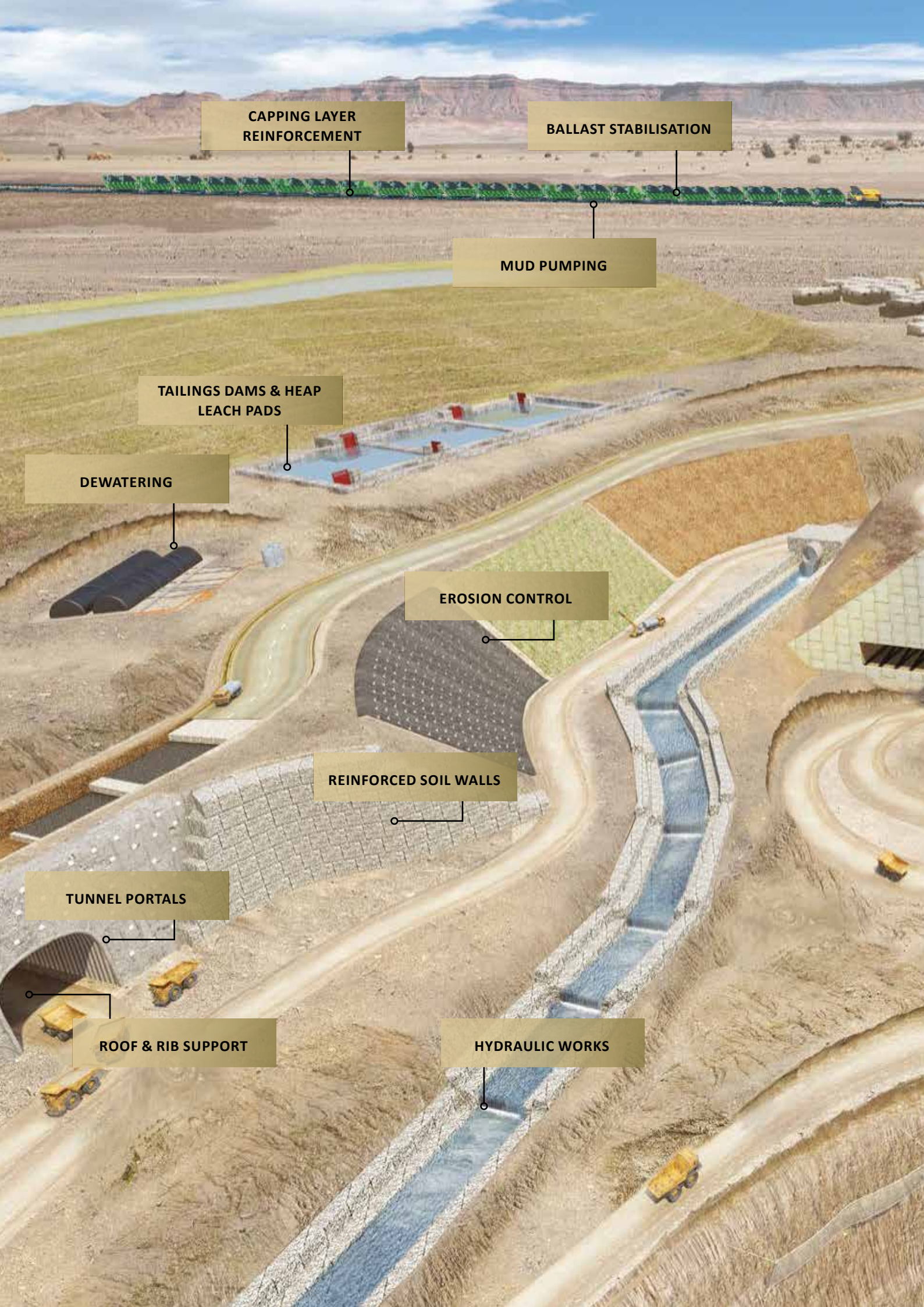
MINING | SMARTER SOLUTIONS

GEOFABRICS®

AUSTRALASIA'S
GEOSYNTHETICS
SPECIALIST

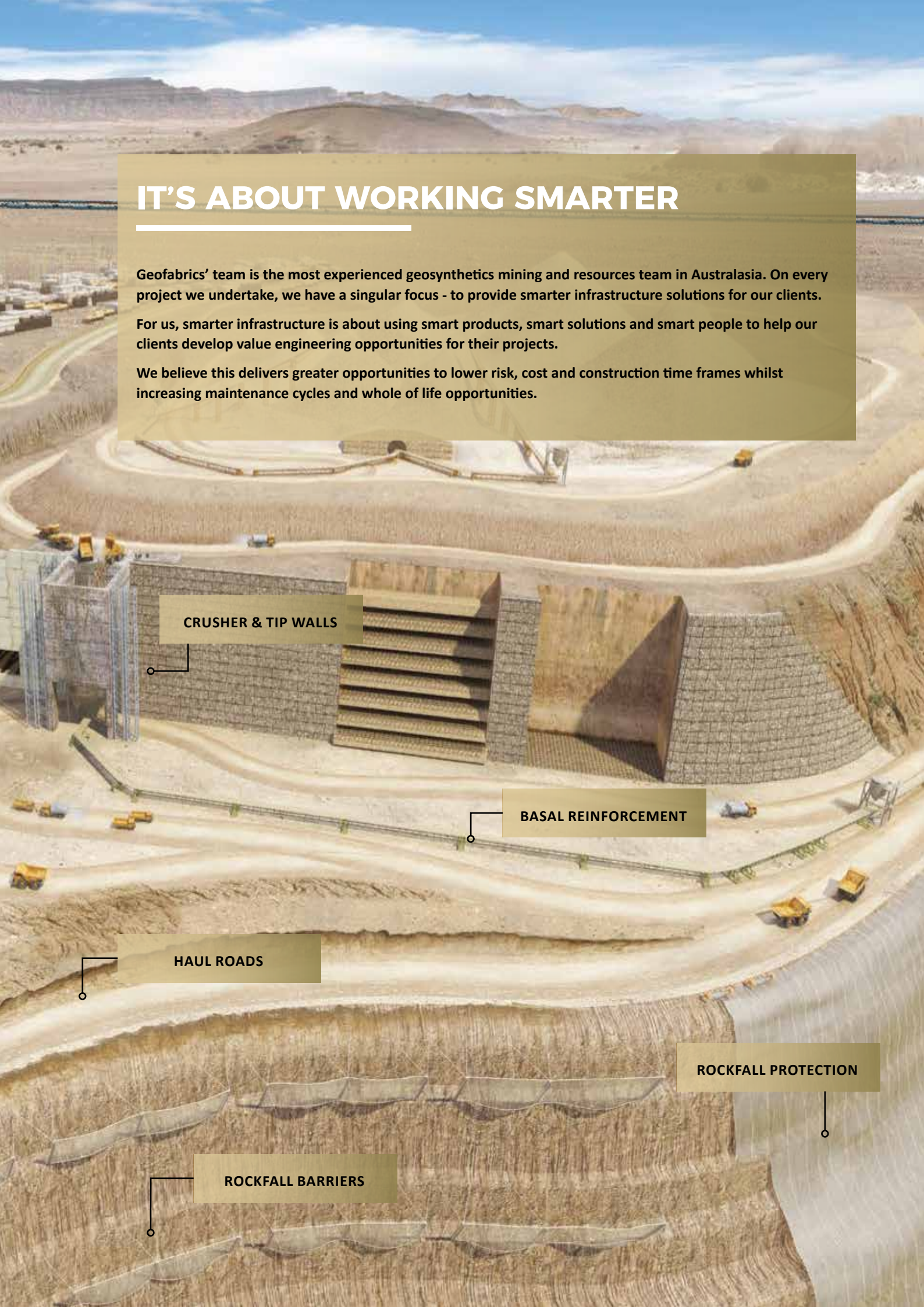

CAPPING LAYER REINFORCEMENT
BALLAST STABILISATION
MUD PUMPING
TAILINGS DAMS & HEAP LEACH PADS
DEWATERING
EROSION CONTROL
REINFORCED SOIL WALLS
TUNNEL PORTALS
ROOF & RIB SUPPORT
HYDRAULIC WORKS

IT'S ABOUT WORKING SMARTER

Geofabrics' team is the most experienced geosynthetics mining and resources team in Australasia. On every project we undertake, we have a singular focus - to provide smarter infrastructure solutions for our clients.

For us, smarter infrastructure is about using smart products, smart solutions and smart people to help our clients develop value engineering opportunities for their projects.

We believe this delivers greater opportunities to lower risk, cost and construction time frames whilst increasing maintenance cycles and whole of life opportunities.



