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Bradley Shuya Architect Inc.
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by email
11 July 2016

Dear sirs:

Re: Town of Sidney Proposed Public Safety Facility

This is an advisory as per your request to review the proposed Town of Sidney Public Safety Facility (the Facility) with respect to its conformity with the Canadian Aviation Regulations (CARs), the site's Airport Zoning Regulation (AZR), and best practices for the development of lands adjacent to and on airports.

Following initial conversations and our site meeting with Brad Shuya, project architect and Brett Mikkelson, Fire Department Chief, we have conducted an investigation of the relevant CARs and known best practises as they relate to the proposed Facility and site. We consulted with representatives of the key aviation and airport stakeholders including the Victoria Airport Authority (VAA), Transport Canada (TC) and Nav Canada.

The following observations reflect our understanding of the application of the CARs and the general approach to similar airport lands in other Canadian cities.

1. The site is within the boundaries of Victoria International Airport (YYJ) and has been leased to the Town of Sidney. It is designated for airport reserves in the Airport Master Plan. We consulted with James Bogusz, Vice President, Operations and Development at VAA. He confirmed that the Authority both supports the proposed development and did not view the facility as in conflict with the airport's AZR or master plan. The Town of Sidney will have to re-zone the site to support the intended use for a Public Safety Facility.
2. Victoria Airport is one of the National Airport System (NAS) airports, and is owned by the Government of Canada and leased to the VAA. NAS airports are Canada's largest airports and those in provincial/territorial capitals.

3. The key regulatory constraints to development of land on or adjacent to an airport include the proposed use's conformity to an AZR (if the airport has one); the Obstacle Limitation Surface (OLS) which control the height of structures, including mobile structures; ensuring that navigation aids are not interfered with or impeded; and the development's potential attractiveness to wildlife that could interfere with the safe operation of aircraft.
4. We consulted Transport Canada (Trevor Heryet, Executive Director, Issues and Program Management with Pacific Region) and were advised that Transport Canada would become involved with the development process only if the airport requested it because the Facility "pierced" the OLS (i.e., exceeded the height allowed by the OLS projections) or was inappropriate land use for the vicinity of an airport.

(The OLS or obstacle limitation surface is a series of surfaces that define the air space around an airport's runway system. These surfaces define how high objects may extend into the air. The outer (horizontal surface extends typically 4000 m from the centre of the airport and is 45m in height. Transitional surfaces extend on angles from the edge of runways, up to the outer surface. The subject property lies under the approach to runway 27 / takeoff from runway09, and is overlain by a sloping transitional surface. Information provided by the Victoria Airport Authority indicates that there is currently a minimum of 20 m elevation between the surface of the site and the transitional surface overhead, in which objects (fixed and mobile) can be placed. The site slopes away to the east and south to a maximum of 23 m of available elevation.

5. We consulted with Mr. Bogusz of the VAA regarding potential future height restrictions , which potentially could result from a long range proposal to extend Runway 09-27 eastward (towards the proposed Facility). VAA has created a projected OLS based on a "full extension of runway" scenario. This full build out scenario would reduce the maximum height available above the proposed Facility as the beginning of the transitional surface would be moved towards the proposed Facility. In the full build out scenario, there is between 15.5 m and 17.5 m between the surface of the proposed Facility and the bottom of the transitional surfaces over the Facility.
6. Mr. Bogusz said that the OLS elevation analysis is consistent with the recently updated Transport Canada airport planning standards (TP312 5th edition) and reflect the proposed extension of Runway 09-27.
7. In addition to the OLS, the Airport Zoning Regulation (AZR) establishes a height restriction. Mr. Bogusz confirmed that the height restrictions of the AZR range from 18.5 – 22 m. over the proposed Facility. He further advised that the AZR height restrictions will not be amended.
8. Nav Canada controls air traffic at YYJ and the site's navigation aids. An Instrument Landing System (ILS), which is comprised of a glideslope and a localizer, beacon and broadcast antenna is located on the west of Runway 09-27. The ILS requires maintenance of line of sight for it to operate. Nav Canada typically reviews proposed land use developments that are adjacent to or in the vicinity of its navigation aids, to ensure that no conflict with their operation will result from the placement or construction of the development. The ILS is an important navigation aid for approaching aircraft and guides them down a glideslope and along the centreline of the runway. As the centreline

of Runway 09-27 transits the southern boundary of the proposed Facility, Nav Canada's review and approval is required. We have consulted with Nav Canada and have been advised that it will require a review of the proposed Facility design and placement before responding. Nav Canada's review is twofold - they will examine the proposal for potential interference with radio waves, and secondly for the proposed structure's impact on Nav Canada operations. The information that they will require includes the proposed design and siting (coordinates for the corner of all construction and the elevation of all construction, including radio antenna). It is anticipating a two-month turnaround for its review.

Please note that if the Fire Department were to operate its trucks with the ladders extended and elevated, Nav Canada would want to know where that would be located and the height of those mobile obstacles. Based on our conversations with Nav Canada and our site visit, we are not aware of any issues that will present themselves with regards to the Nav Aids at YYJ. We would, however, advise that the Fire Department develop a SOP for operation of ladder trucks on the site to safeguard against a conflict with the OLS, as well as a protocol for communication with the YYJ air traffic control tower to ensure that the Nav Canada controllers are advised of scheduled operations of ladder trucks.

9. Transport Canada will require that the proposed Facility be marked with a lighted beacon and identified on Nav Canada charts, due to its height and location. Plans should be submitted to Transport Canada for its independent review.
10. We would recommend that the VAA be advised of and consulted about the details of the proposed development, and should be copied on all communications with Nav Canada and Transport Canada.
11. The CARs also require that proposed land uses should not attract wildlife that could affect the safe operation of aircraft. Wildlife attractants that are risk factors include sources of food and shelter such as trees or shrubs. The proposed development should minimize trees and hedges that would provide additional habitat for birds, especially larger birds (eagles and seagulls).
12. Most airports in Canada support multiple activities including non-aeronautical industry, storage, and commercial developments. Recent development of lands at the approach of major runways at other National airports include:
 - a. A shopping mall, one of the City of Richmond's Fire Halls, the BCIT Aerospace Campus, are all on or adjacent to the approaches to YVR's main runways;
 - b. The development of a shopping mall at Edmonton International, adjacent to the main runway;
 - c. Many airports are now surrounded by urban and suburban development, much like the Town of Sidney. For example, there is a large secondary school located adjacent to Langley Regional Airport, the City of Richmond's central commercial and business area is located immediately under both eastern approaches to Vancouver Airport, etc.
 - d. Generally, buildings on and adjacent to airports are designed and constructed to shield the occupants from noise associated with aircraft operations. Transport

Canada has conducted Noise Exposure Forecasting for YYJ and that is available. There are generally accepted standards for building orientation, design and use relative to noise exposure, and these should be incorporated into the design of the facility. Residential areas are particularly sensitive to noise.

- e. Airports and surrounding communities do not generally institute land use restrictions off the end's of runways other than height and siting of buildings, noise amelioration, and wildlife management measures.

Yours truly,



Jon Spalding,
Operations Economics Inc.