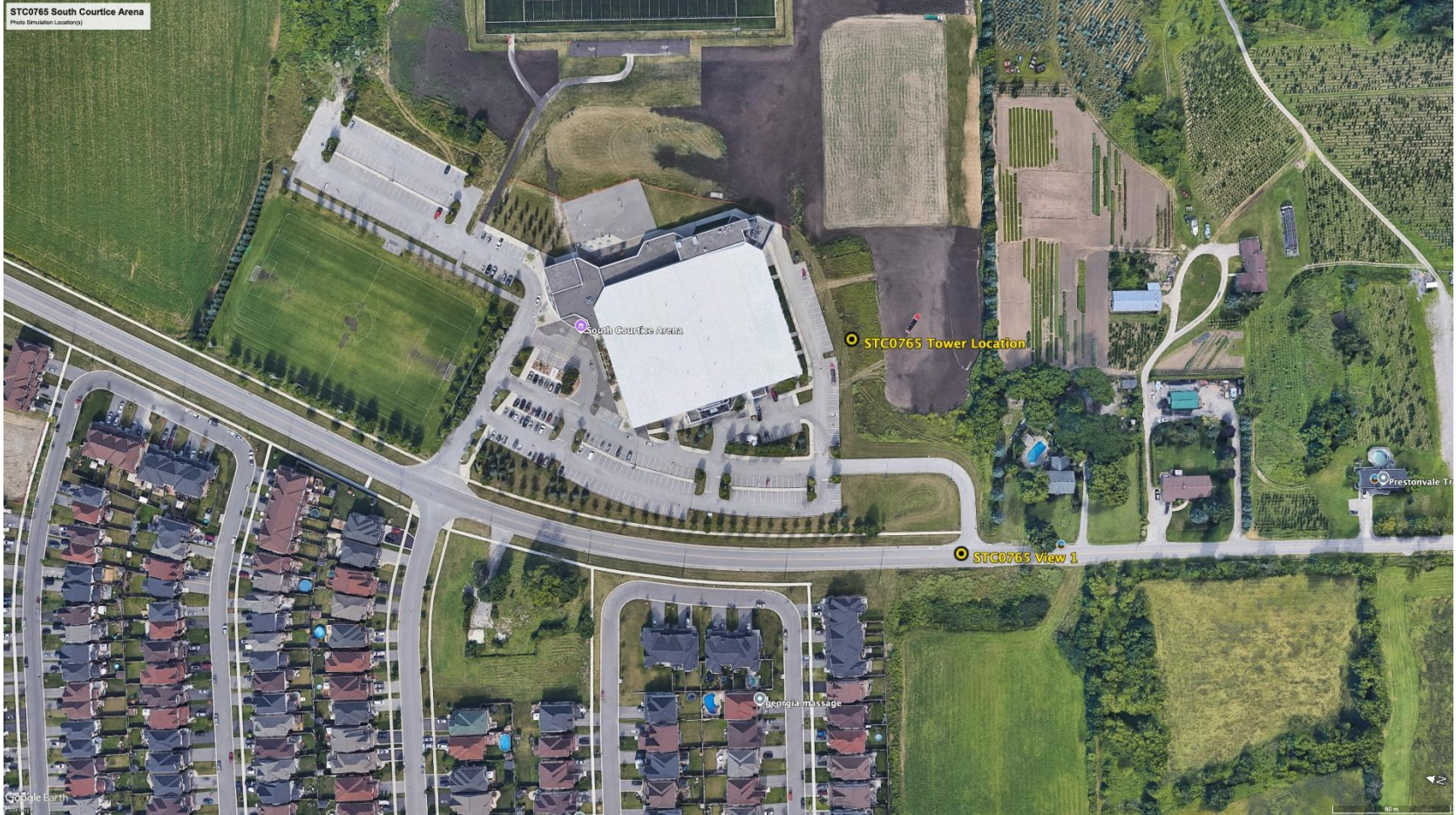
5.1. South Courtice Arena - STC0765 - Mapping Sketch





Shared Tower

5.2. South Courtice Arena - STC0765 - Renderings Key Map





Shared Tower

5.3. South Courtice Arena - STC0765 - Photo Before





Shared Tower

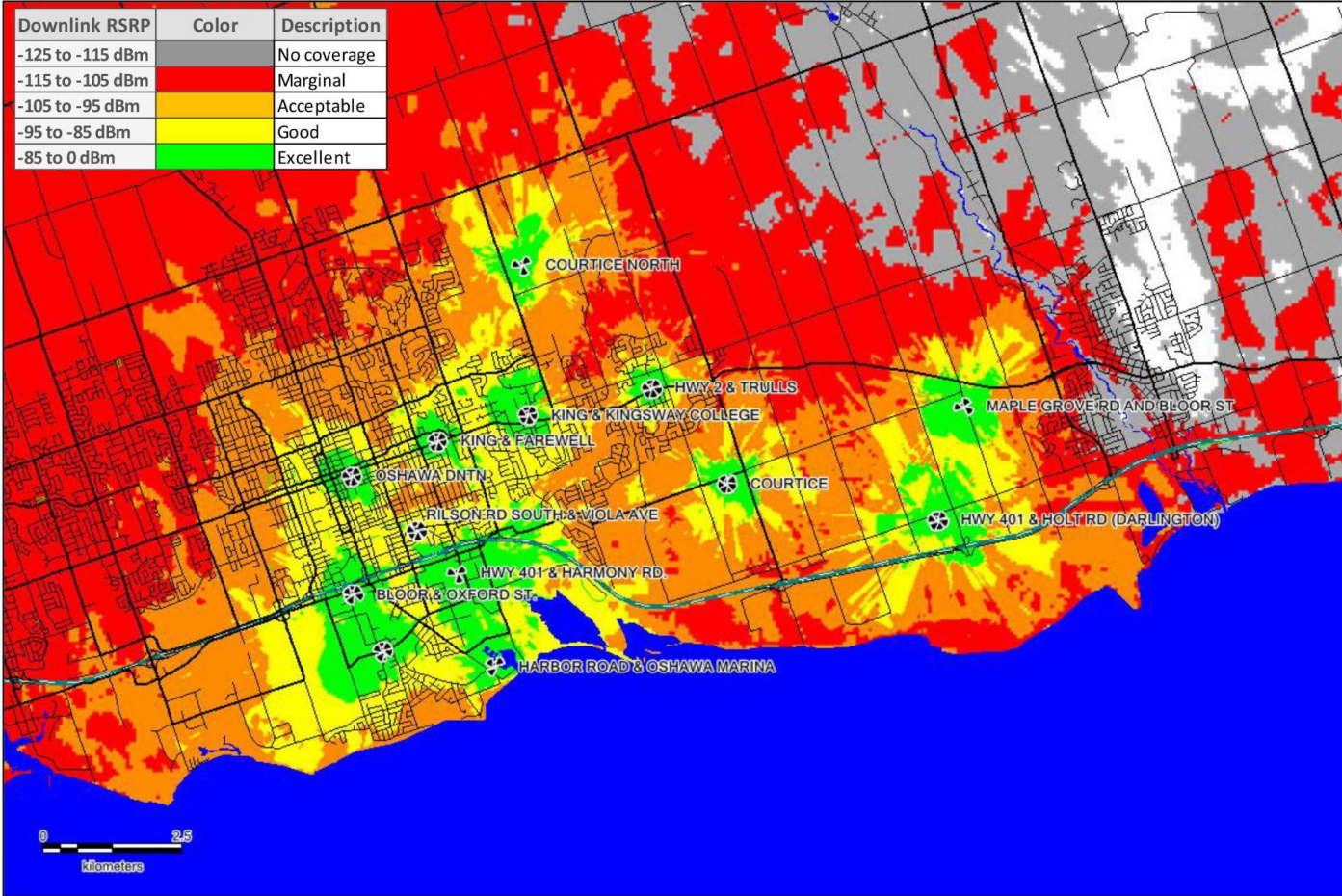
5.4. South Courtice Arena - STC0765 - Photo After





Shared Tower

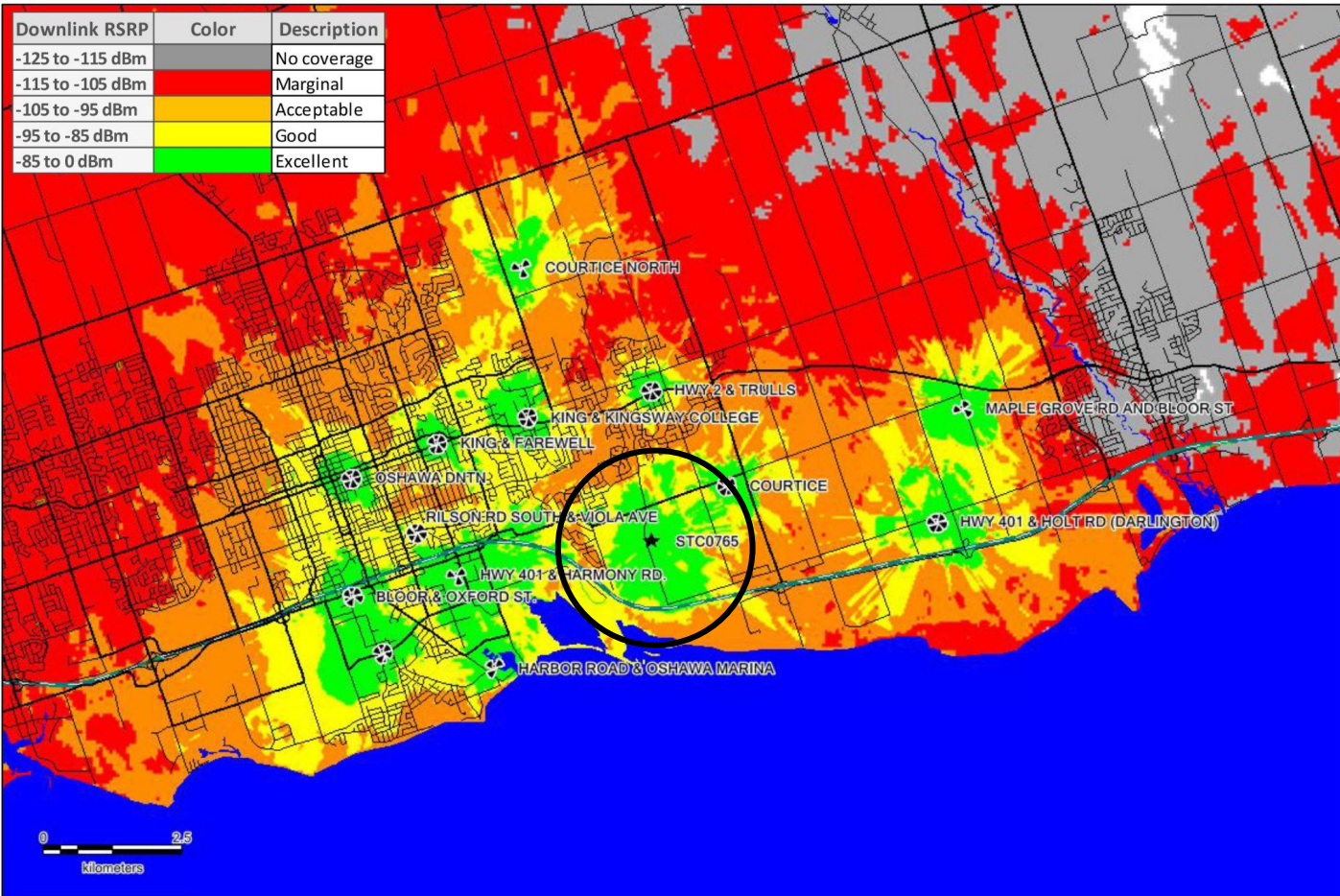
5.5. South Courtice Arena - STC0765 - Coverage Map Before





