

Environmental Impact Assessment

Brief Assessment of the Environmental Impact of the High-rise Residential Development Project proposed for the Baseline-Morrison Area

Wolfhard Geile, Ph.D., M.A.

Technical advisor

Urban climatology - applied Earth observation - Urban planning

September 2009

Scientific Basis

Background and scientific basis

European studies on similar projects

Across most of Europe, an environmental assessment is mandatory with every change in zoning

Most important topics:

- impact on local climate conditions
- air quality and pollutant distribution
- changes in ground water regime
- noise levels

Summary or Findings

The environmental impact of the proposed development is expected cause the following:

- Severe modification of local wind and temperature conditions as a result of cold air injection, turbulences and shadowing
- Increased energy bills and CO₂ emissions (heating, cooling, lighting)
- More (pulmonary) health problems due to increased pollution (especially for children and seniors)
- Structural damage to neighboring buildings resulting from lowering ground subsidence
- Dying trees and lower vegetation also a result of the lower groundwater level

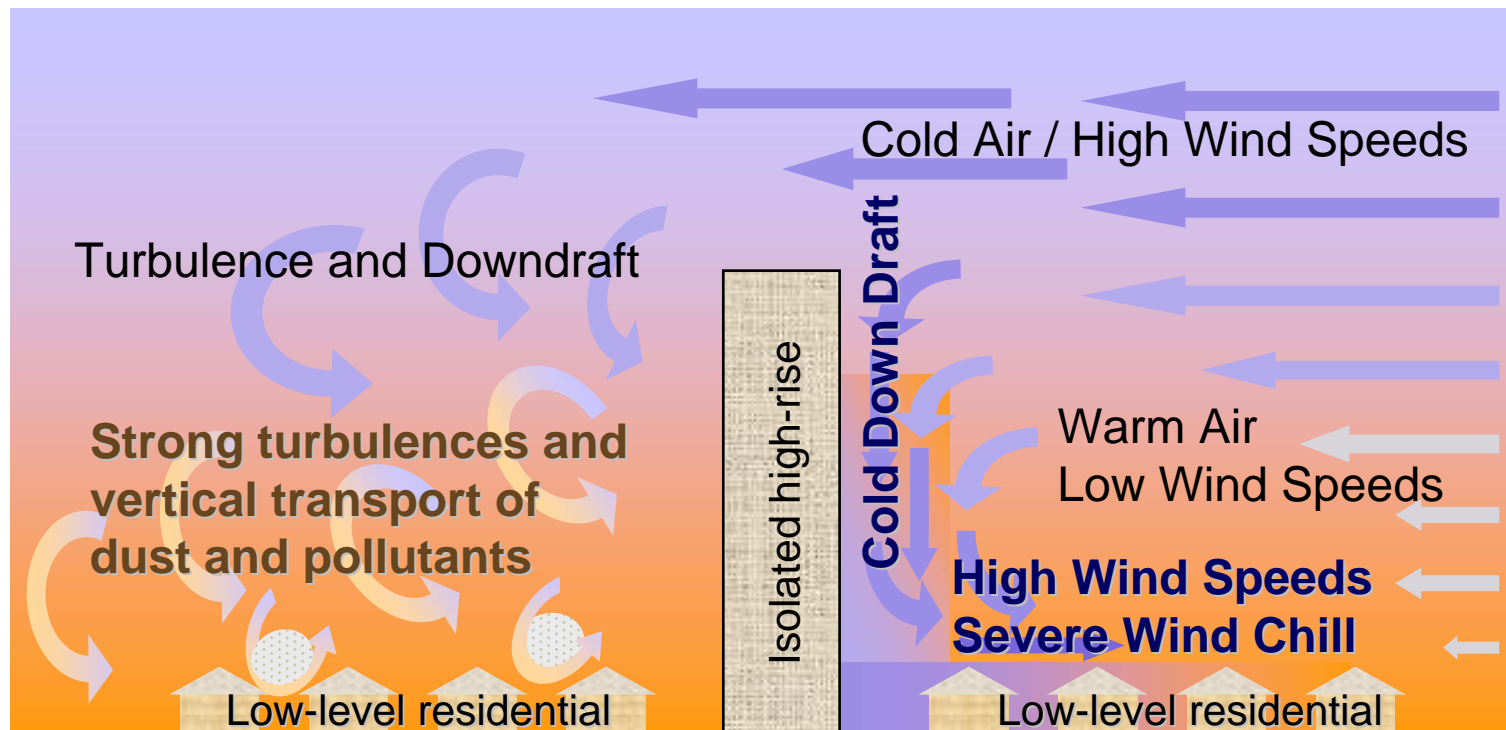
Impact on Local Climate

The climatological impact is expected to be the most severe

- Drastically lower winter temperatures due to cold air downdrafts and shadowing (morning and afternoon temperatures east, north, and west of the complex)
- 6 to 10-fold increase in local wind speeds - thus higher wind chill
- High wind turbulences and increase in pollutants affecting a 500 m circle
- Less direct sunlight, especially during winter months
- Local increase in summer-nighttime temperatures on the southern and western side due to emmitted heat

