SUSTAINABLE **SILENCE**

SOME INSIGHT INTO THE FACTORS AND KEY REASONS FOR THE RISE OF HOLLOWCORE PRECAST CONCRETE NOISE WALLS THROUGHOUT AUSTRALIA.

In sprawling suburbs where urban life meets tranquil residences, the challenge of managing noise pollution has prompted an innovative solution: hollowcore precast concrete noise walls.

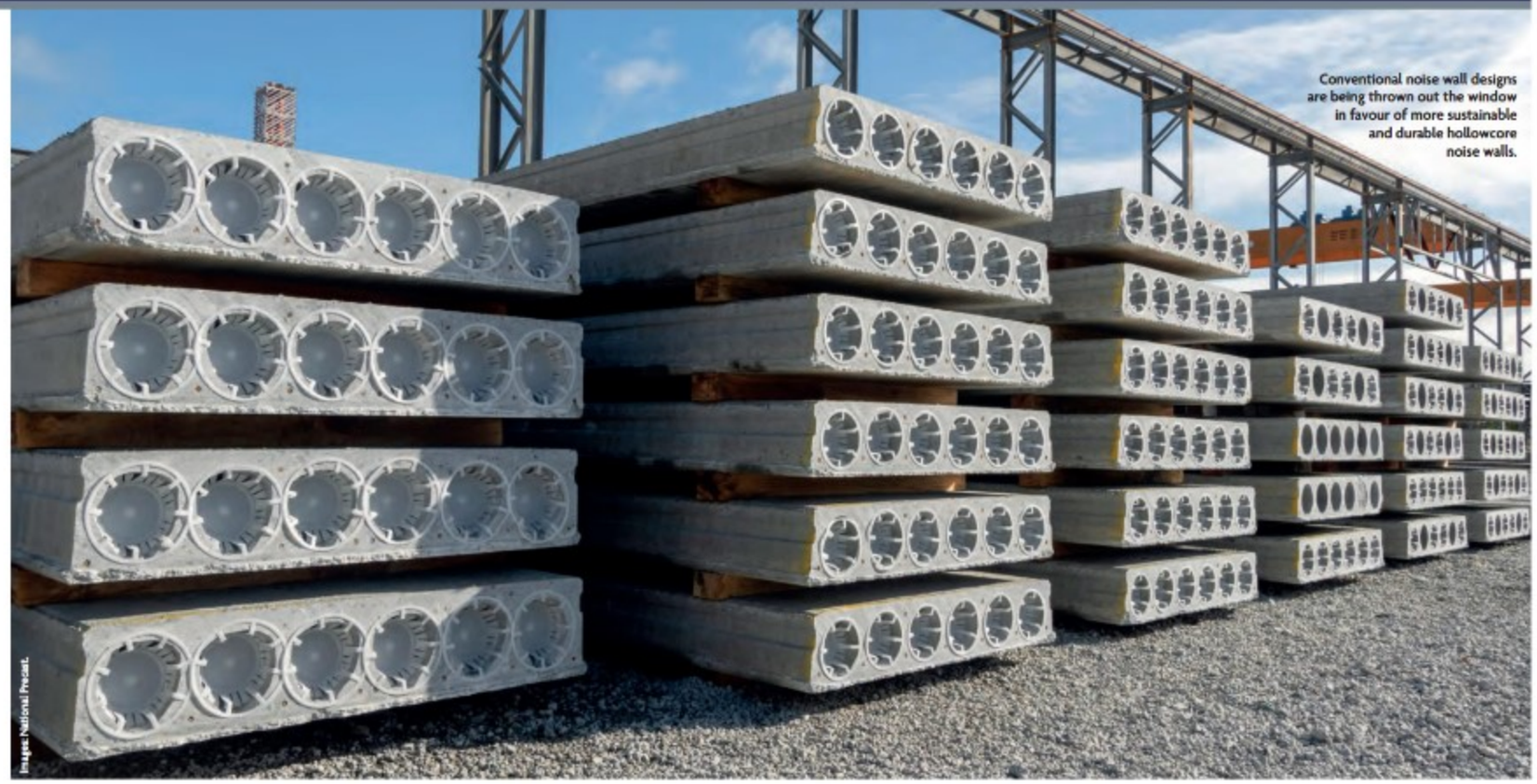
One of the many projects employing this technology is the standout Metronet Thornlie-Cockburn Link project in Western Australia, where Atlas Precast, a National Precast Master Precaster, is pioneering the use of terracotta-coloured hollowcore noise walls.

These walls represent a significant advancement in sustainable and durable infrastructure solutions, reflecting a growing trend toward environmentally responsible construction practices.

The hollowcore design of these concrete planks offers numerous environmental benefits over traditional concrete and alternative material options.