Shared Tower

5.6. South Courtice Arena - STC0765 - Coverage Map After





Shared Tower

6.1. Middle Park - STC0524 Mapping Sketch - Option 1



PLAN SHOWING LEASE AREA

BLOCK 62
REGISTERED PLAN 40M-2627
GEOGRAPHIC TOWNSHIP OF DARLINGTON
REGIONAL MUNICIPALITY OF DURHAM
MUNICIPALITY OF CLARINGTON

SCALE 1 : 1000



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STRUCTURES:
MONOPOLE
10mX10m LEASE AREA

TOWER
LATITUDE NAD 83
N 43°56'29.2" (43.941440)
LONGITUDE NAD 83
W 78°42'15.2" (-78.704222)

HYDRO CONNECTION AND ROUTING TO BE
DETERMINED BY QUALIFIED PERSONNEL IN
CONSULTATION WITH LOCAL AUTHORITY.

SHARED TOWER INC.

SITE: STC0524 BOWMANVILLE



J.D. BARNES LIMITED
SURVEYING
MAPPING
GIS
LAND INFORMATION SPECIALISTS
140 RENFREW DRIVE, SUITE 100, MARKHAM, ON L3R 4B3
T: (905) 475-3668 F: (905) 475-3362 www.jdbarnes.com

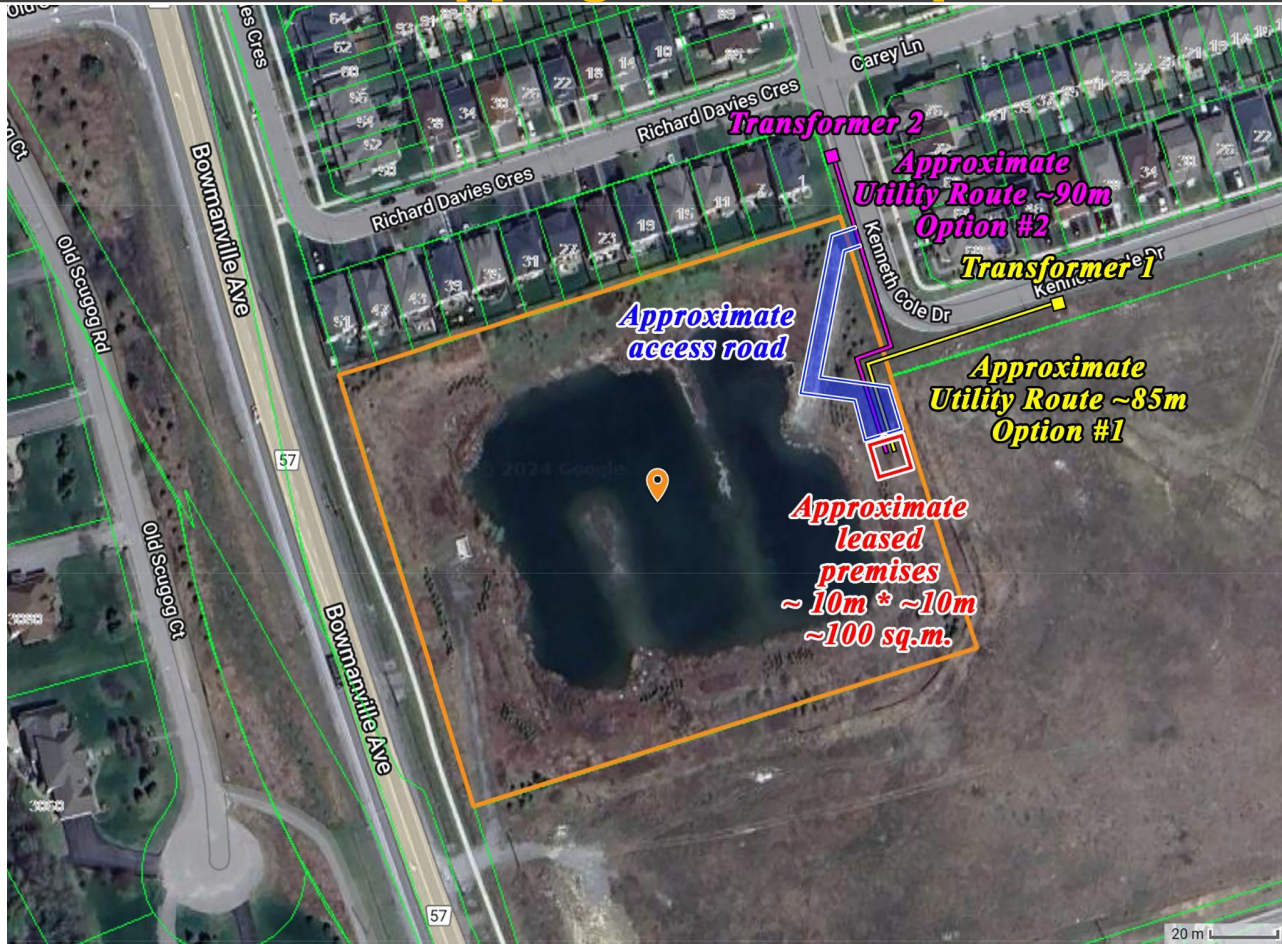
RF	DRAWN
IA	CHECKED
JUNE 30, 2023	DATED
	Ref. No.
23-15-149-00	

6/30/2023
C:\Survey\23-15-149\00\Drawing\23-15-149-00.dgn
PLOTTED: 6/30/2023



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6.2. Middle Park - STC0524 Mapping Sketch - Option 2





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7.1. Tyrone Community Centre - STC0766 - Mapping Sketch



Central Lake Ontario Conservation Authority

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7.2. Tyrone Community Centre - STC0766 - Renderings Key Map





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7.3. Tyrone Community Centre - STC0766 - Photo Before





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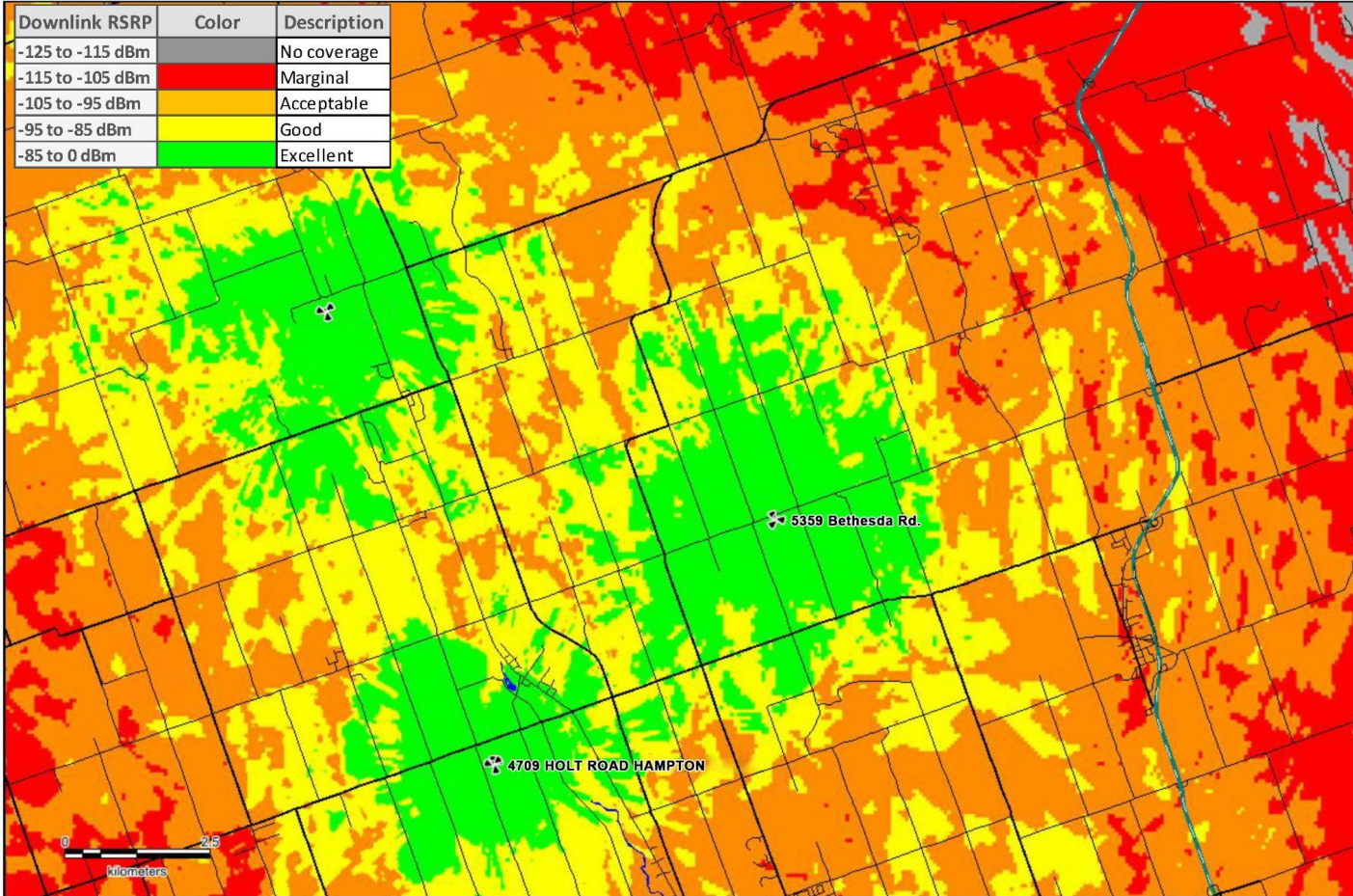
7.4. Tyrone Community Centre - STC0766 - Photo After





