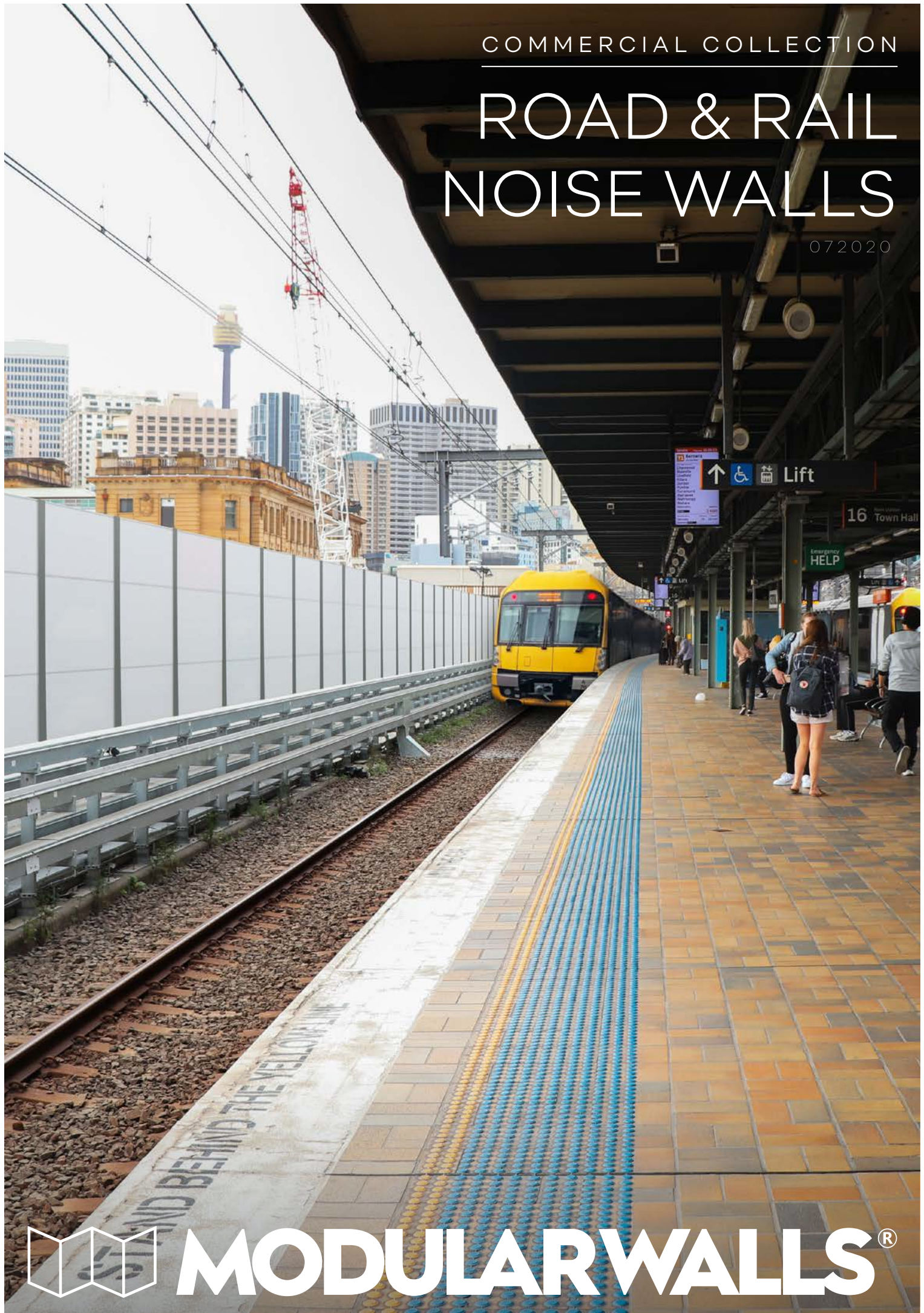


COMMERCIAL COLLECTION

# ROAD & RAIL NOISE WALLS

072020



# MODULARWALLS®



## ModularWalls

With over 30 years' composite panel experience, ModularWalls is an innovative building company specialising in outdoor walls, fences and noise barriers.