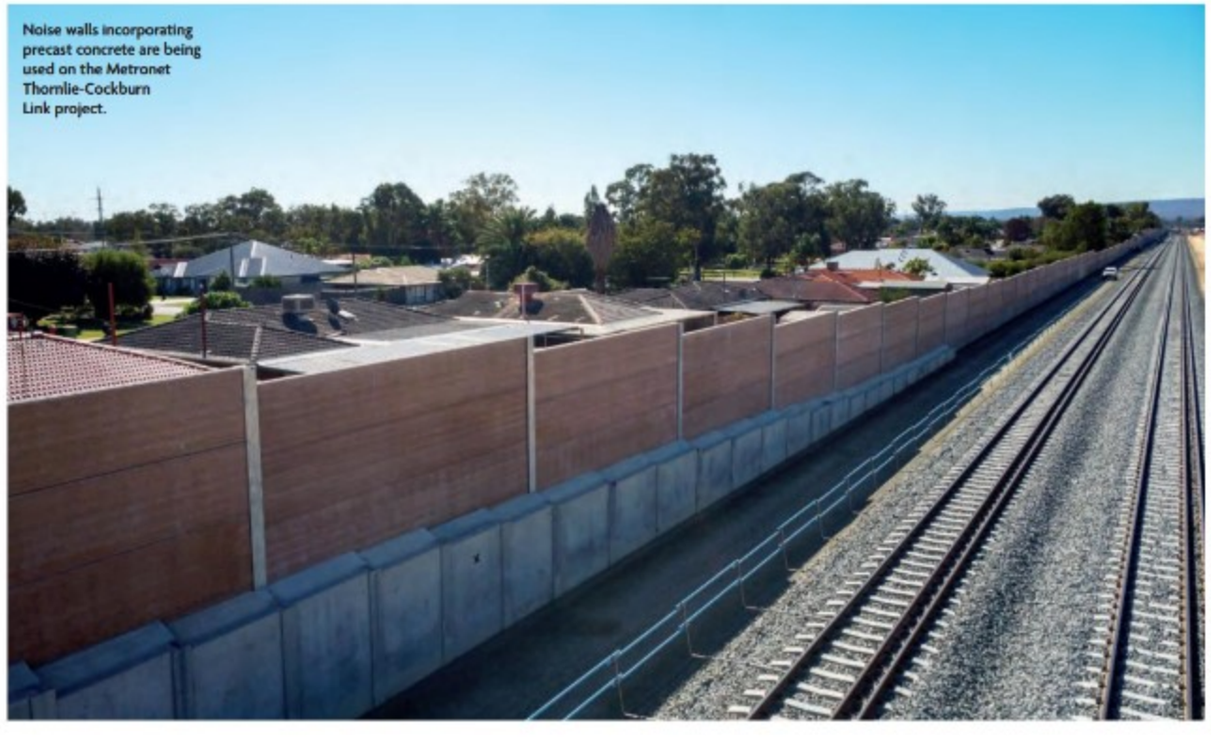
By optimising the use of materials, the planks save about 20 per cent in cement and reduce the weight of steel by 80 per cent. Such material efficiency translates into a remarkable reduction in carbon emissions – specifically, a cradle-to-gate carbon saving of 63,104 kilograms CO_2e.

To put it into perspective, this is akin to the emissions saved from nearly 14 petrol cars driven for a year. This substantial decrease in environmental impact demonstrates the potential of advanced construction materials to contribute to a more sustainable future.



Conventional noise wall designs are being thrown out the window in favour of more sustainable and durable hollowcore noise walls.

Images: National Precast.



Noise walls incorporating precast concrete are being used on the Metronet Thornlie-Cockburn Link project.

"PRECAST CONCRETE DOES NOT SUCCUMB TO ROT, RUST, CORROSION, TERMITES OR FIRE AND IT REQUIRES MINIMAL MAINTENANCE OVER ITS INCREDIBLY LONG LIFESPAN, MAKING IT A COST-EFFECTIVE SOLUTION IN THE LONG TERM."

But the benefits of hollowcore precast concrete walls extend beyond their green credentials. These walls are engineered for durability and longevity, designed to withstand the harsh elements while providing effective noise mitigation. In the context of the Metronet project, these attributes are crucial.

The installation spans almost nine kilometres of rail corridor, with wall heights varying between 2.4 to 5.5 metres based on proximity to residential areas, existing barriers, topography and anticipated noise levels. The choice of hollowcore walls ensures that these variables are addressed with a tailored, effective solution that maintains aesthetic appeal through its distinctive terracotta hue.

Engagement with the community was a cornerstone of the project's planning phase. Residents' concerns about noise and the visual impact of the new infrastructure were met with responsive design and thoughtful implementation.

The use of terracotta-coloured walls, in particular, demonstrates a commitment to not only functionality but also to aesthetic integration into the local environment. This careful consideration likely played a significant role in minimising project impacts and maximising satisfaction among property owners and tenants affected by the construction.

Installation of these noise walls is carried out in stages, allowing for gradual integration into the community and less disruption to daily life.

This phased approach also enables adjustments based on ongoing feedback and environmental monitoring, ensuring that the project's execution aligns with its intended goals.

In comparison to other materials typically used for noise barriers, such as steel or timber, hollowcore precast concrete offers superior noise reduction capabilities. Its mass and density effectively block and absorb sound, protecting communities from the intrusive noise associated with rail and road traffic.

Additionally, unlike timber or steel, precast concrete does not succumb to rot, rust, or corrosion, and it requires minimal maintenance over its lifespan, making it a cost-effective solution in the long term.

The Metronet Thornlie-Cockburn Link project exemplifies how innovative construction materials like hollowcore precast concrete can transform a necessary public utility feature into a sustainable, community-focused solution.

As cities continue to expand and seek new ways to mitigate environmental impacts, the role of advanced materials like hollowcore precast concrete in urban infrastructure is set to increase, marking a new era of sustainable development in public works. ■