Shared Tower

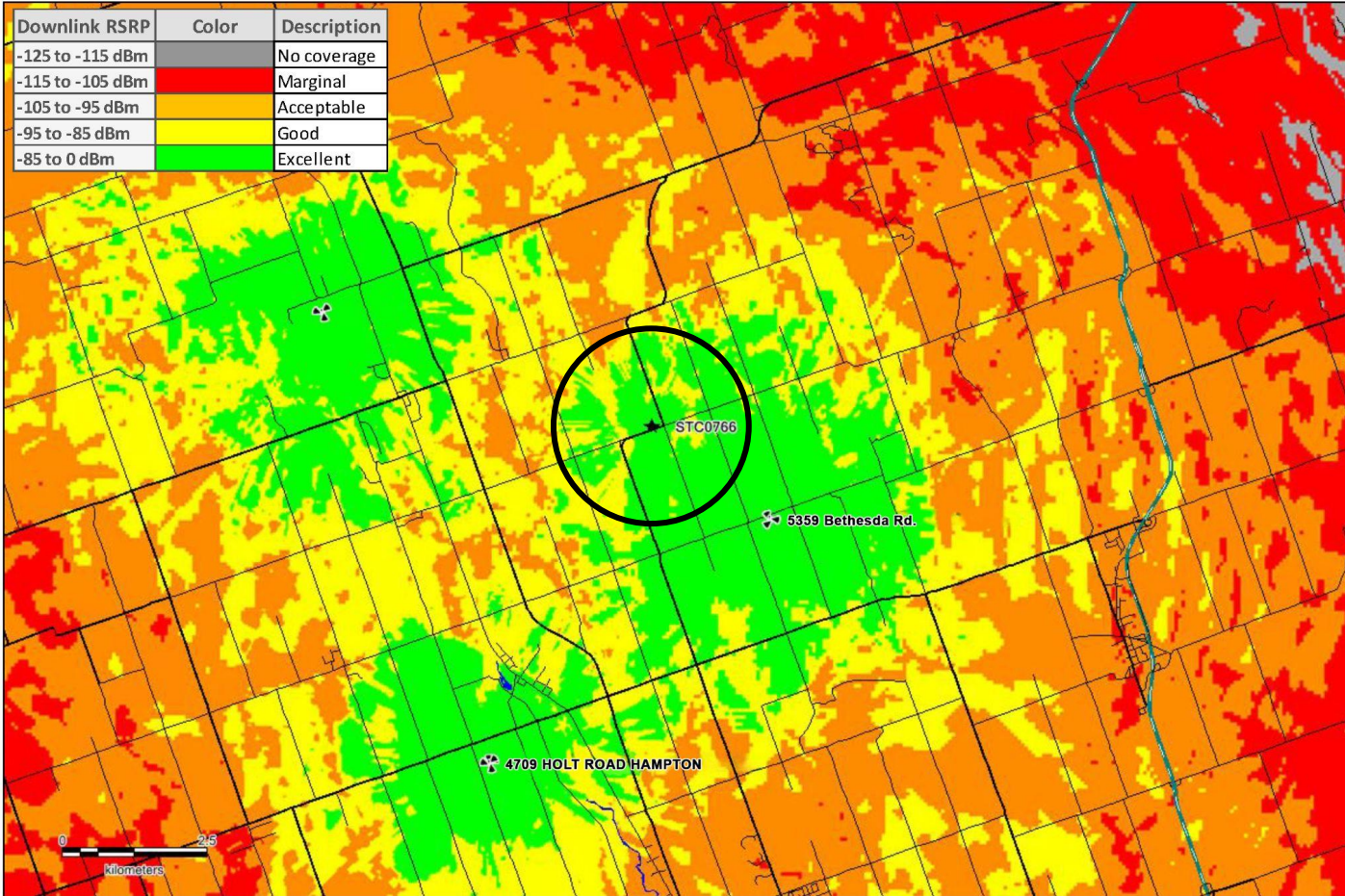
7.5. Tyrone Community Centre - STC0766 – Coverage Map Before





Shared Tower

7.6. Tyrone Community Centre - STC0766 – Coverage Map After





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8.1. Solina Community Centre - STC0764 - Location #1 - Mapping Sketch



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8.2. Solina Community Centre - STC0764 - Location #1 - Renderings Key Map





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8.3. Solina Community Centre - STC0764 - Location #1 - Photo Before





Shared Tower

8.4. Solina Community Centre - STC0764 - Location #1 - Photo After





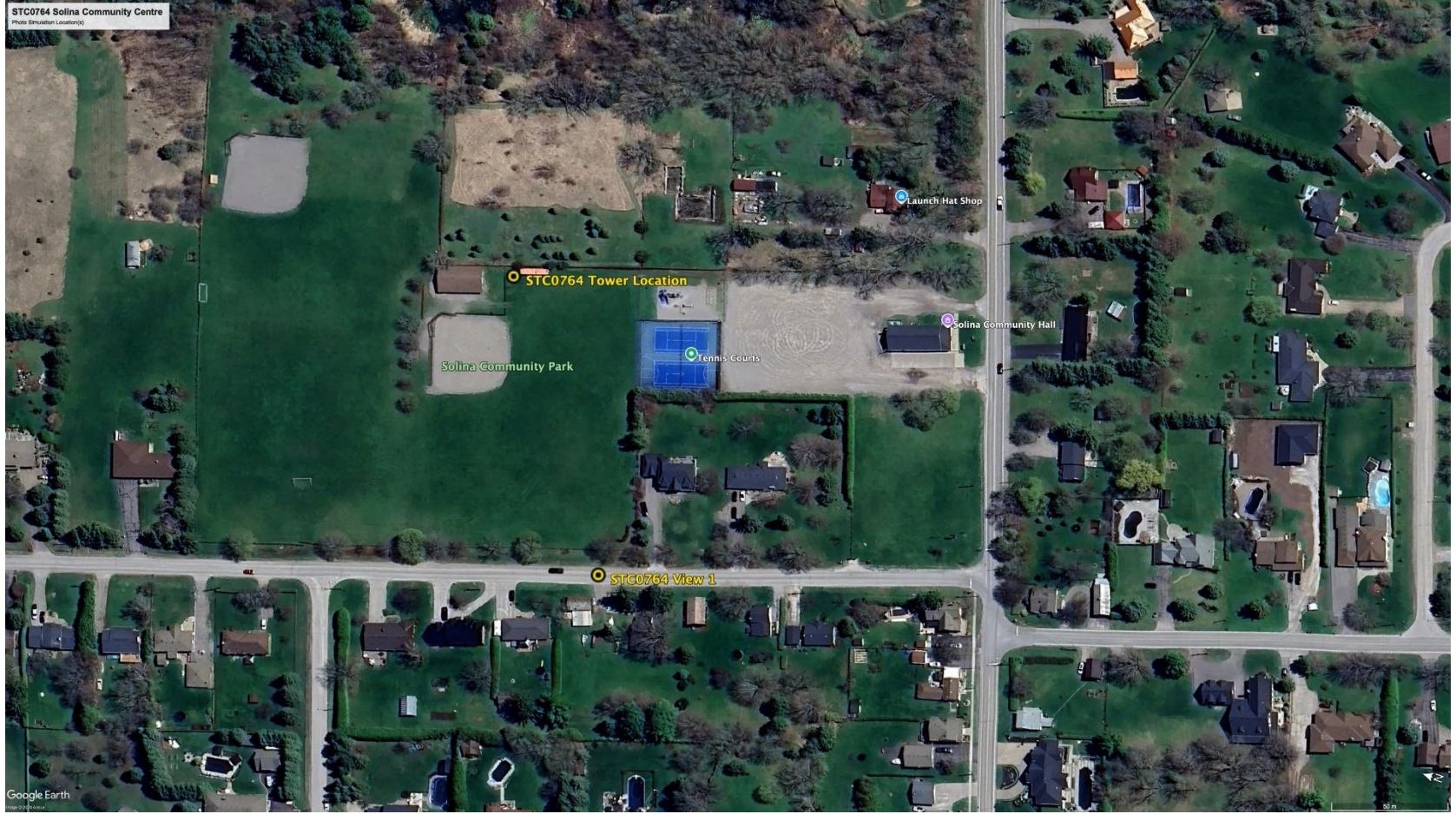
8.5. Solina Community Centre - STC0764 - Location #2 - Mapping Sketch





Shared Tower

8.6. Solina Community Centre - STC0764 - Location #2 - Renderings Key Map





Shared Tower

8.7. Solina Community Centre - STC0764 - Location #2 - Photo Before





Shared Tower

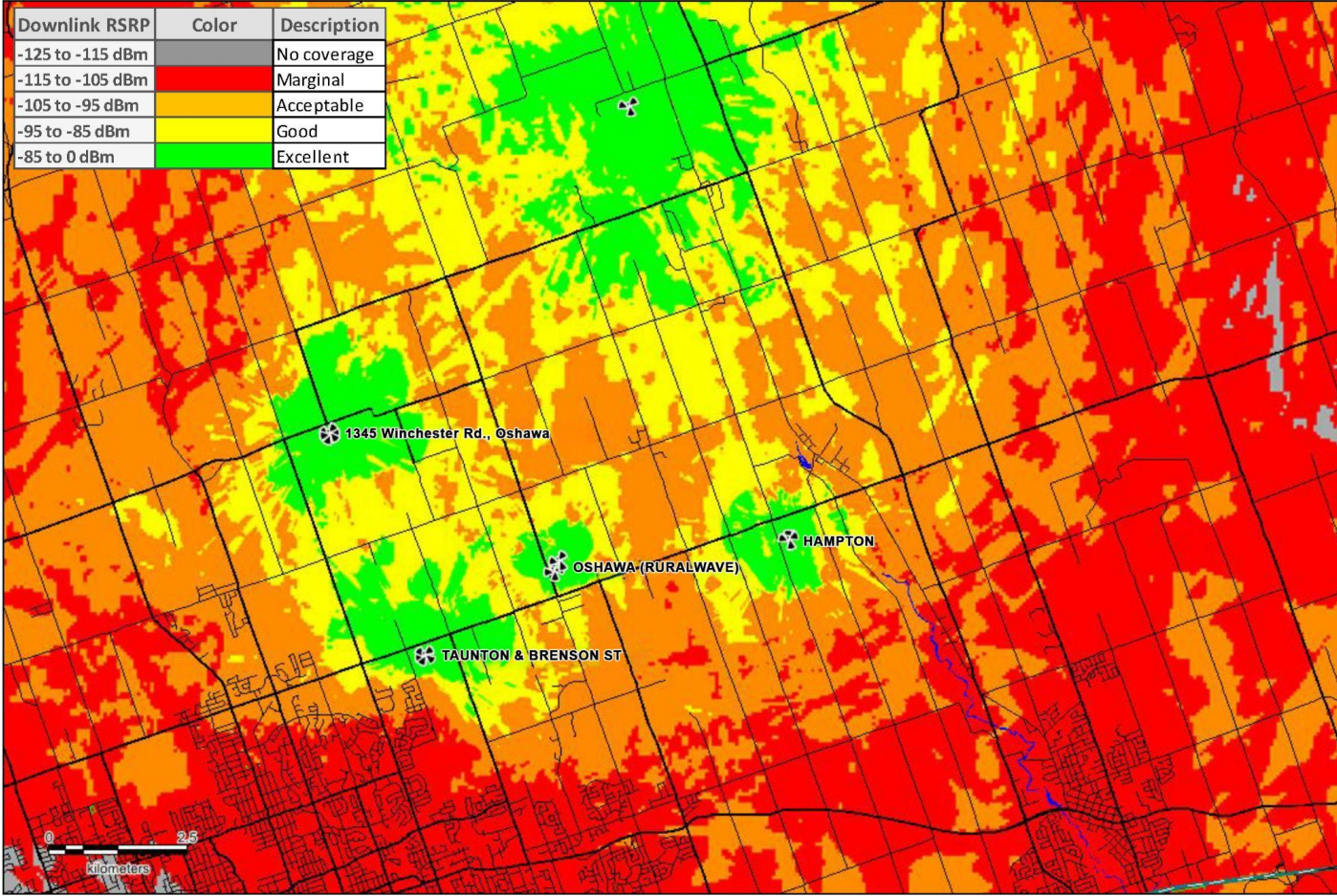
8.8. Solina Community Centre - STC0764 - Location #2 - Photo After