Our products are designed and manufactured in Australia, transforming the world of modern acoustic attenuation and elevating noise wall design aspirations.

We employ ~70 people which are skilled in the delivery of such materials and product to the Australian marketplace. Our manufacturing base is in NSW with a warehouse in Melbourne and a soon to be announced facility in the Brisbane area.

With invention and innovation at the core of our origin story, we are committed to continually evolving how we respond to the ever-changing market demand.

ModularWalls' products are Australian Made, designed and manufactured to strict international ISO 9001 quality standards. From the humble DIY pack to kilometres of roadside noise barriers, we have supplied over 20,000+ walls and other acoustic, retaining and impact-resistant panel solutions across Australia, New Zealand, USA and Europe, in a wide variety of industries and government departments.

Our renewed focus on sustainability is a direct response to Australia's demand to take responsibility for tomorrow's built world.

Through revolutionary composite panel technology, we have found a way to innovate the noise attenuation market and support the construction industry to build more sustainably with ModularWalls.



## WHY MODULARWALLS®?

As the leading manufacturer of cost-effective wall systems, ModularWalls can offer a solution to every challenge. Whether it be noise reduction, impact resistance, overcoming environmental hazards or difficult site access, customised design or rapid installation requirements, ModularWalls is able to deliver.



Camden Valley Way, NSW

## The ModularWalls® advantage

### A reputation for quality and innovation

As the inventor of the Modular Wall and trusted market leader, ModularWalls has delivered over 20,000 projects - some of which have been located in the harshest, remote and most challenging climatic conditions.

### Cost effective

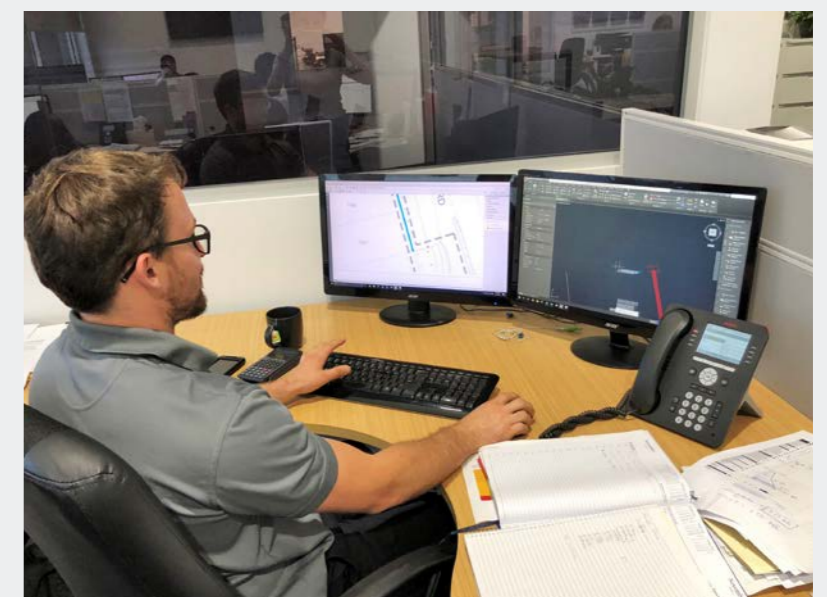
There is a rapidly increasing trend of businesses looking to more cost-effective wall solutions that combine innovative technology with the durability of traditional materials. ModularWalls can deliver a more affordable, aesthetically superior alternative that matches traditional block or concrete solutions in durability and design life, with an unparalleled focus on quality and delivery.

### Strong and durable

Composite panel technology provides a panel that is strong, lightweight and will not rot, warp or corrode. Virtually maintenance-free and impact resistant, a modular wall displays amazing rigidity and durability in any situation.

### Designed and manufactured in Australia

The products are Australian designed and manufactured to strict international ISO 9001 quality standards. With years of proven performance, ModularWalls products are applied in a wide variety of industries and government departments both nationally and internationally. With inhouse design engineers and draftspeople, ModularWalls can confidently provide an end-to-end service.



