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January 20, 2026

**Scott Hanson**  
**Nunastar Properties Inc.**

**Re: Pedestrian Wind Comfort and Snow Drifting – Letter of Opinion**  
**Yellowknife Explorer 2.0 – Yellowknife, NWT**  
**RWDI Reference No. 2602673**

Dear Scott,

RWDI was retained to prepare an assessment on pedestrian wind comfort and snow drifting conditions for the proposed Yellowknife Explorer 2.0 in Yellowknife, NWT. The purpose of this qualitative assessment is to predict wind conditions on and around the proposed project and evaluate the potential snow accumulations on the site. This assessment was based on a review of regional long-term meteorological data from Yellowknife Airport, design drawings dated December 19, 2025 and received by RWDI on January 5, 2026, the experience of wind-tunnel and water flume studies undertaken by RWDI for similar projects in the Yellowknife area as well as our engineering judgement and knowledge of wind flows around buildings.

## **Building and Site Information**

The proposed Yellowknife Explorer 2.0 is located on the north side of 49<sup>th</sup> Avenue near 47<sup>th</sup> Street (Image 1). The site currently consists of two low buildings and trees on exposed bedrocks and is surrounded by dense buildings to the northeast through southwest directions and by roadways and lakes to the west through north. The existing Explorer Hotel is located to the immediate northwest of the project site as shown in Image 1.

The proposed development consists of a 6-storey elongated building (Images 2 and 3). Pedestrian areas of interest include the main entrance on the north side of the building, secondary entries/exits, sidewalks/walkways, parking lots as well as outdoor decks at Level 1 on the south side of the building and on the west portion of the building roof (Images 2 and 3).



Image 1: Project Site and Surroundings (Google Earth)



Image 2: Proposed Project – Northwest View

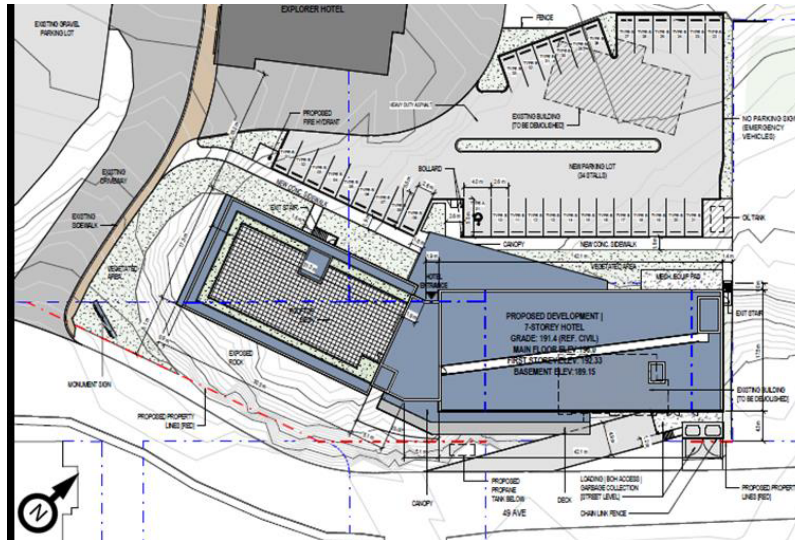


Image 3: Site Plan of the Proposed Yellowknife Explorer 2.0

## Local Wind and Snow Data

Meteorological data from Yellowknife Airport, for the period from 1990 to 2019, were used as a reference for this assessment. The distributions of wind frequency and directionality for the summer (May through October) and winter (November through April) seasons are shown in Image 4. When all winds are considered, winds are frequent from the northwest, northeast and southeast quadrants. Strong winds of a mean speed greater than 30 km/h (yellow and red bands) are infrequent in Yellowknife and they are more likely from the northwesterly directions.

