



Tunnel and Underground Solutions

BLUEY TECHNOLOGIES



SPECIALISED ENGINEERED PRODUCTS BACKED BY KNOWLEDGE + KNOWHOW

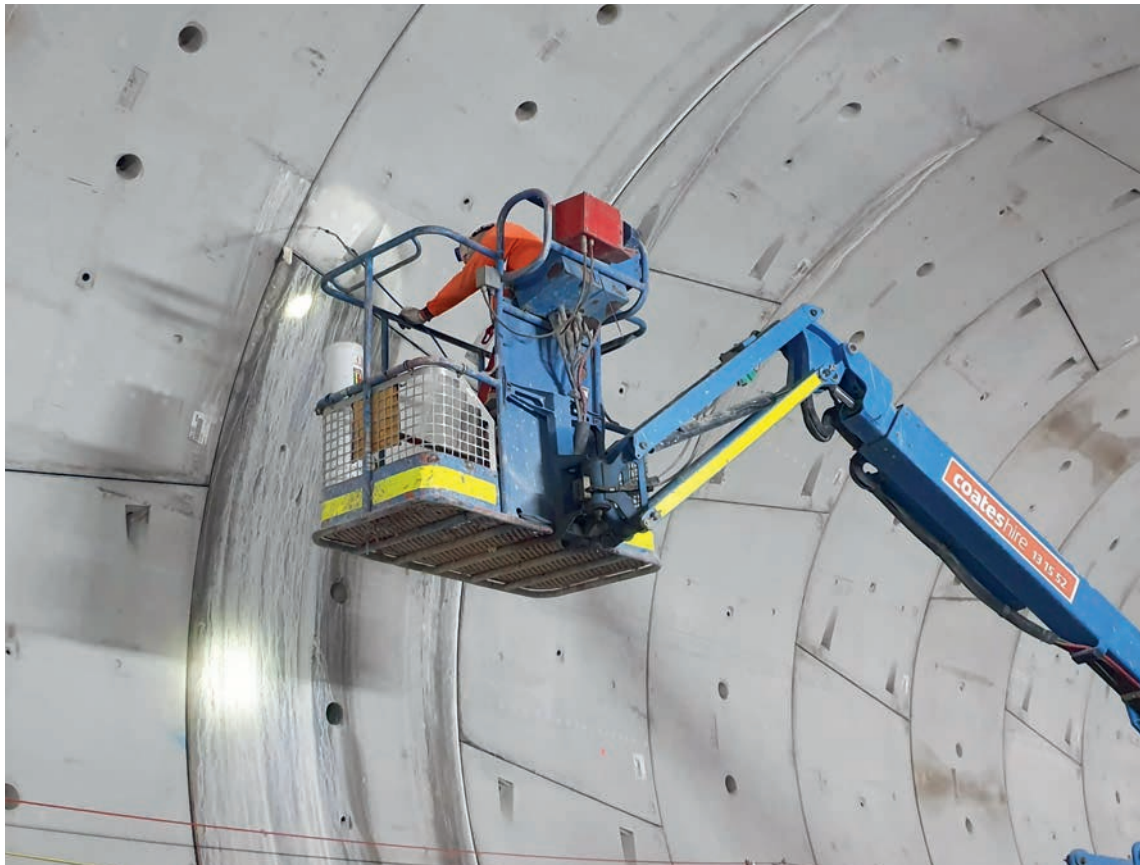
Bluey Technologies is a supplier of engineered construction products for major civil engineering infrastructure works. We have the engineering edge and experience to help you specify, plan and manage projects seamlessly from beginning to end.

Our collaborative approach means you have a committed and agile partner by your side throughout the entire project.

While we like to think outside the box, our continued focus is always to ensure the job gets done to the highest standards, not only making your life easier but lowering the whole-of-life cost of your project.