GEOFABRICS IS COMMITTED TO EXCELLENCE AND INNOVATION, PROVIDING SMART SOLUTIONS FOR OUR CLIENTS IN THE MINING AND RESOURCES SECTOR.

RUBICON GOLD MINE, EASTERN GOLDFIELDS, WESTERN AUSTRALIA

Maccaferri Steelgrid rockfall netting installed to provide rockfall protection.

MINE TRANSPORT INFRASTRUCTURE

Unsealed Mine Access & Haul Roads

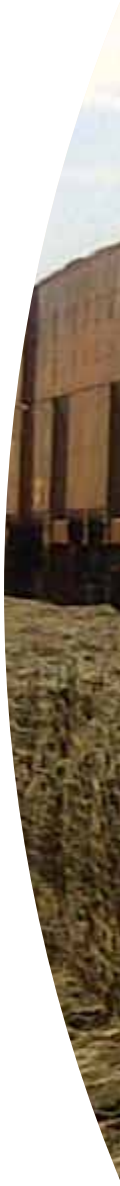
Roads form the backbone of a mine's infrastructure and cost effective and reliable pavements are required to ensure optimum mine output, particularly as they are often in remote and extreme environments.

Coupled with this, mine haul roads are subjected to far higher loading than standard highway pavements, which leads to thicker pavements or increased maintenance intervals to ensure long-term serviceability and performance.

Geofabrics provide a range of geosynthetic solutions for all parts of the road formation which can reduce construction costs by up to 30% whilst improving design life by up to six times.

Depending on the specific site requirements, an unsealed mine access road may require geotextiles for separation of the soil layers as well as **Tensar** geogrids, **Geoweb** geocells or **TenCate** high-strength reinforcement to improve the strength and ultimately the life of the road. There may also be the need for solutions or advice for associated embankments or drainage structures, as mine sites are generally in harsh environments with complex soils.

All of these systems have been used extensively in mining applications around Australasia and the world, and are supported with extensive research and design support.



Rail Track

Over time, rail infrastructure can experience significant problems such as differential settlement and unacceptable track deflection. Mud pumping is also a problem for rail operators. These issues result in speed restrictions on sections of track and frequent, disruptive maintenance. Both these factors can limit the overall performance of the mine but they can be reduced or avoided through the use of **Tracktex**.

Track formations which incorporate geosynthetic solutions like **Geoweb** and **Tensar TriAx** for capping layer reinforcement and track ballast stabilisation have been proven to deliver a cost saving of up to 70% when compared to a conventional construction and maintenance methods, potentially saving asset owners up to A$4.3 million for every 200 metres section of track.

Slopes & Walls

Mine transport infrastructure generally also has slopes or walls associated with them, including run of mine walls at a primary crusher.

Geofabrics provides a full range of geosynthetic solutions for slopes and walls, whether it be vertical structures, hydraulic structures, portal entrances or rockfall or erosion control.

Typical solutions for slopes and wall on mine sites include **Maccaferri Gabion** or **Keystone TW3** walls, **TenCate** reinforcement solutions and a full suite of **Maccaferri** rockfall control solutions.

Concrete Canvas, a flexible, concrete impregnated fabric that hardens when hydrated to form a thin, durable, water proof and fire resistant concrete layer which can also be used for slope protection applications.

We provide free software to support the design of these structures as well as certified designs should these be required by our clients. Our recent work has included heavily laden vertical walls in excess of 15 m in height at mine sites in Australia.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UNDERGROUND MINING

Underground mining is a distinct segment of the mining sector, with coal and other minerals being extracted from depth for processing. Being underground demands high safety considerations from strata control, and the maintenance of underground road networks is undertaken in confined spaces. These challenges – as well as protection of portal entrances and water quality considerations – make our range of underground mining solutions quite exciting for mine operators.

Strata Control - Rib & Roof Support

Tensar mining grids have been widely used in Australia over the past 20 years as an alternative to steel mesh as strata control in underground coal mines. Tensar mining grid is a high strength, lightweight flame-retardant, self-extinguishing polymer grid provided for supplemental support of the roof and ribs of a combustible underground opening (such as within a coal mine), to prevent roof materials from falling and rib materials from spalling.

In recent years, a range of stronger polymer mesh grades have been added to the portfolio, providing mine operators with greater flexibility in their use of light-weight polymer mesh compared to traditional steel meshing systems.

