

Ground Improvement for Dams



Dams

Offering proven expertise in the design and execution of Ground improvement and geotechnical solutions for Dams



About Us

We improve unstable or compressible soft soils to provide solid foundations and ensure the success of your project.

What do we do?

Menard is a specialist contractor for geotechnical and civil engineering activities operating throughout Australasia and the South Pacific region.

Our expertise in ground improvement, specialised foundations, all methods of grouting and environmental remediation has facilitated the delivery of cost-effective solutions for the construction of a wide range of projects.

How do we do it?

Our in-house design capabilities underpin our strength in undertaking contracts in both subcontractor and main contractor capacities at the highest level of technical excellence. As the only dedicated ground improvement contractor in Oceania, we have established ourselves as industry leaders in both design and construction by pioneering techniques needed to get your job done ahead of schedule and budget.

Our first projects in the region can be traced back to the 1970s. Since then, we have delivered some of the largest ground improvement projects within both public and private sectors in Oceania such as NSW Pacific Highway Upgrade, Brisbane International Cruise Terminal, Parakariore Sports and Recreation Centre in Christchurch, Melbourne Metro, Sydney Gateway and Perth Optus Stadium.

With more than 50 years of local experience, we are familiar with both the Australian and New Zealand incredible geotechnical diversity, the many challenges they bring as well as local codes and design guidelines.

*“Excellent **Design** and **Construct** services, great **working relationship** during tender, design and delivery. A great plus was the **confidence and knowledge** demonstrated by the design team during complex stakeholder geotechnical discussions to design and deliver a ground improvement system in challenging geotechnical conditions. They always exceeded our expectations and provided expertise with a professional approach.”*

Tim Perry | Project Manager | Brookfield Multiplex | Perth Optus Stadium |



Who are we?

Menard is a *family feel* company with 1,900 employees in more than 80 countries.

We have a local approach supported by our global network.

We are the Oceania subsidiary of Menard and part of Soletanche Freyssinet group, which is world leader in geotechnical, structural and nuclear engineering.

Every year, Menard works on over 4,000 projects worldwide. From improving the ground that will stabilise the foundations of wind turbines in Tasmania to the Spaceport in Kourou for the Ariane 5 rockets. We are focused on optimising the ground to support your projects.

With offices in Sydney, Brisbane, Melbourne, Adelaide and Perth, we cover every Australian state plus Papua New Guinea. Our office in Auckland also manages our local New Zealand projects.

We have worked on some of Oceania’s most technically challenging construction sites. This includes everything from major sporting stadiums to wind turbines, tank farms, industrial and residential builds and large-scale infrastructure projects including bridges, highways and rail links connecting Australia.



“At Menard, we are working every day to provide the people of Oceania with a solid foundation for their infrastructure, industrial facilities and their homes. We pride ourselves in building tomorrow’s world on solid ground.

Our team is passionate and has years of local experience in Oceania. You can rely on our expertise to deliver your project on time and budget.”

Philippe Vincent, Managing Director

Our Values

#1 HOME SAFE

At Menard we always strive to be the contractor of choice that clients can trust, on and off site. We pride ourselves on being quality driven, and our clients can always bank on the strength of our foundations. However, it is health and safety that forms our first and foremost priority.

“Safety is not just our first priority. Safety is not just the most important moral obligation to ourselves, peers, colleagues and industry partners. Safety is simply the way we do things. It’s a mindset to be adopted that enables us to plan, encourages us to communicate and empowers us to act for the health and well-being of all. So, all of us make it home safely every day.”

Olaf Duwer | QSE Manager

Our Health and Safety Performance:

Consistently outperforming the Australian Piling Specialists Federation in incident frequency rates.

Lost Time Injury free in 2022.
Total recordable injury frequency rate= 0 in 2022.

#2 LESS IS MORE MENARD

We live in a world where resources are becoming increasingly scarce, so we develop optimal solutions using the **least amount** of material possible with a view to improving the sustainability of your projects.

The Less is More Menard attitude relies on several simple principles:

- ✦ less quantities through better designs, better operation, better organisation
- ✦ less ‘big toys’ but instead ones that are adapted to the task
- ✦ less carbon-emitting resources when replacements are available through the supply chain.

The group has set the goal to reduce our Scope 1⁽¹⁾ & 2⁽²⁾ emissions by 40% and our Scope 3⁽³⁾ emissions by 20% before the end of 2030.