Tunnel and Underground Solutions

LEAKS AND CRACKS



VOID FILLING AND CONTACT GROUTING

BluRez CSW

PENETRATING POLYURETHANE RESIN

CRACK INJECTION

BluRez CSW

PENETRATING POLYURETHANE RESIN

BluRez CSI50

HYDROPHILIC POLYURETHANE INJECTION RESIN

BluRez Epoxy III

HIGH PENETRATION EPOXY RESIN

STRUCTURAL CRACK REPAIR

BluRez Epoxy III

HIGH PENETRATION EPOXY RESIN

WATERSTOPPING

BluSeal Superstop 47B

47B HYDROPHILIC BUTYL WATERSTOP SEAL

Tunnel and Underground Solutions

LEAKS AND CRACKS

Concrete provides structures with strength and resilience from deformation. These characteristics, however, result in structures lacking the flexibility to move in response to a range of changes. When these changes exceed the concrete's maximum tensile strength, cracking occurs.



VOID FILLING

Large voids in concrete segment linings can be difficult to repair at the best of times. Repairs involve a team of experienced injection technicians and a range of equipment to carry out the repairs effectively.

BluRez CSW, a water-reactive, single component hydrophobic polyurethane has been designed to solve a number of water related issues, including: High water ingress, consolidation of loose rock formations, and as a grouting solution for ground seepage and running water.

BluRez CSW – Penetrating Polyurethane Resin

- 35-50x foaming factor
- Fast reacting, effective water-stopping properties
- Excellent adhesion properties with both mineral and metallic surfaces
- Superb elastic properties that accommodate considerable movement between construction components
- Ideal for cracks up to 10mm thick

Tunnel and Underground Solutions

LEAKS AND CRACKS

CRACK INJECTION

Injection works are typically carried out to aid waterproofing, prevent corrosion or minimise excessive pressure on concrete structures.

Cracking in a tunnel environment often occurs in the hardened preformed segments, either due to water pressure, weight loading or settling of the segments into a newly bored tunnel. Bluey has developed a range of resins and epoxy solutions, including high foaming, fast setting and water-reactive products such as:

BluRez CSI50 – Hydrophilic Polyurethane Injection Resin

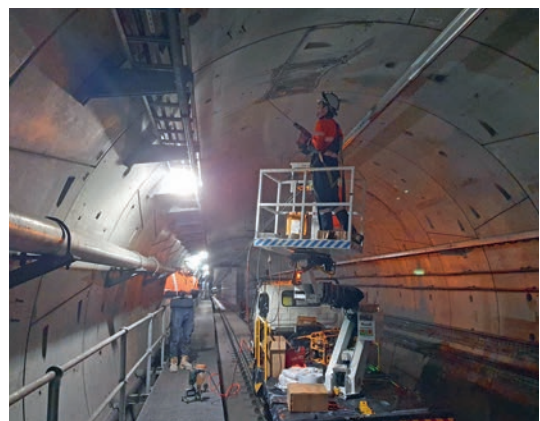
- Ideal for the sealing/grouting and elastic connection of fissures and cavities
- Potable water use approved in accordance with AS/NZ 4020:2005
- Highly flexible for live structures
- Rapid foaming and gel times

BluRez CSW – Penetrating Polyurethane Resin

- Fast reacting, water stopping properties
- Excellent adhesion to mineral and metallic surfaces
- Easy penetration into wet sand
- Large volume, no shrinkage product
- Ideal for cracks up to 10mm thick

BluRez Epoxy III – High Penetration Epoxy Resin

- Low viscosity aids penetration
- Excellent surface wetting
- Bonds well to damp and dry surfaces
- Fast hardening
- Solventless



Tunnel and Underground Solutions

LEAKS AND CRACKS

STRUCTURAL CRACK REPAIR

For structural crack repair in tunnels and underground applications, our partners often choose BluRez III, a high-penetration, structural epoxy resin. Initially developed for use in structural injection and grouting repairs, BluRez III can also be used for general concrete repairs, as a primer for porous concrete or as a sealer for floor toppings.

