



Asset Transition and Mine Closure

↳ Services and capabilities



→ The Power of Commitment

Mine Closure

→ Commitment



As an industry, we must avoid future legacy mine issues that have led to significant environmental, social and reputational impacts across the sector. Enhanced and earlier optioneering, decision-making and robust planning, managing operational interfaces and regulatory perspectives, including substantially improved progressive (or “operationalising”) rehabilitation and closure are all critical as part of these processes. There is a continued disconnect between active mining and post-mining interface and any real opportunities for economic repurposing of sites, assets and value generation through closure are lost. There is a great opportunity and significant imperative to achieve a change.

Our integrated mine closure services form a key part of GHD’s overall asset transition consulting practice. We appreciate our client needs to effectively manage the way in which their portfolio of assets across all stages of the value chain (including multiple sites across the mining lifecycle) are responsibly and sustainably transitioned through to and beyond lifecycle end.

This includes the earliest stages of initial mine closure planning and approvals, through to detailed landform design, contamination investigation, and to the optimal implementation of robust asset exit strategies. Opportunities to address closure and rehabilitation, site repurposing, transfer of assets and / or liabilities, as well as maintaining flexibility through an extended care and maintenance phase, legacy management programs and successful relinquishment are all significant activities.

Environmental, Social and Governance (ESG) drivers are increasingly critical in association with corporate commitments, local communities, as well as investors around environmental and social responsibilities in order to **manage risks and opportunities associated with business performance and organisational reputation.** The ability to unlock and realise maximum value associated with assets, whilst meeting or exceeding community and stakeholder obligations are critical.

GHD is a proud and active participant member of CRC TiME (Transformations in Mining Economies) – in particular given the emphasis on closure being a valued cornerstone for post-mining economies and collaboratively building enduring benefit; with the opportunity to sustainably transform regions towards post-mining prosperity. The mission statement of CRC TiME, focussing on bringing together diverse stakeholders to help reimagine and dramatically transform Australian mine closure outcomes is reflected in GHD’s forward-looking, innovative approaches to connect and sustain communities around the world.

Closure & Transition Pathway



Pre-Closure

- Care & maintenance planning
- Divestment strategies
- Data gathering
- Transition



Closure

- Detailed design & planning (OoM, PFS, FS)
- Execution
- Regulatory compliance
- Risk management
- Financial options & reporting
- decommissioning & demolition



Adaptive re-use

- Progressive rehabilitation
- Rehabilitation & land management plans
- Asset management
- Transition



Repurposing

- Environmental management
- Tailings & waste management, re-processing/re-treatment
- Socio & economic impact assessment



Relinquishment

- Indigenous services
- Water management
- Post closure audits & assessments

Stakeholder engagement

- Stakeholder planning, strategy, reporting, reviews
- Communication materials (including digital, VR, documents and websites)
- Government liaison
- Public consultation
- Social impact assessment & planning
- Social sustainability reporting



Benefits

Clients draw on our diverse professionals including environmental and civil engineers, environmental scientists, drafters, 3D modellers, GIS analysts and mine closure consultants.

As mine closure planning requires the integration of mine site works and the management of social impacts, we've adopted a mine closure methodology to achieve outcomes that meet industry standards and requirements, all with your community in mind. By working with us, you'll benefit from an integrated approach that will minimise risk across the entire lifecycle of your assets.

We use a strategic review team, supported by a project leadership team, to enable seamless delivery of each closure plan.

From operational and regulatory perspectives, in most cases the progressive (or "operationalising") rehabilitation and closure is critical as part of these processes. Our fully integrated services, which effectively draws on specialist disciplines from the entire enterprise including core business, advisory, delivery phase services, digital and remediation contracting is essential to achieving the necessary outcomes given the increasingly complex and cost materiality nature of the necessary asset exit strategies.

We'll review and update your closure plans as the climate and landscape changes. We provide accurate and relevant reporting so you have your finger on the pulse at all times.

Meet environmental standards, comply with regulations and be confident you are across closure costs.

Project experience: mine closure planning



Hazelwood Closure, Victoria

Pilbara Iron Ore Operations | Fortescue Metals Group

GHD prepared mine closure plans for Fortescue's Nyidinghu, North Star and Central Pilbara projects. The plans required soil and waste assessments, groundwater modelling, geochemical assessments and pit lake surveys. GHD utilised its diverse technical capabilities to assess the spectrum of closure issues facing large mining and ore processing operations. The mine closure plans prepared were a compilation of decommissioning and closure outcomes for diverse mine features such as waste rock dumps, tailings storage facilities, processing and ancillary infrastructure areas.

