



Curved ceiling forms at Gadigal station. Source: Network Architectural.

THE CASE FOR CUSTOMISATION

Getting the Most Out of Metal Ceilings



Kingswood Institute of Applied Technology utilises vibrant yellow powder-coated expanded metal mesh panels in practical training rooms to enliven the space. Source: Network Architectural.

Introduction

With the ability to contribute to acoustic comfort, fire resistance and ease of maintenance, metal ceiling systems are increasingly specified in commercial, educational and public sector developments. However, while their benefits are widely acknowledged, there remains a common perception that customised metal ceiling solutions introduce unnecessary complexity, higher costs and longer lead times when compared to standardised options.

This paper challenges that perception by exploring how custom metal ceilings can in fact support streamlined project delivery while enhancing design outcomes. Far from being a costly indulgence, tailored metal ceiling systems offer architects and specifiers the ability to meet both client expectations and regulatory requirements without compromise. When properly considered during early design phases, custom solutions can achieve a higher standard of visual and functional integration—facilitating improved building performance, sustainability and long-term value.

By reframing customisation as a strategic design tool rather than an obstacle, architects and their collaborators—including engineers, designers and manufacturers—can unlock the full potential of metal ceilings. This whitepaper outlines how a collaborative, partnership-driven approach enables the efficient specification and installation of bespoke systems.

Custom metal ceiling systems give architects and designers the creative freedom to craft distinctive spaces that meet both functional demands and aesthetic aspirations.

Rethinking custom metal ceilings

Despite the growing availability of advanced ceiling systems, lingering misconceptions continue to limit design choices for many architects. Custom metal ceilings are often perceived as prohibitively expensive, overly complex and time-consuming to specify and install. These assumptions frequently lead to a default preference for standardised solutions, which can restrict creative flexibility and prevent projects from achieving their full potential.

In reality, custom metal ceilings can be delivered efficiently and economically thanks to modern manufacturing techniques, local fabrication capabilities and experienced supplier networks. Cost concerns are often misplaced, as tailored systems can reduce material waste, simplify installation sequencing and minimise

long-term maintenance requirements—contributing to both budget certainty and lifecycle performance.

Furthermore, the benefits of customisation extend far beyond visual appeal: bespoke metal ceilings can improve acoustic comfort, durability and the seamless integration of lighting, HVAC and fire safety systems—supporting key Green Star, WELL and NCC compliance targets.

For architects, relying on outdated assumptions can have significant consequences. Standard ceiling options may limit a project's design expression and performance, ultimately compromising the original architectural intent. Misconceptions about cost and complexity, sometimes reinforced by contractors working with outdated information, can deter clients from exploring higher-value solutions.

How do custom metal ceilings reduce waste?

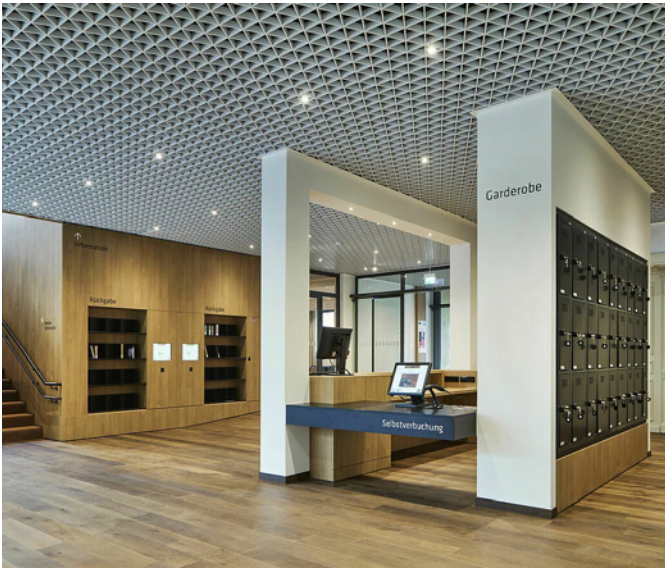
Custom ceilings help reduce waste by aligning design and fabrication to the exact requirements of a project, minimising offcuts and excess material. Unlike standard systems that may require on-site adjustments or result in leftover components, bespoke solutions are manufactured with precision thus ensuring efficient use of resources.