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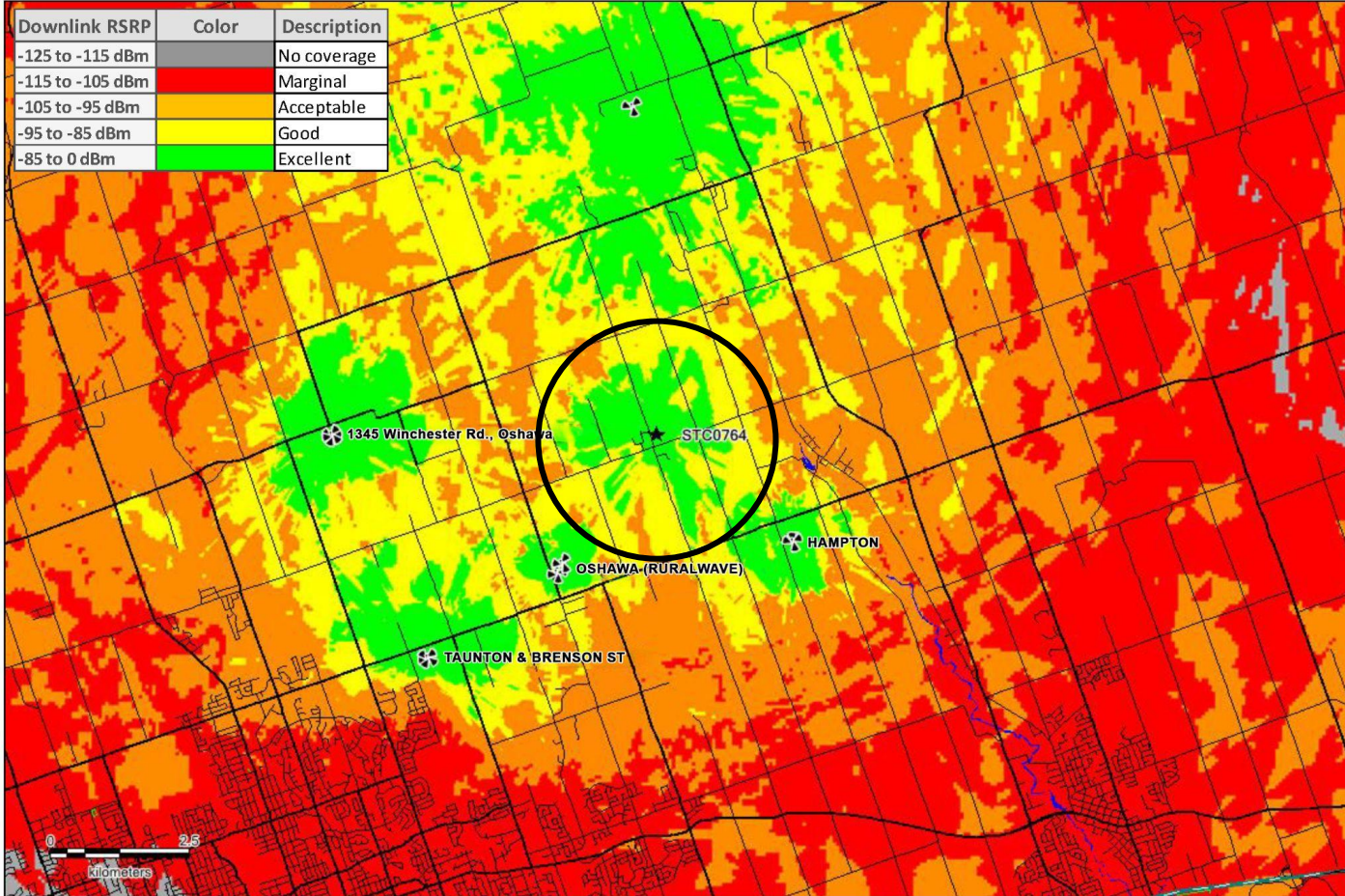
8.9. Solina Community Centre - STC0764 - Coverage Map Before





Shared Tower

8.10. Solina Community Centre - STC0764 - Coverage Map After



9.1. Monopole tower examples

(for all the sites except Clarington Fire Station 3 - STC0763)



9.2. Compound examples with cabinets *(for all the sites except Clarington Fire Station 3 - STC0763)*



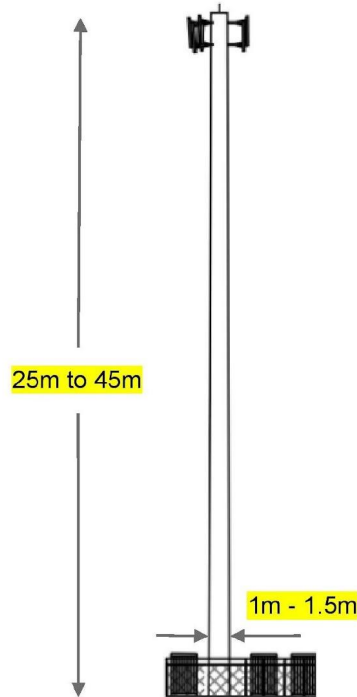
9.3. Foundation examples (for all the sites except Clarington Fire Station 3 - STC0763)





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9.4. Tower compound & equipment layout (for all the sites except Clarington Fire Station 3 - STC0763)



Monopole

Foundation Pier (Diameter): 1.8m to 2.8m

Example site:

[STC0048](#), [STC0029](#)

[STC0121](#),

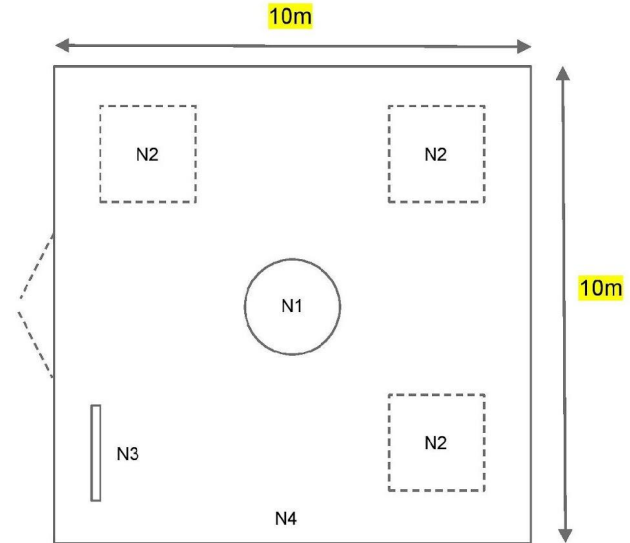
Notes:

N1 - Monopole

N2 - Reinf concrete pad for equipment cabinet (See *Table 1* for Typ. sizes)

N3 - Hydro meter and disconnect

N4 - 1.8m high chain link fence



Compound Size - 10m x 10m

Note - We prefer to go with standard 15m x 15m compound when possible



Shared Tower

10.1. Street Works Example: Port Stanley – STC0400

Before:



After:





Shared Tower

10.2. Street Works Example: Port Stanley – STC0401

Before:



After:



STC0402



STC0403





Shared Tower

10.4. Street Works Example: Port Stanley – STC0404

Before:



After:





Shared Tower

10.5. Street Works Example: STC0412

Before:

After: Option A

After: Option B





Shared Tower

10.6. Street Works Example: STC0413

Before:

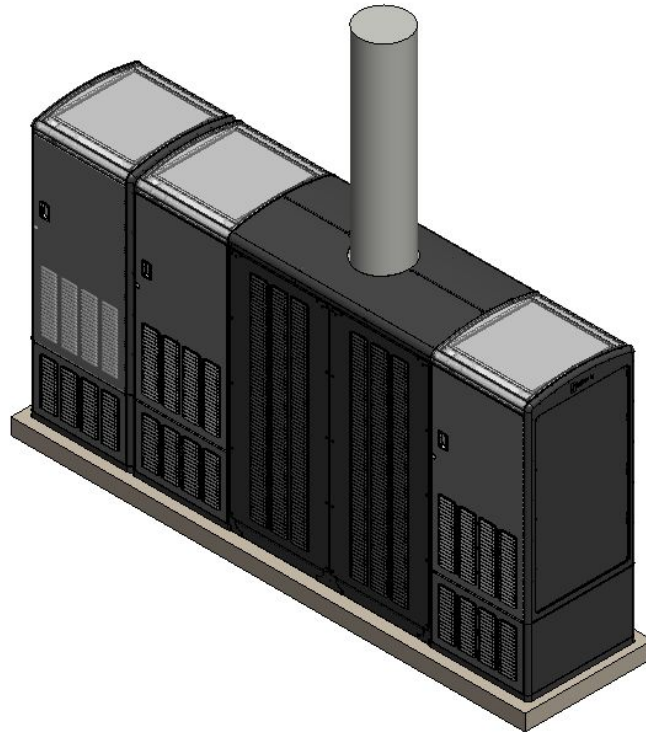
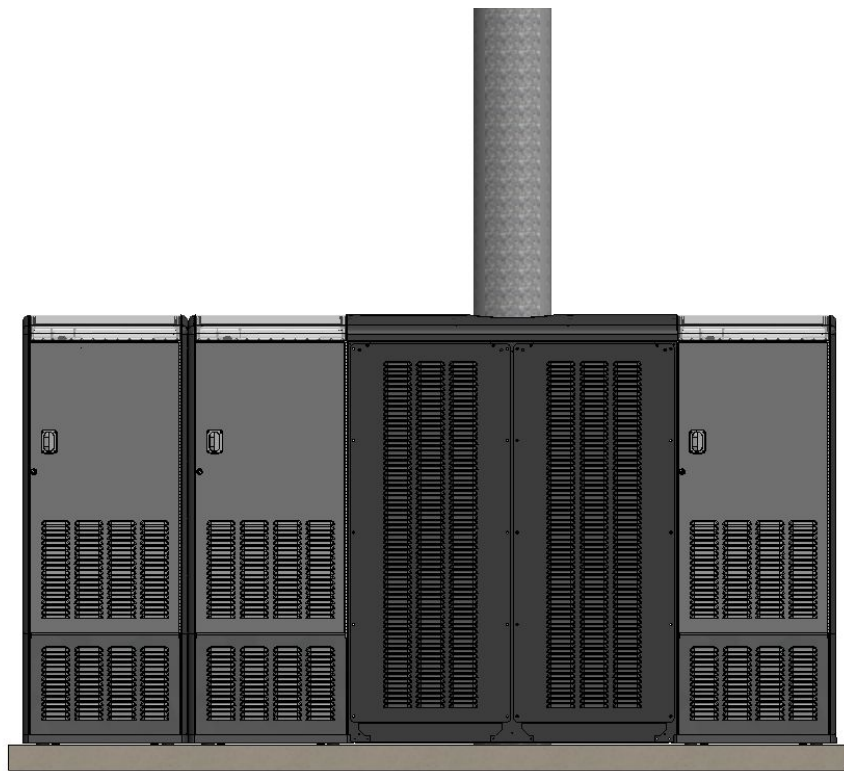
After: Option A

After: Option B



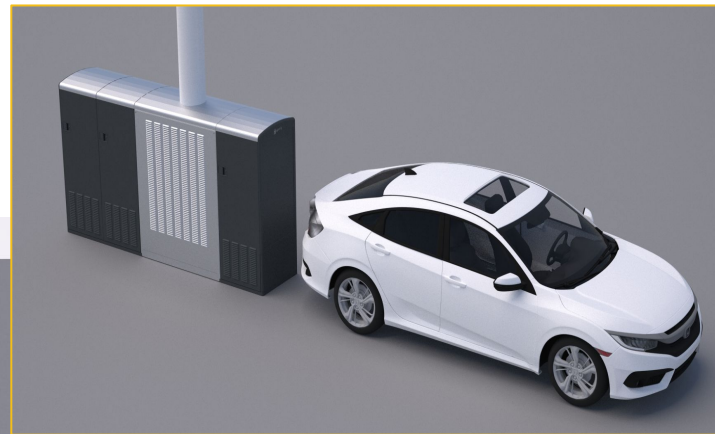
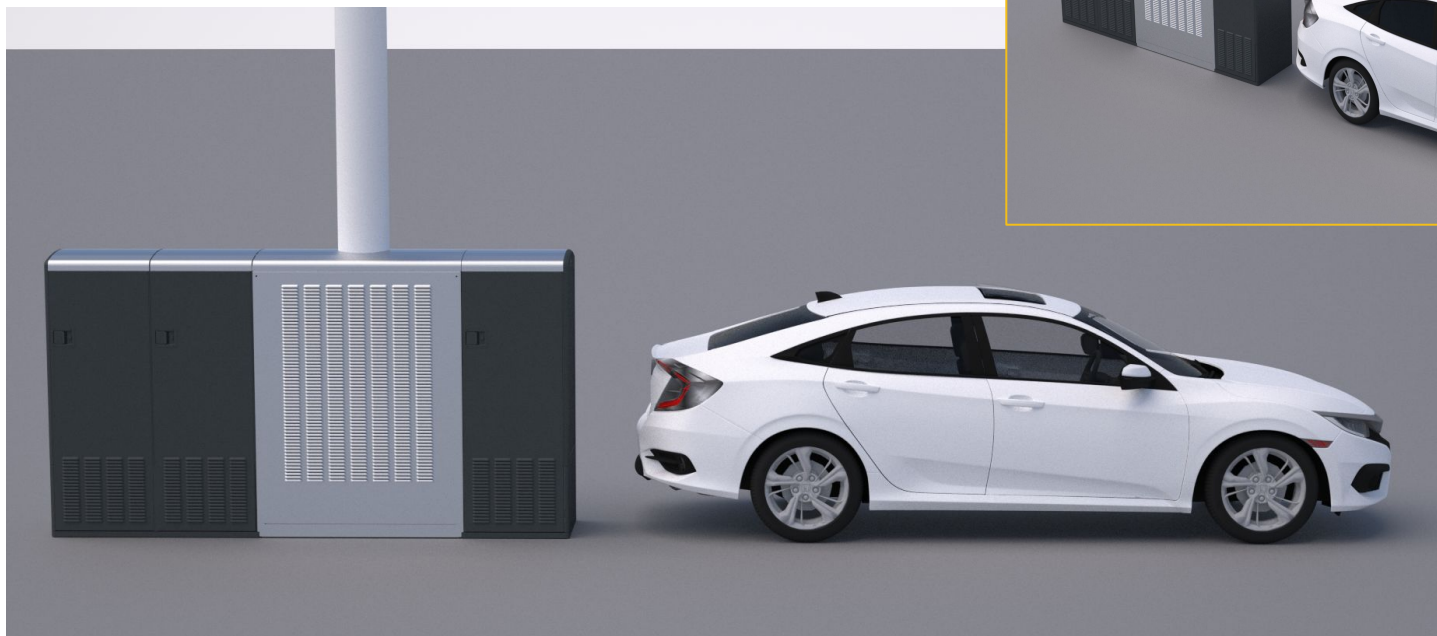
Cabinet System

18 RRU (12x6) Cabinets



10.8. Street Works Footprint

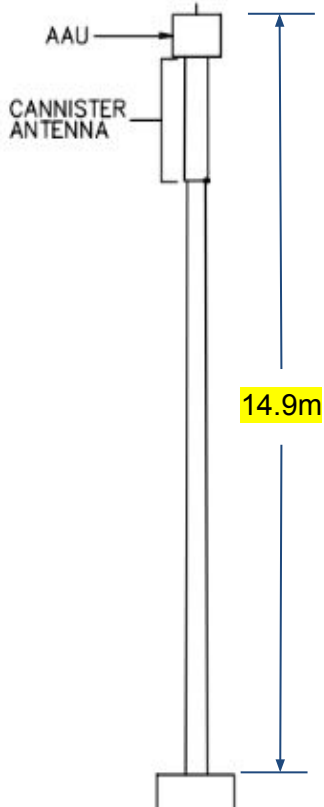
The **largest** footprint is less than the size of a 2022 Honda Civic.





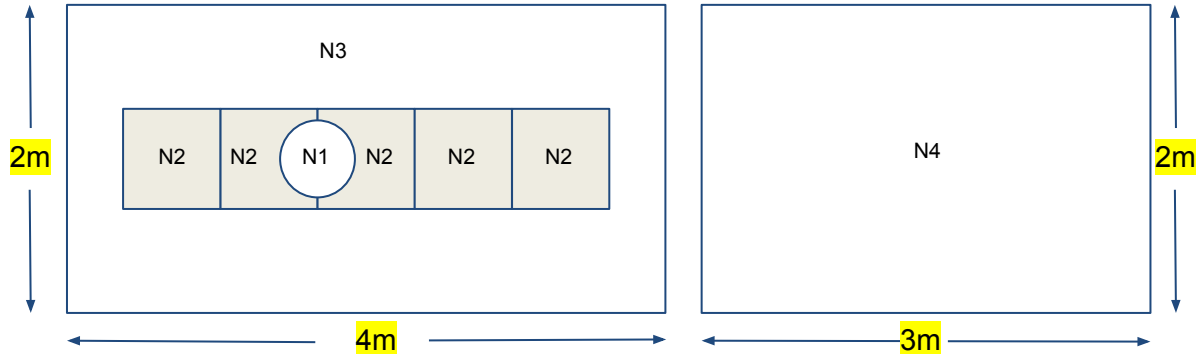
Shared Tower

10.9. Street Works Equipment Layout



**Streetwork / Monopole
(63 & 75 Port Canister)**

- Notes:
- N1 - Monopole
 - N2 - Equip Cabinet (648mm x 648mm)
 - N3 - Reinf concrete pad for equipment cabinet
 - N4 - Space for battery backup
 - N5 - Option to add additional cabinet

