

Capital Region Emergency Service Telecommunications Inc.

Ganges Site - RF Power Density Prediction

Prepared for: Capital Region Emergency Service
Telecommunications Inc.
#110, 2944 Westshore Parkway
Victoria, BC V9B 0B2

Prepared by: Karl Reardon, P.Eng.
Planetworks Consulting Corp.
Suite 350-233 1st St. West
North Vancouver, BC
V7M 1B3 Canada

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1.0 DOCUMENT CONTROL

1.1 REVISION HISTORY

Version	Author	Reason For Issue	Date
1.0	Karl Reardon, Planetworks	Initial Release	16 July 2018

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2.0 PURPOSE

Planetworks was retained by Capital Region Emergency Service Telecommunications Inc. (CREST) to develop a RF power density prediction for a proposed VHF land mobile radio site to be located in Ganges on Salt Spring Island.

2.1 SITE DETAILS

The following provide the relevant technical details regarding the proposed CREST VHF site.

Location: 49° 51' 45.07" N 123° 30' 41.77" W
Antenna Height: 35m AGL (Above Ground Level)
Antenna Type: 210C2 (1/2 wave)
Antenna Azimuth: 30° True
TX Power: 100 W ERP
Frequency: 160 – 174 MHz

2.2 ANALYSIS METHOD

Predicted power density was determined using the EDX SignalPro prediction software. A worst-case prediction model assuming Free Space Loss plus Reflections was assumed (i.e. resulting in maximum power density).

Canadian Digital Elevation Terrain Data was incorporated into the modeling process to reflect terrain variations. To reflect a worst-case situation no foliage or building losses are used.

2.3 RF POWER DENSITY LIMITS

The Salt Spring Island Local Trust Committee maintains the following guideline on RF power density:

“It is a policy guideline of the Salt Spring Island Local Trust Committee that no telecommunication antenna or facility emitting Electromagnetic Radiation (EMR) should be installed within 500 metres of any use, building or structure where there is continuous human activity (dwellings, schools, hospitals, workplaces, parks, etc.). Proponents wishing to install or modify an antenna or facility closer than this distance should demonstrate, using an independent consultant acceptable to the Islands Trust, that the measured and/or predicted EMR power density levels of the antenna, or cumulative levels emitted from the facility, are less than 2 microwatts per square centimetre at the use, building or structure.