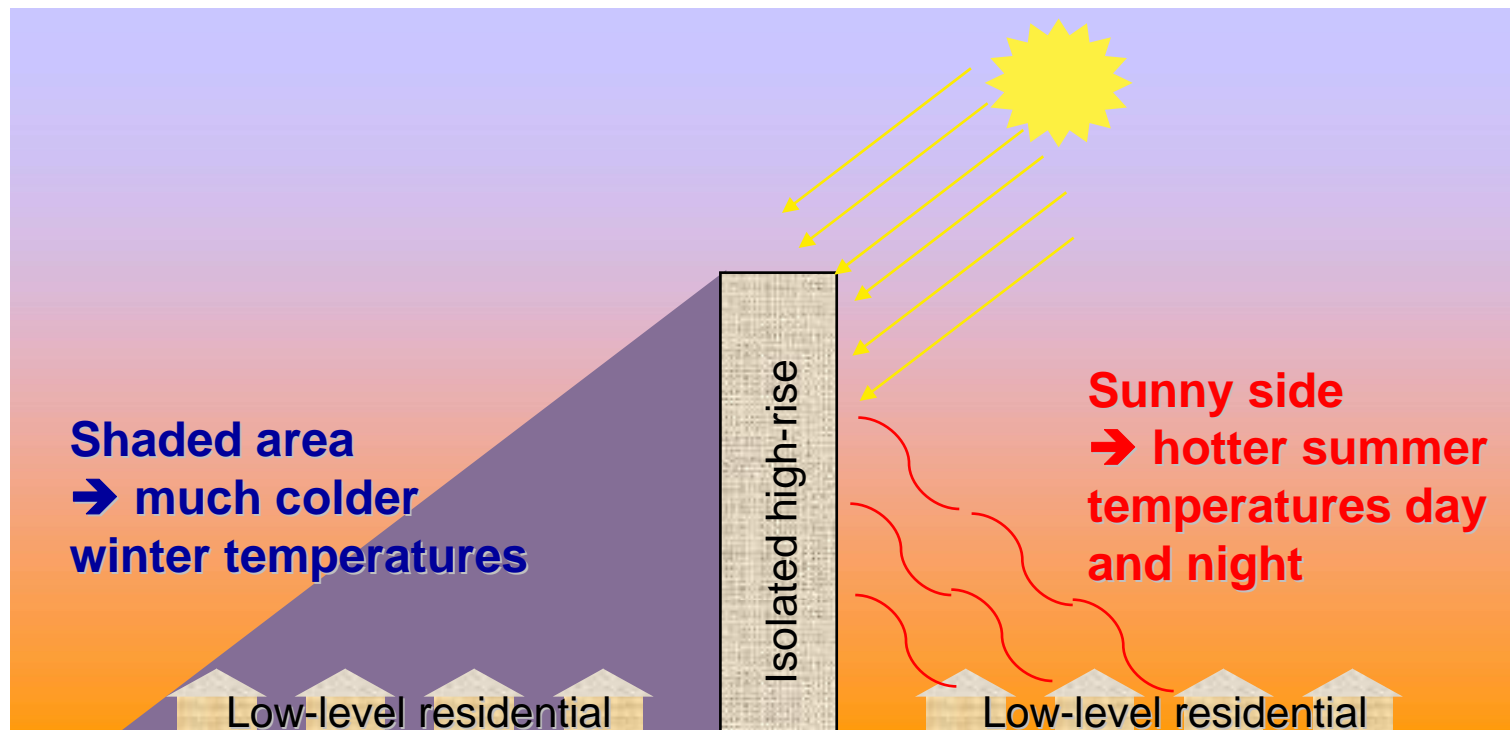
Impact on Local Climate

An isolated high-rise increases local wind speeds and causes turbulences



Impact on Local Climate

An isolated high-rise severely impacts the local temperature regime



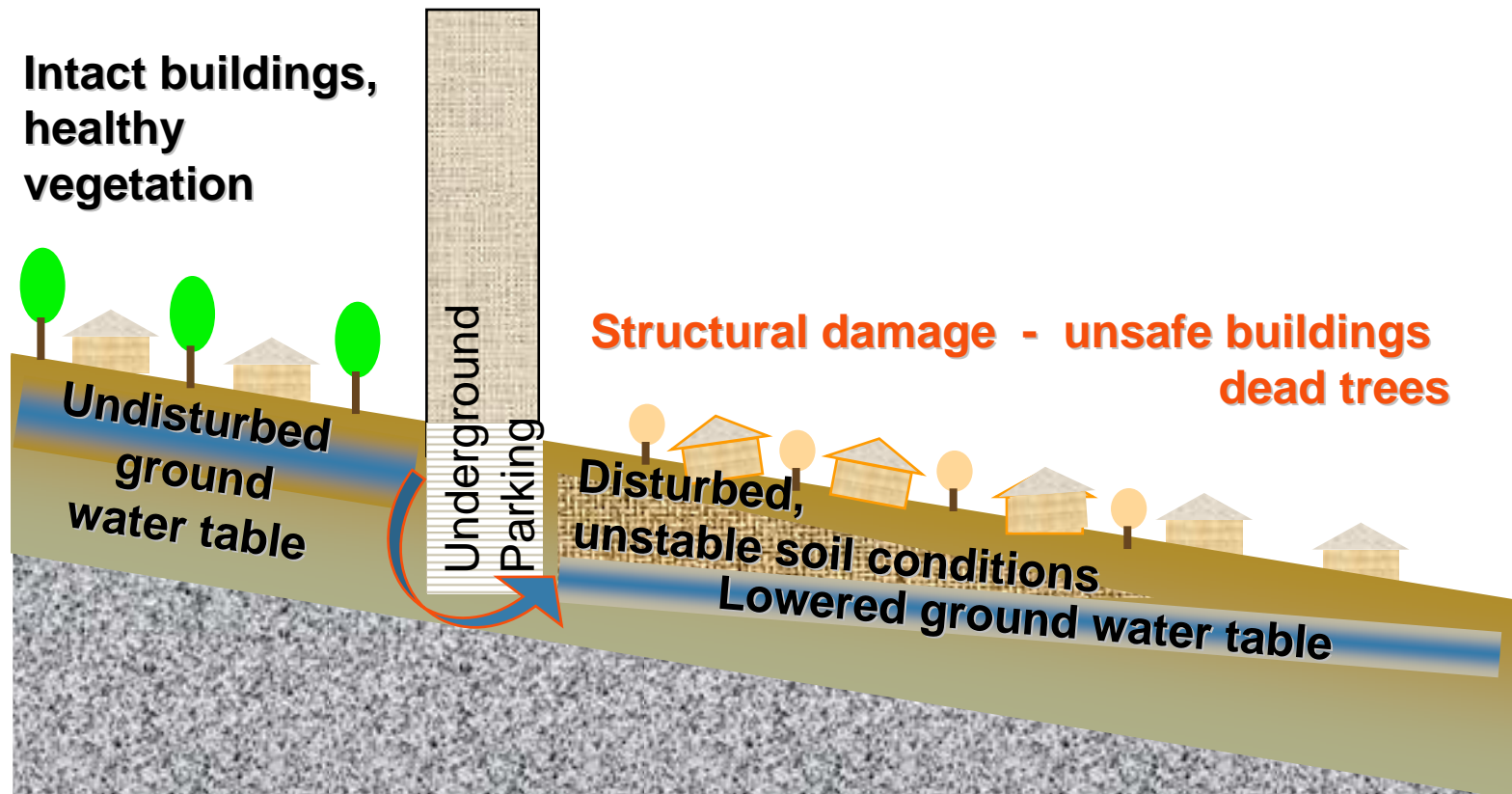
Significant Geological Impact

The geological impact is expected to be significant

- The underground parking requires to drain the high-standing groundwater
- This will lower the groundwater table in the neighborhood
- Soils will compact and sink in ('subsidence')
- This causes structural damage to buildings
- Deep-rooted vegetation will suffer from a lack of water

Significant Geological Impact

Lowering the groundwater table can cause structural damage and vegetation stress



Thank You

Recommended alternate scenario

- Avoid isolated large buildings, especially above current zoning height limits of 11 m
- Seek intensification - moderate necessary - through intelligent building layout and architecture
- Take advantage of a great opportunity to design and construct a role model for a truly sustainable re-development in the Westend

Intensification can be achieved without building high-rises. Aand creative sustainable urban development can be both, beneficial to the public, and profitable for the developer !

Recommendation

Thank you for listening

... - and please feel free to ask questions

Discussion

Room for intensification regionally ?



... - yes, several sites within a 5 minute radius

Discussion

Can intensification be done low-rise ?



Vancouver



Whitehorse



Quebec



... - yes, with mixed use buildings and intelligent design, e.g.