# COMMERCIAL SOLUTIONS

# PANELS

## EnduroMax®

### Impact resistant panels

The EnduroMax is an ultra-resilient, high-performance modular noise wall panel designed specifically for the extreme conditions associated with road, rail and civil infrastructure environments.

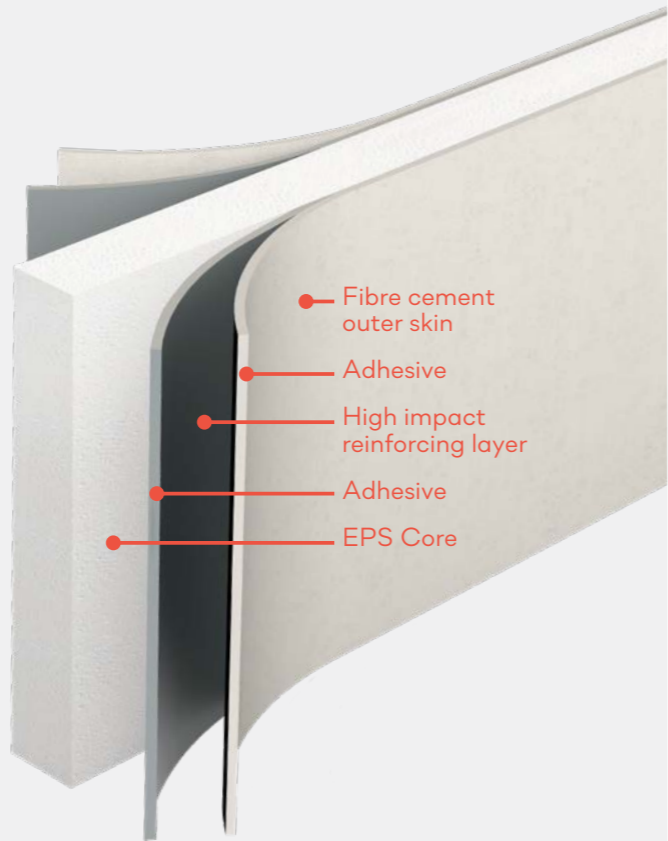
The superior acoustic performance and aesthetics of the EnduroMax panel make them ideal for the intense rigours of rail lines and highways.

The panel can span 4.2 metres in width and have a typical density of ~5 kg per square metre, making them much lighter and more manoeuvrable than the concrete walls conventionally employed for noise abatement within transportation infrastructure.

- Roadway compliant
- Ultra-high impact resistance
- Fibre cement outer skin
- High impact reinforcing layer
- Vandal resistant
- High acoustic performance (Rw 33)
- Panel span up to 4.2m

### Applications

- Road and rail corridors
- Civil infrastructure environments
- High traffic areas
- Car parks



## AcoustiSorb®

### Sound absorbing panels

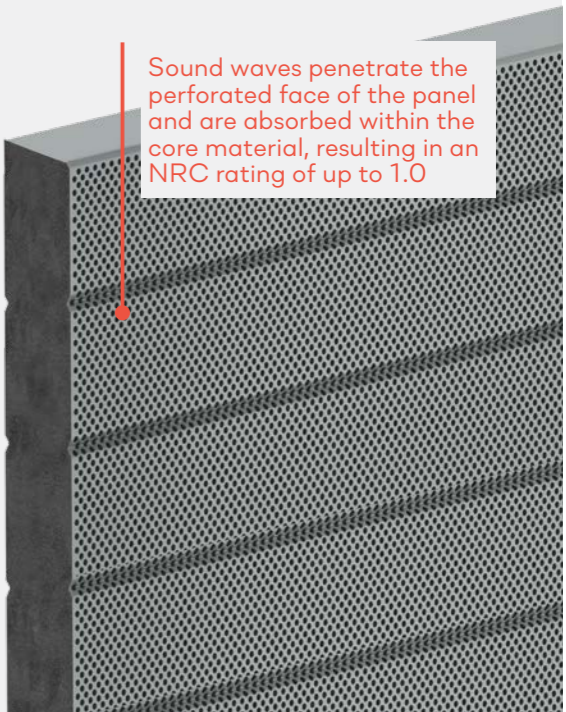
The AcoustiSorb is a simple, effective and aesthetically pleasing noise wall panel that is custom-designed to meet some of the toughest acoustic pollution challenges that clients are likely to encounter in transportation and industry.

