CONCRETE SLEEPER DESIGN, PROCESS & DELIVERY SOLUTIONS
SAFETY, QUALITY, SUSTAINABILITY, INNOVATION AND EMPLOYEE TRAINING ARE THE CORNERSTONES OF AUSTRAK’S SUCCESS

THE COMPANY

Since its establishment in 1980, Austrak has grown to become a world leader in the design and manufacture of pre-stressed concrete sleepers. During more than 30 years of business, Austrak has cemented its place as the largest concrete sleeper manufacturer and supplier in Australia. As a dedicated sleeper technology company, our focus remains on achieving the best in sleeper design and manufacture. Safety, quality, sustainability, innovation and employee training are the cornerstones of Austrak’s capability.

Working in close partnership with clients provides an environment for driving innovation and change. Long before the manufacturing process begins, we work in close partnership with our clients in an open and highly consultative way. We take the time and strive to get a strong understanding of our clients’ needs across all key areas – everything from ballast condition to maintenance schedules. Our clients have input into the sleeper design from the very beginning and are encouraged to work alongside our design and engineering team.

We have produced more than 18 million sleepers for medium and heavy duty rail, and 800,000 sleepers for light rail and tramways. Over this time, we’ve created a broad range of products designed to meet the varying needs of the rail industry. Austrak partners with Swedish innovator Abetong Teknik – a close relationship that enables the transfer of world-leading technology and knowledge. Working closely together, we ensure any new developments in the field are quickly added to our available designs.

As well as providing these pre-existing lines, we can work in partnership with clients to create new products that are tailor-made for their specific requirements. Austrak is an industry leader in the design, construction, commissioning and operation of concrete sleeper manufacturing plants, having built and run 12 factories in Australia and overseas. Some of these factories have been custom-built for specific projects, and capacities range from 50,000 to more than 1 million sleepers per year.

As a wholly-owned subsidiary of major international construction company Laing O’Rourke, Austrak has the backing of the largest privately owned construction firm in the United Kingdom. Laing O’Rourke provides Austrak with the backing of a global, multi-billion dollar organisation with operations in Europe, the Middle East and Australasia.

Creativity, flexibility and an aligned focus towards joint goals encapsulate Austrak’s business approach.
Austrak specialises in providing concrete sleeper solutions. Our core focus is to service our clients with cost-effective concrete sleeper solutions. Our emphasis on researching and developing sleeper design and production technologies ensures we remain industry leaders. We make sure that all of our products meet exacting standards including fit for purpose structural design, beam strength, materials specification and selection, concrete durability, manufacture process, correct stressing, concrete compaction, dimensional integrity, aesthetics, visual inspection processes, and performance testing processes. While we specialise in sleeper solutions, our real product is the intellectual property tied up in our factory designs and operating systems. We have proven and robust systems, processes and equipment. Our focus on research and continuous improvement ensures we implement the most innovative and efficient technologies.

Our factories operate under Austrak’s own work methods and quality assurance standards which are third party accredited to ISO 9001. The systems also comply with the requirements of ISO 14001. In over 30 years of operation, we have never had an ‘in track’ failure of any Austrak sleeper product. This is largely due to our in-house Factory Data Management Software, which is at the heart of our factory management system. It is the result of years of development and captures the essential elements required to ensure that we consistently deliver high-quality sleepers. We record and capture everything from our raw materials test results, to our operator training records, right through to our daily production and quality results.

We also operate an integrated management system (IMS) which has various quality control processes built in. These include:

- State-of-the-art concrete testing laboratories at all factories
- Trained and competent management and operators
- Management system that ensures compliance to the applicable standards including AS1085 Railway Track Material Specifications.

Austrak is a dedicated sleeper company with a sole purpose - to provide high quality engineered sleeper solutions using state of the art manufacturing processes. Benchmarking and performance monitoring is used extensively to ensure optimum manufacturing efficiency and performance. Reliability, repeatability, and value for money are the hallmarks of the Austrak system which has been continually improved since our inception in 1980.

“QUALITY AND CERTAINTY OF SCHEDULE ARE TWO OF THE MOST IMPORTANT THINGS FOR US. AUSTRAK HAS DELIVERED ON BOTH COUNTS.”

Peter Thomas
Project Director Port and Rail Expansion Projects, FMG
Austrak’s versatile and comprehensive range of products meets the various requirements and needs of our clients. We have designed sleepers to accommodate axle loads varying from nine tonne for tram sleepers, through to 30 tonne for freight railways, right up to 50 tonne axle loads for heavy haul lines. Our product range includes:

- Broad gauge
- Standard gauge
- Narrow gauge
- Narrow/standard dual gauge
- Standard/broad gauge changeable
- Turnout bearers
- Level crossing panels
- Monorail
- Gauge widened sleepers
- Guard rail sleepers
- Splay rail sleepers
- End stop sleepers
- Timber replacement sleepers (TRS)

Austrak is an industry leader in the specialised field of manufacturing pre-stressed concrete beams for turnouts, crossovers, diamonds and catchpoints. These have been developed for varying axle loads and gauges as well as divergence ranging from 1:6 through to 1:25.