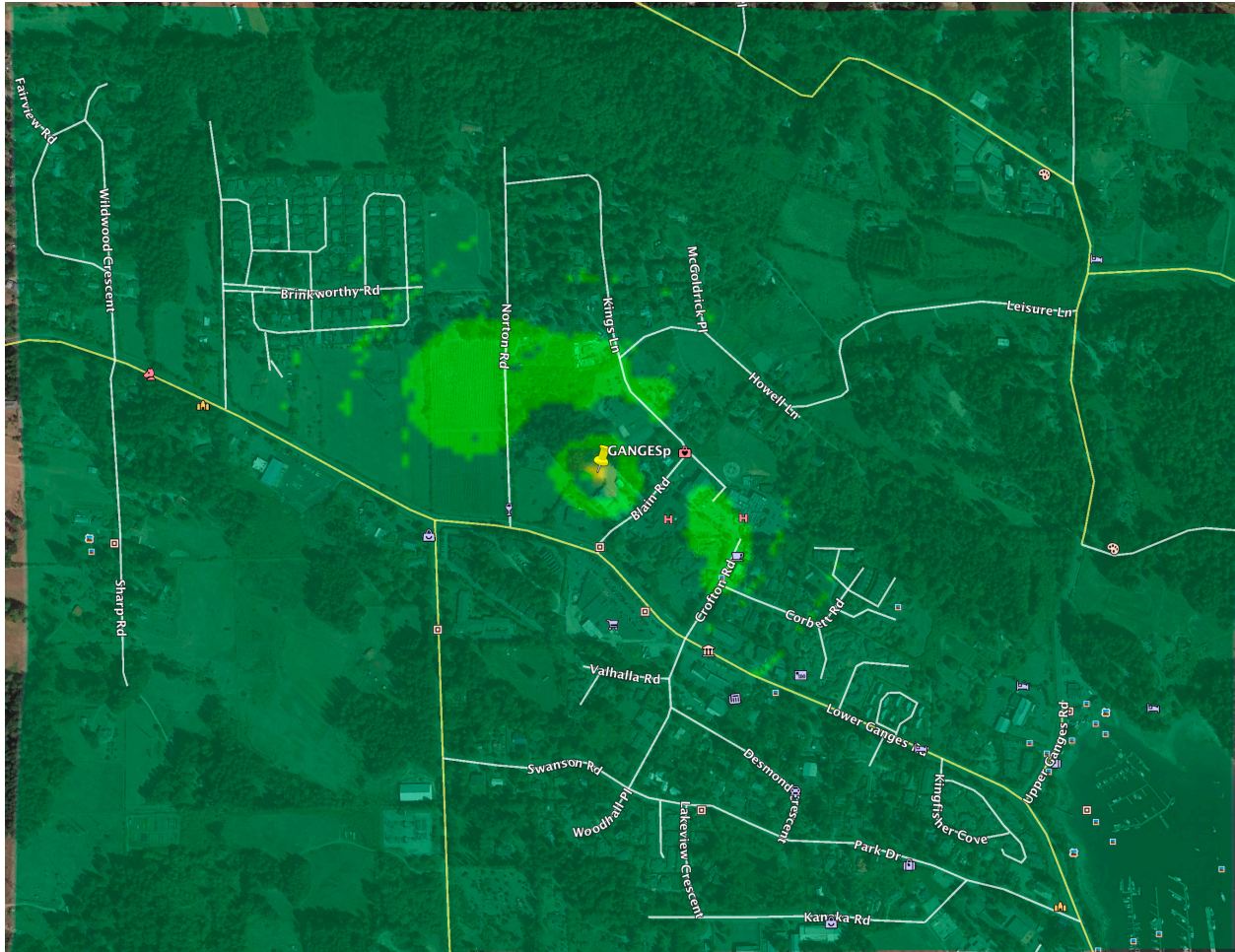
New or Modified Structure: Please provide information on the predicted EMR power density levels for the new or modified structure taking into account factors such as the power of transmission (number of channels, channel power output, reach of signal), direction of transmission and height of antenna. Separate predicted and/or measured EMR levels should be provided at any use, building or structure where there is continuous human activity within 500 metres of the antenna.”

3.0 POWER DENSITY PREDICTION

The following plot presents the cumulative power density for the proposed CREST VHF land mobile radio site in Ganges.

The plot legend is as follows:

- Yellow: Predicted Power Density $\geq 2 \mu\text{W}/\text{cm}^2$
- Light Green: $2 \mu\text{W}/\text{cm}^2 < \text{Predicted Power Density} \leq 0.2 \mu\text{W}/\text{cm}^2$
- Dark Green: $0.2 \mu\text{W}/\text{cm}^2 < \text{Predicted Power Density}$