The robust, lightweight design of the AcoustiSorb makes it ideal for sound insulation purposes in noise-intensive environments such as road and rail corridors, as well as businesses that make extensive use of loading docks, heavy machinery, HVAC units or large-scale generators.

- Pre-coloured, perforated aluminium outer skin
- PET sound absorbing core
- Lightweight yet robust construction
- Panel span up to 4.0m
- Typical audible noise reduction of 30db to 40db and an NRC of up to 1.0

### Applications

- Extreme acoustic attenuation requirements with tunable RW rating
- Loading docks
- Road and rail tunnels
- HVAC units
- Acoustic enclosures (e.g. around generators)



# PANELS

## AcoustiMax®

### Acoustic walls and panels

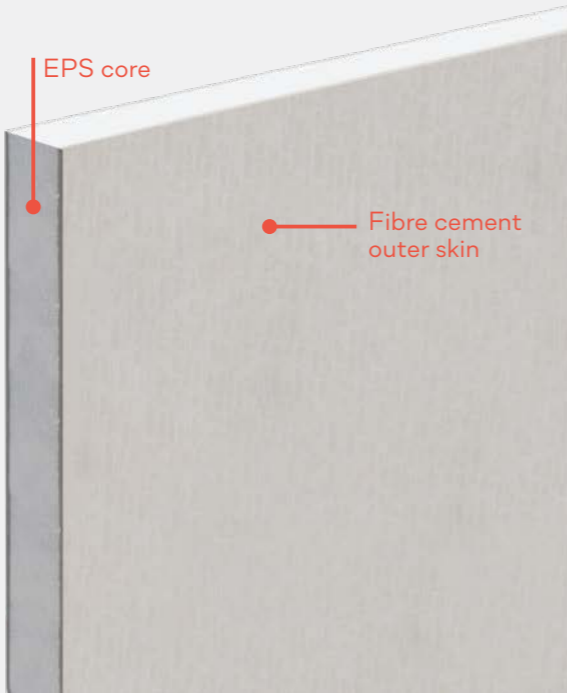
The proprietary AcoustiMax panel is our core modular wall solution for light commerical applications, and the ideal choice for architects and developers seeking an effective noise barrier that's aesthetically versatile as well as economical.

Composed of an EPS core with an external layer of fibre-reinforced cementitious sheets, the AcoustiMax panel is a lightweight, impact resistant modular wall panel that possesses outstanding acoustic properties and a smooth designer finish.

- Fibre cement/EPS composite construction
- Lightweight
- Panel spans up to 4.2m
- Custom manufactured posts or universal beams - subject to height and wind region

### Applications

- Visual screening
- Security
- Boundary walls
- Acoustic fencing
- Housing developments



### TECHNICAL SPECIFICATIONS

	Thickness	Post Type	Density	Rw	Fire Class†	Max Wall Height	Post Widths	Wind Regions
EnduroMax impact panel	75-150mm	Steel	30.50 kg/m <sup>2</sup>	34	BAL40	12m+	2400 3000 4200	A, B & C
AcoustiSorb sound absorbing panel	75-100mm	Steel	14.32 kg/m <sup>2</sup>	29-34 (NRC 0.9 typical)	BAL40	12m+	2400 3000 4000	A, B & C
AcoustiMax	75-150mm	Steel	15.49 kg/m <sup>2</sup>	28	BAL29	12m+	2400 3000 4200	A, B & C
AcoustiMax 6mm wallboard (non-compressed)	75-150mm	Steel	22.00 kg/m <sup>2</sup>	29	BAL40	12m+	2400 3000	A, B & C
AcoustiMax 9mm wallboard (non-compressed)	75-150mm	Steel	30.71 kg/m <sup>2</sup>	30	BAL40	12m+	2400 3000	A, B & C

# TECHNICAL INFORMATION



# APPROVALS AND COMPLIANCE

The EnduroMax panel range meets and exceeds all road and rail specification requirements.