Unparalleled design flexibility

Custom metal ceiling systems give architects and designers the creative freedom to craft distinctive spaces that meet both functional demands and aesthetic aspirations. From material finish to form, every element can be tailored—offering limitless combinations of shapes, colours, textures and integrated services. Below is an overview of the key design options available:

Custom shapes and perforation patterns

- **Geometric perforations:** Create visual rhythm using patterns like hexagons, equilateral triangles or bespoke motifs tailored to the project's design language.
- **Open-cell designs:** An open-cell ceiling is a type of suspended ceiling system made up of a grid of three-dimensional, lightweight metal cells or modules, creating a visually open and lattice-like pattern.
- **Bespoke modules:** Panels can be manufactured flat, curved or faceted to suit unique architectural geometries.



Example of open-cell ceiling (PYTHA by durlum). Source: durlum.

Surface finishes and colours

- **Extensive colour palette:** Choose from unlimited colour options with powder coating or anodised finishes to align with interior schemes.
- **Textural variety:** Options include brushed, satin, matte or mirror-polished finishes for dramatic visual effects.
- **Timber-look options:** Baffle ceilings designed to resemble tree trunks or timber battens bring natural warmth into contemporary interiors without compromising durability.

Decorative and sculptural solutions

- **Organic shapes and textures:** Metal ceilings can be engineered into organic forms with complex curves, delivering a soft, sculptural aesthetic that adds fluidity and elegance to interior spaces.
- **Rippled mirror-finish panels:** Highly reflective surfaces introduce movement and amplify light, enhancing the sense of volume and flow.
- **Metal tube and bronze bulkheads:** These architectural ceiling and wall design elements can be used to frame perimeters or transitions between spaces. Often custom fabricated to integrate with curved or angled geometry.



Bubble design ceiling. Source: durlum.

Expanded mesh and paddle systems

- **Expanded metal mesh ceilings:** Available in custom finishes and colours, mesh ceilings add texture and a sense of transparency while masking services.
- **Paddle ceilings:** Characterised by multidirectional louvres arranged at right angles, paddle ceiling designs provide layered textures and tonal depth.

Acoustic and integrated lighting solutions

- **Baffle ceilings:** Custom-coloured vertical baffles that incorporate integrated lighting, optimising both acoustics and illumination.
- **Integrated lighting:** Luminaires—such as linear lights, downlights or backlit panels—can be embedded within the ceiling panels, baffles or structural profiles, becoming part of the metal ceiling's overall design and construction.
- **Acoustic raft ceilings:** An acoustic raft ceiling is a type of suspended ceiling system designed to absorb sound and improve the acoustic quality of a space.



A combination of durlum S7 perforated mesh panels and opaque acrylic panels in an acoustic ceiling system helps mitigate noise from machinery while maintaining natural light permeation throughout at Kingswood Institute of Applied Technology. Source: Network Architectural.

Acoustic performance without compromise

Through the use of custom perforations and baffle configurations, architects can achieve targeted sound absorption while maintaining design integrity. Innovations in perforated metal ceiling technology, combined with high-performance backing materials, have made it possible for these systems to match or exceed the acoustic effectiveness of conventional acoustic tiles.

