## Information Request 24



## Response to Information Request 24

**IR 24 – Fish Lake Control Dams**

**References:**

EIS Guidelines, Sections 2.2.3
EIS, Section 2.7.3.2
EIS Appendix 2.2.5-A (Conceptual Design of Fish Lake Control Dams)

**Rationale:**

The EIS Guidelines (p. 14) require the Proponent to describe components and activities of the Project that have changed due to the implementation of proposed commitments or recommendations made as part of the provincial and federal 2009/2010 review process. In addition the Proponent is to provide sufficient detail to be able to identify which components are likely to have a high failure consequence during construction, operation, closure and post-closure and where monitoring efforts will be required for the purposes of risk analysis.

With respect to Fish Lake Control Dam construction, Appendix 2.2.5-A states that:

- Site specific geotechnical data are not available for the Fish Lake Control Dams for this conceptual level of design. (p. 2)
- The expected site conditions have been developed based on drill hole and test pit data available within the general vicinity of the proposed Fish Lake Control Dams. (p. 2)
- Select fill embankments are to be comprised of a homogenous low permeability earth fill, making up the bulk of the embankment (p. 3)
- Prior to the detailed design and construction of the Fish Lake Control Dams, a site investigation and soils testing program will be required to validate conceptual design parameters.(p. 3)
- The Fish Lake Control Dams will be designed to accommodate an Inflow Design Flood of a 1:1,000 year 24-hour event, and an Earthquake Design Ground Motion event with a 1:1,000 year return period. (p. 5)
- Prior to the commencement of construction, a detailed design report and drawing package shall be commissioned by the Owner to include the technical design intent and associated construction drawings. (p.6)

While providing for isolated occurrences such as flood and earthquake noted in the 5$^{th}$ bullet above, there is no mention of the proximity of control dams to the pit, and the possible progressive impacts that a long term (17 years) blasting program may have on the integrity of the control dams, particularly given that much of the construction materials will include earth fill situated below the water surface, as illustrated in Figure 1.3 in Appendix 2.2.5-A.

**Information Requested:**

The Panel requests that Taseko:

a. Discuss what potential effects pit blasting may have on the Fish Lake control dams over the life of the mine and how the eventual design and construction will address these potential effects.

**Information Request #24a**

Discuss what potential effects pit blasting may have on the Fish Lake control dams over the life of the mine and how the eventual design and construction will address these potential effects.

**Response Summary**

Blasting within the open pit will not have an effect on the Fish Lake Flood Control Dams (FCD). Design and construction of these dams will be carried out by professional engineers experienced with these structures. Guidelines and regulations provided through the Canadian Dam Association, the BC Dam Safety Guidelines and the BC Dam Safety Regulations will provide the basis for not only the design and construction, but the ongoing operation, maintenance and surveillance of these dams.

**Discussion**

There is precedent globally and within BC of water diversions and structures located close to Open Pits experiencing the effects of production blasting with no discernible impact.