Hazelwood Closure | ENGIE

The Latrobe Valley site initially closed in 2017. GHD continues to be engaged by ENGIE at the Hazelwood mine site to undertake detailed rehabilitation and closure-related assessments and execution. The intent of these assessments is to determine and manage the batter stability risks during the transient phase (i.e., during lake filling) and explore short-medium-long term mine closure options/scenarios.

Our team also assisted with successfully obtaining regulatory approval of the proposed rehabilitation and closure plan, which is currently being implemented at the site. Achieving safe, stable and sustainable closure of the Hazelwood Power Complex through a diverse range of services has been critical.

Significant scope elements for GHD included: program/project management; risk assessments, environmental impacts assessments pre-post closure; geotechnical stability analyses, surcharge/buttress designs; predictive ground movement from lake filling and shutdown of aquifer pumping; hydrogeological stability assessments from aquifer uplift pressures; and surface drainage and water designs and management.

Henty Gold Mine Closure Investigations | Barrick Ltd

GHD was commissioned by Barrick Ltd to undertake mine waste management, closure planning, closure studies, closure design and estimates for the Henty Gold Mine. The Mine is in an environmentally sensitive area on the west coast of Tasmania. Scope included underground mine water rebound hydrogeology assessment; contaminated site assessment and field investigations; waste rock dump and tailings dams geochemical, geotechnical and hydrogeological investigations and assessments; rehabilitated tailings dam capping performance assessment.

Olympic Dam Surface Closure Program | BHP

GHD undertook a Selection Phase Study on the closure of Olympic Dam's redundant Smelter, Solvent Extraction and Pilot Plant closure domains as part of BHP's Surface Closure Program. Incorporating five technical disciplines (mechanical and electrical services, demolition, HAZMAT, soil remediation and waste management), the project aimed to define closure strategies and worked to quantify and optimise scope, costs, schedules and residual liability risks. With a focus on safety in design and value optimisation, the team undertook more than 2,600 hours of on-site investigations and 18,000 hours of study work in a tight 8 month period. We provided a detailed analysis of site conditions and developed closure recommendations, plans, work scopes, estimates and schedules with a high degree of confidence for progressing the Olympic Dam Surface Closure Program.



Baal Bone Colliery Closure Water, New South Wales

BHP Ore Body 17/18 Closure Investigative Phase Study | BHP

Ore Body 17/18 ceased productive mining in 2020. GHD was engaged by BHP to undertake an Investigative Phase Study (IPS) to identify and select a preferred closure approach for the Ore Body 17/18 mining area. The scope included pits, overburden storage areas (OSAs), in-pit storage areas (ISAs) and low-grade stockpiles and also included some infrastructure, local road network and other unrehabilitated areas.

GHD determined a list of potential closure options (for example, backfill above water table, no backfill etc.) that were refined over the course of the IPS resulting in the selection of a preferred option. GHD produced an engineering concept design (for landforms and voids) and developed Class 4 estimates and scheduling.

Baal Bone Colliery Closure Water | Glencore

GHD completed the development of a range of models to inform the design of the Ben Bullen Creek rehabilitation and the final landform. The modelling included hydrodynamic modelling of Ben Bullen Creek to estimate final flow depths; velocities and shear stresses to inform channel design and selection of bed lining materials; hydrogeological modelling to estimate the regional groundwater recovery and seepages into final voids; water and salt balance modelling to estimate long-term water and salinity levels within the final voids.

The Conceptual Project Closure Plan commenced for Baal Bone Colliery in 2010 with the site being in care and maintenance. Development of conceptual rehabilitation options and preparation of “for tender” design drawings for the rehabilitation of a previously mined section of Ben Bullen Creek occurred through until 2018.

The Project Closure Plan included review of the risk assessment, coordination of hydraulic, ecological, reject emplacement area capping, geomorphological and geotechnical studies for the open cut



Clean Water Diversion

areas, update of completion criteria and monitoring program. The comprehensive closure plan provided rehabilitation activities and details suitable for Glencore to initiate request for tenders from contractors.

The Mine Operations Plan was then updated for the closure phase of the site and approved by the NSW Resources Regulator. GHD then provided Glencore with ongoing design and technical support during closure activities and are actively providing consultation and advice for this operation and closure.

Clean Water Diversion | Confidential Client

GHD completed a life of mine design for a clean water diversion to protect mining activities from upstream creek catchments. The design included incorporation of the site wide closure plan.