The Environmental Management System (EMS) ensures Menard recognises that its commitment extends to the protection, care and responsibility for the environment. This includes the environmental impact, together with the implications of responsibility to the workforce under the company control.

#3 INNOVATION IN OUR BLOOD

In 1954, Louis Ménard, a young French civil engineering student, invented a device to measure the soil’s stress - deformation relationship at various depths in a borehole. The **pressuremeter** was a drastic innovation in the geotechnical industry that continues to inspire the Menard spirit to this day!

Since then the group has invented and developed the **Dynamic Compaction** technique for granular soils as well as the **Menard Vaccum™** for cohesive soils and the **Controlled Modulus Columns (CMC)** technology for high-level control of ground deformations accommodating higher loads.

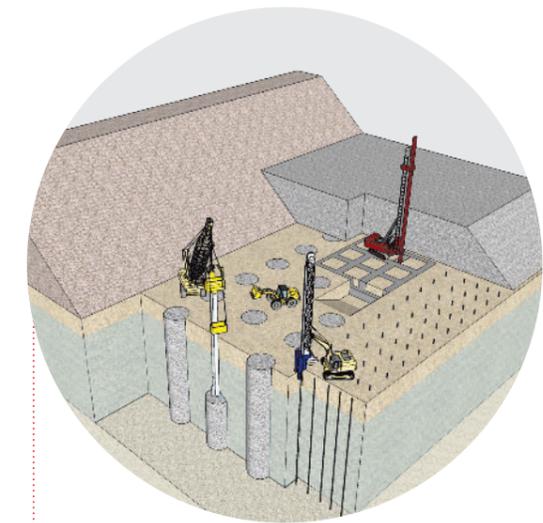
Working on the most demanding projects, our engineers, technicians and operators concentrate on bringing value to our clients by keeping up to date with the **latest state-of-the-art technologies**.

Performing thousands of successful projects each year provides a constant flow of information to support our local and group R&D teams in generating a **continuous flow of innovations**.



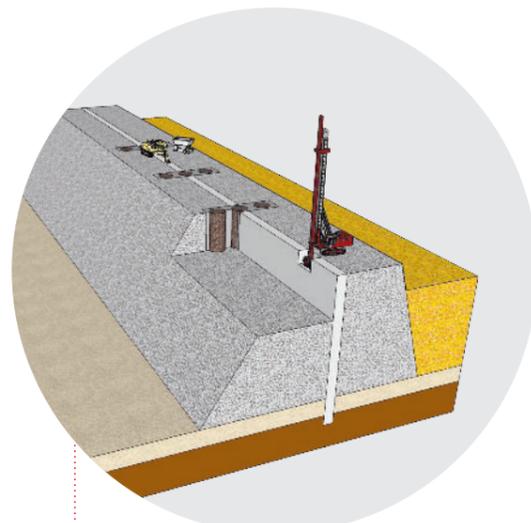
(1) Scope 1 (direct emissions): Greenhouse gas emissions directly produced by Group operations, in particular from fossil fuels used by vehicles, equipment and generators owned or controlled by the Group. — (2) Scope 2 (direct emissions): Emissions from the generation of energy purchased by the Group. — (3) Scope 3 (indirect emissions): Downstream activities.

Ground Improvement for Dams



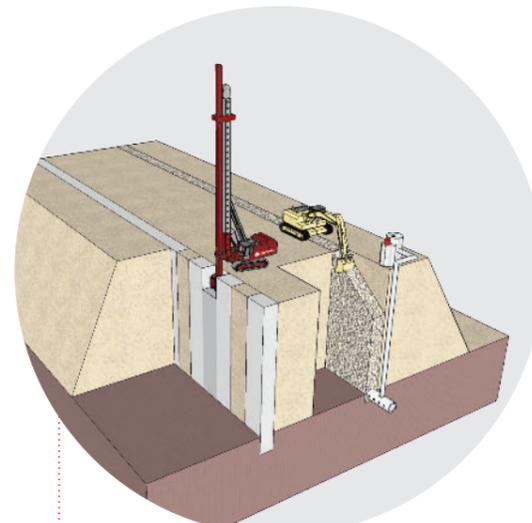
Dam Rehabilitation

Routine and industry standard dam safety reviews can identify inefficiencies and durability issues within many dam components. Poor performance can impair the structure's life span or compromise its safety. Many aging dams will require significant rehabilitation to meet current standards of performance. Installing a new impervious core can reduce seepage, provide additional shear resistance and/or improve stability. Menard offers services such as **Deep Soil Mixing**, **Permeation Grouting**, and **Slurry Wall** installation to facilitate this type of rehabilitation.