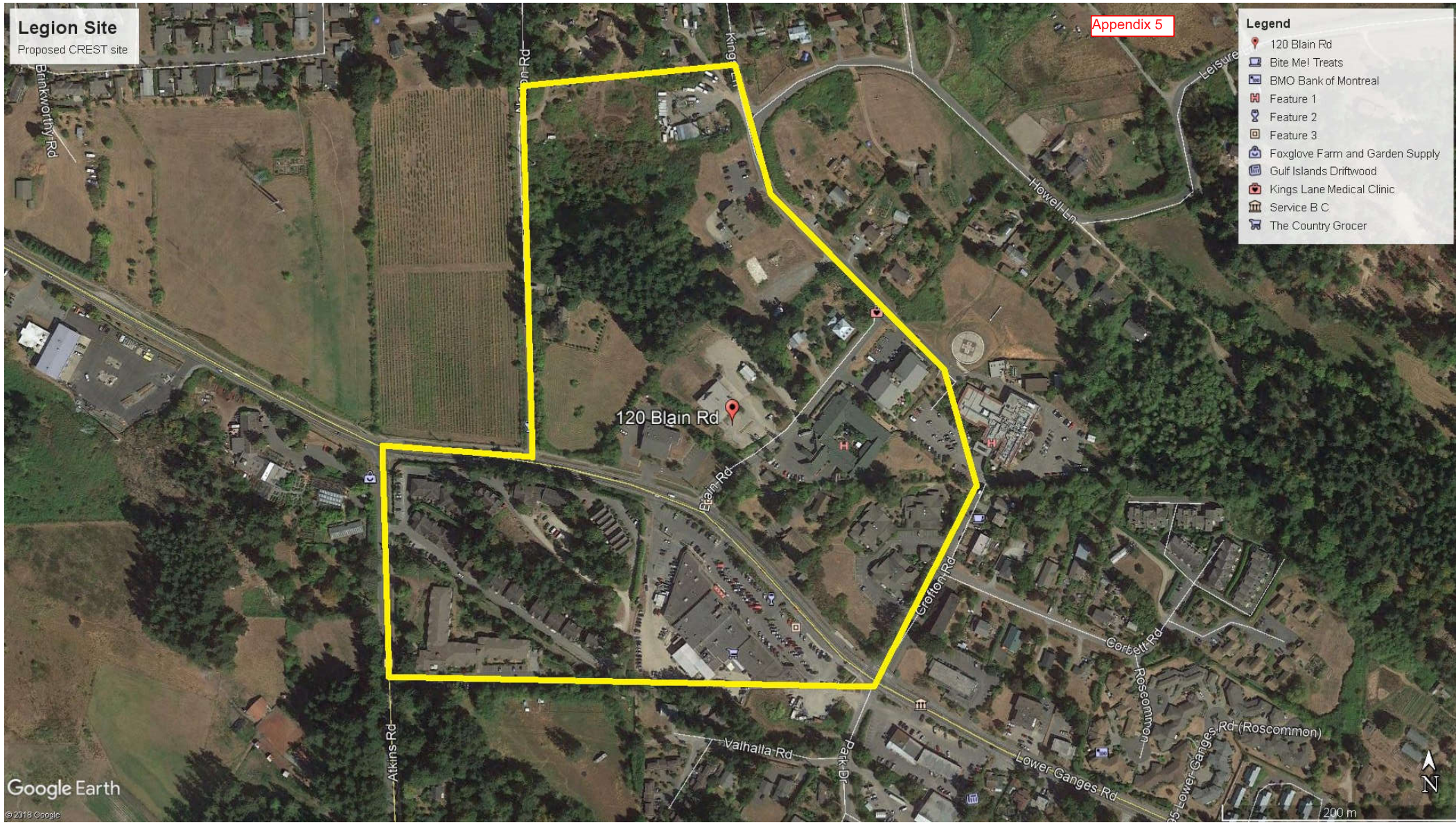


4.0 CONCLUSIONS

Predicted power densities in excess of $2 \mu\text{W}/\text{cm}^2$ are limited to areas within 10m of the tower structure and do not occur in any areas with 'continuous human activity'. Note that all levels at the tower base are predicted to conform to Health Canada Safety Code 6 requirements for uncontrolled environments.

All other areas are below the $2 \mu\text{W}/\text{cm}^2$ guideline established by the Salt Spring Island Local Trust Committee.

It is noted that the analysis methods are conservative, and actual power density levels encountered will be less than predicted.



January 31, 2019

Islands Trust (Ganges)
1 – 500 Lower Ganges Road
Salt Spring Island, BC
V8K 2N8

Proposed CREST Public Safety Transmission Facility (120 Blain Road)

Overview

Our proposed site in Ganges is one of 32 sites either in operation today or by the project completion in 2019. This public safety system is used by 50 emergency provider agencies which includes the RCMP, SSI Fire, BC Ambulance, BC Conservation Officers, and SSI emergency coordinators.

The Ganges site is a critical piece of infrastructure that will compliment 2 existing sites on SSI (Mt. Bruce, and Fire Hall #3 - Vesuvius).

A public safety initiative, this upgrade would see the installation of a communications mono-pole behind the Legion; It is an integral part of an extensive \$24.5-million technology renewal project that is rolling out across the Capital Region with 20 new installation sites.