Austrak’s capabilities extend to producing sleepers and turnout products using all approved fastening systems. Following an extensive research, development and testing process, Austrak has developed timber replacement sleepers. The highly-engineered solution for replacing ageing timber sleepers was based on extensive rail track data and analysis to ensure the sleepers are a similar size and match the specifications of the line. The sleepers are longer-lasting, more economical and lower maintenance than timber sleepers.

Austrak’s in-house research and development capability ensures we can design sleepers and turnout beams for almost any type of railway requirement. Whether designed in-house or in conjunction with Abetong Teknik or other specialist consultants, Austrak’s experience and network of specialists ensure we deliver innovative solutions for new requirements. Designs can be made from clients providing bending moments or from basic load parameters. Our various design techniques can be used from allowable stresses to limit state design. Austrak has also developed and patented its own design techniques using specific data collected on the operating railroad.

Through innovation, value engineering and an unrelenting commitment to quality in sleeper design, manufacturing systems and processes we are striving to be the world’s premier provider of concrete sleeper solutions.
TESTING

Comprehensive testing is an integral part of Austrak’s design and production process. We create and refine sleeper designs to ensure they meet train speed and load-bearing specifications.

Before mass producing a new design, the company carries out computer-based modelling to prove the theoretical design. Then exhaustive repeated-load tests on prototype sleepers are evaluated against the theoretical data and the client’s performance expectations.

During production we perform various tests to ensure the conformity of:

- Materials utilised in the products;
- Prestressing; and
- Concrete strengths

Sample sleepers are taken from each bed to ensure the final product meets testing criteria for first crack and bond as well as dimensional testing. All sleepers are visually checked as part of our quality assurance program.

PRODUCTION TECHNOLOGY

Austrak has proven experience in factory construction and operation.

We have proven and robust manufacturing systems, processes and equipment and continual research ensures we remain a leader in the field.

Our factory employees undergo rigorous training to ensure quality, productivity and safety are of the highest standard. Our operational and management staff bring extensive experience to the business and a client-focused approach to each project.

Austrak builds and operates factories in close proximity to large-scale projects to provide cost and time efficiencies. For example, two factories were built in the Northern Territory to manufacture two million sleepers for the 1410 kilometre rail line from Alice Springs to Darwin, one of Australia’s largest infrastructure projects. The construction of the factories was fast-tracked and the sleeper production rate accelerated allowing the project to be completed three months ahead of schedule.

Currently Austrak has factories in:
- Geelong, Victoria
- Rockhampton, Queensland
- Port Hedland, Western Australia
- Wagga Wagga, New South Wales
- Dubai, United Arab Emirates

In the past we have built and operated factories in:
- Mackay, Queensland
- Wickham, Western Australia
- Townsville, Queensland
- Katherine, Northern Territory
- Tennant Creek, Northern Territory
- South Hedland, Western Australia
- Malaysia
Austrak is committed to a ‘no compromise’ approach to health and safety which is enshrined in our ‘mission zero’ approach. Mission Zero is our safety program designed to eliminate all accidents in the workplace by 2020.

A slingable pack design: From a risk assessment, Austrak has determined that the logistics component of the supply chain is the most likely to cause serious harm. Special precautions need to be taken before a sleeper is moved to minimise the health, safety and environmental risks. Austrak have designed a proven and robust slingable pack design to enable safer and more efficient loading and unloading process. This is an alternative to the forkliftable pack.

Factories safer by design: Our factories are designed to incorporate valuable safety features to minimise risk on-site. Some design initiatives include:
- One way traffic flow on site has mitigated risk of reversing vehicles
- Zonal areas separating vehicles, moving equipment and pedestrians to prevent collisions
- Designated wet areas away from the main production area developed to reduce risk of slips and trips
- Overhead positioning of services and utilities to prevent slips, trips and electrocution.

Austrak is proud to be the only company to have exported heavy haul (40TAL+) sleepers from an overseas manufacturing facility into Australia. We have developed robust manufacturing processes and procedures that can withstand the transport and logistics to deliver sleepers to remote project locations. We have a proven record of meeting our clients’ expectations to consistently and safely deliver to schedule, quality and cost requirements.

Austrak continue to invest in our plant and equipment to ensure we deliver quality sleepers that can be relied upon to perform to the required standards. We have existing capability to support and assist our facilities with state of the art, remote online fault diagnosis systems from anywhere in the world. Our ongoing investment improves our sleeper reliability and in turn, our clients’ infrastructure delivery performance. Additionally, our rigorous preventative and predictive maintenance regimes help ensure optimum performance of our sleepers long after the tracks have been laid and are in use.