The project consisted of an initial options assessment looking at potential alignment and mechanism for diverting a 200Ha catchment out-letting via rock cutting around proposed underground mining activities. The final design comprised of two diversion embankments, up to 18m

high, and two interconnected drainage channels cut in the natural rock. The diversion drains totalled approximately 1km in length and generally had a base width of 10m with a maximum depth of approximately 15m.

GHD's design considered the life of mine requirement and enabled the work to tie in with the overall sitewide closure plan. During the design process, the team liaised with third parties and contractors to integrate the design into ancillary environmental studies being completed in support of the client-led water licence application. Due to staging of the works, GHD also developed a temporary diversion design solution to assist with continuation of mining activities prior to the construction of the permanent drain.

GHD provided a detailed design of a water diversion system capable of handling Probable Maximum Flows (PMF) flows up to approximately 600 m³/sec, which will allow the client to protect their underground workings.

Project experience: waste dumps, pits and landform design



Clarence Colliery Reject Emplacement Area REA3, New South Wales

Clarence Colliery Reject Emplacement Area REA3 Closure Plan | Centennial Coal

GHD were engaged to develop a closure plan for Clarence Colliery REA3. As part of the works we investigated the REA3 deposits for geotechnical, geochemical and also marketability for re-use, using CPTU and Sonic drilling techniques. The available site overburden and borrow soils were also assessed for material balance and for agronomic potential. GHD designed the rehabilitation landform comprising recovery of most of the FCR for export sale and forming the agreed 3D model with CCR and rehabilitation capping. A Construction Management Plan with designated plant access stability, monitoring, TARPs and Safe Work Method Statements were prepared in accordance with the client site protocols and HSE system.

Tallering Peak PAF Material Management | Mt Gibson Iron

Mt Gibson Iron engaged GHD to prepare Tallering Peak's Waste Rock Management Plan (WRMP) to assist with the preparation of their mining proposal for the expansion of their waste dump, the WRMP has since been accepted by regulatory authorities and mining proposal approved. Mine and waste rock dump closure considerations formed an important part of the scope of this work.

Superpit Waste Rock Management Plan | KCGM

KCGM engaged GHD to develop their internal waste rock management plan. The plan detailed existing operations, waste rock classification, management of PAF material, plans and objectives, operational controls and reviews/auditing. Mine and waste rock dump closure considerations also formed an important part of this project and work.

Project experience: contamination assessment and remediation



Kam Kotia Mine Site Reclamation, Canada

Kam Kotia Mine Site Reclamation, Canada | Ministry of Northern Development and Mines

The Kam Kotia Mine produced copper and zinc ore from 1942 to 1944, and again from 1961 to 1972. The site occupies approximately 600 acres, including the former open pit, underground mine workings, tailings, sludge pond, and waste rock piles.

GHD evaluated options for optimising the lime ARD treatment plant and the long-term management of effluent sludge to analyse methods for the rehabilitation of the waste rock piles and recommendations regarding preferred options. Samples of ARD were collected at the treatment plant for bench-scale jar testing to develop recommendations for optimising treatment plant operations.

We provided cost-effective solutions for the long-term management of the lime sludge that will be produced for the next 50 to 75 years and ARD-producing waste rock and tailings. The solution for the latter issue simultaneously addresses permanent closure of the open pit. These designs represent a significant step towards bringing the Kam Kotia Mine site to overall closure, in accordance with the Ontario Mine Closure Regulations.

Nickel West Contaminated Sites Audit and Closure Planning | BHP

GHD was engaged by BHP Nickel West (NiW) to provide ongoing technical advisory and contaminated site auditor services for the Identification Phase Study (IPS) for NiW's entire asset portfolio (including all sites and activities). GHD's scope involves ongoing technical input and critical and independent reviews of NiW's documentation which comprises assessments across seven mine sites and hundreds of individual areas of potential concern.

Yarri HAZMAT and Contamination Investigation | BHP

BHP engaged GHD to complete a hazardous material (HAZMAT) and contamination investigation for the Yarri Mine Site in care and maintenance. The investigations defined the HAZMAT and contamination liability associated with the site, which fed in the development of remedial and closure planning.

Ravensworth Complex Water Balance | Glencore

GHD was engaged to amalgamate three site water balance models into a single regional water balance model covering Glencore's operations at Mt Owen Complex, Ravensworth Operations and Liddell Coal Operations (the Greater Ravensworth Area). The project included inter-site transfers managed according to a regional water and tailings management strategy, and discharges into the Hunter River (from a single discharge point at Ravensworth Operations). The project also included a salinity balance to assist in the estimation of salt discharges.