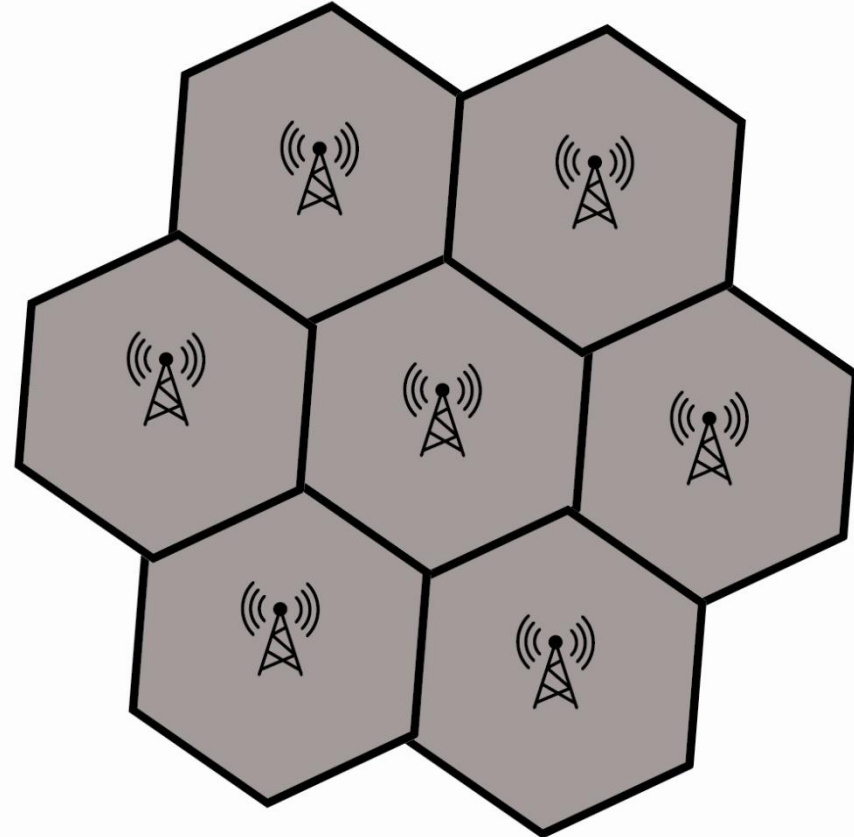


Compound size (75 Port) - 4m x 2m + Space for Battery Backup - 2m x 3m

11. How the Wireless Network works

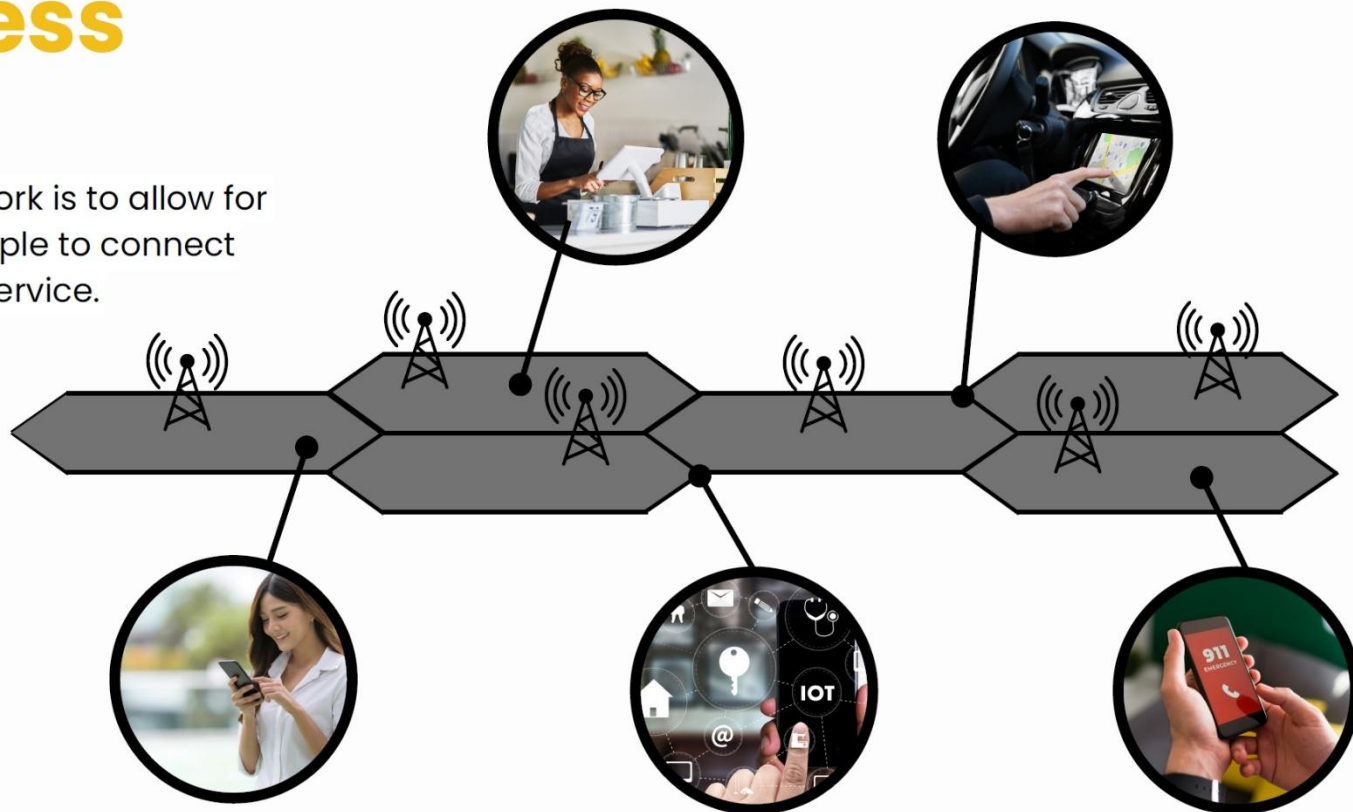
In order to keep up with the increasing wireless demands, carriers must establish a *Wireless Network*.

The wireless network is comprised of multiple installations working together to provide **constant, consistent** and **reliable** wireless coverage.



The Wireless Network

A goal for the wireless network is to allow for the greatest number of people to connect with the highest quality of service.





Shared Tower

11. How the Wireless Network works

The Wireless Network

How each cell site supports the other

Shouldering network traffic with other towers to ensure seamless wireless activity for users and that areas in between towers are also serviced (ie) roadways, public areas, hamlets, etc.

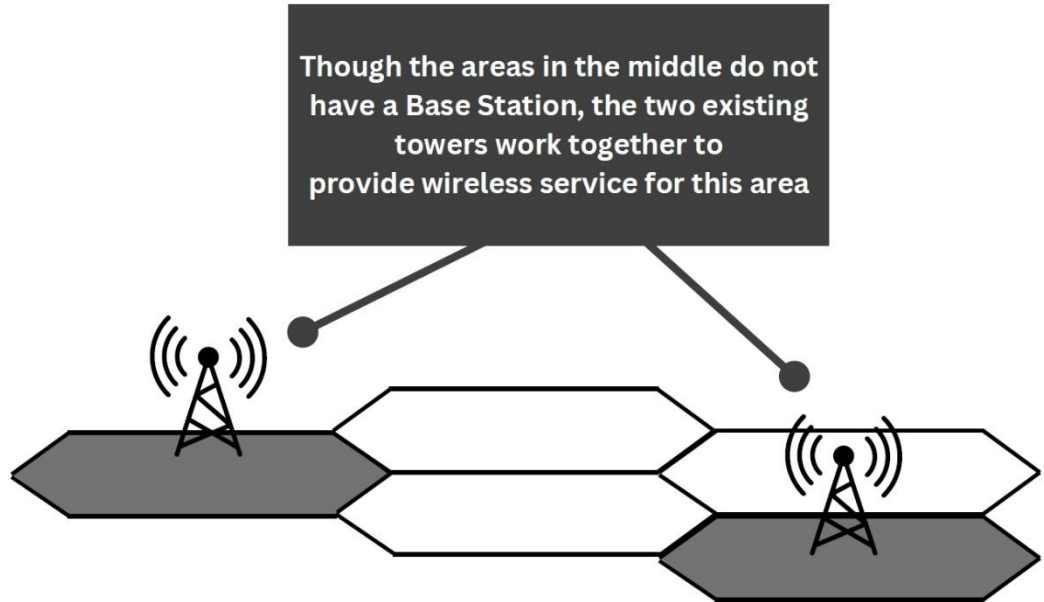
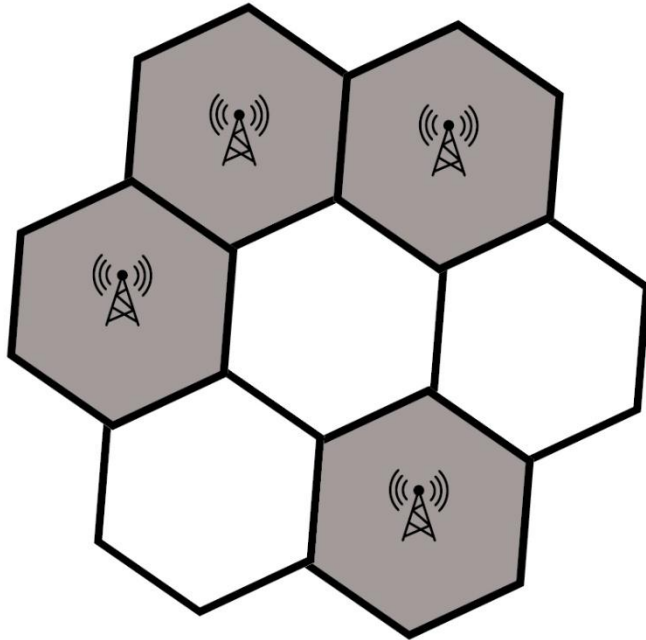


Everyone is afforded the same level of coverage despite the activity or geographical location.

11. How the Wireless Network works

Wireless Coverage in areas without telecommunications infrastructure

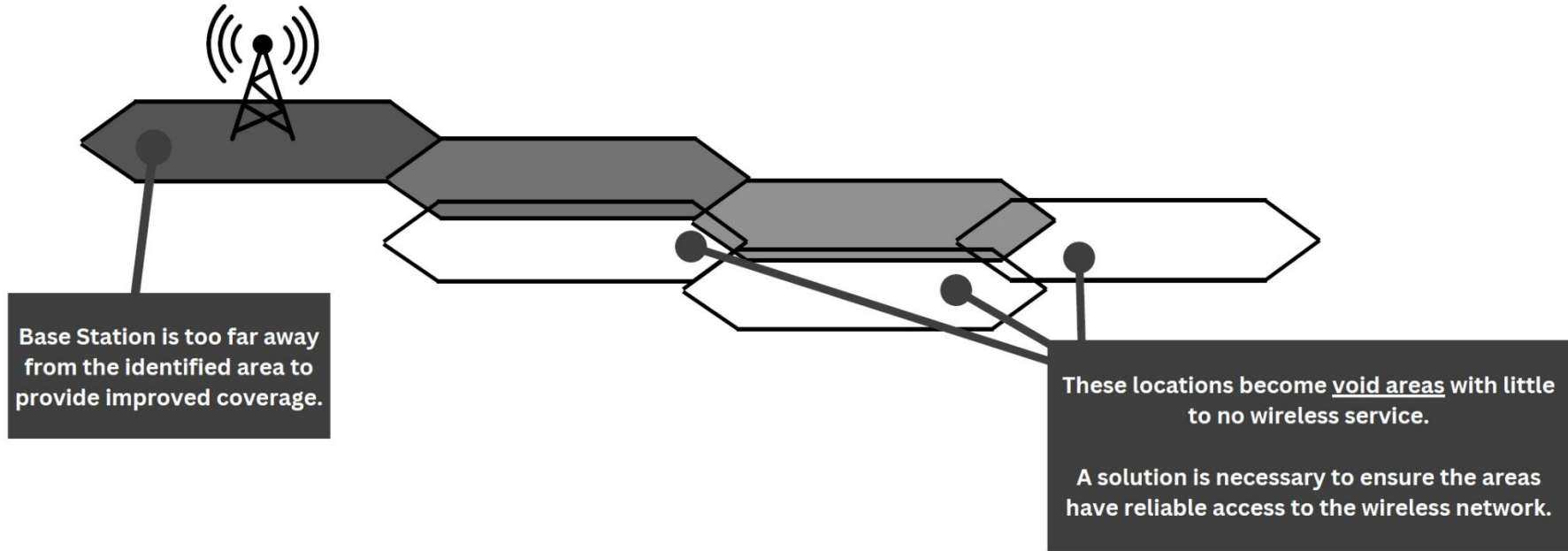
Not every area contains telecommunications infrastructure but, may still have access to the wireless network.





