



Tailings and Mine Waste

Paterson & Cooke is an industry leader in tailings and mine waste processing, transportation, and deposition. We recognise that sustainable mining relies on effective tailings management, as well as balancing multiple factors such as geotechnical and geochemical stability, water conservation, regulatory compliance, environmental impact, and cost-efficiency.

Comprehensive Tailings Management Solutions

Our process begins with a deep and holistic understanding of corporate and asset-specific requirements. Through close collaboration with stakeholders, we leverage global expertise to develop innovative, site-specific solutions that address complex tailings challenges.

Tailings and mine waste processing options include:

- **Thickening, filtration and screening** to optimise water recovery
- **Particle classification** for efficient separation of fine and coarse materials
- **Flotation of acid-generating minerals** to reduce environmental risk
- **Co-mingling and co-disposal** of tailings and waste rock for enhanced stability
- **Customised combinations** of these approaches for optimal results

Transportation of tailings and mine waste is usually through a combination of:

- **Pipelines** for slurry tailings transport, distribution and deposition, and
- **Conveyors and trucks** for tailings filter cake and waste rock transport and deposition

Tailings deposition methods depend on water content, site topography, and stability requirements.

Optimised Results

Through a collaborative process we evaluate various solutions against project and corporate requirements, typically using a Multiple Accounts Analysis (MAA), to identify the best-fit, sustainable solution.

This results in an optimum solution across all requirements and accounts, evaluated in a transparent and unbiased manner. Another advantage of the MAA approach is that it can give value to factors which are difficult to place a direct cost on, but which must be considered as part of the sustainable solution.

From Concept to Execution

Our expertise extends beyond tailings process, transport and deposition design. We support our clients throughout the project lifecycle:

- **Advanced laboratory testing** for accurate material characterisation
- **Pre-feasibility and feasibility studies** to guide decision-making
- **Detailed engineering** for robust designs
- **Procurement** to secure the best technology
- **Commissioning and startup** to ensure seamless integration and performance

Case Study: LaRonde Tailings Filter Plant, Quebec

P&C completed the feasibility level design and test work and provided on-going technical support to the detailed engineering of the 10 000 tpd LaRonde gold tailings filter plant.

The system commissioned in 2022 is designed to accommodate a wide range of operating conditions, including significantly different ore types from two mines, and large fluctuations in tailings flowrate when underground paste backfill is being produced.

P&C provided a unique design approach to ensure the successful integration of the dewatering plant with the existing infrastructure. Dewatering and rheology test work campaigns were completed by our laboratories to establish the operating windows for design, and we completed an independent filtration technology assessment of commercially available technologies to select the filter types best applied to LaRonde.

P&C were responsible for plant location trade-off studies, process, mechanical and hydraulic engineering, dewatering technology selection and sizing, capital and operating cost estimating to maximise investment value, and technical and commercial bid evaluations to secure the best solutions.

The LaRonde filter plant is recognised as a benchmark in tailings dewatering, demonstrating our commitment to delivering high-quality, integrated designs that drive operational success.

Group Capabilities

- Tailings & Mine Waste
- Slurry Pipeline Systems
- Mine Backfill
- Mineral Processing
- Mine Services
- Marine Pipeline Systems
- Laboratory Services

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