This “next generation” technology replaces the existing 15-year-old emergency technology that currently serves more than 50 emergency response and public service agencies within the Capital Regional District including the Gulf Islands. The new radio system is based on digital radio technology known as Project 25 (P25) and is considered the preferred technology for emergency responders across North America.

Rationale for Site Selection

CREST seeks to maintain and improve high quality, dependable emergency communications services. In order to improve network performance, CREST is seeking to add the proposed communications tower.

The proposed site is a result of many considerations. Existing structures and other sites, including towers and rooftops, were initially reviewed during the site selection process. After careful examination, it has been determined there are no viable existing structures in the area that would be suitable for the operations of CREST network equipment.

CREST has secured tenure at this location in order to install the proposed tower. CREST radio frequency engineering has identified that the proposed 48 metre tower will improve CREST coverage in the greater Ganges area including the marina and boat basin.

The proposed location is considered to be appropriate. The site is located on a large parcel and is largely obscured by a thicket of mature fir trees.

Public Safety

The new Ganges location would improve communications for first responders (police fire, and ambulance) in an area where they have experienced challenges accessing reliable coverage. Sergeant Ryan Netzer, Commanding Officer I/C, of the RCMP Salt Spring Detachment, and Fire Chief Arjuna George of the SSI Fire Rescue welcome the technology upgrades:

“CREST’s new technology plan is an important step forward for all emergency responders and for our citizens,” said Sergeant Netzer. “The new communications mono-pole will strengthen our effectiveness and our ability to respond optimally to ensure the safety of the public.”

Fire Chief Arjuna George of the SSI Fire Rescue agrees. “The system upgrade is expected to provide clearer audio with less interference, noise suppression and increased capacity. Ultimately, we will have improved coverage and security for the benefit of our citizens. The mono-pole installation at the Legion is essential for the effectiveness of our operations and emergency services on Salt Spring.”

Proposed Site

We believe this project meets the Islands Trust General Objectives and Policies of C.5.1 Land Use Consultation for Radio Communications Utilities.

A site plan is attached that clearly shows the locations of area facilities.

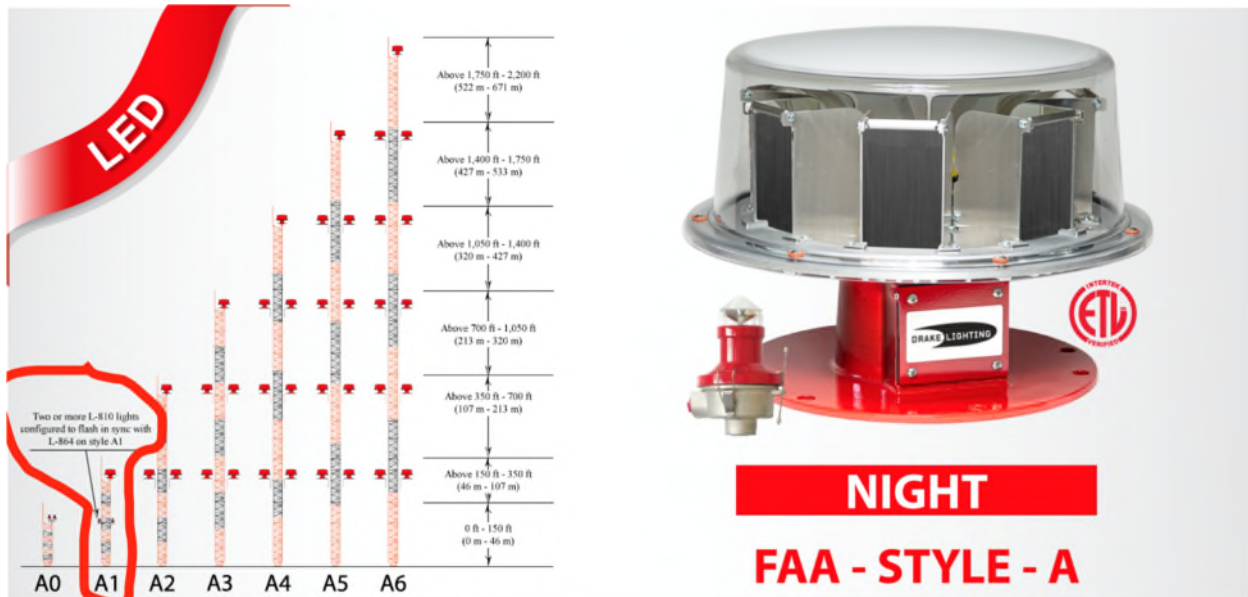
The structures themselves will be tucked in at the northern section of the property adjacent to mature fir trees to be as innocuous as possible.

