

# THE ULTIMATE GUIDE TO NOISE CONTROL FOR YOUR OFFICE

EBOOK



# THE ULTIMATE GUIDE TO NOISE CONTROL FOR YOUR OFFICE

## How offices can overcome the challenge of poor acoustics

This Ultimate Guide aims to provide health professionals with the noise control information they need to improve the acoustics in offices, boardrooms and foyers.

### THE IMPACTS OF POOR ACOUSTICS ON STAFF AND PRODUCTIVITY

The open-plan office brings many benefits to businesses, including increased communication and easier collaboration between team members. Unfortunately, it also has many negatives – such as the distractions from open-plan office noise.

Common open office noise annoyances include:

- Colleagues' telephone conversations
- Personal conversations
- Sudden laughter
- Telephone ringtones
- Doors slamming
- Eating noises
- Business conversations
- Coughing, sneezing, sniffing, and
- Music.

When you consider that it takes employees around **15 minutes to regain focus** once they are interrupted, you can see that these distractions result in a substantial amount of lost productivity. Many people use noise-cancelling headphones as a solution – which defeats the purpose of an open-plan office!

It's not just the distracting nature of office noise that causes problems. In a recent survey, 64% of respondents said they suffer from a lack of privacy at work. 51% stated they had overheard sensitive information, and over half of the respondents were reluctant to speak about confidential business-sensitive or personal issues for fear they would be overheard.

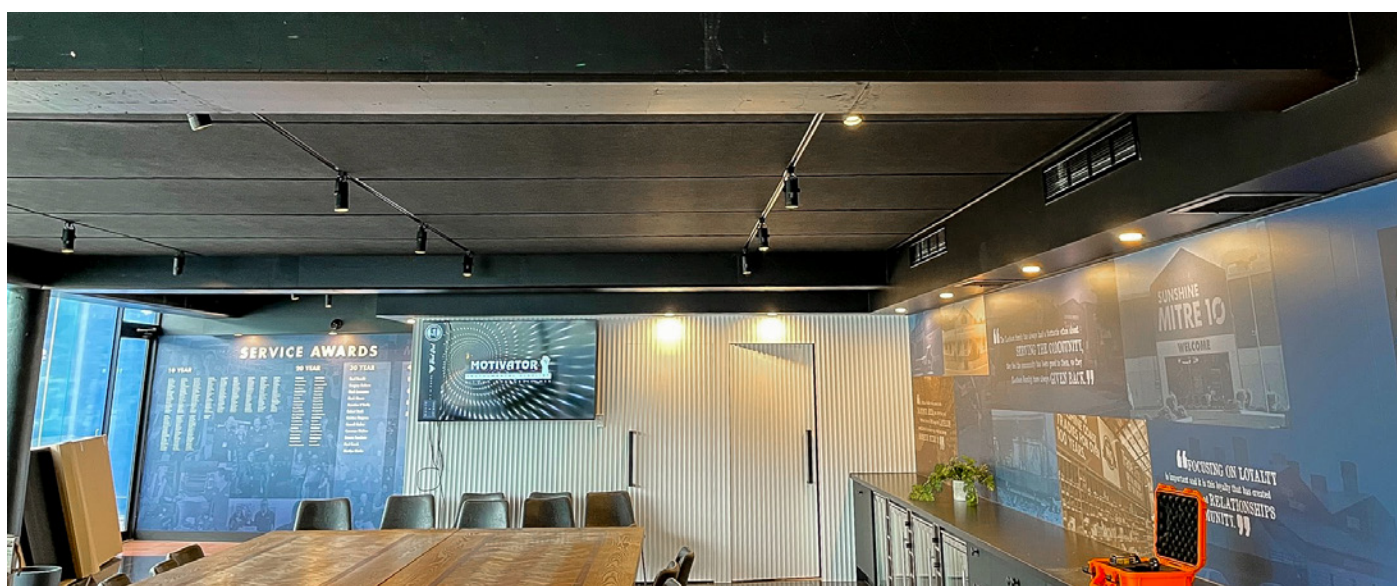
So, what can be done to help employees who suffer from noise in an open office situation? Plenty!