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11. How the Wireless Network works



What impacts the Wireless Network - *Distance*

A network's signal degrades over space. The further away a user is from a tower, the weaker the signal strength.

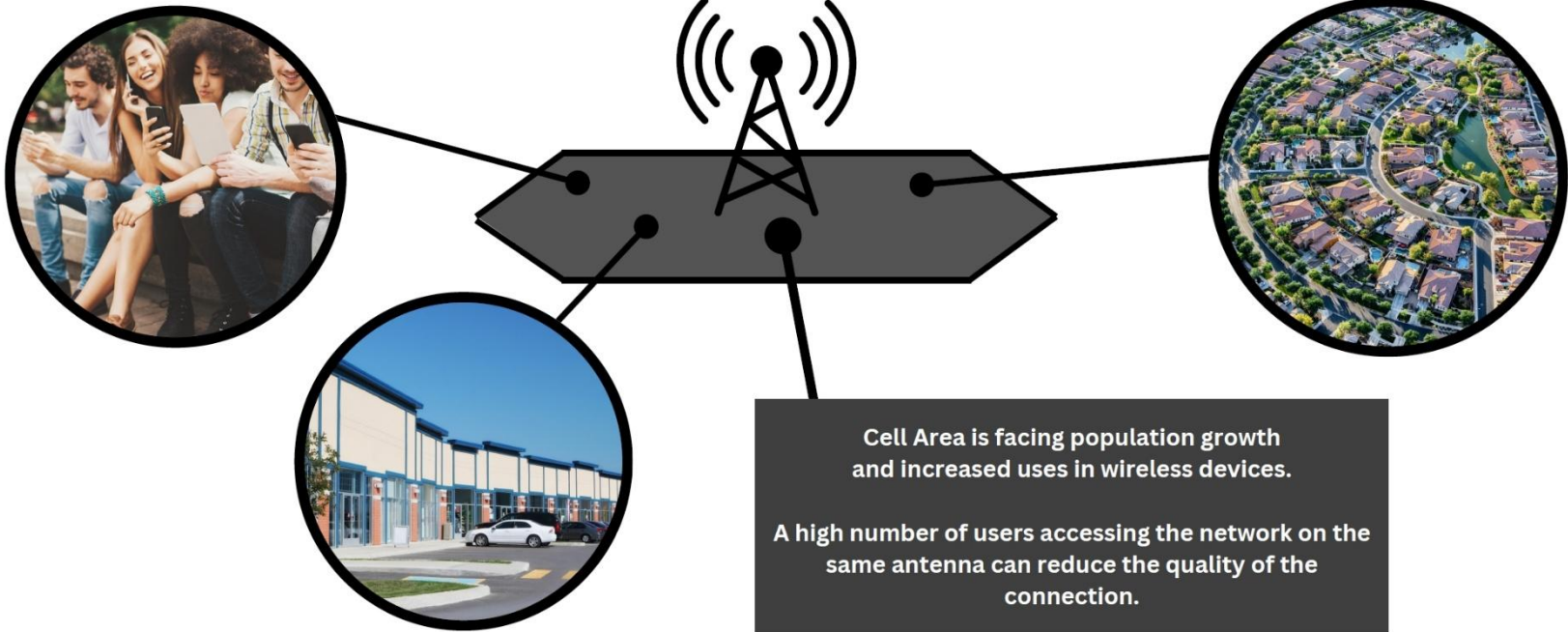


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11. How the Wireless Network works

What impacts the Wireless Network – Capacity

As more of the population uses the network for school, work, and personal use, further support is required to ensure the same level of service.

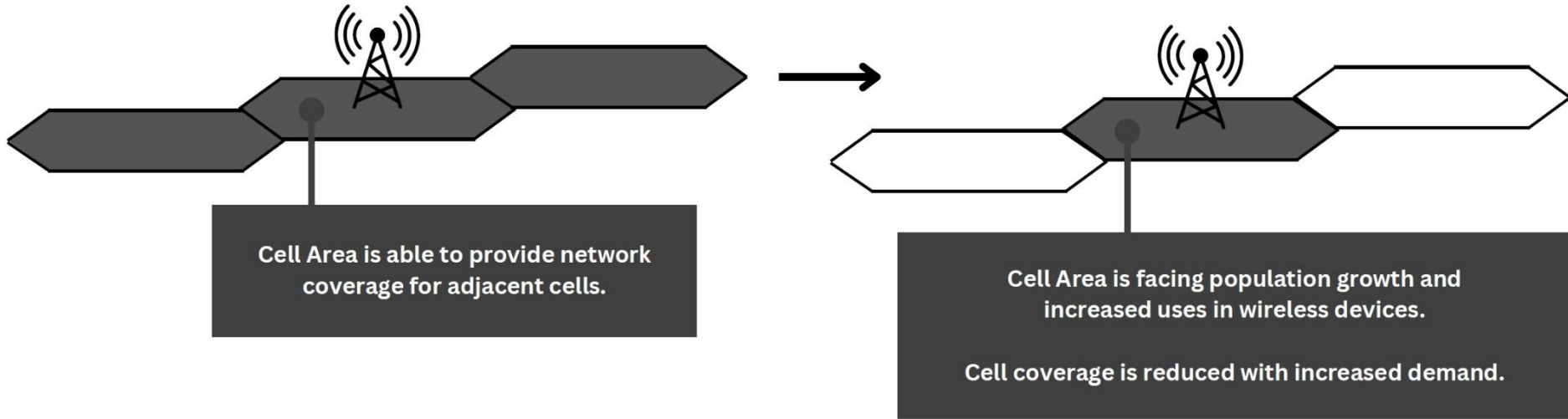




Shared Tower

11. How the Wireless Network works

What impacts the Wireless Network - Capacity



As municipalities expand, the population grows and the use of our wireless devices increase, more cell sites are required to keep up with the demands of our wireless technology.

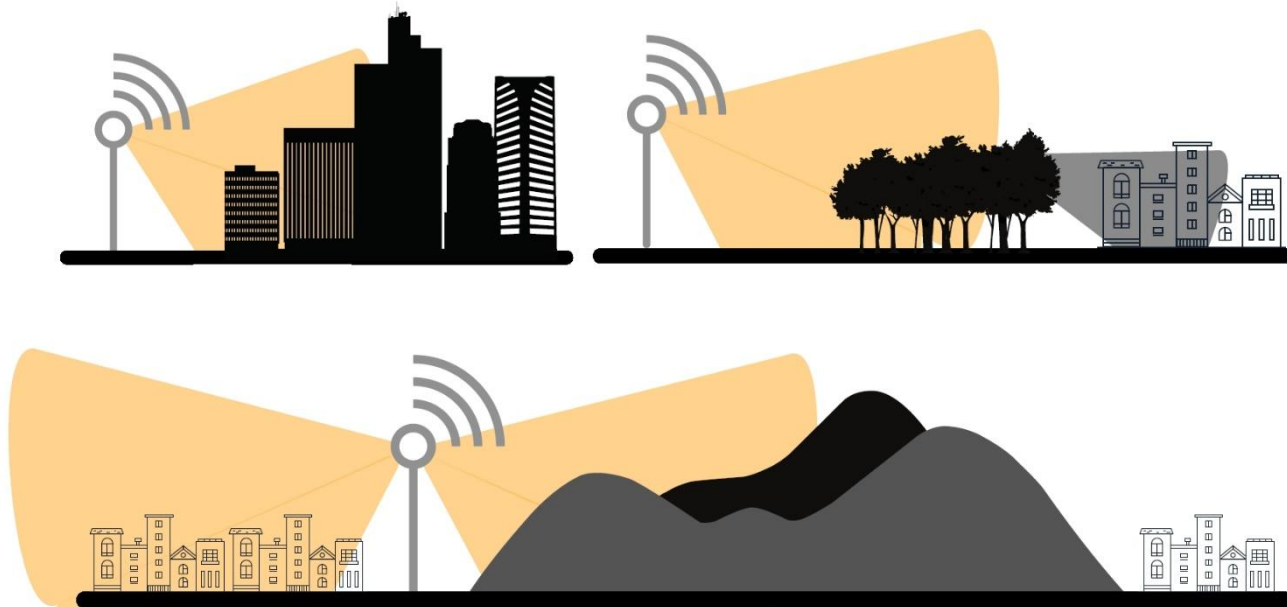


Shared Tower

11. How the Wireless Network works

What impacts the Wireless Network – *Natural & Built Features*

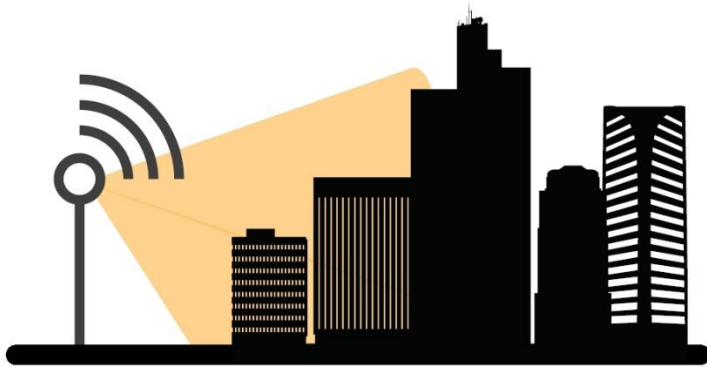
Network coverage provided by a Base Station is never a perfect “circle” as it is impacted by both built and natural surroundings.



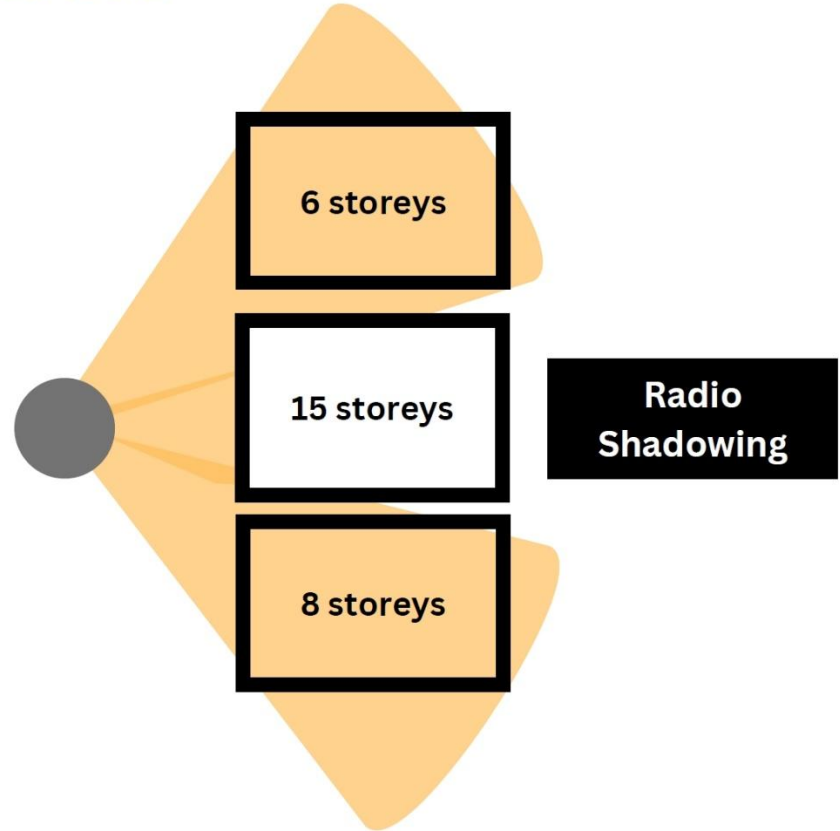


11. How the Wireless Network works

What impacts the Wireless Network – Built Features



Buildings and structures can degrade signal strength. Often “shadowing” can also occur with tall buildings and greatly decrease service.

