

LE PHARE SKYSCRAPER “NOT SUITABLE” FOR QUEBEC CITY, CANADA’S NORTHERN CLIMATE



In its actual form, Quebec City, Canada’s Le Phare project is “not at all well-suited to the northern climate.” This is due to its “very limited” solar exposure and its height, which will provoke violent winds and make the square below “very uncomfortable year-round,” estimates André Potvin, professor at the Laval University’s School of Architecture.

Refusing to be an “alarmist,” but anxious to launch a “rigorous and serious discussion” on this large-scale project, Dr. Potvin estimates that the construction of a 65-story building and three other towers ranging from 25-30 stories in the same section of the city will, “without fail,” bring “wind-condition anomalies” similar to those that sweep Parliament Hill around the Édifice Marie-Guyart (formerly known as Complexe G). This effect is particularly pronounced in extreme cold.

“Everything is perfectly set to create problems. When a building is greater than two times the height of neighboring structures, it can provoke extreme turbulence,” explained Professor Potvin, specifying that in the international classification of climate zones, Quebec falls into the “extremely cold” category, like Calgary, Edmonton, and Winnipeg.



As a consequence, protection against wind and solar exposure are two “critical” conditions that need to be kept in mind when planning exterior spaces in order to make them as comfortable and convivial as possible. This is not the case for Group Dallaire’s design for Le Phare, explains Potvin, who is also a member of the university’s group for research on the ambiance of physical spaces.

Enormous Whirlwind

According to his observations in the field and in the lab, Dr. Potvin has no trouble imagining the strength of the winds that will hit pedestrians and cyclists in the neighborhood, even in the summertime. The height of Le Phare, erected in a sector where the buildings are shorter, will bring about winds that are stronger near the ground, provoking an “enormous whirlwind” that, on rainy days, will turn passerby’s umbrellas inside-out. “In the winter, the cold air, which is much denser, amplifies these already critical conditions that lead to wind-condition anomalies in an urban context.”



A biking enthusiast himself, even in the winter, Dr. Potvin can attest to the non-negligible impact of the natural elements whilst cycling near the Corminard Towers by Laurier Boulevard and Route de l'Église, especially when the wind comes from the northeast.

Dr. Potvin explains that the wind velocity can be very different, even at the same time of day, between Parliament Hill and the Saint-Jean-Baptiste neighborhood.

His studies showed that winds that hit at 83 km/h in the first location (which makes walking difficult, almost impossible) transform into a light 11 km/h breeze in Saint-Jean-Baptiste. An eloquent demonstration, he explains, that “the urban framework, and also the shape of buildings can improve local microclimates, or, on the contrary, exacerbate them.”



A More Aerodynamic Tower

Even if an imposing skyscraper can prove to be a “powerful symbol” for an agglomeration, Potvin believes that the city would benefit from erecting shorter buildings in the area around Laurier Boulevard. Even the configuration of Le Phare could benefit from being “optimized” so as to be more aerodynamic, in the style of London’s Swiss RE building, better known as the “Gherkin” because of its resemblance to a pickle. “There are architectural means of handling the shape of a building so as to minimize negative impacts.”

If the height and architecture of Le Phare cannot be revised, the specialist estimates that attaching a basilaire could be one measure to counteract the wind. Not setting the tower too far back from the street would help relieve pedestrian discomfort.

“There are other ways to develop a city these days,” pleads Professor Potvin.

“There are better ways to do so; keeping in mind that densification in a nordic climate is at the heart of this problem.”

Source: <http://www.globalsiteplans.com/environmental-design/le-phare-skyscraper-not-suitable-for-quebec-city-canadas-northern-climate/>