### HOW CAN YOU SOUNDPROOF AN OPEN OFFICE?

Avenue Interior Systems offer a range of discreet commercial noise control solutions. Our desk dividers and booths still allow for open office collaboration but absorb excess noise and create individual workspaces that improve privacy and office soundproofing.

Our office noise reduction office products include:

- Calando Booth
- Calando Desk
- ECO Desk Divider
- ECO Phone Booth



# THE ULTIMATE GUIDE TO NOISE CONTROL FOR YOUR OFFICE

## Top 10 ways to reduce noise in your open plan office

### CLEVER IDEAS TO HELP YOU AIM FOR HAPPIER, MORE PRODUCTIVE EMPLOYEES

Noise is one of the most common complaints of employees working in corporate office settings. And that's especially the case in open-plan offices, where employees are situated together in a large space with no separation.

If you've ever worked in such an environment, you'll know how distracting the constant activity of a busy workplace can be.

But a noisy workplace can be more than just an annoyance. Multiple studies have shown that too much noise in the office can seriously reduce productivity and increase stress, not to mention lower both job satisfaction and employee morale.

**Research shows 49% of workers report not being able to concentrate easily, while the average person loses 86 minutes per day due to distractions. – Steelcase, 2014**

A study from the University of Sydney in 2013 found that lack of sound privacy was the biggest frustration for employees.

If you or your employees are suffering from any of these symptoms, it might be time to consider one or more of the following 10 ways to reduce noise in your open plan office.

#### 1 USE DESK PARTITIONS

A tried-and-true solution, desk partitions and cubicles have helped businesses of all sizes separate employees and reduce overall office noise. Even low-level wall partitions that don't wholly close workers off have proven effective.

#### 2 INSTALL ACOUSTIC WALL PANELS

Sound absorbing wall panels are incredibly effective in combatting noise pollution in the workplace. Though not all wall panels are aesthetically pleasing, luckily, there are some more modern design options available, such as a custom Calando Panel.

#### 3 IMPROVE YOUR OFFICE'S INSULATION

Installing sound insulation material can reduce noise transfer between areas of your office. This noise reduction strategy makes the most sense during an office renovation or tenant fit-out, as it is time-consuming and messy work.

#### 4 CONTROL BACKGROUND NOISE

One proven noise reduction strategy for open office spaces involves fighting noise with noise. It seems counterintuitive, but ambient noise (or white noise) played in the background has consistently been shown to help mask unwanted sounds. Effective types of background noise include rainfall and waves crashing on the beach.

#### 5 INCORPORATE A DEDICATED QUIET SPACE

Occasionally, it's good for employees to get away to a quiet place within their workspace. While empty conference rooms can make for great makeshift work sanctuaries, some businesses incorporate dedicated quiet spaces within their office layout.

#### 6 GET INNOVATIVE WITH YOUR OFFICE LAYOUT

Another way to reduce noise in an office space is to get creative with your overall office layout. For example, desks situated close together in clusters help compartmentalise noise, especially when separated by some soft furnishings. Even simpler, perhaps some of the noisier office equipment (e.g., copy machine, printer, or fax machine) can be situated in a separate room away from workers.

#### 7 PROVIDE NOISE-CANCELLING HEADPHONES

If redesigning the office is not a feasible option, perhaps the easiest way to reduce noise in your open office space is by purchasing high-quality noise-cancelling headphones. Some quality brands even boast 100% noise reduction by using microphones and special processing to create an opposite sound wave to the one headed for an employee's eardrums. The only downside? Reduced collaboration through not being able to easily converse with your colleagues.

#### 8 INVEST IN SOUND-FRIENDLY FURNITURE

Couches, lounge chairs, partitions and filing cabinets can all impact the acoustics of open office space – especially high-backed couches or enclosed booths that essentially separate a person from the rest of the room.