Winter winds were further analyzed to determine the predominant directions/frequencies of winds that are associated with drifting snow:

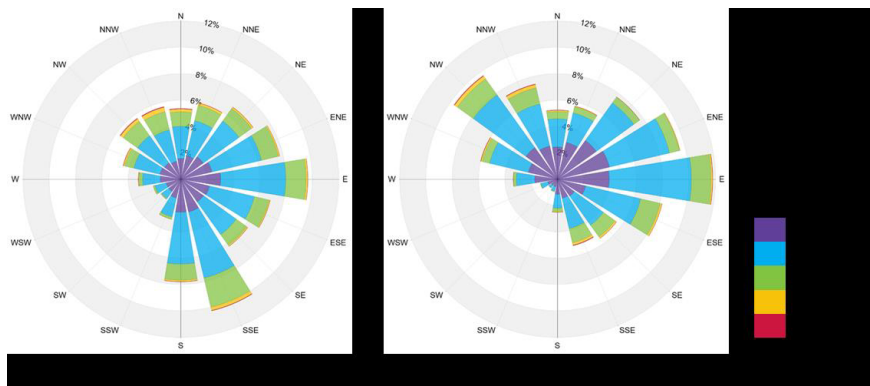
- all winter winds greater than 15 km/h;



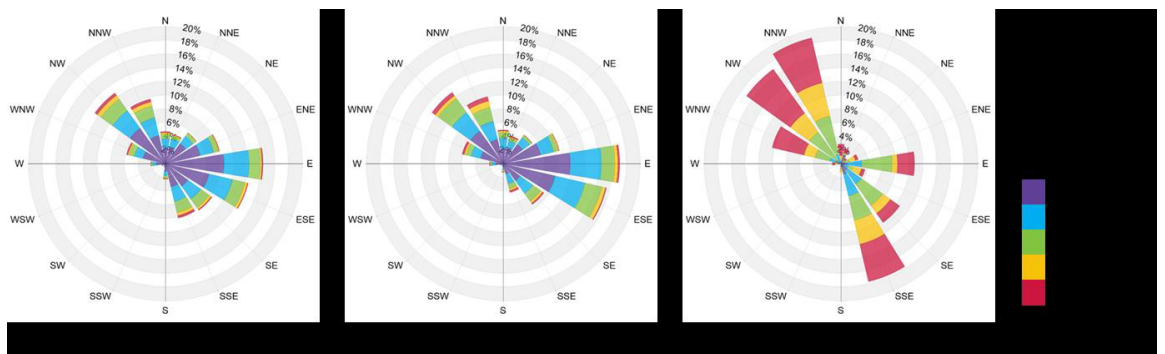
- winter winds greater than 15 km/h with snowfall; and,
- winter winds with blowing snow events.

The movement of drifting snow at wind speeds less than 15 km/h is negligible so this threshold wind speed was used to determine the predominant wind directions that could potentially create snow drifting problems around the study site. The 15 km/h wind speed is measured at the weather station using an anemometer, which is typically located on a mast approximately 10 m above the ground. Winter winds with blowing snow represent higher wind speeds often associated with storm events and significant drifting. As shown by the snow roses in Image 5, winds associated with snow drifting are primarily from the northwest, east and southeast directions.

In Yellowknife, there is an average of 155 cm of total snowfall over the course of a year, with measurable snowfall events occurring for approximately 78 days of the year on average, primarily between October and May.



**Image 4: Directional Distribution of Winds Recorded at Yellowknife Airport (1990 – 2019)**



**Image 5: Winds Related to Snowdrifting Conditions – Based on Records at Yellowknife Airport (1990 – 2019 between November and April)**



## Predicted Wind Comfort and Snow Drifting Conditions

Based on the current building design and local meteorological information described above, we offer the following assessments on wind comfort and snow drifting conditions on and around the proposed Yellowknife Explorer 2.0.