Perforated metal panels work by allowing sound waves to pass through their surface, where the energy is absorbed rather than reflected. When perforation levels

exceed 20% of the surface area, the ceiling becomes acoustically transparent, meaning sound absorption is primarily handled by the material installed behind the panels.¹ A wide variety of perforation patterns—such as circles, bars, and slats—are available to suit different design visions. Testing by the Industrial Perforators Association (IPA) confirmed that even with varying open areas (23% to 46%), the presence of perforated metal panels had virtually no impact on the performance of the acoustic backing, preserving full sound absorption across all frequencies.²

Durability, sustainability and efficiency

Beyond acoustics, metal ceilings offer significant long-term performance benefits. They are inherently durable, with high resistance to moisture, corrosion and impact, making them ideal for high-traffic or high-humidity environments. These systems require minimal upkeep, resulting in reduced ongoing maintenance costs and fewer disruptions over the building's life cycle. Their longevity and resistance to wear also mean fewer replacements over time.

From a sustainability perspective, many metal ceiling products are made using recycled content and are fully recyclable at end of life. In addition, integrated lighting and HVAC elements can be incorporated into the ceiling system, enhancing energy efficiency. Reflective finishes can help optimise natural light distribution.

Together, these factors make custom metal ceilings not only a high-performance acoustic solution but also a cost-effective, environmentally responsible investment.

The power of partnership

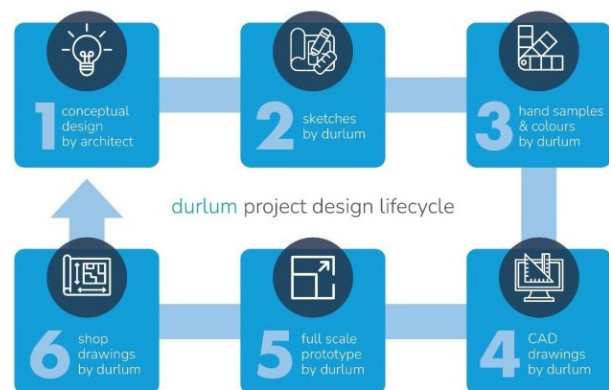
Designing a bespoke metal ceiling involves more than choosing finishes or configurations—it requires close collaboration between architects, engineers, designers and manufacturers. When these stakeholders work together from the outset, it's easier to align creative ambitions with technical realities. This collaborative process not only helps ensure that aesthetic and functional goals are met, but also streamlines project delivery, reduces risk and enhances the overall outcome.

Architects may have a clear design vision but can run into challenges when it comes to execution—whether due to material constraints, budget pressures or site conditions. Partnering with manufacturers and technical experts early in the process allows design intent to be translated into solutions that are both buildable and high-performing. It bridges the gap between concept and construction, ensuring that creative ideas remain intact without compromising on functionality or compliance.

Early engagement with suppliers also simplifies the specification and approval process. Detailed CAD

drawings, rendered prototypes and fast turnaround on colour and material samples make it easier for architects, clients and builders to make confident decisions. This proactive approach helps prevent delays caused by redesigns or last-minute substitutions. It also enables performance and compliance factors—like acoustics, fire ratings, ventilation, lighting and accessibility—to be considered and integrated from the start.