Tower Proposal Details

CREST is proposing to construct a 48-metre monopole tower with accessory equipment located at the base of the pole. CREST has completed preliminary design plans (attached).

Navigation Canada

The structure will comply with Nav Canada regulations for a structure of this size. It will have lights at top and the midpoint level of the structure.



Consultation Process

CREST has undertaken a public consultation process, including public newspaper notice, an open house, and notice to adjacent property owners and residents. A website was launched to provide further details and this website was featured in our material as well as notification in the “Salt Spring Exchange” and the Driftwood” (community newspaper) Included with this information is the news release we issued April 10, 2018.

At our open house, at the Legion on Dec 1 from 2-4 pm we addressed several questions:

- What does CREST do?
- What changes are CREST proposing?
- Why Ganges?
- Why this location?
- What exactly is being proposed behind the Ganges Legion?
- Where on the site is this going?
- What noise will be emitted from the mono-pole and related infrastructure?
- How long will it take to install this?
- Is there a public health risk with this mono-pole?
- When will it be installed?
- Will the mono-pole affect other communications services (i.e. cell phone or TV services)?
- How much is this going to cost residents of Salt Spring Island?

Attached is the map where residents and businesses were hand delivered a notice of the open house.

Approximately 30 people attended the open house. I believe it is fair to say the vast majority supported this piece of public safety infrastructure. Attached is a list of attendees (22) who chose to sign in.

To date we have not received an emails or phone calls making further inquiries about the proposal.

Health and Safety

Health Canada's Safety Code 6 regulations are applicable to this, and all, telecommunications sites. Safety Code 6 seeks to limit the public's exposure to radiofrequency electromagnetic fields and ensures public safety for all Canadians. Additional information on health and safety can be found online at:

Health Canada:

<http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/radioguide-lignesdirect-eng.php>

An independent electrical engineer has verified the incident power density is less than 2 microwatts per square cm at any facility concerned with continuous human activity within 500 m of the proposed antenna (the report was emailed to Islands Trust earlier in the year).

