UNLOCKING POTENTIAL OF THE GOLD FIELDS, ST IVES GOLD MINE USING WIRELESS BLASTING TECHNOLOGY

B. Jesionek1, R. Massabki 2.

1.Unit Manager: Technical Services, Gold Fields, Perth Western Australia 6000 Email: [bart.jesionek@goldfields.com](mailto:bart.jesionek@goldfields.com)

2.Sr. Engineer - Webgen, Orica, Perth, Western Australia. Email: [ricardo.massabki@orica.com](mailto:ricardo.massabki@orica.com)

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# ABSTRACT

The Gold Fields, St Ives Gold Mine (SIGM) uses Orica’s WebGen™ wireless initiation system to realise safety, productivity, and cost benefits at its underground operations. WebGenTM uses magnetic induction to wirelessly transmit an initiation signal in lieu of a physical connection. The absence of any in-hole or surface wiring allows stopes to be pre-charged partially or entirely, as independent firings in any sequence enabling novel mining methods while increasing safety and productivity in more traditional extraction styles.

WebGenTM was first implemented at St Ives for safety and productivity benefits brought by eliminating personnel from brow exposure. The use of WebGenTM has since broadened to include designs that achieve:

* Reduced required Jumbo advance: Eliminating costly lateral development in transition and transverse stopes,
* Optimal slot placement: Relocating the rise and slot to the optimum point for stope performance without concerns for re-entry and personnel,
* Eliminating hole cleaning: Stope pre-charging negates requirements for mechanical hole cleaning, ensuring continuity of production while reducing exposure to stope brows.
* Operational flexibility: Pre-charging blasts calculated to optimum void ratios, increasing the recovery of single shot applications, used on small, narrow stopes.
* Improve ore recovery: Changing the shape of stopes to include stranded ore, by preloading, reverse firing and changing firing directions to throw blasted material around corners,

Across 15 stopes and 29 individual blasts as of March 2024, these applications have delivered a reduction of 102 metres of lateral development and generated more than 110 days of scheduling benefit, realising production uplift and production ore unit cost benefits.

The mining methods enabled by the wireless initiation have been fully incorporated into mine’s production schedule, and Orica continues to support Gold Fields in its journey to unlock safer, more reliable, and cost-effective production from the St Ives asset.