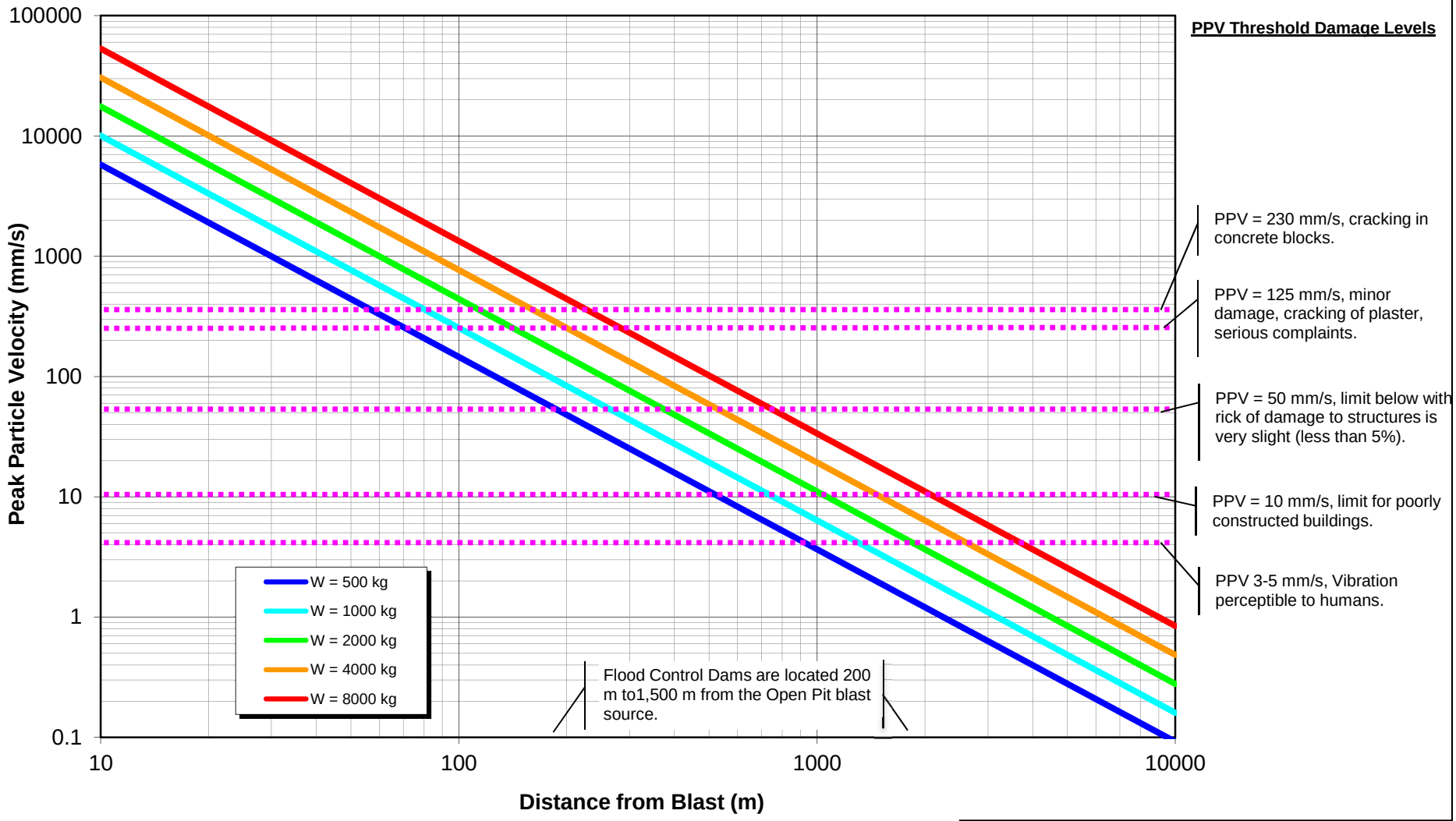
The FCD are currently designed as embankments of earth fill construction, located between 200 m to 1,500 m from the Open Pit blasts. The potential hazard to the FCD from blasting is due to blast energy transmitted to the structure (measured as peak particle velocity), the combination of distance from the Open Pit (the blast source), the FCD construction (which will be resistant to damage by blasting vibration) and the FCD foundation soils (which are competent non-liquefiable) are expected to result in acceptably low peak particle velocities at the FCD location.

An estimated peak particle velocity at the FCD for various charge weights is shown on Figure 24-1. This peak particle velocity estimate has been completed using assumed parameters for a typical production Open Pit blast. The estimated charge weight per delay from blasts in the New Prosperity open pit is 630 kg's. The maximum peak particle velocity of vibrations expected from this charge that is a distance of 200 meters from the FCD is 36 mm/second. The dams will be designed to not only withstand this vibration but will have a factor of safety intended to withstand much greater peak particle velocities.

## References

Taseko Mines Limited (2012). *New Prosperity Gold-Copper Mine Project Environmental Impact Statement*.

Knight Piésold (2012). *New Prosperity Gold-Copper Project – Conceptual Design of the Fish Lake Flood Control Dams*. Ref no. VA12-01540, August 22, 2012.




**NOTES:**

1. PPV = PEAK PARTICLE VELOCITY (MM/S).
2. W = INSTANTANEOUS EXPLOSIVE CHARGE WEIGHT PER DELAY (KG).
3. SITE AND ROCK FACTOR CONSTANTS K AND B ASSUMED TO BE 1600 AND -1.6, RESPECTIVELY.
4. PPV THRESHOLD DAMAGE LEVELS AFTER SISKIND ET AL (1980).

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | DDMMM'YY | ISSUED WITH LETTER | - | - | - |

TASEKO MINES LIMITED

NEW PROSPERITY GOLD-COPPER PROJECT

**OPEN PIT BLASTING TYPICAL PEAK PARTICLE VELOCITY ESTIMATES**

Knight Piésold CONSULTING

P/A NO. VA101-266/30

REF. NO. VA13-00360

**FIGURE 24-1**

REV A