Figure 1. durlum Project Design Lifecycle



Gadigal Railway Station – Showcasing the flexibility of custom metal ceilings

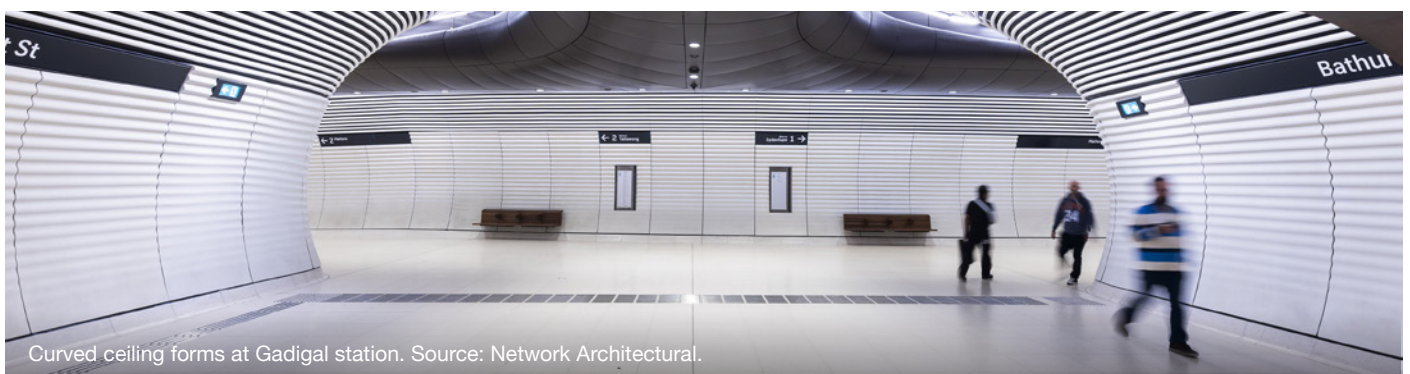
The new Gadigal Railway Station, part of the Sydney Metro development, is a striking example of how custom metal ceilings can elevate architectural outcomes in complex, high-traffic environments. Located deep beneath Sydney's CBD, the 250-metre-long underground station required a ceiling solution that could meet the project's demanding structural, aesthetic and wayfinding requirements—while reflecting the cultural and civic importance of the site.

Designed by Cox Architecture, the station features over 5,000m² of durlum bespoke metal ceilings, including curved bronze bulkheads and horizontal white aluminium tube linings. These elements are not only visually distinctive but also serve to guide passengers intuitively from entrances to platforms. The flowing, organic forms—described as “transitioning like a cobra”—demonstrate how customised ceiling systems

can contribute to spatial clarity, calmness and cohesion in complex underground environments.

Crucially, the success of the ceiling installation relied on close collaboration between the architect, the installer (Foxville Projects Group) and the manufacturer (durlum). Particular attention was given to the precision of the curved sections, where ceilings transition between passageways and platforms. This required iterative design development, detailed prototyping and ongoing technical support to ensure each panel met the exacting tolerances and visual intent.

The result is a ceiling system that exemplifies how partnership-driven design, combined with the flexibility of custom metal ceilings, can deliver exceptional functional and architectural outcomes on large-scale infrastructure projects.



Curved ceiling forms at Gadigal station. Source: Network Architectural.



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Network Architectural is committed to supporting architects throughout every phase of the design and construction process. Their durlum Project Design Lifecycle provides a structured, expert-led approach to metal ceiling systems that guides projects from initial concept through to final installation. This comprehensive framework ensures that each stage—whether design development, compliance or implementation—is managed with precision and a deep understanding of architectural intent.

Architects who engage with Network Architectural benefit from access to dedicated design consultants who offer tailored advice on concept development and technical feasibility. The company provides an extensive portfolio of materials, finishes and integrated ceiling solutions—such as acoustic systems and lighting integration—to meet a wide range of aesthetic and functional requirements. In addition, Network Architectural offers detailed guidance on compliance with Australian Standards, fire safety regulations and sustainability goals, ensuring that all designs meet the required performance criteria.

By streamlining the production and installation process, Network Architectural helps reduce lead times and cost inefficiencies. Their collaborative partnership model allows designers to fully realise the creative and functional potential of custom metal ceilings—without the typical barriers of complexity or delay. With Network Architectural as a project partner, architects can expect a seamless, results-driven experience that supports innovation and excellence in ceiling design.

Designing a bespoke metal ceiling involves more than choosing finishes or configurations—it requires close collaboration between architects, engineers, designers and manufacturers.

REFERENCES

- ¹ Browne, Sean. "Controlling noise with metal ceiling systems." Construction Specifier. <https://www.constructionspecifier.com/controlling-noise-with-metal-ceiling-systems> (accessed 2 April 2025).
- ² Ibid.

All information provided correct as of April 2025.