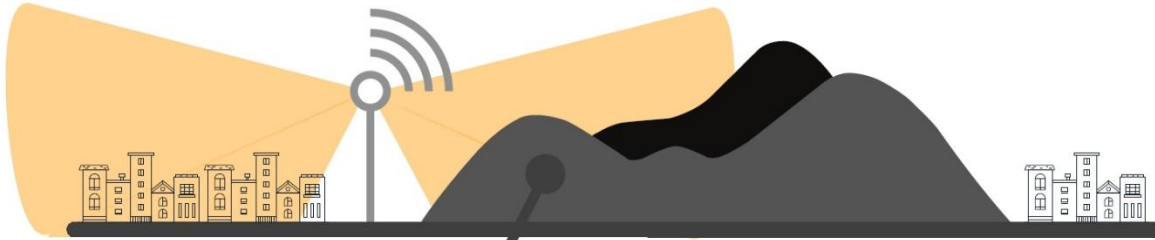




Shared Tower

11. How the Wireless Network works

What impacts the Wireless Network – *Natural Features*



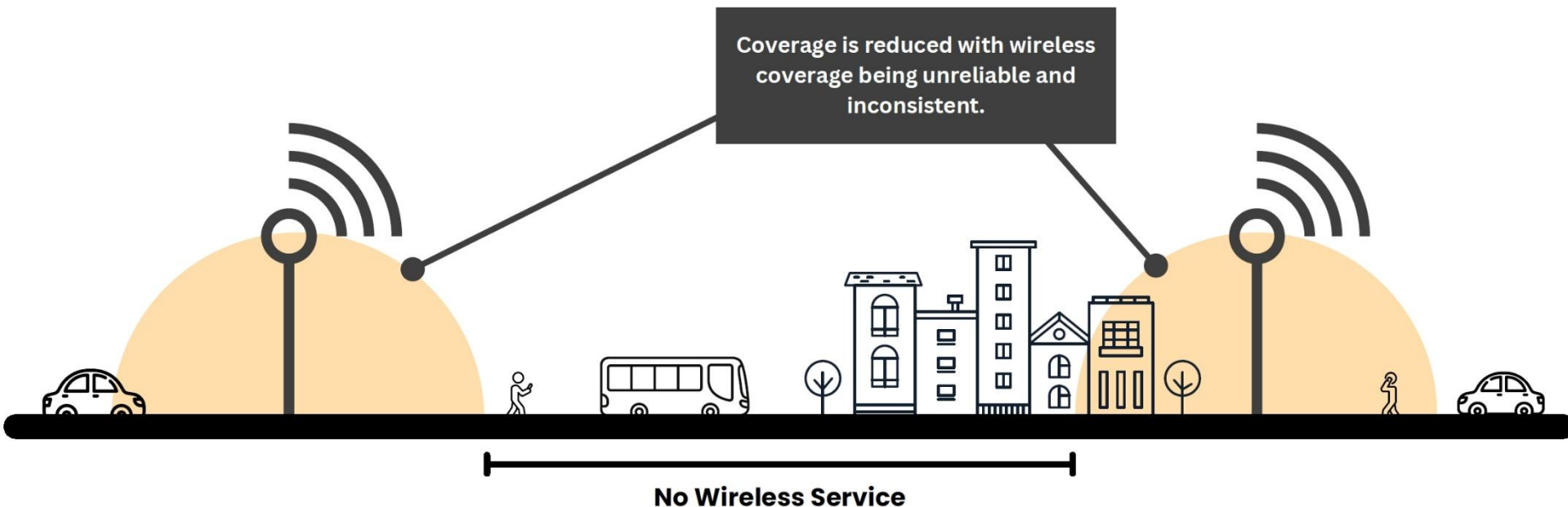
Frequencies cannot travel through rocks, the ground or hills.

Often areas with hills and valleys require more infrastructure compared to flat lands to provide the required network framework.

Though frequencies can still travel through, trees and similar obstructions can also create a “shadowing” effect, resulting in areas with greatly decreased service. This can vary by season.



Gaps in the Wireless Network



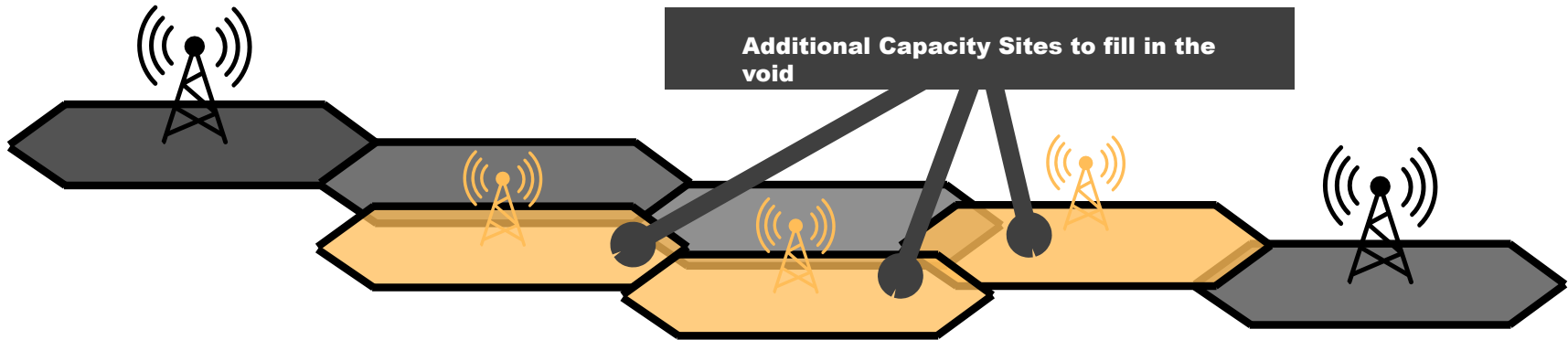
With gaps in the wireless network, the level of coverage received is depending on geographical location and how wireless devices used.



Shared Tower

11. How the Wireless Network works

Additional Capacity sites are added to fill in the gaps in wireless coverage. This ensures improved coverage that can allow for reliable voice call and high throughput data streaming capabilities.



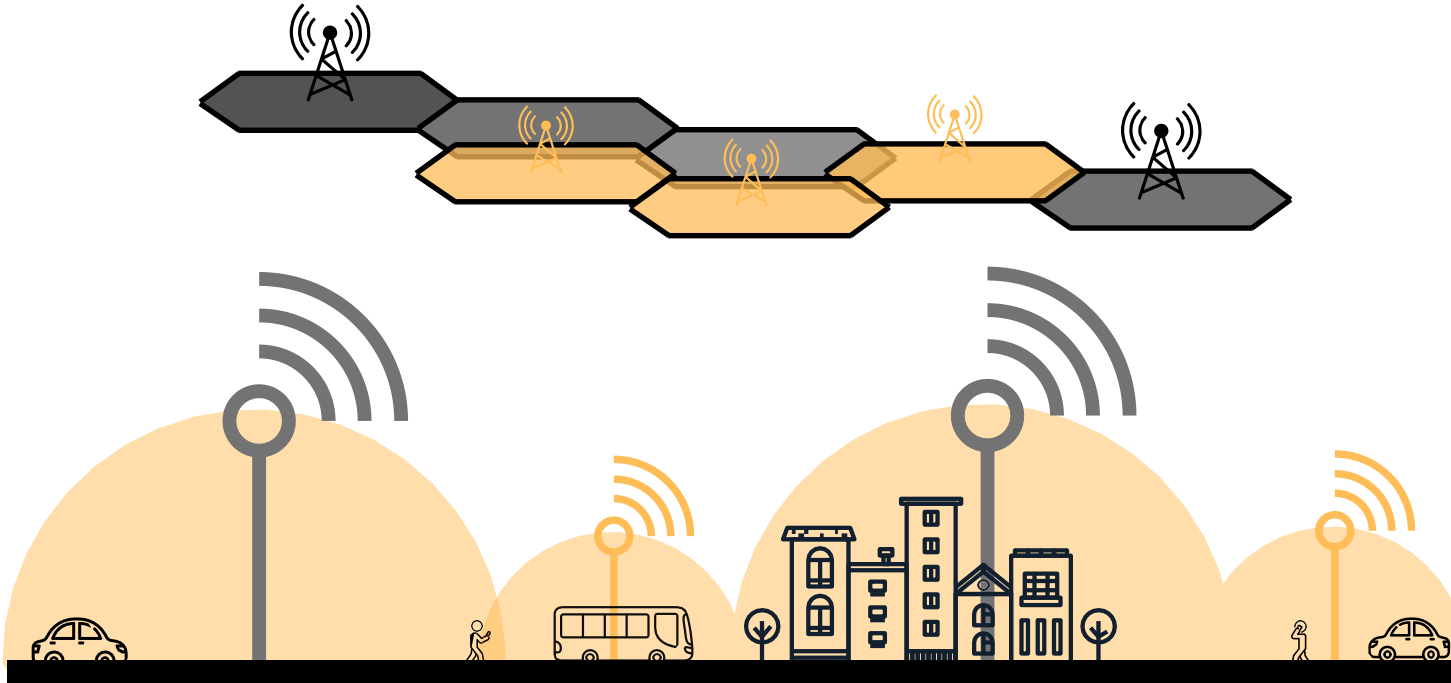
Void Gaps have been alleviated with the additional capacity sites.

Continuous wireless service is now established.



Shared Tower

11. How the Wireless Network works



Additional Capacity sites provide a solution for both distance & capacity. These sites are closer to the user and can also offload and relieve the existing sites of network traffic and increase signal power in particular areas.

It ensures a smooth experience for users as they use their wireless devices and move from different locations, utilizing the services from various base stations.