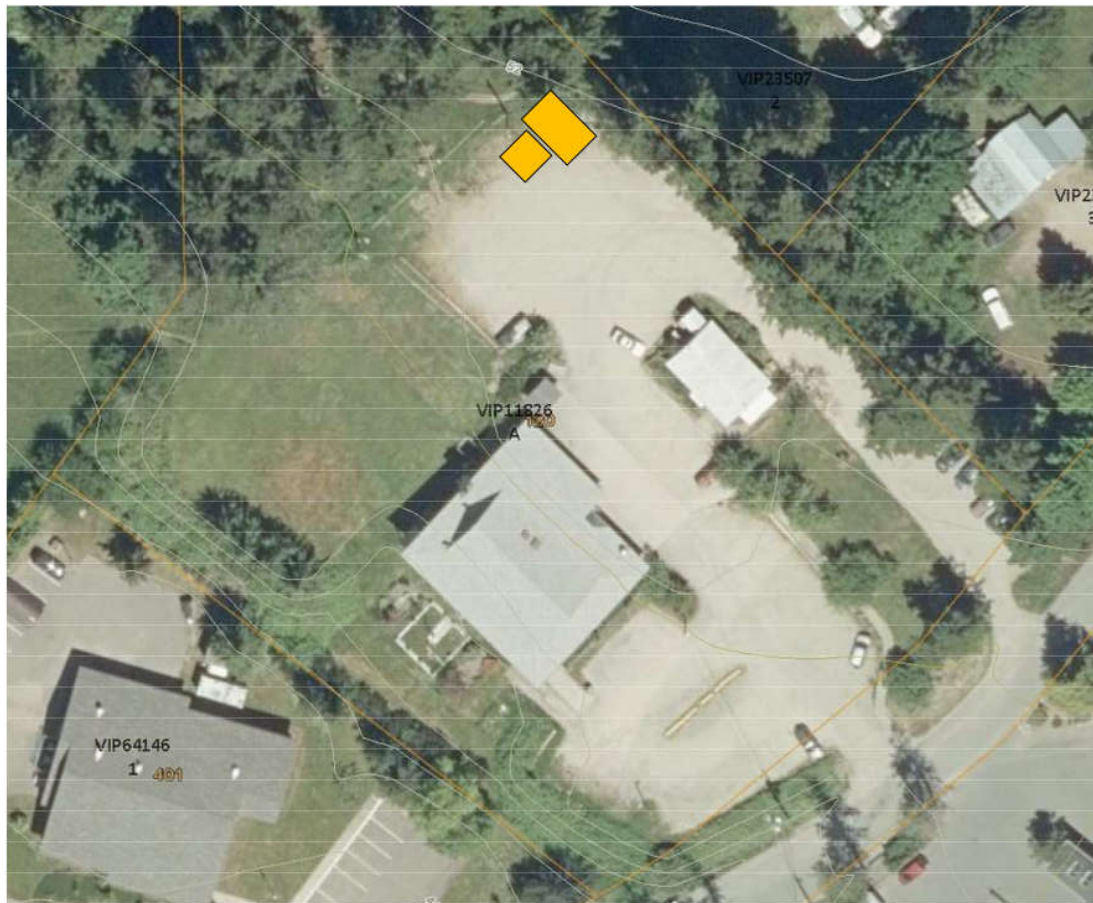
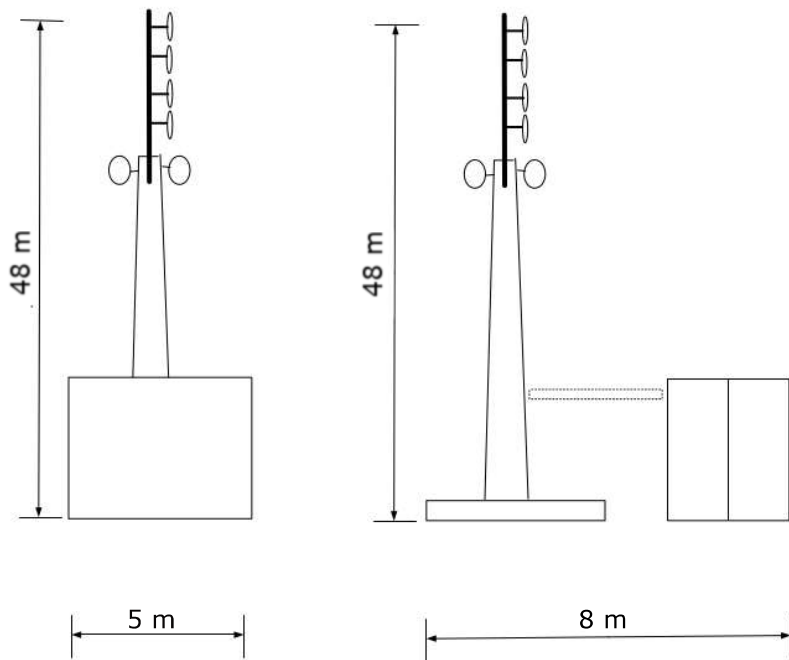
Sincerely,



Gord Horth
General Manager

Attachments:

1. Ganges proposed site layout
2. Open House notification map
3. Sign in sheet (from the open house Dec 1, 2018)
4. Driftwood notification ad



Rev.	Description	Date	Technician
0	Drawing Established	21/08/2018	MR
1	updated	01/10/2018	AM

GANG Proposed site layout

Org. Planner:

Est. Date: 21/08/2018

Scale: NTS

CREST

EMERGENCY COMMUNICATIONS