Project experience: cost estimation



Mt Leyshon Gold Mine, Queensland

Mt Leyshon Closure Cost Review and Options Assessment | Newmont

Newmont Australia engaged GHD to review and update their Mine Closure Cost Estimate for the Mt Leyshon Gold Mine, located approximately 30km south of Charters Towers, North Queensland. GHD was subsequently engaged to conduct an Engineering Options Assessment to further develop viable closure alternatives for the various waste rock dumps, tailings storage facilities and satellite stockpiles at the Mt Leyshon Mine Site.

Global Legacy Site Management | Rio Tinto

Rio Tinto (Sustainable Development Assurance) commissioned GHD to undertake a strategic review of their current approach to managing their global legacy assets, primarily in bauxite and copper mining, processing and refining as applicable. The report was used to inform Corporate Management and the RT Board as legacy management had been identified as a higher risk issue for corporate funding through the that specific financial year.

Tarmoola Mine Closure Plan and Closure Cost Estimate | St Barbara Ltd

St Barbara Ltd commissioned GHD to develop an integrated Mine Closure and Rehabilitation Plan for the Tarmoola Gold Operations, near Leonora, WA. The work focused on the development of a domain closure and rehabilitation plan for the various tailings storage facilities and waste rock dumps. After developing the closure plan GHD completed a closure cost estimate. The closure plan was commended and approved by the WA Department of Mines and Petroleum and WA Department of Environment and Conservation.

Rehabilitation Masterplans and Cost Estimates | AGL Loy Yang

GHD has had a long-term and strategic role in advising Loy Yang on mine closure matters that cover short and long-term mining operation. This has included:

- 1996: Cost of removal of buildings and structures
- 2003: Strategic framework for rehabilitation and closure planning
- 2005: Mine Rehabilitation and Whole of Life Cost report
- 2008: Update Mine Rehabilitation and Whole of Life Cost report
- 2011: Mine Rehabilitation Masterplan
- 2012 Update Mine Rehabilitation and Whole of Life Cost report
- 2015 Update Mine Rehabilitation and Whole of Life Cost report
- Continued/ongoing detailed cost estimation and strategic independent reviews/advice regarding closure costs

GEMCO Closure Plan and Cost Estimate | South32

GHD was engaged by South32 to update the Mine Closure Plan and Closure Cost Estimate for the Manganese mine on Groote Eylandt. The mine is less than ten years from closure and South32 are progressing closure studies to enhance the plan and accuracy of cost estimate. The study scope included the update of the closure cost estimate to a minimum Class 4 level ($\pm 25\%$ to $\pm 35\%$) to support the integrated closure planning process. The Mine Closure Plan was updated to include revised Post-Mining Surface designs and the TSFs Feasibility Study and aligned with the WA DMIRS Statutory Guidelines for Mine Closure Plans (2020) as required by the NT DPIR. A forward work plan for the next three years was also developed for South32's closure team. The project brought together technical inputs from subject matter experts in stakeholder engagement, water, contamination, asset management and landform design for the Northern.

