



Metallurgical Testwork Capability Statement

CPC Engineering provides a full range of testwork related services from sample selection through to testwork management and evaluation. CPC ensures that testwork programs align with the client`s requirement and deliver fit-for-purpose testwork outcomes appropriate to the development status of the project.

CPC can provide the following testwork services:

Sampling selection including:

- Quality of sampling;
- Sample representatively;
- Drill type and size;
- Sample security; and
- Sample assay.

Testwork program development based on:

- Level of study – scoping, pre-feasibility, feasibility;
- Ore type and mineralogy;
- Review of historical testwork completed;
- Process technology risk; and
- Evaluation of deleterious elements.

Management of testwork programs, including:

- On-site lab supervision;
- Continuous interpretation of results to optimise testwork program;

- Flexible approach to maximise opportunities that may present; and
- Summary testwork report and recommended process design criteria.

Grade and recovery model development for financial analysis and performance guarantees.

Reagent optimisation to minimise operation cost.

Evaluation of 3rd party laboratories services, including:

- Key personnel;
- Consideration of sample transport costs, including quarantine and customs import/export constraints;
- Previous work completed;
- Acceptance of CPC direct supervision of testwork;
- Review of laboratory equipment and suitability for specific test work;
- Review of laboratory analytical methods; and
- Review of 3rd party assay, if relevant.

Testwork gap analysis, including:

- Evaluation of previous testwork raw data and interpretation;
- Identification of steps required to take the testwork to the study level required by the client; and
- Recommendations for future testwork.

CPC has qualified persons (QP) for the metallurgical testing component of NI 43-101 technical reports.

CPC Personnel Testwork Experience

Gold

- Midas Au-Sb Study; mineralogy, comminution, flotation, pressure oxidation, concentrate, leaching, gravity concentration, and environmental testwork management;
- Gold and silver heap leach ores; crushing, agglomeration, column leach, acid mine drainage testwork and analysis;
- High silver gold ores; comminution, leach, thickening, Merrill Crowe, leach residue cyanide detox testwork and analysis;

- Free milling gold ores; mineralogy, comminution, gravity, flotation, CIL testwork and analysis; and
- Carbonaceous gold ores; mineralogy, comminution, gravity, flotation, CIL testwork and analysis.

Base Metals

- Lumwana Copper Project; comminution, flotation, thickening and filtration test analysis. Batch, locked cycle and pilot plants tests. Grade and recovery models for process guarantee;
- Selwyn Lead-Zinc Study; pre-concentration testwork program development including ore sorting and HLS testwork;
- Ravensthorpe Nickel Project; beneficiation and hydrometallurgical (Pressure acid leach and atmospheric leach to produce a hydroxide intermediate product) testwork. Bench and pilot scale testwork and analysis, including management and interpretation of a large scale beneficiation variability program. Commissioning and operation of the pressure acid leach and atmospheric leach pilot plant;
- Perseverance Deeps Project; Development of regression model to predict nickel recovery from ore grades, and target concentrate grade;
- Cliffs Nickel Project; Grinding and Flotation testwork and analysis;
- PT Dairi Zn-Pb Project; flotation testwork and analysis;
- Bozshakol Clay; Copper oxide clay ore; sample selection and handling to ensure representative testwork outcomes, scrubbing, conventional grinding, conventional and sulphidisation flotation, filtration, thickening, mineralogy testwork and analysis; and
- Malborough Nickel Project; beneficiation, pressure acid leach, metal recovery, purification and nickel, and cobalt refinery. Bench and pilot scale testwork and analysis, including management and process modelling.

Mineral Sands

- Eneabba Mineral Sands – geometallurgical interpretation of ore zones, desliming and slime settling and thickening, gravity separation, upcurrent classifier separation, magnetic separation, electrostatic separation, dry gravity separation;
- Narngulu Mineral Separation Plant – gravity separation, upcurrent classifier separation, magnetic separation, electrostatic separation, dry gravity separation, comparison of separation equipment from different commercial suppliers;
- Narngulu Minerals Zircon Finish Plant – Hot acid leach test work, acid washing and neutralisation, magnetic separation;

- Minerals sands laboratory management - desliming, gravity separation, upcurrent classifier separation, electrostatic separation, dry gravity separation. Full minerals sands pilot plant test work to produce samples for market analysis; and
- Kwale Mineral Sands – test work interpretation, on site thickener pilot plant test work, slime rheology testing.

Iron Ore

- Minas Rio Iron Ore Study – comminution, flotation, concentrate pipeline testwork development;
- Iron ore laboratory management – desliming, upcurrent classifier separation, wet and dry low and high intensity magnetic separation;
- Apurimac Iron Ore Project – Sample selection, management and interpretation of ore characterisation and Davis Tube testwork;
- Wadi Sawawin – ultra fine grinding, complex elutriation, reverse flotation, thickening and filtration testwork and analysis; and
- Southdowns Iron Ore Project; Variability testing, Davis Tube testwork, magnetite comminution, magnetic separation, flotation, fine grinding, hydro-separation and filtration testwork.

Other

- Round Hill (Macraes) Tungsten- Gold Study – Comminution, spiral and wet table gravity separation, magnetic separation and classification. Batch and pilot plant testwork and analysis;
- Hinda Phosphate Study – Comminution and flotation testwork program development. Batch and pilot testwork and analysis;
- Lumwana Uranium Study – Mineralogy, comminution, flotation, atmospheric leaching, solvent extraction, precipitation, thickening, filtration, neutralisation, rheology, environmental testwork program development and management. Batch and locked cycle testwork and analysis;
- Hemerdon Tungsten – Testwork program development and management. Comminution, dense media, conventional jig, spiral and wet table separation, magnetic separation testwork and analysis;
- Rare Earth Project – mineralogy (QEMSCAN), beneficiation and hydrometallurgical flowsheet development bench and pilot testwork programs. Including sample selection, transportation of NORM samples (both within Australia and Internationally), scope development, testwork management, interpretation of testwork results to support development of process design criteria and mass and energy balances used to evaluate a number of potential flowsheet options; and

- Office Chérifien des Phosphates – scrubbing, conventional grinding and classification, mineralogy, reverse flotation, thickening, filtration, slurry conditioning for overland pumping testwork and analysis.