- The proposed building is located on a slightly elevated site, and it is taller than most existing surroundings. Therefore, it is exposed to the prevailing winds, resulting in increased wind speeds around building corners and on the building roof. The height of 6 storeys, however, is considered low or moderate for wind impact, given the local wind climate. Any potential wind effects are expected to be limited to the areas immediately adjacent to the proposed project, and severe wind conditions are not predicted on or around the project site.
- The proposed building design includes several positive features for wind and snow control. For instance, (1) the main entrance is located in a recessed area at the centre of the north façade, away from building corners, and it is sheltered by a large canopy, with a full-height vertical screen on the west side (see Images 2 and 3, and the left diagram in Image 6); (2) most entries/exits are raised (Images 2 and 3), reducing the potential snow impact; (3) The outdoor deck at Level 1 is sheltered by the building itself from the northwest and northeast winds and by the proposed canopy from the southeast winds (right diagram in Image 6); and (4) the rooftop deck sets back from the edge of the roof and protected by dense landscaping along the entire perimeter (right diagram in Image 6).
- As a result of these positive design features, suitable wind conditions are predicted for the main entrance and other entries/exits, sidewalks/walkways and parking lots. Suitable wind conditions are also expected for the outdoor deck at Level 1.



**Image 6: Close-up Views of the Main Entrance (left) and Outdoor Decks (right)**

- Due to its elevation and exposure, the roof deck is expected to have wind speeds that are higher than desired for passive activities. In addition to the proposed perimeter landscaping, local wind control measures, such as planters, screens and trellises, may also be considered for seating areas to further reduce wind speeds and improve user comfort.



- Increased wind speeds are also expected in the space between the existing Explorer Hotel and the proposed Explorer 2.0, due to the northwest and northeast winds channelling between the buildings (Images 2 and 3). The resultant wind conditions, however, are predicted to be suitable for active use of sidewalks, walkways and parking lots.
- Snow accumulations on the project site are expected to be primarily due to the direct snowfall on site that is redistributed by local building aerodynamics, with minimal drifting from off site due to surrounding topography. Although the proposed parking space to the north may provide a source of snow (Images 2 and 3), the snowdrift accumulations on and around the proposed project are predicted not to be significant.
- Given the local wind and snow data and protection provided by the surrounding buildings and landscaping, it is expected that regular maintenance and snow clearing activities will be sufficient to manage any potential snowdrift concerns for all pedestrian areas, including the main entrance due to the proposed canopy, screen and landscaping.
- The existing/proposed trees and other landscaping elements are positive for both wind comfort and snow drifting. To make them more effective, coniferous species should be selected, especially in the areas north of the parking lot and adjacent to the main entrance area. This will help limit the amount of driftable snow that may affect the main entrance area and adjacent walkways.
- If feasible, snow should be removed from the site after a major snow fall. Temporary snow storage areas may be located to the east and west of the proposed building and parking lot - piling up snow on the parking lot north of Explorer 2.0 may cause additional snow drifting and accessibility challenges to the main entrance area.

## Closing

A qualitative assessment has been provided for the potential wind comfort and snow drifting conditions around the proposed Yellowknife Explorer 2.0 in Yellowknife, NWT, based on the current building design, local meteorological data and our experience. Should you have any questions or require additional information, please do not hesitate to contact us.

Yours truly,

**RWDI**

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Senior Technical Director / Principal

**Rodney Blanco, BSc**  
Senior Project Manager



## STATEMENT OF LIMITATIONS

This memo entitled *Updated Generator Silencer Recommendations* was prepared by RWDI AIR Inc. ("RWDI") for Nunastar Properties Inc. ("Client"). The findings and conclusions presented in this report have been prepared for the Client and are specific to the project described herein ("Project"). The conclusions and recommendations contained in this report are based on the information available to RWDI when this report was prepared. Because the contents of this report may not reflect the final design of the Project or subsequent changes made after the date of this report, RWDI recommends that it be retained by Client during the final stages of the project to verify that the results and recommendations provided in this report have been correctly interpreted in the final design of the Project.

The conclusions and recommendations contained in this report have also been made for the specific purpose(s) set out herein. Should the Client or any other third party utilize the report and/or implement the conclusions and recommendations contained therein for any other purpose or project without the involvement of RWDI, the Client or such third party assumes any and all risk of any and all consequences arising from such use and RWDI accepts no responsibility for any liability, loss, or damage of any kind suffered by Client or any other third party arising therefrom.

Finally, it is imperative that the Client and/or any party relying on the conclusions and recommendations in this report carefully review the stated assumptions contained herein and to understand the different factors which may impact the conclusions and recommendations provided.