Project experience: rehabilitation and re-vegetation



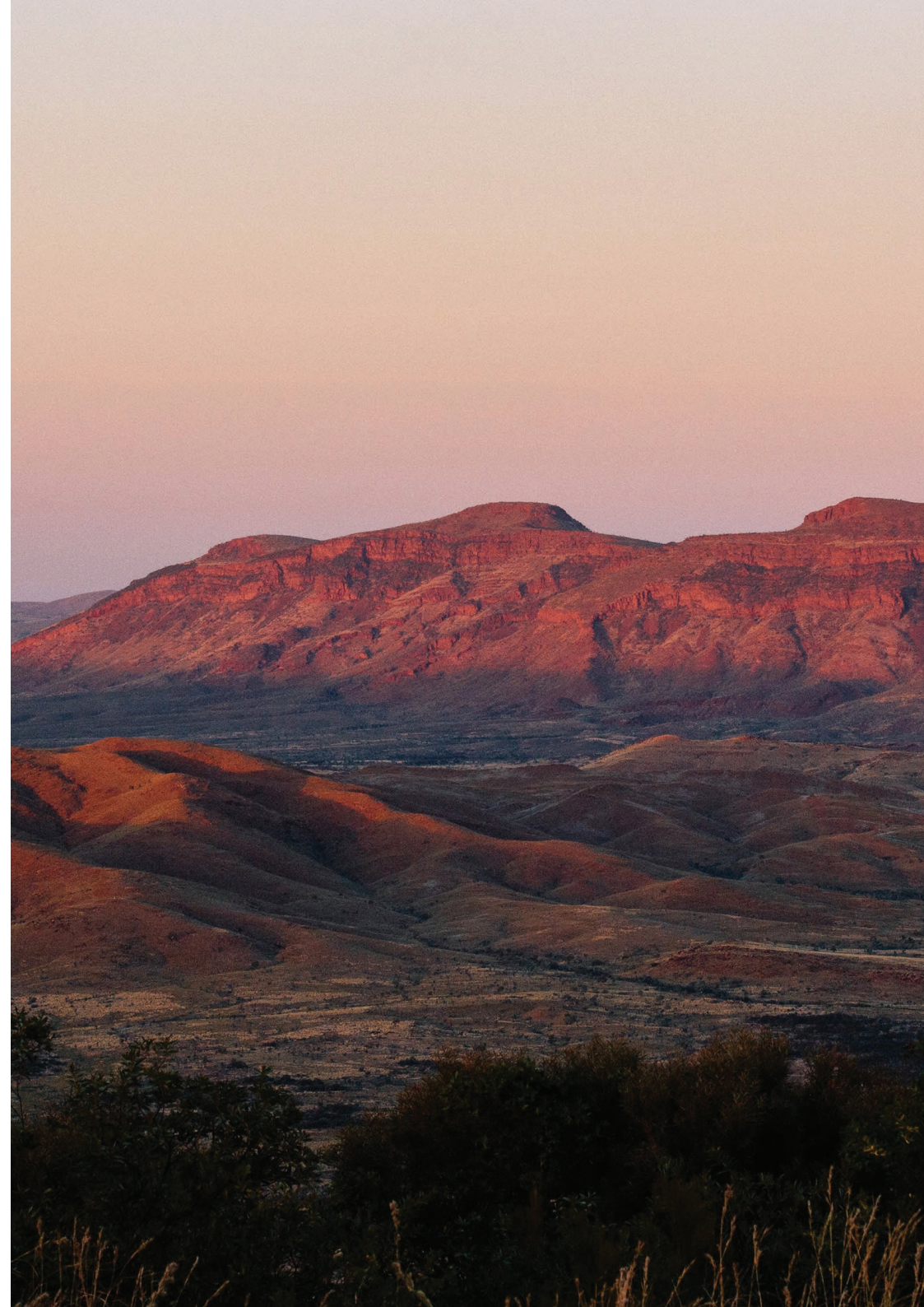
Cloudbreak mine site, Pilbara Region, Western Australia

Cloudbreak Vegetation Health Monitoring | Fortescue Metals Group

GHD completed the design and implementation of a monitoring and management plan to avoid adverse impacts to the conservation of significant vegetation as a result of groundwater related mining activities at the Cloudbreak Mine Site, in the Pilbara region. GHD undertook the baseline vegetation health and landscape function analysis assessment and prepared both the vegetation health monitoring and management plan and baseline report.

Loy Yang Mine Rehabilitation Research Program | AGL Loy Yang

GHD has a long-term and strategic role in advising Loy Yang on mine closure matters and was recently engaged to facilitate and provide specialist technical input to a series of workshops to develop a strategic 5-year program of research. The program includes trialling rehabilitation solutions for the site. GHD provides technical specialists as part of the research program steering committee.



Project experience: smelters and refineries



Townsite Smelter Program, property remediation, USA

Smelter Refinery Closure and Decommissioning, Canada | Vale Canada

In 2018 GHD prepared updated closure plans, specifications, and detailed cost estimate for the closure and decommissioning of the Smelter Complex, the Refinery Complex, the Manasan Quarry, the Thompson Gravel Pit, the Slag Pile, Birchtree and Pipe Mine facilities.

As part of the scope of work, GHD completed a physical asset inventory and asbestos and designated substances surveys; calculated detailed salvage values; developed detailed shut-down sequences for both the smelter and refinery, and closure, facility decommissioning, and utilities decommissioning plans, shut-down and closure costs; reviewed the regulatory requirements to ensure compliance; estimated material quantities that would be generated during decommissioning and demolition, and developed a schedule for the complete demolition of the smelter and refinery complex.

Townsite Smelter Program, USA | Confidential Client

Legacy Smelting operations dating back to WWII produced thousands of tons of particular emissions in an era where stack emissions requirements were not as stringent than in later years when the cumulative effects of emissions on the local area were better understood. This clean-up addressed legacy operations, which pre-existed the current owner, was jointly developed with US EPA, State Departments of Environment and the client.