#### 9 PROVIDE PLANTS, PLANTS, AND MORE PLANTS!

Well-placed plants have proven to be effective in reducing noise levels in an open office setting. The larger the plant, the more significant its impact. As a bonus, living walls and green walls are not only ideal for sound reduction; they're also increasingly popular in commercial design with their obvious aesthetic benefits and overall impact on air quality.

#### 10 INSTALL NOISE-FRIENDLY FLOORING

Hard flooring surfaces like natural wood, porcelain and ceramic can wreak havoc within a work setting, thanks to the massive noise pollution they create. While carpet is an ideal flooring solution for noise reduction, vinyl flooring is a versatile alternative offering ease of maintenance and variety of design options.

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## What's the difference between an echo and reverberation?

An echo is a single reflection of a soundwave off a distant surface. Reverberation is the reflection of sound waves created by the superposition of such echoes.

### ECHO

Humans can only hear an echo when the distance between the sound source and the reflecting body is greater than 15 metres.

An echo is usually clear and easily distinguished because of the distance and time the sound wave travels. Reverberations do not usually have enough distance or time to travel which makes them pile up on each other, making the sound very difficult to comprehend.

Echoes can be used to determine the distance of a reflecting object, such as a large building or mountain, if the ambient temperature and humidity are known. Reverberation does not allow enough travel time to be used to measure distance.

### REVERBERATION

With reverberation, sound waves pile on top of each other, arriving at the receiver's ear at different times. This makes it difficult to comprehend or understand the sound.

This piling up of sound waves also increases the sound energy in a room. The build-up of energy will eventually excite the structure and increase the overall volume in a room.

Reverberation in a room will cause people to raise their voices to compensate for their inability to understand speech. This further increases the volume in the room, as everyone fights to be heard.

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## Understanding the Lombard Effect

Discovered in 1911 by French otolaryngologist Dr Etienne Lombard, the Lombard Effect was first documented in his article “Le Signe de l'elevation de la voix”.

The focal point of Dr Lombard's article is that when a patient was engaged in conversation and presented with intense noise, they would elevate the level of their speaking voice. Interestingly, he noted that the patient was unaware of the change in their speaking voice volume.

Therefore, the Lombard Effect is the involuntary adjustment of vocal intensity when background noise levels change.

Excited by his discovery, Dr Lombard initially thought this was an ideal way to ferret out malingerers pretending to be deaf to neglect their work duties or make false injury claims! As the years passed, the Lombard Effect became more and more common in society – without many of us knowing about it.

The last time you had a conversation in a noisy cafe, restaurant or even on a street corner when a noisy bus or car drove past, you will have automatically adjusted your vocal intensity – that's the Lombard Effect.

## MODERN OUTCOMES FROM RECOGNISING THE LOMBARD EFFECT

Even over 100 years ago, Dr Lombard recognised that his effect could be used for more than just diagnosing hearing loss (or recognising someone faking it). Some of the uses today include:

- Understanding the Lombard Effect – particularly the changes associated with Lombard speech – has been instrumental in developing software for automatic speech and speaker recognition
- Assisting with the study of phonetics and linguistics, and
- Application in architectural acoustics and design to reduce unwanted noise and improve speech intelligibility indoors.

## HOW THE LOMBARD EFFECT AFFECTS YOU

Some scientific articles suggest that a speaker influenced by the Lombard Effect does not try to increase their vocal intensity so their companion can hear them – but so they can hear themselves!

Increasing vocal intensity (whether to hear yourself or be heard) increases the amount of noise in a room. And the more people there are in a space, the more effects are in play. Of course, everyone wants to be heard – but this can create a very uncomfortable environment.

Think about the last time you had a great night out. You woke the next day with a sore throat and ringing ears. You instantly thought the worst and wondered if you were getting sick, but without knowing it, you had been impacted by the Lombard Effect.