Underground Roads

Whilst the road network in underground mines are critical to the efficiency and safety of a mines operations, some mines require frequent maintenance of their road network due to water ingress, soil conditions or vehicle loads.

Geofabrics has completed many projects using **Tensar geogrids, TenCate reinforcement** or **Geoweb geocells** where the maintenance cycle for the underground road network is greatly extended, reducing costs and increasing mine productivity.

Portal Entrances

At every mine portal entrance, there is a need to minimise or eliminate falling debris from the rock face above the portal. For many years, Geofabrics has worked with mine operators or drilling contractors to create a safe working environment through use of **Maccaferri rockfall netting** and other rockfall control systems.

Coal Washdown & Sediment Ponds

Underground mining can be a dirty business, and we have solutions to help mine operators achieve greater performance and environmental outcomes – including the use of **TenCate Geotube dewatering systems** for coal wash down areas.

Sediment ponds around the mine sites are also common, with **ELCOSEAL GCL** used many times as a simple-to-install lining system, otherwise HDPE geomembrane with needle-free **bidim** geotextile is another common solution. **Concrete Canvas Hydro**, a concrete impregnated fabric backed with a geomembrane, which sets when hydrated, can also be used in secondary containment bunds.

WASTE & CONTAINMENT SOLUTIONS

Containment Lining Solutions

Many mines or resource projects make use of geosynthetic lining systems to contain their waste, whether it be tailings, liquids or processed waste. Geofabrics has worked hard over the past decade to understand the nuance for every type of waste involved in the resources sector, and how it influences the selection of materials for the geosynthetic lining systems.

With our own client facing R&D facility in Queensland, Geofabrics has worked on many resources projects to assist designers, contractors and mine owners to select the most appropriate materials for their site. This can include interface shear or cushion testing to understand how the system components interact, UV resistance for materials left exposed over many years, as well as chemical compatibility of each product with the waste stream.

Working with Geofabrics early in the project life has helped many engineers deliver a superior performance outcome with significant reductions in risk and cost compared to the traditional or standard lining systems.

Leak Detection

When using geomembranes, there are times when leak detection is a required activity after installation to prove the quality of installation. Geofabrics has developed the **bidim C** nonwoven geotextile as a leak detection solution.

bidim C uses graphene technology to offer an effective, lower cost means for designers and installers of lining systems to undertake liner integrity surveys in newly constructed containment cells.

Waste Rock & Soil Capping

Geosynthetic systems can be used extensively to cap tailings dams or waste rock detentions. For example, capping can be achieved using low permeability **ELCOSEAL GCL** and geomembrane barriers to meet the governing regulatory guidelines, whilst additional drainage systems, such as **Megaflo** or drainage geocomposite systems, can be used as leak collection systems as well as reduce hydrostatic head pressures acting on the liner.

Geofabrics has worked with many mine sites to ensure the most appropriate lining system is developed and understood, whether it be from a chemical compatibility perspective or understanding the inter-action between the various layers within the lining system.

Dewatering of Sediment Dams & Leachate Ponds

A cost-effective solution for the dewatering of sludge or removing fine sediments from site run-off is to make use of geosynthetic dewatering systems. **TenCate Geotube** dewatering technology uses high strength geotextiles with unique filtration and retention properties to provide solutions to mining and mineral processing.

Dewatering of waste water and sludge is commonly achieved by pumping the slurry into permeable geotextile tubes, treating with site specific flocculants and allowing the moisture to either evaporate through the geotextile or drain through the geotextile pores under significant pressure. The run-off from the dewatering process can be reused or treated and returned to native waterways while the sediment or waste can be re-processed or detained.

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bidim needle free nonwoven geotextiles utilised as a HDPE geomembrane cushioning layer in a tailings dam.

SINO IRON ORE MINE SERVICES CORRIDOR, CAPE PRESTON, WESTERN AUSTRALIA

Mirafi PET High Strength Woven Geotextile utilised for construction of a basal reinforced embankment on soft soils.

UNMATCHED EXPERTISE & SUPPORT

We draw from our years of experience in the Australasia resource sector to tailor design and provide geosynthetic solutions to best meet our client's performance and economic requirements.

Our superior technical support includes early stage testing to validate product selection, design and construction suggestions, certified designs if required as well as installation systems to increase safety and productivity during installation.