## QLD Department of Transport and Main Roads: MRTS15

The MRTS15 specification is known for its stringent impact & durability requirements, the toughest in Australia. During approval assessment the various EnduroMax panels were selected from the Manufacturing line and tested under supervision of independent and DTMR RPEQ Engineers in accordance with the testing procedures outlined as part of the specification. The EnduroMax panel met and exceeded all performance requirements and was granted approval by the department of main roads and listed on the pre-approved products register for Noise Walls/Fences.



## QLD Rail: Civil SR-014

Both EnduroMax and AcoustiMax panels have been approved by QR and previously utilised on numerous projects where the Civil SR-014 specification applied. Both panels comfortably exceeded the requirements of the specification.



## NSW Roads & Maritime Service: R271

The EnduroMax panel was assessed against the R271 specification and comfortably exceeded the requirements. R271 has similar requirements for impact and durability to the QLD MRTS15 specification requiring detailed impact testing and documentation of results by suitably qualified engineers. AAC panels have been used for many years in NSW under this specification, however the EnduroMax panel proved to have superior impact and durability qualities when like for like tests were conducted.



## VicRoads Bridge Technical Note: BTN 007/2018

Whilst VicRoads do not offer formal assessment for products, the noise walls specifications stipulated under note BTN 007/2018 set out requirements for composite panels, all of which are exceeded by the EnduroMax panel.



## Main Roads Western Australia: Specification 904

With no pre-prescribed testing requirements set out in the specification, the EnduroMax test results from both RMS and QLD DTMR assessments were submitted to the Senior Bridge Engineer and Specification Custodians for assessment. All requirements were exceeded and the panel was advised to be acceptable.

# Carbon Emissions Reductions

EnduroMax offers a far smaller carbon footprint compared to precast concrete panels. ModularWalls conducted a comparative case study of the carbon footprint created by the installation of a noise wall running a distance of 1000 lineal metres.

The EnduroMax panel provided a massive 80% carbon reduction project-wide against concrete, dramatically reducing CO<sub>2</sub> emissions across the manufacture, transportation and installation of the panels.

The embodied CO<sub>2</sub> of the EnduroMax panel itself is just a third that of precast concrete noise wall panels, measuring the same dimensions; this translates into savings of roughly 135.35 tonnes of embodied CO<sub>2</sub>.

The low weight of an EnduroMax panel, at 146kg as compared to 1440kg (for a 4 x 1.2 x 0.125m product), also meant that transportation would incur only 9.58 tonnes of CO<sub>2</sub> emissions over a distance of 1000 kilometres, as compared to 74.52 tonnes for traditional concrete, achieving a savings of 66.9 tonnes of CO<sub>2</sub>.

During installation, the modular design of EnduroMax also achieved major greenhouse gas reductions due to quicker and more convenient construction, with a CO<sub>2</sub> load of 6.3 tonnes, as compared to 16.53 tonnes for precast concrete panels, or a savings of 10.05 tonnes.

In all aspects of the project, EnduroMax came out with the lowest carbon footprint.



Yangebup, WA



Sandgate - NSW

# Impact Resistance

One of the key advantages of EnduroMax is its high level of impact-resistance and durability, enabling it to successfully withstand the minor projectiles and vandalism that so often affect road and rail infrastructure.

EnduroMax is approved by the Queensland Department of Transport and Main Roads, and has passed highly rigorous testing for impact resistance and strength. When Queensland engineers dropped a 4kg steel shot put ball (approved MRTS15 test) onto the EnduroMax from a height of 3 metres, the impact failed to leave an impression of more than 2mm, attesting to the sheer strength of the panel.

The EnduroMax panel approaches concrete in terms of durability, yet is far cheaper, quicker and easier to install, due to its low weight and modular structure.

Compounded by its vandal resistant properties and superior acoustic performance, EnduroMax is the ideal panel solution for the intense rigours of rail lines and highways.

# Minimised Risk

Our lightweight materials offer the added benefit of minimising risk factors involved with transportation of materials and hazardous manual handling.

ModularWalls' products are packed to volume rather than weight, resulting in many less trucks on the road.