While enjoying a meal with your friends or maybe boogieing on the dance floor, you have involuntarily increased your voice so you can hear yourself – leading to your sore throat. And where did the ringing in your ears come from? It came from everyone else doing the same things you did. The volume in the room became so loud that it potentially exceeded noise limitations, causing hearing damage.

Today there are many products available that can improve a venue's acoustics. Most of these products are:

- Aesthetically pleasing and customisable
- Designed with the end-user in mind, and
- Pin, hook, and loop friendly.



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## Improving the video calling experience with acoustic solutions

### REVERBERATION MINIMISED WITH DECORATIVE SOUNDPROOFING

#### THE CHALLENGE

Our client BMA Coal was experiencing what many of us have in recent times: a severe echo when participating in Zoom meetings. The speaker's voice echoed back to them and around the room, becoming so distracting that other participants in the discussion were missing critical comments.

With mostly hard surfaces in the room, the sound had nowhere to rest. That made it continually bounce around the room – and the more voices speaking, the more bouncing soundwaves there were.

To make matters worse, too much noise in a room triggers the Lombard effect, where people naturally increase their voice volume to hear themselves. The louder the room was getting with echo, the louder people spoke just to hear themselves.

BMA Coal contacted Avenue Interior Systems to create a solution for the uncomfortable space.

#### THE AVENUE SOLUTION

Using photos of the impacted room, our Project Consultants created an acoustic solution for BMA. Avenue Interior Systems recommended two acoustic products: Calando acoustic fabric and ECO Wall tiles.

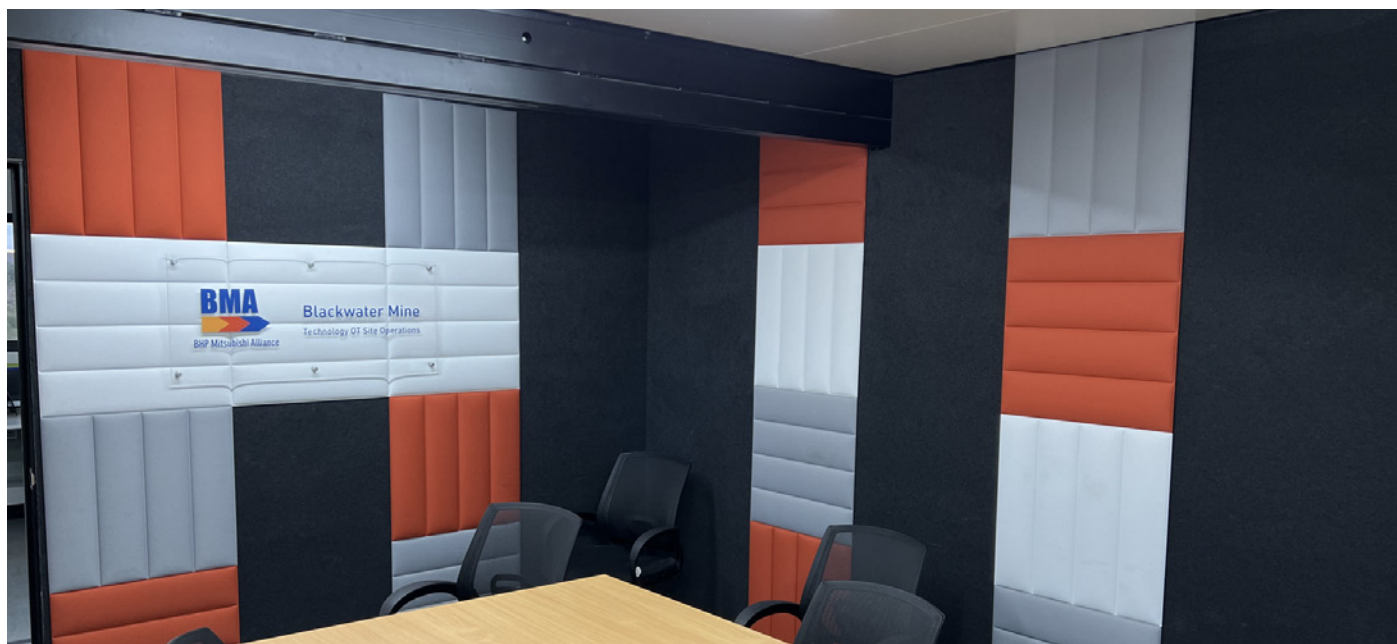
Calando acoustic fabric is a decorative soundproofing fabric for walls. The surfaces are hook and loop friendly and pin receptive, and the acoustic fabric is available in many colours – you can even custom print directly onto your Calando acoustic fabric.