Our comprehensive design advice for projects can include R&D testing, stability analysis, typical sections and standard details. We can also assist with product and installation specifications for tenders.

By employing a national team of engineers, and forming strategic alliances with multi-national consulting engineering practices, our technical support for geosynthetics is unmatched throughout Australasia.

We support our design advice with a suite of design software which assists engineers in developing cost effective solutions to exacting international design standards. We offer our software suite free of charge to our clients and it offers the ability to run a range of design scenarios to cover differing ground and loading conditions to minimise the design risk for a project.

To assist engineers with this process, the Geofabrics team of engineering specialists are available to give technical advice in the use of the software as well as provide in-house or seminar training.

Our team also provides on-site installation training as well as guidelines and diagrams to assist contractors or maintenance crews.

QUALITY & TRACEABILITY

Geofabrics manufactures its geosynthetics under management systems that comply with the Australian and International Quality Standards and are ISO 9001 quality assured.

We operate two quality assured testing facilities in Australia and products are tested frequently and transparently.

Our reliability as a supplier of high quality goods is borne out by our track record spanning 40 years of product supply for Australian infrastructure projects.

Our products have traceability from the test results to the roll number and production batch, providing confidence in the quality and consistency of our products in accordance with our latest published specifications.

In keeping with our commitment to quality assurance, the products we manufacture can be readily identified from the labelling on their wrappers.

The information on the labels can be traced via a clear audit trail to the date, name and place of manufacture and the relevant quality assurance test results.

Importantly, this means that the product you have ordered and the grade you have paid for is the product and grade that is delivered to site.

In addition, our geotextiles are clearly printed for identification once they are unwrapped and rolled out.

Our commitment to world class quality provides our clients with the confidence that the product delivered is as per their project specifications, ensuring performance and life-cycle costs are optimised.

ROY HILL MINE, WESTERN AUSTRALIA

bidim geotextile used as a separatation layer under Geoweb geocell cellular confinement system for channel stabilisation.

TECHNICAL LEADERSHIP

As the Australasian leader in geotextiles and geosynthetics, we pride ourselves on our reputation for supplying world-class technical leadership and engineering support through our innovation, research, industry education, design and independent testing services.

Geosynthetic Centre of Excellence

Our Geosynthetic Centre of Excellence is a specialist R&D laboratory that works with clients to develop the right geosynthetic solution for project.

Based just south of Brisbane (Queensland), our Geosynthetic Centre of Excellence houses a selection of key geosynthetic-specific test equipment. Testing is aimed at solving the real-world problems that designers, contractors and asset owners find on their site – a major step forward to ensure the right solution is adopted.

The Geosynthetic Centre of Excellence is committed to precision analysis and comprehensive reporting. Analysis is performed according to Australian and International test methods and comprehensive test reports are generated, including results, photos, graphs, test conditions and details of the apparatus used.

Our own research is supported by the research undertaken by our industry leading suppliers in both laboratory and field trials across the Americas, Europe and Asia.

Geosynthetic Testing Services

Geosynthetic Testing Services is a commercial testing laboratory that specialises in the testing of geosynthetics. It is widely used by clients to ensure they are meeting their Construction Quality Assurance obligations.

Geosynthetic Testing Services is a fully independent, confidential, NATA registered laboratory based in Albury. With quick turnaround times and competitive rates, Geosynthetic Testing Services supports the infrastructure industry in Australia.

Technical Design Hub

Geofabrics Central Design Hub can provide our clients with specification reviews, design suggestions and certified designs for geosynthetic applications, which can help reduce construction timeframes and cost whilst increasing maintenance cycles.

Innovation & Education

As leaders in our industry we believe it is our role to provide technical and practical education to engineers about the use of geosynthetics in infrastructure projects.

Our team conducts technical seminars for engineers and contractors; we run in-house workshops for our clients and undertake lectures at universities around Australia and in New Zealand.

We also support the next generation of engineers through sponsorship of PhD candidates. We aim to extend their knowledge through mentoring opportunities and through provision of access to the Geosynthetic Centre of Excellence to allow candidates to test and validate their PhD thesis - in turn expanding the knowledge of our industry.

