INFRASTRUCTURE COMMITTEE MEETING
OF THE VILLAGE OF LIONS BAY
HELD ON THURSDAY, OCTOBER 29, 2020 at 7:00 PM
COUNCIL CHAMBERS, 400 CENTRE ROAD, LIONS BAY
AND ELECTRONICALLY VIA ZOOM

MINUTES

In Attendance (all via video conference):

Committee: Fred Bain (Chair/Councillor)
Ron McLaughlin (Mayor)
Neville Abbott (Councillor)
Karl Buhr (Resident Member)
Tony Greville (Resident Member)
Brian Ulrich (Resident Member)

Regrets: Norm Barmeier (Councillor)

Staff: Public Works Manager Nai Jaffer
Chief Administrative Officer Peter DeJong

Delegations: (Invited guest) Tom Dunn, Senior Engineering Technician, WSP Electrical & SCADA Group

Public: 0

1. **Call to Order**
   The meeting was called to order at 1910 Hrs
2. **Appointment of Recorder**
   Fred Bain/Nai Jaffer
3. **Approval of the Agenda**
   Approved as presented
4. **Public Questions & Comments**
   None
5. **Delegations**
   Tom Dunn was invited to address communications options with the Committee (see Item 7)
6. **Approval of Minutes**
   September 24, 2020 Minutes approved as presented
7. **Business Arising from the Minutes**
   A. Information Report – Draft 2017 AECOM report re. SCADA Communications Plan (redacted)

B. Communications Options – Guest Speaker (Tom Dunn, WSP Electrical & SCADA communications Specialist)
   - Tom reviewed most sites on the preceding Tuesday with the exception of PRV 8 & 9 and the Phase 4 & 5 tanks. He found the conditions as described by AECOM, in their report of 2017, to be accurate.
   - Tom expressed preliminary concerns with respect to the information in the public arena regarding non-factual cell service information from the recent cell tower proposal, in particular:
     i. Safety Code 6 is in place to ensure public protection from cellular radiation
     ii. Some public misunderstanding of 5G cellular
         a. 5G is more suitable for metropolitan areas versus more rural communities like Lions Bay as 5G's range is too short to be useful – many antennae are needed for coverage and rural subscribers are generally too few and spread out.
         b. 3G or 4G would be more suitable for Lions Bay
   - The private radio option for communication is expensive
     i. Specialized hardware would be required
     ii. a repeater would probably be needed on a facing island with the cost of a site and the full operating costs borne by Lions Bay
     iii. the existing Bowen Island site(s) would be considered to be "fringe" as far as coverage is concerned

C. Tom took questions from committee members:
   - Is the hard-wired option better as a conduit is already in place?
     - The conduit only serves the Harvey Tank but not Magnesia. All other sites will require conduit to be laid. This is cost prohibitive to some of the sites including the intakes and remote PRV's.
   - What are our options besides cellular?
     - Hardwired connections – twisted pair telephone, fibre optic, or leased lines provided by telephone companies(telcos)
       - Unless installed in conduits, these are more vulnerable to be damaged by tree falls or weather events and vandalism.
     - Fibre Optic cables were discussed:
       - costs have come down slightly but not significantly
       - it has some benefits, but high cost is still a negative
   - With dial-up lines, is bandwidth an issue?
     - A problem with them is that the system does not "know" when the line goes down unless there is programming that polls so that when a signal is not received at the appropriate time, an alarm sounds.
   - What is better, own wires or telcos?
     - Distance is the issue: after 150 metres signal strength weakens and afterward there needs to be a repeater. Some use kiosks for this = more costs.
     - Which infrastructure currently could not be accomodated by a wired connection?

- Answer: PRVs 8, 9, 10 & 12 and Magnesia.
- What about intakes?
- Nai's answer: We have given up on intakes without cellular.