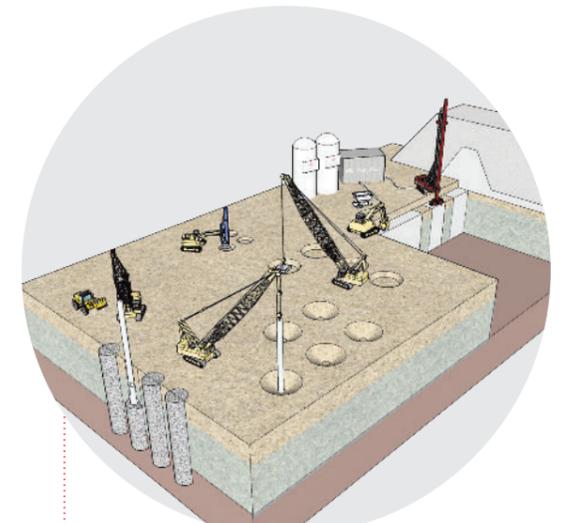
Dam Upgrade

Upgrading an existing dam is often necessary to enhance its lifespan, dam safety, or increase the capacity of the facility. Installing a toe berm can be an effective method to accomplish this upgrade by increasing the factor of safety against slope failure. Menard offers many ground improvement techniques that will allow soft, compressible and liquefiable soils to support the loads imposed by the additional berm and improve global stability against failure. Techniques include **Vibro-Replacement** and **Deep Soil Mixing**, or to increase the rate of consolidation, **Prefabricated Vertical Drains**.



Water Management

Menard offers several barrier wall options, including **Soil-Bentonite** and **Cement-Bentonite**, to suit our client's water management requirements. Other services include **Permeable Reactive Barriers** and **Drainage Walls**. By applying these techniques, water can be contained and treated properly. Menard is here to help you with virtually any water management challenge, with the right combination of techniques.



New Dam Construction

Menard offers several services to help the construction process when constructing a new dam. Whether improving the original or mining-generated soils through **Dynamic Compaction**, **Rapid Impact Compaction**, **Vibro-Compaction** or **Vibro-Replacement**, or installing the dam's core using **Slurry Wall** or **Deep Soil Mixing** techniques. Menard has advanced techniques to optimize any new dam construction.

Case Histories



Hinze Dam Stage 3, QLD Rock Grouting

Menard's foundation grouting expertise was instrumental in raising this major dam by approximately 15 m, significantly expanding Gold Coast's water storage capacity and reducing downstream flood risks. To achieve a watertight foundation, Menard installed an extensive curtain of cement grout deep into highly fractured bedrock (up to 40 m depth) using staged low-pressure injections. Despite challenging ground conditions, this precise grouting solution sealed the dam's base against seepage, resulting in a waterproof foundation for the raised dam. Menard's work ensured the dam's successful upgrade and exemplified the company's capability in complex dam foundation improvement.

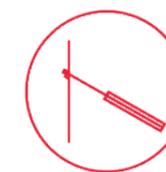
- **Foundation (Curtain) Grouting:** 17 470m of drilling; 1040t of cement injected; max. treatment depth 40m



Eurobodalla Southern Storage Dam, NSW Rock Grouting

Menard performed the foundation grouting for a new off-stream storage dam built to bolster regional water security. To cut off seepage beneath the embankment, the team installed a single-line cement grout curtain roughly 550 m long and extending up to 42 m deep, injecting grout into the bedrock below the dam. This complex drilling and high-pressure grouting operation successfully sealed zones of fractured argillite and greywacke rock, achieving the very low permeability (under 5 Lugeons) required for the dam's design. The resulting continuous cut-off barrier in the foundation ensures minimal seepage and secure long-term performance of the dam.