BluRez Epoxy III – Two Component High Penetration Epoxy Resin

- Low viscosity aids penetration
- Excellent surface wetting
- Bonds well to damp and dry surfaces
- Fast hardening
- Solventless

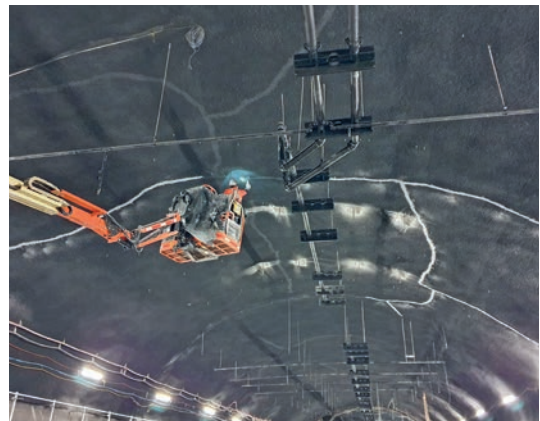


WATERSTOPPING

The compartmentalisation of a waterproofed structure limits the spread of leaks if a membrane is damaged during its service life. Bluey Engineers adhere to International Standards for spacing, looping and continuity of waterstop to provide long-term assurance and minimise water damage and safety risks for our partners. Bluey has developed a number of URG and UCG waterstops for a variety of applications.

BluSeal URG Waterstop – PVC Universal Rear Guard Waterstop

- Easy to install
- Wide range of sizes and profiles
- Exceeds all major international standards
- High-quality PVC for long term durability
- Can withstand high hydrostatic pressures
- Resistant to a range of environmental conditions



Tunnel and Underground Solutions

GEOTECHNICAL



CORROSION PROTECTION

BluGeo GRP60	GRP CONTINUOUSLY THREADED SOLID BAR
BluCem HS400Plus	ACID RESISTANT THIXOTROPIC GROUT
BluCem ZeoGlass	ACID RESISTANT SHOTCRETE CONTAINING RECYCLED AGGREGATE

TUNNEL BOLTING

BluGeo LP Rock Bolt	DCP LOW PROFILE STEEL RIGID ANCHOR
BluGeo CF Rock Bolt	DCP LOW PROFILE CABLE FLEXIBLE ANCHOR
BluGeo GRP60	GRP CONTINUOUSLY THREADED SOLID BAR

GROUND ANCHORING

BluGeo GRP60	GRP CONTINUOUSLY THREADED SOLID BAR
BluGeo SW-PTF	MULTI-STRAND PERMANENT GROUND ANCHOR
BluGeo SW-TTF	MULTI-STRAND TEMPORARY GROUND ANCHOR

GROUT CURTAINS

BluCem HS200	PT CABLE GROUT
--------------	----------------

ROCK GROUTING

BluRez CSW	WATER STOPPING POLYURETHANE RESIN
------------	-----------------------------------

SPRAY CONCRETE

BluCem HB55	SPRAYABLE SHOTCRETE
BluCem ZeoGlass	ACID RESISTANT SHOTCRETE CONTAINING RECYCLED AGGREGATE

THIN SPRAY LINERS

BluSeal TF05	CEMENT POLYMER MEMBRANE
--------------	-------------------------

Tunnel and Underground Solutions

GEOTECHNICAL

Changes in ground conditions create an increased risk to the public and lead to the expensive rehabilitation or replacement of damaged buildings and infrastructure. Our range of innovative ground support products excels in such situations.



CORROSION PROTECTION

In underground environments, acidic and contaminated ground may result in corrosion of tunnel bolts, grouts and infrastructure.

To ensure that these ground conditions don't affect the design life of underground structures, Bluey has developed innovative, corrosion resistant products.