- How about telcos vs cell?
  - Cell is easier since you don't have to have a hard-wired connection
  - There was some discussion of sending signals along power lines but radio interference was a concern
- Radio communications for sites?
  - Radio systems are capital intensive and would require many repeater sites (high cost).
    - For example, Horseshoe Bay's SCADA site needs line of sight to the West Vancouver Works Yard on Cypress Bowl. In order to get a signal through, it sends its data to a repeater at UBC which bounces it back to the yard at Cypress Bowl. Lions Bay has many sites which would require a repeater.
    - Industry Canada may not be able to provide us with licenced long wavelength bandwidth because the frequencies are all taken (long wavelength may pass through trees better than shorter wavelength).
    - It would be expensive to build and maintain a site on Gambier Island
- Is satellite a viable option?
  - Satellite is only worth it based on the value of the data - otherwise cost prohibitive
- Is cellular the best choice then?
  - It has the least cost per megabyte of data and the start-up is lowest.
- Is security covered?
  - VPN is advisable
- Is then the only real option for our various needs (works, UBC project, Fire and Search and Rescue) cellular?
  - It is likely the best option.
- How about X-10?
  - Don't go with carrier lines – it causes radio interference with HAM radios. Mesh networks are slow and would not work well with some of our terrain.
  - There is no redundancy in our SCADA communications right now
  - Wire connections are restricted by our terrain
- What bandwidth do we need? Such as for video?
  - We can compress the data such as using a low frame rate for video monitoring
- The conduit at Harvey is okay but also a lot more conduit would be needed for other sites, some of which it would not be practical at all.
    - We would also need inline repeaters every 150m to boost signal strength because of line loss
    - Could we go from twisted to coax or cat 6?
      - can do but installation is the expensive part
      - doesn't really help because only twisted pair at Oceanview culdesac
- We need connection to all our sites. Without cellular, so far, each is treated individually

but none of the existing PRVs are connected at all.
    - Intakes will not be monitored without cellular
    - Connectivity and redundancy cannot be achieved without cellular
- Can non-cellular options benefit other needs, such as improved residential reception and UBC study?
    - No.
- Note: the agreement we have with UBC and their Watershed Hydrology study was predicated on a level of connectivity that the Village would provide. Their grant funding for equipment was based on the assumption that Lions Bay would provide improved cellular connectivity. UBC will need to revise their communications plan which will likely result in reduced data collection since more funding would need to go towards communication.
- We could study what height and location(s) could be used for communication towers opposed to the 60-metre tower that was proposed. Downsizing may be more palatable for residents. Study how we could go for the needed, better coverage.
- Given that a cellular communications solution appears to be the option best suited to our needs, could we engage SBA to consider changes such as two smaller towers? And determine the optimum locations for coverage, whether Harvey and Magnesia or other?

- Karl mentioned that a competent mapping firm such as Chartwell (who compiled the Lions Bay resources map), could drop an exact rendering of any proposed tower into our LIDAR data to offer a fly-aroundable public presentation at exact-tree level of detail.

- **Recommendation**: THAT staff look into the options for exploring optimum cellular communications locations and report back on details for further consideration.

- We could study what height and location(s) could be used for communication towers as opposed to the 60-metre tower that was proposed. Downsizing may be more palatable for residents. Study how we could go for the needed, better coverage and ensure accurate graphical representations for any future proposals.
- Neville, however, suggested that as the decision not to proceed with the SBA communication tower proposal had been made by Council any suggestion to revisit this must go back to Council.

8. Unfinished Business

A. Kelvin Grove WWTP – A few “bugs” to be worked out to do with the Gearbox but otherwise running well.
    I. The temporary tank will be removed on this coming Wednesday (November 4, 2020)
B. 3 PRV Project – Industra is to begin the PRV installations soon
C. Upper Bayview, Bayview Place, Centre Road – No Update
D. Oceanview Drainage: Neville informed the IC of discussions between the PW Manager and

a Civil Engineer on Neville's staff:

- For discussion in the future: should we consider increased risk in a project in order to reduce the size of culverts? What he was suggesting was we install standardized culvert sizing rather than an engineered solution and put in mitigation measures for the possibility that the culverts may overflow occasionally.
- Geotextiles are typically not used on steep roads as they create a slip-surface for the road to slide upon.
- The Oceanview Drainage Project will be discussed at the Council Strategy Session in December.

9. **New Business**

Dr. Steven Weijs, Assistant Professor of Hydrology at UBC, will be presenting a summary of this year's research at the next meeting.

10. **Public Questions & Comments**

None

11. **Next Meeting: November 19, 2020**

12. **Adjournment**: The meeting was adjourned at 2101Hrs.