

**To:** Hardie, Karie EAO:EX  
**Cc:** Chaplin, Jessy EMPR:EX; Flynn, Doug EMPR:EX  
**Subject:** Davidson Project - additional comment

There are several mine engineering related issues that merit some comment, though outside of my area of expertise. These (at least the first two) will require detailed consideration as part of the proponent's application for approval of its mine plan under the Mines Act. This application and permit consideration would be subsequent to, and contingent upon approval-in-principle under Environmental Assessment. However these may be significant issues that you should be aware of now.

1) Stability of open stopes (the secondary stopes) - A geotechnical engineer / rock mechanics expert will need to evaluate rock quality data to determine the size of underground cavities (open stopes) that will be stable. Stope convergence refers to rock bursts caused by rock load pressure that exceeds the rock strength. Rock failure may occur after an indeterminate time. Stope convergence could render it impossible to mine the adjacent ore zone after extraction of the high-grade ore.

2) Stability of filled stopes (the primary stopes) - Cycloned sand derived from mill tailings is the material normally used as stope fill. Its fine grain size is amenable to tight packing. Rock is less satisfactory for use as stope fill, and its rock quality characteristics will be necessary for a geotechnical engineer / rock mechanics expert to predict how well it will perform. Rock from the 700 and 1066 adits will be considerably less than what is required. The proponent has not identified the supplemental source. Low rock quality and/or inadequate placement of stope fill could also lead to convergence in the filled stopes and, as above, render it impossible to mine the adjacent ore zone after extraction of the high-grade ore.

3) If rock fracturing, as described above, extends high enough above the stopes to result in an inflow of water from below Kathlyn glacier into the mine workings, there could be concern for safety of workers.

4) Efficacy of grouting ahead of 700 Adit - Anecdotal evidence from grouting the pilot hole of the 700 Adit indicates there might be considerable difficulty in grouting ahead of development of the 700 Adit. The result could be an abrupt increase in water flow that the holding pond would need to accommodate.

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