The program consisted of a multistage process in which homeowners (and public lands custodians) were provided with the option of having their properties assessed for the effects of stack emissions. The characterisation assessed the individual properties for the effects of emission fall out, including Arsenic (As), Lead (Pb), Tin (Sn), Zinc (Zn), Boron (B).

As prime consultant, GHD provided strategic advisory, project and program management, data management, community outreach, environmental investigation, permitting, engineering, and remedial construction management services for four projects within the Townsite Program. GHD investigated and collected approximately 100,000 soil samples from about 8,000 properties as part of the site characterisation program at the completion of the fourth Townsite Project. Designs and remediation/restoration action plans were developed for over 5000 properties. To date, GHD has provided construction management services for over 2,400 successfully remediated and resorted properties.

Lead-Zinc Smelter Facility Closure, Canada | Confidential Client

Since 2004, GHD has provided environmental and engineering services for the 120k tpa per Pb-Zn smelter facility. The facility has operated for over 50 years.

GHD completed a Closure Plan PFS for the site in 2019. The PFS closure analysis included development of key concepts for hazardous waste disposal options analysis, demolition plans, conceptual remedial action planning including in-situ capping of impacted soil, human health and ecological risk assessment review, hydrological evaluations including conceptual design of water treatment systems using engineered wetlands, and preparation of a Class B (+/- 20% accuracy) closure cost estimate.

Several innovative, sustainable and cost-effective closure solutions for the Closure Plan PFS were developed. Through the completion of the on-going Trade-Off Study, GHD and the client further evaluated the long-term remedial and water treatment strategies.

The project demonstrated GHD's expertise in obtaining regulatory approvals in a cost efficient and technically sound manner as well as limiting long-term liability for our clients.

Project experience: renewables and repurposing



Kidston Pumped Hydro, Queensland

Kidston Pumped Hydro | Genex Power Ltd

This world-first project repurposes an abandoned gold mine into a pumped hydro storage facility. Using the abandoned gold mine pits as the upper and lower reservoirs helps minimise the environmental impacts of a new site design through the effective reappropriation of the former mine's assets. During the day, solar electricity generated from the adjacent solar plants will be used to pump water from the lower to the upper reservoir. This water will be released back to the lower reservoir during peak electricity demand periods, generating dispatchable electricity and capacity-firming.

The project consists of a six-kilometre-long dam on the upper storage, 235m deep shafts and tunnels forming the waterways, an underground powerhouse cavern housing two reversible pump turbines, and a surface switchyard. More than 25 billion litres of water will be pumped out of the lower storage to enable the underground works to be completed once the upper dam is complete. GHD has also designed a 1.6km 275kV transmission line as part of the connection to the national grid.

GHD delivered the engineering services contract for the design and construction of the 250MW Kidston Pumped Storage Hydro project in a joint venture with Mott MacDonald.

Detailed design has been completed across a range of services including:

- Detailed design of the dam and underground works
- Powerhouse design
- Oversight of dam construction and technical assistance for the tunnel development
- Cocreation and development with all stakeholders of a BIM model for the entire scheme
- Completion of electrical design for balance of plant.

When fully operational in 2024, the facility will have the potential to generate up to 250MW of rapid response, emissions-free flexible power for delivery into Australia's National Electricity Market.

Kidston (250MW) will be the first of numerous large-scale pumped hydro water infrastructure schemes planned in Australia and New Zealand.

Tent Mountain Renewable Energy Complex, Canada | Montem Resources

In 1983, open cut coal mining was suspended at the Tent Mountain Coal Mine, Alberta, Canada. Montem Resources (Montem), an Australian mining company, purchased the asset in 2016 with the intent to re-start operations under the Provincial framework. The proposed mining project was ordered to undergo a multi-year Federal impact assessment before it could operate. The challenge for Montem was to find a way to deliver a sustainable and socially acceptable project with strong economic value that could attract investment and utilise the unique features of the Tent Mountain site.

Through an integrated asset transformation planning process, a resulting mine site conversion project has been formed and named the Tent Mountain Renewable Energy Complex (TM-REX). TM-REX includes a 320MW / 4,800 MWh pumped hydro energy storage facility (PHES), a 100MW green hydrogen production electrolyser, and a 100MW wind farm off-site (originally considered on-site). The PHES utilises an existing legacy open mining pit which is presently filled with water and collects rain and snow melt throughout the year. A lower reservoir, approximately 300m below, would be constructed with a dam structure and existing natural terrain. The offsite wind farm is proposed to be developed by the Piikani Nations, an Indigenous group in the region.