ECOWall Panel is a sound absorbent panel that can be hung as wall panels or ceiling baffles, or suspended in a standard ceiling grid. Available in various sizes, colours and fabric finishes, ECOWall can double as a soundproofing solution and a notice board.

BMA Coal Blackwater opted for the Calando acoustic fabric and 36 individual 600x600 mm ECOWall tiles to apply to the noisy space. They selected Trevia CS fabric – made of 100% flame retardant fibres and yarns – and matched it to the company's corporate colours.

#### RESULTS ACHIEVED BY AVENUE

As BMA Coal discovered with their noise control solution, acoustically treating a space doesn't need to be boring! Avenue Interior Systems have many colours and custom options available.



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## Soundproofing a noisy boardroom to improve usability

As one of the largest independent suppliers of hardware and timber in Queensland, Mitre 10 have supplied quality building materials and hardware to Australians for over 100 years.

Sunshine Mitre 10 Nambour was struggling with excessive noise – not in the hardware and timber part of the store as you might think, but in their boardroom.

### THE CHALLENGE

The boardroom featured tiled floors, a full glass front, Gyprock internal walls, and a concrete ceiling – all hard surfaces that tend to reflect sound. Before the room was modernised, it featured a suspended ceiling. Unfortunately, after the space was renovated (which included removing the ceiling tiles), it was found to be even more reverberant thanks to the room's only absorption having been removed.

Sunshine Mitre 10 contacted Avenue Interior Systems for help turning their unusable, wasted space into an aesthetically pleasing, acoustically sound boardroom.

### THE AVENUE SOLUTION

After initial discussions, Sunshine Mitre 10 sent Avenue photos and the dimensions of their boardroom. This information allowed the team to complete modelling to establish both the current reverberation time, and the projected reverberation time after installing absorptive products.

The Avenue team installed 25 mm thick black Calando Panels between the ceiling beams and lighting strips on the ceiling area, turning the boardroom back into a usable space. Importantly, installing the Calando Panels brought the room up to Australian standards.

Calando Panels are 100% acoustic polyester panels that are ideal for use on walls or ceiling surfaces. The panels' versatility allows for complete design flexibility, with the option to use standard colours (white, black, or grey) or personalise with your branding or even add a photo.

### RESULTS ACHIEVED BY AVENUE

The entire soundproofing project wowed the Mitre 10 team. Amazingly, from their initial enquiry to installation took only one week – well inside regular project times! The boardroom is now used for meetings and conferences and the improvements to the space have exceeded expectations.



Hi Katelyn,

*This is just a follow-up note to thank you for your prompt attention to our project at Nambour. Your installers were excellent and did an amazing job; the finished product not only makes the room serviceable now due to the echo being all but eliminated but also aesthetically the panels with the shadow-line joint finishes of the room off perfectly.*

*I have included some photos of the finished product.*

Once again – thank you.

Deen Saint  
Group Trade Manager

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## Reducing noise transfer in a busy office

### AVENUE IMPROVES ACOUSTICS AND TEAM HARMONY

"It's all working well. Avenue's solution is definitely good, has worked and we have no complaints."

EVO Heat, suppliers of energy-efficient pool and spa heaters, operate their award-winning business from a two-storey office. The downstairs area is home to reception and the administration staff, while upstairs is a large open plan office with the remainder of EVO Heat's staff.

