



MATRIX THORNTON

CAPABILITIES STATEMENT

STRUCTURAL ► CIVIL ► MECHANICAL ► ACOUSTIC

OUR MISSION

Matrix Thornton Consulting Engineers is a multi-disciplinary engineering practice on the Mid North Coast of NSW. Headed by Philip Thornton, it provides comprehensive, professional, innovative and ethical engineering services. We aim to exceed our clients' expectations while maintaining a friendly, fair and creative work environment for our employees. This is achieved by actively listening to our clients' ideas, forming trusting relationships and delivering quality, cost effective, on-time services that meet regulatory requirements.

We respect diversity, gender equality, new innovative ideas and hard work.

WHO WE ARE

Matrix Thornton is a multi-disciplinary team providing quality and professional engineering solutions in structural, civil, mechanical and acoustic engineering.

From our base on Oxley Island, we provide engineering services to Taree, Forster, Port Macquarie, Gloucester and surrounding areas.

The demand for our acoustic engineering expertise means we work with clients on acoustic projects from Newcastle to Coffs Harbour.

Matrix Thornton has a reputation for being professional, easy to deal with and innovative, working with small to large clients – home owners, builders, architects, project managers, local government authorities and heritage bodies.

We have a long list of successful projects with established clients such as; MidCoast Council, MidCoast Water, the Alliance Strata Group, NSW Public Works, Sorensen & Caldon Quality Home Builders, Stebercraft and packaging manufacturer Jamestrong.



PHILIP THORNTON - PRINCIPAL ENGINEER & DIRECTOR

Philip Thornton, BE (UNSW) MIEAust CP Eng NER RPEQ

Founder and Director, Philip Thornton, has a long-standing reputation for integrity, sound professional judgement and on-time solutions to a range of engineering projects.

Philip has been involved in diverse aspects of the building and construction industry since graduating as an engineer from the University of NSW in 1977. He is an established innovator and entrepreneur in the building products and restoration industry, having established Matrix Industries Pty Ltd with a range of patented building products in 1985.

Philip is a Chartered Professional Engineer and member of Engineers Australia and is supported by a dedicated, highly qualified team of specialty staff.



ENGINEERS
AUSTRALIA
Chartered Professional Engineer
MEMBER

THE MATRIX THORNTON TEAM

The team working alongside Philip Thornton has decades of experience. This ensures that your project is always viewed holistically and solutions are sought from a variety of engineering disciplines.

The team consists of:

- Eric Boere BE(Civ) MIEAust – Senior Structural Engineer
- Erica Thornton BE(Civ) MIEAust – Structural Engineer
- Gordon Chirgwin BE(Civ) ME(USYD) MIEAust – Senior Structural Engineer
- Mustafa Al-Azzawi PhD(UOW) – Structural Engineer
- Alyaa Al-Khazraji BE(UNSW) – Civil Engineer
- Carey Molloy BE(Mech) – Project Engineer
- Chris Howe BE(Mech) ME(UTS) – Mechanical Engineer
- George Jenner BSc – Acoustic Consultant
- Terry Shoobridge – Senior Design Draftsperson
- Ian Kemp – Draftsperson
- Bruce Anderson – Draftsperson
- David Stein – Administration Assistant
- Stephanie O'Toole – Business Manager



WHAT WE DO

Our professional services range from concept, through to planning and design and on to implementation and operational stages.

Our services include:



- Structural engineering for residential dwellings, multi-unit dwellings and townhouses, commercial offices, retail, industrial, educational and institutional buildings. Also, swimming pools, shade structures, carports, garages, marine structures and retaining walls
- Certificate of Adequacy, structural integrity certification including re-located buildings, buildings without council approval, shopfront awnings, storm damage, impact damage, jetty pontoons, wall and slab cracking and steel corrosion damage
- Extensive expertise in the investigation and repair of masonry wall and slab cracking including producing a Scope of Works for underpinning of foundations
- Acoustic engineering – including noise and vibration assessments and acoustic reports
- Flood and mound certification
- Bridge and culvert design
- Stormwater design
- Heritage and restoration work
- Site investigations
- Expert witness and investigation
- Residential, commercial and strata building inspections, generation of scope of work and supervision of remedial works
- Mechanical design of projects, manufacture processes, jigs and fixtures

The following pages depict a small example of our extensive portfolio of work.