GEOFABRICS®

AUSTRALIAN MANUFACTURED

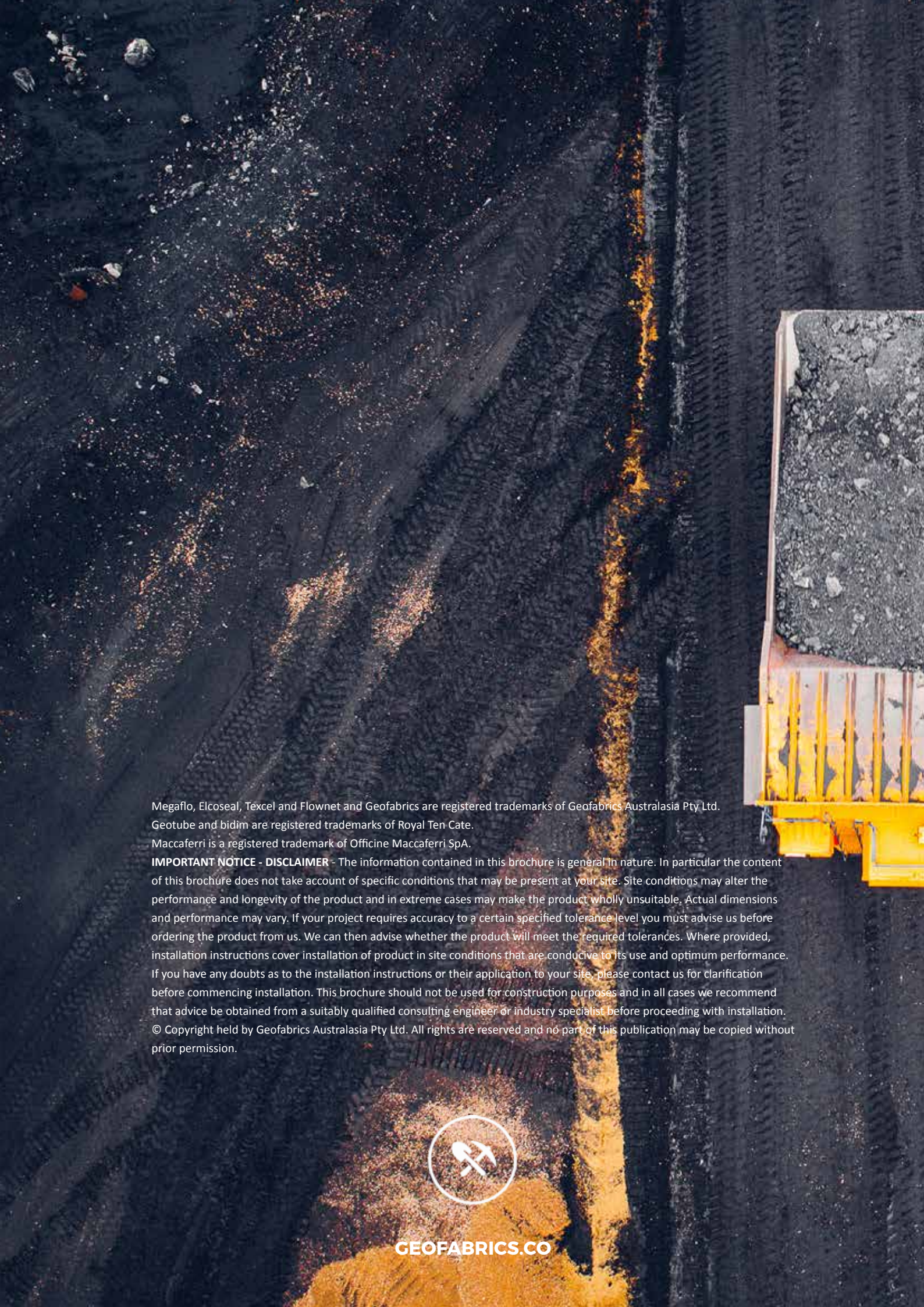
Many of the products we supply are manufactured in our two manufacturing plants in Albury (NSW) and southern Queensland. We employ more than 100 manufacturing staff and we return more than $7.5 million per annum into the regional communities in which we operate.

WHERE YOU NEED US

Geofabrics has the largest regional footprint of any geosynthetic supplier in Australasia. We have branches throughout Australia, New Zealand and the Pacific. Within Australia we have branches in every state as well as offices in strategic regional centres along the east coast staffed by Geofabrics own employees. This means that we can deliver product where you need it, when you need it while providing local expertise to support your project.

ALCOA, PINJARRA, WESTERN AUSTRALIA

Maccaferri Rockfall Netting installed to protect services assets from rockfall damage.



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