BluGeo GRP60 – GRP Continuously Threaded Solid Bar

- Non-corrosive in acidic environments
- Eliminates the need for Double Corrosion Protection (DCP)
- >50% reduction in excavation and grouting
- 100 year design life
- 25% the weight of steel equivalent
- 2x the tensile strength of steel

BluCem HS400Plus – Acid Resistant Thixotropic Grout

- High acid resistance
- Thixotropic, for overhead rock bolting
- High early strength
- High load transfer to rock
- Excellent flex fatigue resistance

BluCem ZeoGlass – Acid Resistant Shotcrete Containing Recycled Aggregate

- Uses >50% recycled raw materials
- Ultra-high build in one pass
- High acid resistance
- High compressive and bond strength
- High flexural strength

Tunnel and Underground Solutions

GEOTECHNICAL

TUNNEL BOLTING

When it comes to the success of tunnelling projects, tunnel bolts play an essential role. We've developed a low-profile bolt which provides cost and productivity savings, a lower environmental impact and a higher-quality end result.

BluGeo LP Tunnel Bolt – DCP Low Profile Steel Rigid Anchor

- Designed for use in tandem with BluCem grouting system
- Meets and exceeds 100 year durability requirements
- Ideal temporary or permanent tunnel support solution



BluGeo CF Rock Bolt – DCP Low Profile Cable Flexible Anchor

- Easy to install
- Shotcrete application savings
- Flexible nut and plate configuration
- Double corrosion protection
- Accessible for post installation testing
- 100 year design life



BluGeo GRP60 – GRP Continuously Threaded Solid Bar

- Non-corrosive in acidic environments
- Eliminates the need for Double Corrosion Protection (DCP)
- >50% reduction in excavation and grouting
- 100 year design life
- 25% the weight of steel equivalent
- 2x the tensile strength of steel



Tunnel and Underground Solutions

GEOTECHNICAL

GROUND ANCHORING

Ground anchors are stressed to prevent structural movement. Commonly referred to as tension anchors, they are ideally suited for strong rock conditions.

Bluey has been supplying a range of multi-strand ground anchor systems for more than a decade, including:

- Permanent multi-strand anchors – these fulfil their function for the duration of the working life of a structure and require comprehensive corrosion protection
- Temporary multi-strand anchors – temporary anchors with a working life of up to 2 years
- Removable multi-strand anchors – temporary anchor (working life up to 2 years) with the strands being removed at the end of the working life.



GROUT CURTAINS

Grout curtains are used in below ground applications where excavated soil or rock may pass dangerous levels of water seepage. These curtains reduce the amount of water moving through the ground, ensuring a safer site with less associated delays.

BluCem HS200 and BluRez CSW have been designed for the sealing/grouting and elastic connection of concrete cracks, rock fissures, brickwork and natural stone.

- High early strength for strata support
- Does not contain aluminium or other metallic expansion agents which could cause hydrogen embrittlement
- Low viscosity giving maximum penetration
- Excellent pumpability
- Chloride free
- Unique additives to minimise shrinkage and bleed



Tunnel and Underground Solutions

GEOTECHNICAL

ROCK GROUTING

From stopping water seepage to consolidating loose rocks, BluRez CSW has been a game-changer over the past two decades. BluRez CSW improves rock conditions and can extend the operational life of tunnels, embankments, dams and retaining walls.

BluRez CSW – Penetrating Polyurethane Resin

- Ideal for high pressure leaks in tunnels and basements
- Highly elastic formulation withstands movement from rocks, concrete or water
- Fast reacting water stopping properties
- Excellent adhesion properties with both mineral and metallic surfaces
- Easy penetration into wet sand
- Large volume, no shrinkage product
- Ideal for cracks up to 10mm thick
- 35-50x foaming factor



SPRAYABLE CONCRETE

Shotcretes are used extensively in underground projects for overhead, vertical and horizontal applications. Sprayable concrete systems provide fast cycle-times, saving both time and costs.

BluCem HB55 and BluCem ZeoGlass offer solutions in both the rehabilitation of existing assets and new infrastructure.

