



WirelessWorks

*Driving **Innovation**
through Partnerships*



WirelessWorks Solutions Ltd.

Contract No. DAS2014-072

**Review of Wireless Broadband Communications Infrastructure
Assessment and Recommendations**

April, 2015

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Evaluation Options Studied

	Option	Description
1	Maintain	Continue to operate the WBS for its own exclusive use
2	Grow	Continue to operate the WBS but expand its coverage and offer services to other third parties
3	Retire and Switch to Third-Party	Discontinue operation of the WBS and turn to one of the incumbents (Bell, Rogers, TELUS, etc) for interconnectivity services
4	Sale	Sale of network to a Third Party to maintain and manage

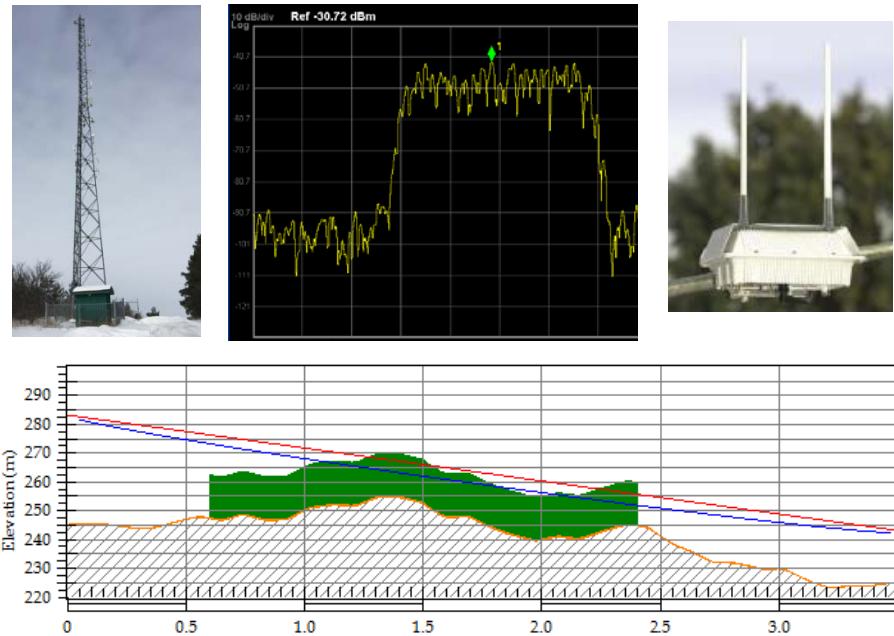
WBS Evaluation

- Broadcast and backhaul networks operate in unlicensed spectrum using equipment from a variety of vendors
 - Unlicensed spectrum is prone to interference which makes it difficult to maintain service level agreements
- Site survey indicated that there are some unoccupied unlicensed bands which could be leveraged to improve system performance
- The equipment and towers are in good condition
- Older equipment (Trango, Tropos) to be replaced with newer, better performing Ubiquiti access points and CPE's



WBS Evaluation

- The network suffers from high levels of within-system interference, caused by sub-optimal antenna selection and channel planning
- The LHH-CHU link is at capacity and is in need of immediate upgrade
- The Civic Centre to BEL link is partially obstructed which affects performance



Option 1 - Maintain

- Address key findings
 - Replace legacy Tropos and Trango equipment with Ubiquiti
 - Fix CIV-BEL backhaul link
 - Upgrade LHH-CHU link to 100Mbps licensed link
- Capital Requirement: estimated at \$107,000
- Annual OpEx: currently \$70,000; will increase to about \$72,000 (net of network usage fee from ILS and includes additional costs for licensed spectrum link)



Option 2 - Grow

- Double network capacity
 - Optimize RF network (antenna replacement and RF planning to reduce self-interference)
 - Add 3.65GHz equipment
 - Upgrade BEL-CHU link and LHH-OH link
- Capital Requirement: estimating an additional \$64,600 (total is \$171,600)
- Annual OpEx: \$90,000
 - OpEx higher due to more equipment to manage, licensing fees, but Town's internet service doubles and is more reliable
 - Fees are net of network usage fee (50% higher than Maintain option) from ILS



Option 3 – Retire and Switch

- Purpose-Built Solution from Third Party
 - Requires site visit and formal quote from Third Party such as Bell, Rogers, TELUS, or TeraGo
 - Up-front cost and monthly fee for service will apply
 - May “strand” WBS residential and business customers
- Capital Requirement: estimated at \$50,000 to remove equipment and land reclamation, as well as up-front third party fees
- Annual OpEx: estimated at \$49,000, including:
 - 50-100Mbps link at Civic Centre
 - Service for the ROC, Operations Centre, Animal Control, Seniors Home, Fire station, library, road yards

TeraGo
Networks

 **ROGERS™**

 **TELUS**

Bell

Option 4 - Sale

- Town to receive revenue from sale of network, to be negotiated with buyer
- Buyer to provide Town with continuity of service for residential and business customers
- Town to receive internet service at municipal facilities at a negotiated rate
- Network may be attractive to buyer because:
 - Good condition of infrastructure
 - Loyal customer base
 - Relatively low cost to double capacity
 - Low network operating costs (towers currently rent-free)



Summary of Options

	Maintain	Grow	Retire / 3 rd Party	Sale
Capital Cost Requirement Estimate	\$ 107,000.00	\$ 171,600.00	\$ 50,000.00	No cost; revenue from sale of assets
Ongoing Annual Net Expenses Estimate	\$ 72,000.00	\$ 90,000.00	\$ 49,000.00 (quote required)	Service fees to be negotiated with buyer
Customer Benefits				
Town	Continue to receive service at current pricing levels; improved service reliability	Improved network performance	Improved network performance, remove non-core business and financial burden	One-time revenue from Sale, remove non-core business and financial burden, continuity of service
Local Business	Continue to receive service at current pricing levels; improved service reliability	Higher data rates, more service plan options	Remove unlicensed spectrum performance risk	Continuity of service
Residents	Continue to receive service at current pricing levels; improved service reliability	Higher data rates, more service plan options		Continuity of service
Customer Drawbacks				
Town	Financial burden, non-core business	Financial burden, non-core business	Potentially higher cost service	
Local Business	Unlicensed spectrum performance risk		Potentially higher cost service	
Residents	Low speed plans		Potentially higher cost service	

*** NOTE: Current annual OpEx estimated at \$70,000**



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THANK YOU