STRUCTURAL PROJECTS

▶ Alterations and Additions of Existing Structure: Main Beach Forster

Two storey Ocean View Motor Lodge on Forster main beach converted to three storey apartment block.

The original lower storey section was retained and footings strengthened where required. Matrix remedial wall ties were used to replace corroded brick ties.

The upper levels received a lavish new structure with large open plan living areas and an outdoor lap pool on the first floor. The existing timber floor was used as permanent formwork for upper level slab.



Clockwise from top left:
Picnic Shelter Design, Cattai Wetlands;
Art Studio, Tinonee; Engineers for Sorensen &
Caldon, Quality Home Builders; Structural
Assessment of Mono Pole; Design & Certification
for Manning River Rowing Club.

CIVIL PROJECTS



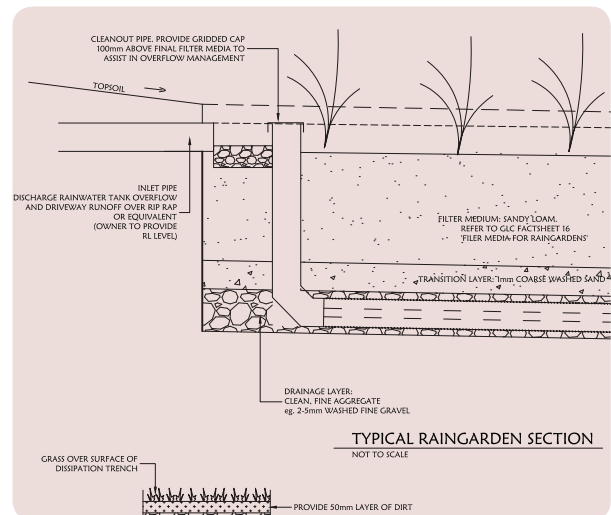
◀ Lateral Thinking Culvert Design

Matrix Thornton developed a method of upgrading rural causeways using waffle pod slab construction. This allows rapid low-cost construction and meets rigorous local government structural requirements. Importantly, the waffle system allows a council or private land owner to leave the existing causeway in place, reusing the existing infrastructure and minimising creek bed disturbance.

Right: At Belbora Creek, near Taree, the new culvert design preserved significant aquatic habitat whilst fulfilling important fish passage requirements from Fisheries NSW.



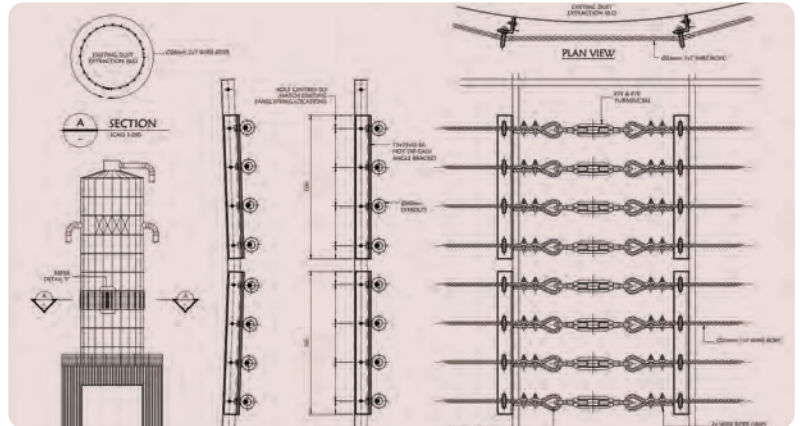
Below Left: Traditional Culvert Design
New Rural Residential Development
Below Right: Gutter, downpipe and rain garden design for council stormwater requirements



MECHANICAL PROJECTS

▶ Backhoe Dipper Arm Repair

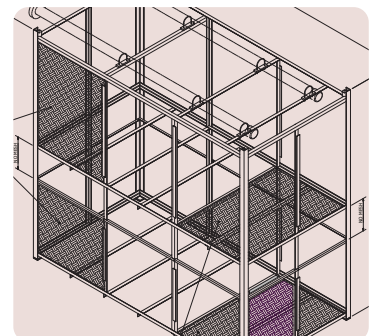
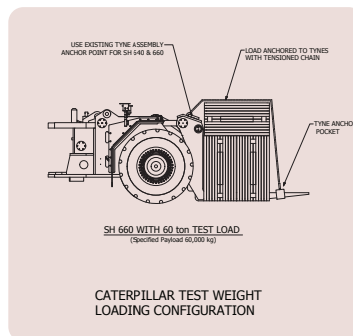
A failed backhoe dipper arm requires re-certification for strength after the correct repair method. The design of the gusset is of critical importance.