- Fast setting with rapid strength gain
- Ultra-high build in one pass
- Extremely low permeability
- High resistance to sulphate and chemical attack
- Low rebound, low dust emissions
- Cost effective formulation
- High compressive and bond strength
- No formwork required



Tunnel and Underground Solutions

GEOTECHNICAL

THIN SPRAY LINERS

Thin spray liners are highly useful to permanently consolidate and seal brickwork, concrete structures and rock excavations from gas and/or water transmission.

BluSeal TF05 is designed to form a flexible and durable membrane suitable for sealing and consolidating shotcrete, concrete linings, rock excavations and brickwork.

The membrane is also often used for lining bored and driven tunnels, cut and cover tunnels, cross passages, shafts and underground structures. BluSeal TF05 can be applied in a range of thicknesses for various performance applications. The membrane liner is applied to structures to prevent water inflow and provide asset protection.

BluSeal TF05 – Cement Polymer Membrane

- Excellent tensile strength with high flexibility maintains coating integrity
- Superb adhesion to rock, timber and brick surfaces assures long-lasting coating
- Fire-resistant for safe use in underground environments
- Potable water use approved in accordance with AS/NZS 4020:2005
- UV and weather-resistant
- Easily applied by roller, brush or spray methods



Tunnel and Underground Solutions

WATERPROOFING



TUNNEL/BASEMENT LINING

[BluSeal VLDPE Tunnel Liner](#)

VLDPE FLEXIBLE SHEET MEMBRANE

[BluSeal PVC Tunnel Liner](#)

PVC FLEXIBLE SHEET MEMBRANE

WATERSTOPPING

[BluSeal URG Waterstop](#)

PVC UNIVERSAL REAR GUARD WATERSTOP

[BluSeal UCG Waterstop](#)

PVC UNIVERSAL CENTRE GUARD WATERSTOP

CROSS PASSAGE WATERPROOFING

[BluSeal URG Waterstop](#)

PVC UNIVERSAL REAR GUARD WATERSTOP

[BluSeal Injection Hose](#)

INJECTABLE HOSE FOR CONSTRUCTION JOINT

JOINT SEALING

[BluSeal Superstop 47B](#)

47B HYDROPHILIC BUTYL WATERSTOP SEAL

[BluSeal JS50](#)

EPDM JOINT SEALING MEMBRANE

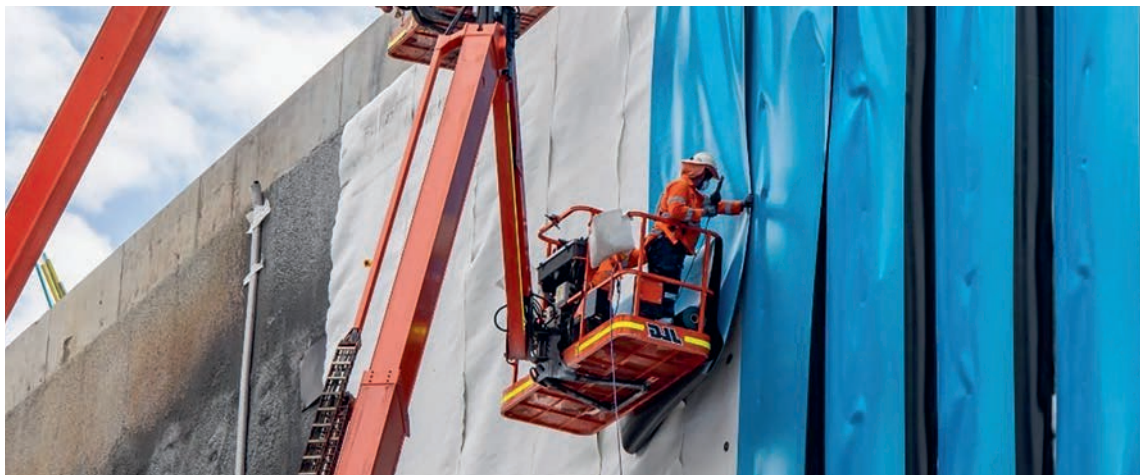
[BluSeal AD50](#)

SILANE-MODIFIED POLYMER ADHESIVE

Tunnel and Underground Solutions

WATERPROOFING

When waterproofing underground, the effort required to resist water pressure is often underestimated. Blueey looks to International Standards and our decades of experience to help our partners select the right product for every application.



