



BOARD REPORT

TO: Chair and Directors

File No: 1855 03

SUBJECT: Bastion Mountain Geomorphic Assessment

DESCRIPTION: Report from Derek Sutherland, Team Leader, March 29, 2019. For information only.

RECOMMENDATION: THAT: The Bastion Mountain – Geomorphic Assessment Hydrology Overview report prepared by Kerr Wood Leidal Consulting Engineers dated April 2, 2019 and the Bastion Mountain Area Overview Landslide Assessment Report prepared by Westrek Geotechnical Services Ltd. dated April 2, 2019, be received by the Board for information this 18th day of April, 2019.

SHORT SUMMARY:

As a result of major land slide events in McIntyre Creek (2014), Handy Brook (2017) and Robinson Creek (2017), the CSR D applied for and received funding from the Union of BC Municipalities (UBCM to conduct a geomorphic assessment of Bastion Mountain in the Sunnybrae area of Tappen, BC to determine future land slide risk.

Kerr Wood Leidal Consulting Engineers (KWL) was retained by the CSR D to undertake the assessment work which has recently been completed. Dwayne Meredith, Senior Project Manager, KWL, will provide a project overview to the Board at the April 18, 2019 Board meeting.

VOTING:

Unweighted
Corporate



LGA Part 14
(Unweighted)



Weighted
Corporate



Stakeholder
(Weighted)



BACKGROUND:

In November 2017, the CSR D Board of Directors authorized staff to develop a grant request to UBCM in the amount of \$150,000 to conduct a Geomorphic Assessment of the Bastion Mountain area between Handy Brook and McIntyre Creek. The area has been subject to three major landslides in recent years and a detailed risk analysis of the area was needed to identify the likelihood of future events and identify associate risks.

The CSR D application to the UBCM Flood Risk Assessment grant was successful and the CSR D engaged KWL to perform the geomorphic assessment. KWL created LiDAR data of the area and engaged Westrek Geotechnical to interpret the data and provide the geomorphic assessment.

Draft reports were created in January 2019 and finalized in April 2019. The reports define the potential landslide hazards in the area and identify potential at-risk areas.

KEY ISSUES/CONCEPTS:

The report findings may be utilized to define potential hazard areas for development planning and mitigative efforts. The reports make the following recommendations:

1. A level of acceptable landslide risk for proposed development should be developed, at both the building permit and/or development permit levels.
2. A level of tolerable landslide risk for existing development within the landslide hazard areas should be developed.
3. Detailed landslide risk assessments should be undertaken for existing developments using the level of tolerable landslide risk, to determine whether the implementation of risk mitigation measures is necessary. Priority should be given to residential developments located within or adjacent to the land slide hazard areas discussed in [Westrek, 2019] Section 12.
4. Detailed landslide risk assessments should be completed for all proposed development within the landslide hazard areas identified in this study. These should be carried out in accordance with Engineers and Geoscientists BC's Guidelines for Legislated Landslide Assessments for Residential Development in BC (2010).
5. Terrain stability assessments that address the post-harvest landslide risk, and/or an assessment of the hydrologic impacts of logging on gullied stream systems capable of triggering debris floods and debris flows should be completed for all logging on the slopes within the study area. This should be implemented as part of the referral process.
6. A landslide database should be developed and maintained to collect data about future landslide events. The database should be used to update our landslide hazard maps, and could also allow for adjustments due to the long-term effects of climate change.
7. Post-Wildfire Natural Hazards Risk Assessments should be undertaken for existing development and infrastructure downslope from terrain affected by wildfires. Significantly burned slopes can have an elevated potential for debris flows/debris floods/floods for up to 5 years following a wildfire.
8. The Reinecker Creek watershed should be assessed with regard to the debris flood potential. A flood and/or debris flood event occurred in 2017, and the fan is occupied by the Herald Provincial Park and campground.
9. All creek fans in the study area should be designated as Development Permit Areas.
10. A level of flood hazard tolerance (i.e., 200-year return period) or flood risk tolerance (probability of death) for proposed development applications should be specified.
11. Flood risk mitigation measures should be added or upgraded within its flood control bylaw in consideration of Legislated Flood Assessments in a Changing Climate in BC (2018).
12. The culverts along Sunnybrae-Canoe Point Road are significantly undersized to pass clear water floods, except for the recently replaced Robinson Creek culvert, and are typically susceptible to blockage from sedimentation, and as identified debris floods and/or debris flows. The culverts should be upgraded to pass clear water floods and with consideration to reduce the potential for blockages.

COMMUNICATIONS:

The reports and appendices have been posted on the CSRD website and affected residents and stakeholders will be informed. If necessary, information can be provided through a public meeting held in the community.

BOARD'S OPTIONS:

1. *Endorse the Recommendation.*
2. *Deny the Recommendation.*
3. *Defer.*
4. *Any other action deemed appropriate by the Board.*

LIST NAME OF REPORT(S) / DOCUMENT(S) AVAILABLE FROM STAFF:

1. Hydrology Overview - Bastion Mountain Geomorphic Assessment, KWL Consulting Engineers, April 2, 2019.
2. Bastion Mountain Area – Overview Landslide Assessment, Westrek Geotechnical Services Ltd., April 2, 2019.

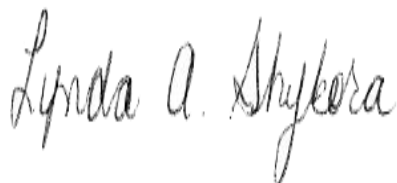
Report Approval Details

Document Title:	Bastion Mountain Geomorphic Assessment.docx
Attachments:	
Final Approval Date:	Apr 9, 2019

This report and all of its attachments were approved and signed as outlined below:



Darcy Mooney - Apr 9, 2019 - 1:26 PM



Lynda Shykora - Apr 9, 2019 - 1:58 PM



Charles Hamilton - Apr 9, 2019 - 2:38 PM