Left and Above: Structural Upgrade of Dust Extraction Silo

Below Left: Caterpillar Test Weights Design

Below Right: Aeration Cage Design for MidCoast Water Services



REMEDIAL PROJECTS



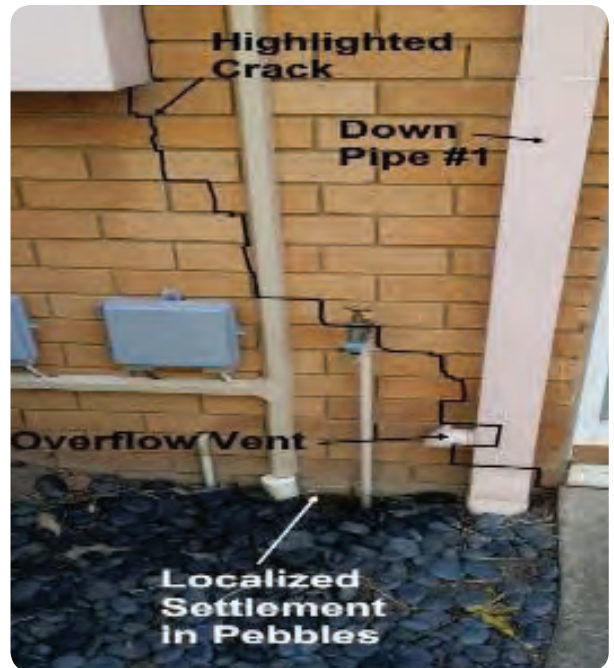
◀ Wall Damage Repair

The outer leaf of a very high masonry wall in a 60-year-old building had begun to buckle where the bricks had been cut in half to cover the edge of an upper level slab.

The repair included fabricating a galvanised shelf angle and re-attaching the outer leaf with Matrix remedial wall ties.



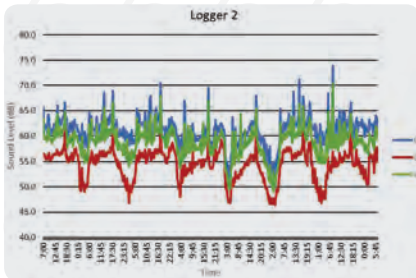
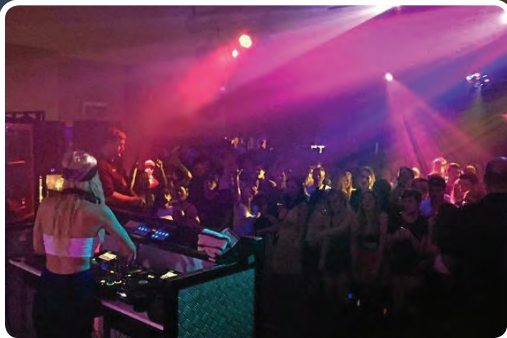
Below Left: Inspection of the Martin Bridge after the March 2021 floods Below Right: Building Defect Investigations



ACOUSTIC PROJECTS

▶ Noise Assessment Liquor and Gaming NSW

Live music venues are commonly required to undergo an acoustic assessment by Liquor and Gaming NSW to ensure they comply with noise regulations.



Clockwise from above:
Graph showing results of 7-day noise logging by Matrix Thornton at an acoustically sensitive site;
Noise Assessment Report for holiday park to support DA; Taree Public Library acoustically absorbent clouds in children's section.



HERITAGE PROJECTS



▲ Historic Wharf Restoration, Wingham

A whole section of wharf washed away in a flood, but a community desire to keep this 150-year-old structure created challenges for our engineers, resulting in a usable structure for another generation.





**MATRIX
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CONSULTING ENGINEERS

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