TUNNEL AND BASEMENT LINING

Tunnel liners are specified where there is a need for 'dryness' in a tunnel. The main tunnel sealing and drainage systems are known as sheet membrane linings. The liner creates an impermeable water barrier between the concrete lining and the surrounding strata.

BluSeal PVC – PVC Flexible Sheet Membrane

- +100 year design life
- Flexibility to conform to various surface profiles
- High tear strength and elongation
- Exceptional waterproofing performance
- International Standards testing

BluSeal VLDPE – VLDPE Flexible Sheet Membrane

- Total system solution for all detailing
- Extensive ageing tests – 120 year design life
- Does not contain chlorides or plasticisers
- 500% elongation at break - suitable for high movement civil structures
- Double seam welding at all locations – maximises security against water infiltration

Tunnel and Underground Solutions

WATERPROOFING

WATERSTOPPING

The compartmentalisation of a waterproofed structure limits the spread of leaks if a membrane is damaged during its service life. Bluey Engineers work to International Standards for spacing, looping and continuity of waterstop to provide long-term assurance and minimise water damage and safety risks for our partners.

Bluey has developed a range of waterstop solutions to suit a variety of applications, including BluSeal URG Waterstop, our PVC Universal Rear Guard Waterstop.

BluSeal URG Waterstop – PVC Universal Rear Guard Waterstop

- Wide range of sizes and profiles
- Conforms and exceeds all major international standards
- High-quality PVC for long term durability and integrity
- Can withstand high hydrostatic pressures
- Resistant to a range of environmental conditions



Tunnel and Underground Solutions

WATERPROOFING

CROSS PASSAGE WATERPROOFING

Waterproofing TBM cross passages is no easy feat. Complex terminations, three-way curvature compartmentalisations, excessive water pressure and weak ground are just some of the challenges that engineers face. Bluey assists in the design, procurement, project management and installation of membranes and waterproofing solutions.

Bluey has now successfully sealed more than 500 TBM cross passages across many significant infrastructure projects, including Auckland's Waterview Tunnel, the Brisbane Airport Link and Metro Rail Projects to name a few, using BluSeal VLDPE and ancillary products such as our BluSeal Injection Hose Kit.

BluSeal VLDPE – VLDPE Flexible Sheet Membrane

- Total system solution for all detailing
- Extensive ageing tests – 120 year design life
- Does not contain chlorides or plasticisers
- 500% elongation at break - suitable for high movement civil structures
- Double seam welding at all locations – maximises security against water infiltration

BluSeal Injection Hose Kit – Injectable Hose for Construction Joint Sealing

- Allows easy joint repair after construction
- Low-cost installation
- Allows targeted injection along construction joint
- Long-term durability against infiltration
- May be incorporated into maintenance regimes
- No drilling required compared to traditional method
- Filled through dedicated, permanent injection ports to allow the flow of resin into the joint



Tunnel and Underground Solutions

WATERPROOFING

JOINT SEALING

Underground sealing systems are designed to seal various types of concrete elements and structures, including both horizontal and vertical construction joints.

BluSeal Leakmaster is a unique sealing compound which can be used to form a bonded seal for in-situ concrete joints.