We have worked with some of the world’s most demanding and iconic railway networks. In servicing the ongoing and growing demands of our clients, we have established 12 factories and delivered more than 18 million sleepers. Our demonstrated local and international manufacture and delivery model ensures our clients are supplied with superior quality sleepers, when they are needed, that meet the lifetime requirements of the project.

Importantly, Austrak understands the priority of meeting schedules so as not to jeopardise delivery of the overall project programme.
**Alice Springs to Darwin Railway**

**Client:** Australasia Railway Corporation (Australasia was a subcontractor to ADrail)  
**Location:** Northern Territory  
**Overview:** The Alice Springs to Darwin railway line was one of the largest infrastructure projects ever undertaken in Australia. As part of the overall project, Australasia was charged with the responsibility of manufacturing approximately two million concrete sleepers in just 16 months for the 1410 kilometre single track railway. To meet this daunting challenge, Australasia designed, constructed and commissioned the facility has also been producing turnout bearers since 2005.

**BHP Billiton Iron Ore Projects**

**Client:** BHP Billiton Iron Ore  
**Location:** Western Australia  
**Overview:** BHP’s long-term relationship with BHP commenced in 1986 when the company was contracted to manufacture and supply sleepers and turnout bearer sets for the partial duplication of the line to Mt Newman, Yandi, Whaleback and Jimblebar. To date, Australasia has manufactured and supplied about one million sleepers and 200 turnout bearer sets. To support BHP’s requirements, Australasia rapidly built and commissioned a single bed rail sleeper factory at South Hedland in Western Australia. A new five bed factory was built and commissioned at Wedgefield in 2000 and this supports BHP’s current production needs. This facility has also been producing turnout bearers since 2005.

**Main North-South Line Project**

**Client:** Australian Rail Track Corporation (ARTC)  
**Location:** Victoria, New South Wales and Queensland  
**Overview:** The Australian Rail Track Corporation (ARTC), with the support of the Federal Government, initiated the Melbourne to Brisbane rail corridor upgrade project to improve the performance and competitiveness of the Melbourne to Brisbane rail network. Australasia was awarded the more than $100 million contract to manufacture and supply materials to both companies.

**Queensland Rail Projects**

**Client:** Queensland Rail + QR National  
**Location:** Queensland  
**Overview:** Australasia is proud to have a 30 year relationship with Queensland’s passenger and freight rail services. Until 2009, both areas were managed under the banner of Queensland Rail. With the separation of services, we now work closely with both Queensland Rail and QR National. We are the sole supplier of concrete sleepers to both companies.

**Rio Tinto Iron Ore Projects**

**Client:** Rio Tinto Ltd, Norths Ltd and Robe River Associates  
**Location:** Western Australia  
**Overview:** Since 1987 Australasia has had an ongoing relationship with Rio Tinto, one of the world’s leading mining and exploration companies. By leveraging its existing factories and being able to quickly build new factories in remote locations, Australasia is supremely positioned to deliver Rio Tinto’s specific design needs now and in the future.

**Pilbara Iron Ore and Infrastructure Project**

**Client:** Fortescue Metals Group (FMG)  
**Location:** Western Australia  
**Overview:** FMG contracted Australasia to manufacture and supply materials necessary to lay 255 kilometres of single track railway that connects the company’s port facilities at Port Hedland with their iron ore mine site. To meet this challenge, Australasia used its existing local factories at Wedgefield, Port Hedland in Western Australia to ensure all sleeper production met the demanding schedule.

We work with our clients to develop solutions that maximise the benefit to them. Our design flexibility and innovation has met the diverse demands of private and government sector organisations by working in unison with them, developing and refining specific solutions tailored to each situation. We have the ability and expertise to work in remote and regional locations and have worked on the biggest rail projects in Australia.
Austrak’s management systems are continually evaluated to ensure the company is delivering to world standards.

• **Health and Safety**
  We recognise the importance of staff safety and ensure that in all facilities we have specialist personnel who control safety and quality assurance systems.

• **Quality**
  Since 1996, Austrak’s quality assurance system has been third-party accredited to ISO 9001. The system extends from verification of raw materials used in concrete blends, to monitoring process control variables, to operator training and auditing.

• **Sustainability**
  Austrak recognises the importance of environmental issues and our systems comply to ISO 14001. Factories are designed with waste minimisation and energy efficiencies in mind.

• **Training**
  Training begins with the induction of new staff and continues through to a competency based system to ensure our staff attain the specialist skills needed to control the sleeper manufacturing process.

• **Technology**
  We have specialised in-house developed production and quality systems to monitor, control and report on all factory systems.

• **Community**
  Austrak aims to participate in community activities that develop and nurture positive relationships built on mutual understanding, respect and trust. Wherever possible, we employ local people to further develop the local economy.
  We have a documented Reconciliation Action Plan (RAP) in place that outlines our commitment to Indigenous Australians.

• **Innovation**
  Austrak has an active and significant R&D agenda focused on further developing efficient sleepers, production processes and environmentally sustainable solutions.