Additionally, the reduced weight of parts and the composite construction methodology minimise the risk of injury or material damage during installation. The chance of injury from incorrect or excessive manual handling of tradespersons onsite is far lower than on sites involving solid concrete materials, and ensures installers can work productively and efficiently, with less physical fatigue.

# Design and Engineering

ModularWalls engineering designers will assist contractors in completing a project on time and on budget, using the latest and most up-to-date software programs to design and model your complete wall and footing solution.

Using leading edge structural analysis engineering software, we design and construct the most robust structures from the ground up to ensure your project is completed as cost effectively as possible.

The products are Australian designed and manufactured to strict international ISO 9001 quality standards. With over 18 years proven performance, ModularWalls products are employed in a wide variety of residential, commercial and infrastructure projects, both nationally and internationally.



Bruce Highway, Cooroy QLD

# CASE STUDIES



EnduroMax®



## Case Study 1

# CAPTAIN COOK DRIVE, CARINGBAH NSW

## Wall Specs

- 3.6m high
- Enduromax (R271) Panels

## Highlights

- 2.4m high with additional 1.2m clear acrylic panels on top.
- Custom-engineered foundations around underground high-pressure gas, water and sewer services.
- Additional group consultations with ModularWalls, RMS and the local communities spanning over 2 years.
- Face-mounted design.



EnduroMax®

## Case Study 2

# BRUCE HIGHWAY, COOROY QLD

## Wall Specs

- 3m - 3.6m high
- 287m long
- EnduroMax panels

## Highlights

- EnduroMax panel is pre-approved by the Queensland Department of Transport and Main Roads.
- Lightweight, modular systems greatly facilitated installation on the sloped terrain.
- Galvanised steel beams delivered 50+ year design life.



EnduroMax®



### Case Study 3

## CENTRAL STATION, SYDNEY NSW

### Wall Specs

- 4.5 m high
- 200m long
- Enduromax Panels

### Highlights

- Worked closely with Laing O'Rourke, offering detailed consultations, design work and engineering.
- Supplied custom length EnduroMax panels within a 2-week turnaround period.
- Much faster than alternate concrete or AAC.



EnduroMax®



## Case Study 4

# WARINGAH FREEWAY, NSW

### Wall Specs

- 4m - 5m high
- 180m long
- EnduroMax (R271) panels,

### Highlights

- Worked with RMS, Celtic Civil & Arup Group on high-performance noise wall with premium aesthetics, due to prominent location.
- Lightweight solution reduced size (and cost) of installation machinery.
- Modular construction accommodated challenging site conditions, successfully avoiding traffic disturbance of heavily-used freeway.





EnduroMax®

## Case Study 5

# RAIL NOISE ABATEMENT PROJECT, MUSWELLBROOK NSW

### Wall Specs

- 4.2m high
- 552m long
- Enduromax Panels (ARTC)

### Highlights

- EnduroMax overcame weight and logistical challenges of previous tenders for concrete and AAC solutions.
- Feature panels were designed to tie in with existing indigenous Australian artwork in nearby Simpson Park, which was continued along the railway noise barrier.



EnduroMax®



## Case Study 6

# SPEARWOOD AVE, YANGEBUP WA

### Wall Specs

- 3 -3.6m high
- 250m long
- Enduromax Panels

### Highlights

- ModularWalls engaged by Ertech to supply sophisticated noise barrier for Main Roads WA, due to widening of Spearwood Ave.
- Seamlessly integrated TerraFirmX retaining panels met the 1.5m earth-retaining capabilities, providing an 'invisible' retaining solution.
- The client saved substantial costs, time and hassle with the dual-purpose noise barrier/retaining design.



EnduroMax®



## Case Study 7

# ALFORDS POINT ROAD, NSW

## Wall Specs

- 3.6m high
- 30m long
- Enduromax Panels

## Highlights

- Engaged by the RMS to remove and replace a 30m section of collapsed concrete road barrier along Alford's Point Rd, constructed in the early 2000's.
- A customised face-fix application with applied external detailing to panels offered an aesthetic blend with the existing concrete barrier.





**MODULARWALLS®**

20,000 SUCCESS STORIES AND COUNTING...

[modularwalls.com.au](http://modularwalls.com.au)

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