GHD has taken the main role of developing the clean hydrogen facility and requirements, business case and technical feasibility. Along with the integration of the hydrogen facility, the PHES and wind farm, GHD has additionally provided diligence on the PHES portion of the project. The full-scale, 100MW hydrogen would produce enough clean fuel to displace approx. 50 million litres of diesel from large highway trucks, or the equivalent of approximately 200,000 tonnes of CO2 emissions each year.

The TM-REX is a novel approach to re-imagining and then physically re-purposing an idle coal mine for the purposes of the energy transition. As of March 2023, feasibility studies and in-depth business cases have been undertaken, and the project has recently been agreed to undertake joint-venture development with a major utility in Alberta, TransAlta (Berkshire Hathaway Energy).

Talk to us

**Cherie Babineau**

Team Leader – Decommissioning and Demolition, Eastern Canada
E: Cherie.Babineau@ghd.com
P: +1 506 470 4597

**Stephanie Grant**

Manager, Innovation Management, South Queensland
E: Stephanie.Grant@ghd.com
P: +61 7331 63461

**Angus McKenzie-McHarg**

Senior Mining Engineer, Victoria
E: Angus.McKenzie-McHarg@ghd.com
P: +61 3868 78248

**Ben Saffron**

Transaction Executive Advisor – North America, Canada
E: Ben.Saffron@ghd.com
P: +140 368 98765

**Phil Baker**

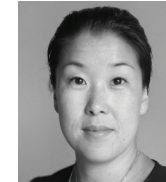
Executive Advisor – Transactions, Strategy and Commercial, Victoria
E: Phil.Baker@ghd.com
P: +61 419 726028

**David Horn**

Market Leader, Western Australia
E: David.Horn@ghd.com
P: +61 4373 48176

**Lachlan McQuire**

Mine Closure Specialist, South Queensland
E: Lachlan.McQuire@ghd.com
P: +61 7331 63279

**Jennifer Son**

Environmental Market Leader, Canada
E: Jennifer.Son@ghd.com
P: +1519 340 4190

**Mike Buchan**

Delivery Lead, Western Australia
E: Mike.Buchan@ghd.com
P: +618 6222 8990

**Chelsea Kavanagh**

Sustainability Advisor – Energy & Resources, South Queensland
E: Chelsea.Kavanagh@ghd.com
P: +61 7331 63585

**Sanjive Narendranathan**

Technical Director, Mine Geotechnical Engineering, Victoria
E: Sanjive.Narendranathan@ghd.com
P: +61 4202 49624

**Daniel Todd**

Market Leader – Energy & Resources, RM South32, South Queensland
E: Daniel.Todd@ghd.com
P: +61 4006 62677

**Dave Clark**

Australian Mining Leader
E: Dave.Clark@ghd.com
P: +61 412 092096

**Michelle Kiejda**

Technical Director – Environment, Northern New South Wales
E: Michelle.Kiejda@ghd.com
P: +61 4278 67656

**Jess Priest**

Engineer, Tasmania Energy & Resources, Tasmania
E: Jess.Priest@ghd.com
P: +61 3621 00761

**Sarah Town-Hopkinson**

Senior Advisor, AU Advisory Risk, New South Wales
E: Sarah.Town-Hopkinson@ghd.com
P: +61 4099 36955

**Michael Gallahue**

Team Leader – Decommissioning and Demolition, Eastern Canada
E: Michael.Gallahue@ghd.com
P: +1 902 237 6934

