Slow Moving Landslides Fact Sheet

Please be aware that this fact sheet is provided to the public for the purpose of information only and should **not** be relied upon by any person who may be contemplating purchasing a property in the study area or making a financial investment.

Our region is home to a number of historical landslide areas. These are typically slow-moving slides, which creep progressively over a period of months or years. While this shifting land movement generally does not pose immediate risk or danger to life, it can cause significant damage to buildings, roads and other infrastructure.

Fast-moving vs. slow-moving landslides

A fast-moving landslide is often unpredictable and happens suddenly, resulting in a rapid and significant change in the landscape. Historical examples of this in our province include the Hope slide from over one hundred years ago, as well as the fatal North Vancouver landslide, which occurred in a residential area in 2005.

While slow-moving landslides also cause damage, they often occur over longer periods of time, rather than minutes. Slow-moving slides also don't move all at once – one area may shift, while another area may have no activity at all. Movement can be complex and different parts can move at different rates. Certain zones of the slide may activate and continue to move, while others can be seemingly stable for decades.

What causes a slow-moving landslide?

Slide activity is generally associated with the amount of water in the ground, as well as the natural movement and water flows of our rivers, and we know that climate change also plays a factor. Changes to rain and snowfall patterns, spring melt, winter temperatures and wildfire impacts all impact river and stream flows. When the ground is saturated with water, it can become more susceptible to movement.

What can be done to stop them?

The control and mitigation of slow-moving slides is a complex area of study. The characteristics of a particular slide will determine whether any steps can be taken to halt or slow down the slide activity. Often, there is very little, if anything, that can be done to stabilize the area and prevent further movement.

What technology is used to detect slow-moving landslides?

To complete this analysis, geotechnical professionals conducted a change detection analysis using LiDAR technology. LiDAR provides extremely accurate pictures of the earth's surface without any trees, plants or other vegetation. This technology allows the professionals to identify areas that have experienced appreciable land movement. Prior to the introduction of LiDAR in recent years, geotechnical professionals had to rely on aerial photography combined with on-the-ground evidence of slide activity.

What is the purpose of the latest LiDAR study?

The purpose of the study is to determine which landslides throughout the study area have undergone recorded movement in the stipulated period of time and to identify areas where the slope stability may be questionable. From this, elected officials will be made aware of the extent of the current situation as it exists today, and this may assist them in forming their approach to managing development on or adjacent to unstable and potentially unstable slope areas.

The study is not predictive, meaning that it cannot predict whether and how much landslides in the area will move in the future. Rather, it provides a "snapshot in time" for the slope movement in the stipulated time period.

What if my home is near one of the questionable slope areas?

If you own property on or near one of the "slopes where the stability may be questionable" identified in the study, or if you are considering purchasing property in one of these areas, it is important that you educate yourself on the risks and on the methods to manage and avoid increasing the problem.

- If you are considering a new development, upgrade, renovation, repair or other construction that involves excavation, fill placement or structural work, ensure you consult with a qualified professional early in the process.
- Tree cutting, vegetation removal, ground disturbance and drainage work is not permitted within any of the known slide areas identified within the various Official Community Plans until an appropriate geotechnical assessment is completed by the landowner and a Development Permit is applied for and received from the City. These requirements have been in place for many years already to help reduce the impacts on slide areas.
- If you live in or near active or inactive slide areas, it is important to know that even small actions, such as removing a tree, constructing a driveway, changing where your roof drainage goes, etc., could affect how much or when a slide moves in the area.
- Finally, if you are worried about existing or potential slide activity on your property, you should consult with a qualified professional.

What mitigation steps can I take in a slide area?

These are some responsibilities homeowners have, and steps they can take, if they live within a known slide area. Please note that this is not an exhaustive list:

- **Irrigation**: Be aware that irrigating lands within a slide area can increase slope movement.
- **Stormwater management**: Consider contacting a qualified professional to determine whether roof drainage to the storm sewer system or rain barrels would be advisable and permissible.
- **Reduce excavation and grading**: Be aware that excavation and fill placement within a slide area can increase slope movement.
- **Reduce tree and vegetation clearing**: This damages natural vegetation and can reduce stability.
- **Follow the City's bylaws and guidelines:** For all development and vegetation removal, and seek a geotechnical review.
- **Consult with professionals:** If you are worried about existing or potential slide activity on your property, you should consult with a qualified professional to assess the immediate and long-term risk, and determine whether anything can be done to stabilize the area and prevent further slope movement.

I am looking to buy a home in the area. Where can I find out more information about areas of questionable slope stability?

Potential homebuyers should educate themselves about living in an area where the slope stability may be questionable. You can review the study, fact sheets, information, and updates at www.quesnel.ca/land-hazards.

It is important to note that neither the LiDAR study nor any information provided in this Slow-Moving Fact Sheet should be relied upon by any person who may be

contemplating purchasing a property in the study area or making a financial investment in a property in the study area. Individuals considering making a financial investment in a property located in the study area must conduct their own due diligence as to potential physical and economic landslide-related risks and seek the advice of qualified professionals before making any decision to purchase or invest.

How will I be kept informed about local updates?

We are ensuring that the study is publicly available, and all residents should review its contents. However, this type of mapping technology and analysis does not allow the authors of the study to identify which specific properties are and are not at risk. Rather, this study helps us understand the general areas where land movement has occurred. If you own property in or near one of the "slopes where the stability may be questionable" as identified in the study, it is important that you educate yourself on the risks and on the methods to manage and avoid increasing the problem.

Those who are interested in reading the study, fact sheets, and other updates can review all documents at www.quesnel.ca/land-hazards. If you have further questions, please email developmentservices@quesnel.ca or contact our office at 250-992-2111 and ask to speak to someone with regards to the slope stability study. Please keep in mind, questions regarding movement or potential movement on your property can only be answered by a qualified professional.