BluSeal Leakmaster – Hydrophilic Gun Grade PU Waterstop

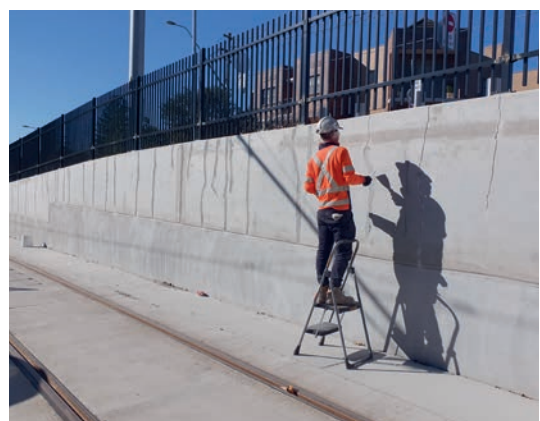
- Ideal for use in both horizontal and vertical construction joints
- Suitable for use in tunnels, basement construction, retaining walls and on shotcrete joints

BluSeal JS50 – EPDM Joint Sealing Membrane

- Easy and fast application
- Suitable for bonding to damp surfaces
- Bonds to steel, concrete and other building surfaces
- High movement capacity
- Extreme temperature variation tolerant

BluSeal AD50 – Silane-Modified Polymer Adhesive

- Suitable for bonding to moist surfaces, even underwater
- For use on damp and wet environments
- Low shrinkage
- Extreme temperature variation tolerant
- Ultra-high bonding
- Adheres to a wide range of substrates



Tunnel and Underground Solutions

INSTALLATION AND SUPPORT

We've proudly trained many Australians to successfully work in the tunnel industry. Some of our original team from 2003 remain as Bluey employees, now training others.



EXPERT INSTALLATION TEAMS

It takes approximately five years to train a Waterproofing Technician. Bluey has established a plastics welding course in conjunction with PARTEC in Queensland, an independent, government-funded plastics and composites training college.

- Expert training for the tunnel industry
- Two full time teams on Australia's East Coast
- Expert installation teams for underwater lining system
- Trained in the use of BluSeal products

PROJECT DESIGN AND SPECIFICATION

Engineering design and specification is one of the most important areas of waterproofing. Bluey employs qualified, full-time engineers, specialising in tunnel waterproofing to ensure project design consultants understand the strict detailing that is required to work in accordance with best practices.

PROJECT MANAGEMENT

Project management ensures that each stage of the design, procurement, delivery and installation of membrane, are completed successfully. Time and time again, Bluey has managed projects large and small for partners across the globe. By utilising Bluey project management services, our partners can be confident that each stage of the project, is completed successfully.

Tunnel and Underground Solutions

INSTALLATION AND SUPPORT

LINING AND TERMINATIONS

Waterproofing is no easy trade. Welds, complex terminations, three-way curvature, compartmentalisations, high water pressure, and weak ground are just some of the complications that Bluey Waterproofing Technicians often face.

When you can't afford a single leak, the only way to go is to utilise Australia's most experienced waterproofing team.

MATERIAL SELECTION

Not all membranes are created equal. Bluey engineers assist in selecting the most appropriate material for the project, taking into consideration the project design requirements, ground water contaminants, and the client's budget.

To ensure the highest quality, Bluey only use membranes manufactured in Europe from virgin materials to the highest international quality standards.

QUALITY ASSURANCE

As one of the most experienced supply and install companies in the industry, we offer the following quality assurance features and benefits to all of our partners.

- Experienced installers, management and supervision
- Co-ordinated deliveries and stock
- Site testing of all welds
- Quality assurance paperwork





Bluey delivers...

- Products developed for civil engineering
- Product technical knowledge
- Site application knowhow
- A collaborative approach
- Economical solutions for large projects



HEAD OFFICE QLD

1300 0 BLUEY | qld@bluey.com.au

bluey.com.au

NSW

nsw@bluey.com.au

VIC

vic@bluey.com.au

SA

sa@bluey.com.au

WA

wa@bluey.com.au

TAS

tas@bluey.com.au

ACT

act@bluey.com.au

NT

nt@bluey.com.au

NZ

nz@bluey.com.au

UK/EUROPE

bluey@bluey.ie

ASIA PACIFIC

sales_sg@quicseal.com

Bluey products have Government and Regulatory Authority approvals across Australia and New Zealand.

Exclusive Distributors for