**Dr Pallavi Mandke**

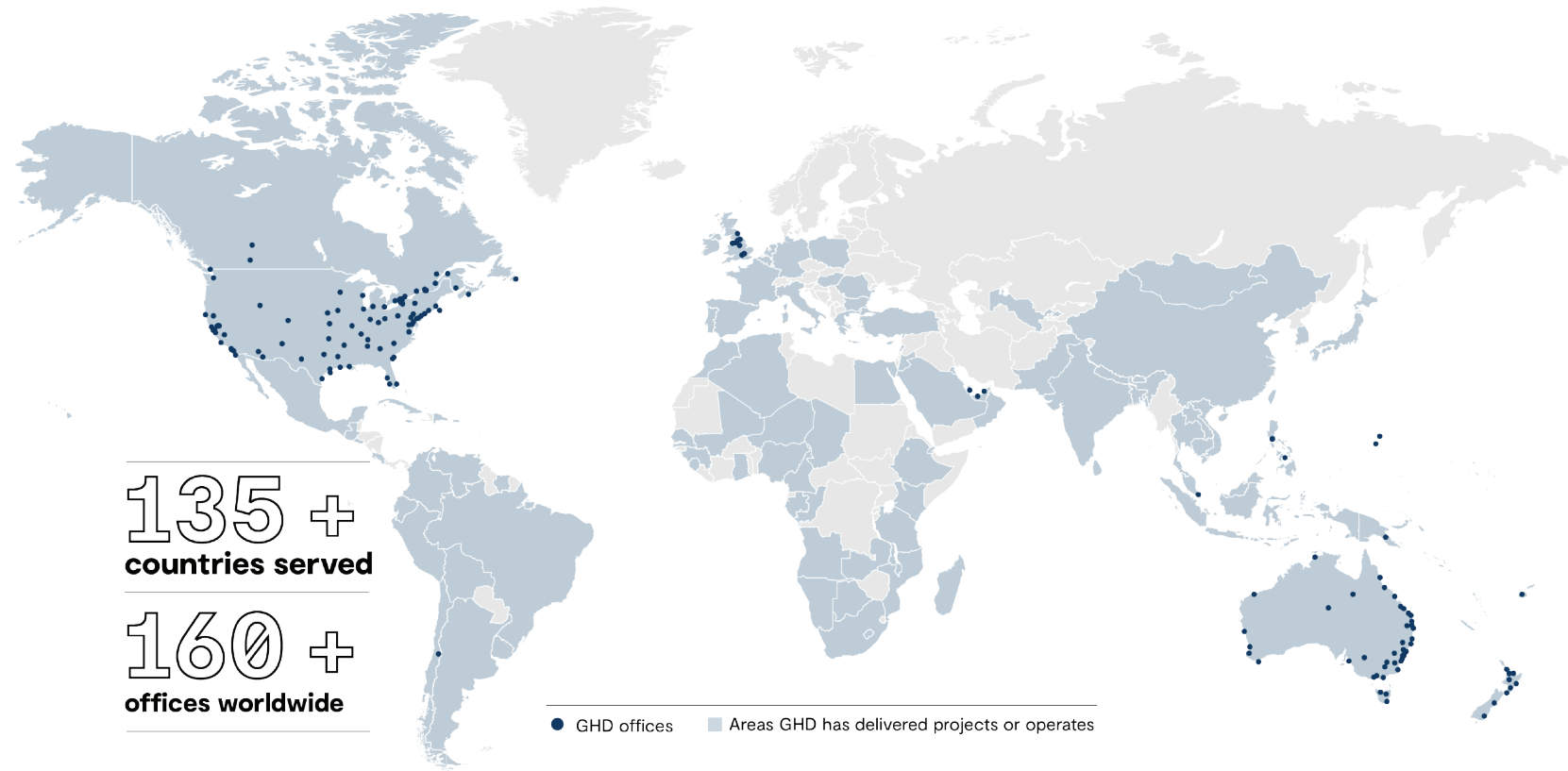
Principal Consultant – Social Sustainability, RM, SQ – Rio Tinto SQ Environ Assessment, South Queensland
E: Pallavi.Mandke@ghd.com
P: +61 4177 15168

**Amanda Rukuwai Donnelly**

Senior Scientist – Energy & Resources, South Queensland
E: Amanda.Rukuwai@ghd.com
P: +61 7331 64065

**Larry Williams**

Senior Project Manager, NA West Environ – Contaminated Site Assess and Remediation, USA
E: Larry.Williams@ghd.com
P: +1 602 216 7238



135 +
countries served

160 +
offices worldwide

● GHD offices ■ Areas GHD has delivered projects or operates

About GHD

GHD recognises and understands the world is constantly changing. We are committed to solving the world's biggest challenges in the areas of water, energy and urbanisation.

We are a global professional services company that leads through engineering, construction and architectural expertise. Our forward-looking, innovative approaches connect and sustain communities around the world. Delivering extraordinary social and economic outcomes, we are focused on building lasting relationships with our partners and clients.

Established in 1928, we remain wholly owned by our people. We are 10,000+ diverse and skilled individuals connected by over 200 offices, across five continents – Asia, Australia, Europe, North and South America, and the Pacific region.

Find out more about us at [ghd.com](https://www.ghd.com)

90+ years in operation

135+ countries served

160+ offices worldwide

2.3^(B) AUD revenue 2022

5 global markets

11^(K) people

45+ service lines

↳ **Providing engineering, environmental, advisory, architecture, digital and construction services**



→ The Power of Commitment