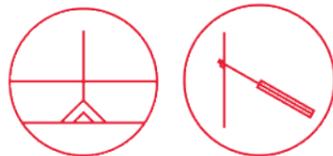
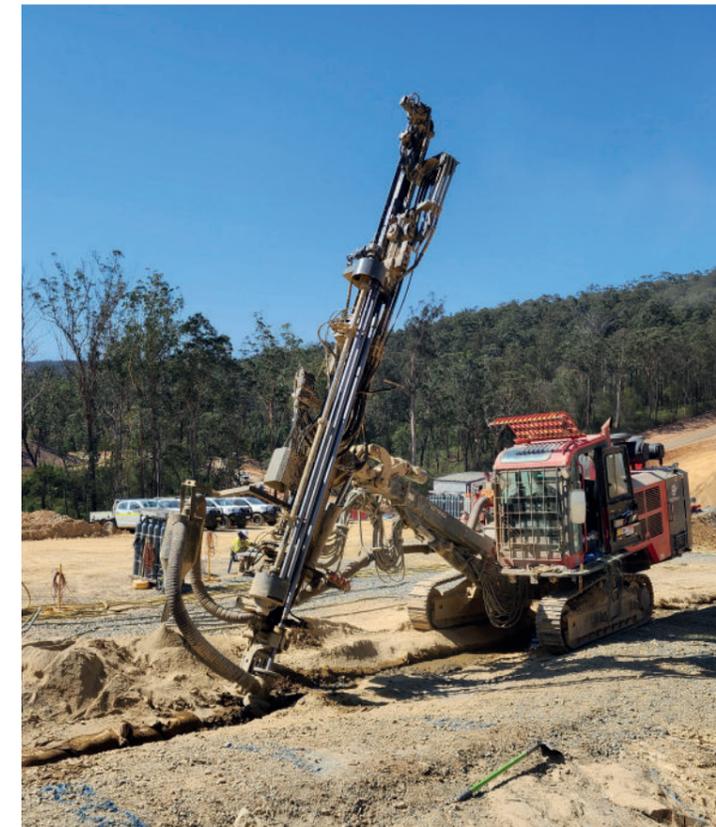
- **Foundation Grout Curtain:** 15 641m of rock drilling; 764 grout holes; maximum treatment depth 42m.



Wyralong Dam, Queensland Rock Anchors & Drainage Holes

This landmark 48 m-high, 500 m-long roller-compacted concrete dam was the first new storage in South East Queensland's water grid in decades. Menard was responsible for drilling foundation drainage holes and grouting high-strength rock anchors to stabilize the dam's twin spillways and abutments. The project demanded innovative solutions: when heavy rains rapidly filled the reservoir in just 25 days during construction, the team accelerated the works, and they custom-converted a drilling rig to electric power to install anchors in the dam's confined gallery spaces with only 2.4 m x 2.0 m access. The result was a robust, securely anchored foundation completed successfully despite extreme conditions, ensuring the long-term stability of this vital water-supply dam.

- **Rock Anchors & Drainage Holes:** Ground anchors installed in both spillways and abutments; 500m dam length, 48m dam height; foundation drilling to significant depths in bedrock.



Kangaroo Creek Dam Upgrade, South Australia Permeation Grouting & Permanent Anchors

Menard delivered a hybrid ground-improvement solution for this project to increase the dam's spillway height, boosting reservoir capacity for Adelaide's water supply. The team overcame extremely complex geology (steeply inclined, interbedded soft and hard rock layers) that made precision drilling and grouting challenging. Menard combined targeted permeation grouting in the dam's abutments with the installation of high-capacity permanent rock anchors (up to 40 m long) socketed into the bedrock. By stabilizing fractured zones and securing the structure with 22 multi-strand anchors, Menard's work minimized seepage and reinforced the dam's stability, enabling a safe and successful crest raise.

- **Consolidation Grouting:** 150 m of grout curtain installed in abutments.
- **Permanent Anchors:** 22 post-tensioned strand anchors (~40m length) drilled and grouted into rock.

Our Techniques



Deep Soil Mixing



Dynamic Compaction



Anchoring



Slurry Walls



Vibro Stone Columns



Jet Grouting



Dynamic Replacement



Rapid Impact Compaction



Rock Grouting



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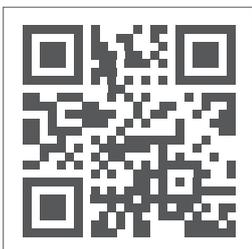
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