### THE CHALLENGE

The noise generated from the upstairs open plan office travelled down the open stairwell, disrupting and distracting the administration team. The hard floors in the reception area only accentuated this noise from upstairs. Both storeys of the office building are constructed from hard and highly reflective surfaces.

The client wanted a solution to reduce noise in the open office and reduce noise transfer from one area to another.



### THE AVENUE SOLUTION

The Avenue team began the process by completing a site visit to assess the challenges, measure up the facility, and discuss our client's requirements directly.

The site visit led the Avenue team to use a combination of our 'standard' products and custom-made products for EVO Heat, including:

- Calando Panel
- ECO Wall
- Room dividers
- Acoustic fabric covers

Creating the solution involved many conversations directly with our client to discuss colours and layout.

The Avenue team used our ever-reliable Calando Panel on the ceilings of the open office and in the reception area to absorb and muffle the noise in the space. ECO Wall tiles on the end walls add a decorative element to the offices while providing extra noise absorption in the space.

Custom-made sound attenuating and absorbing dividers were installed above the stairway opening nib wall to reduce noise transmission to the downstairs reception area.

EVO Heat contacted the Avenue team in June 2021, and the final install was complete in October 2021. The Avenue team worked closely with our client throughout the process to ensure a seamless result.

### RESULTS ACHIEVED BY AVENUE

With Calando Panels from Avenue, the EVO Heat team are enjoying a quieter, more comfortable working environment which makes it easier for their staff to perform at their best. In fact, results have been so good that EVO Heat has now purchased more ECO Wall tiles to treat their showroom.

And with EVO Heat now looking for a larger space to house their growing business, they have already requested that Avenue Interior Systems treat the new space acoustically! We can't wait to work with the team again.



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## Acoustic products

Some acoustic products we may recommend to improve your healthcare space include:

- Calando Panel
- Custom Calando Panel
- Calando Acoustic Fabric
- Calando White Ceiling Tiles

### CALANDO PANEL

One of our most popular and versatile acoustic products, Calando Panels are available for application on walls and ceilings. Calando Panel can blend into your environment or stand out (see Custom Calando Panel).

Calando Panel is made from highly durable 100% polyester and comes in various thicknesses for optimal acoustic performance.

<b>Composition</b>	Sound absorbing material made from polyester. Contains minimum 45% previously recycled polyester fibre (from PET bottle flake).			
<b>Recyclability</b>	Environmentally friendly and recyclable			
<b>Panel Dimensions</b>	1200mm x 2400mm			
<b>Tolerance</b>	(+5mm) x (+10mm)			
<b>Thickness</b>	25mm	50mm	75mm	100mm
<b>Tolerance</b>	(+/-6%)	(+/-6%)	(+/-6%)	(+/-6%)
<b>Weight</b>	2300gsm	3800gsm	4050gsm	4300gsm
<b>Microbial Resistance</b>	ASTM G21-15			
<b>Growth Rating</b>	0 (no growth). Calando Panel does not promote the growth of mould and mildew			



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## Acoustic products

### CUSTOM CALANDO PANEL

An upgrade to our basic acoustic polyester panel, Custom Calando Panel maintains all the benefits of the 100% polyester panel. Available in 25mm, 50mm, 75mm and 100mm thicknesses, Custom Calando Panel allows you to use your favourite photo and logo, or even add a texture. No more hiding your acoustic treatment in the background – Custom Calando Panels put your style and acoustic treatment on display.

Composition	Sound absorbing material made from polyester. Contains minimum 45% previously recycled polyester fibre (from PET bottle flake).			
Recyclability	Environmentally friendly and recyclable			
Panel Dimensions	1200mm x 2400mm			
Tolerance	(+5mm) x (+10mm)			
Thickness	25mm	50mm	75mm	100mm
Tolerance	(+/-6%)	(+/-6%)	(+/-6%)	(+/-6%)
Weight	2300gsm	3800gsm	4050gsm	4300gsm
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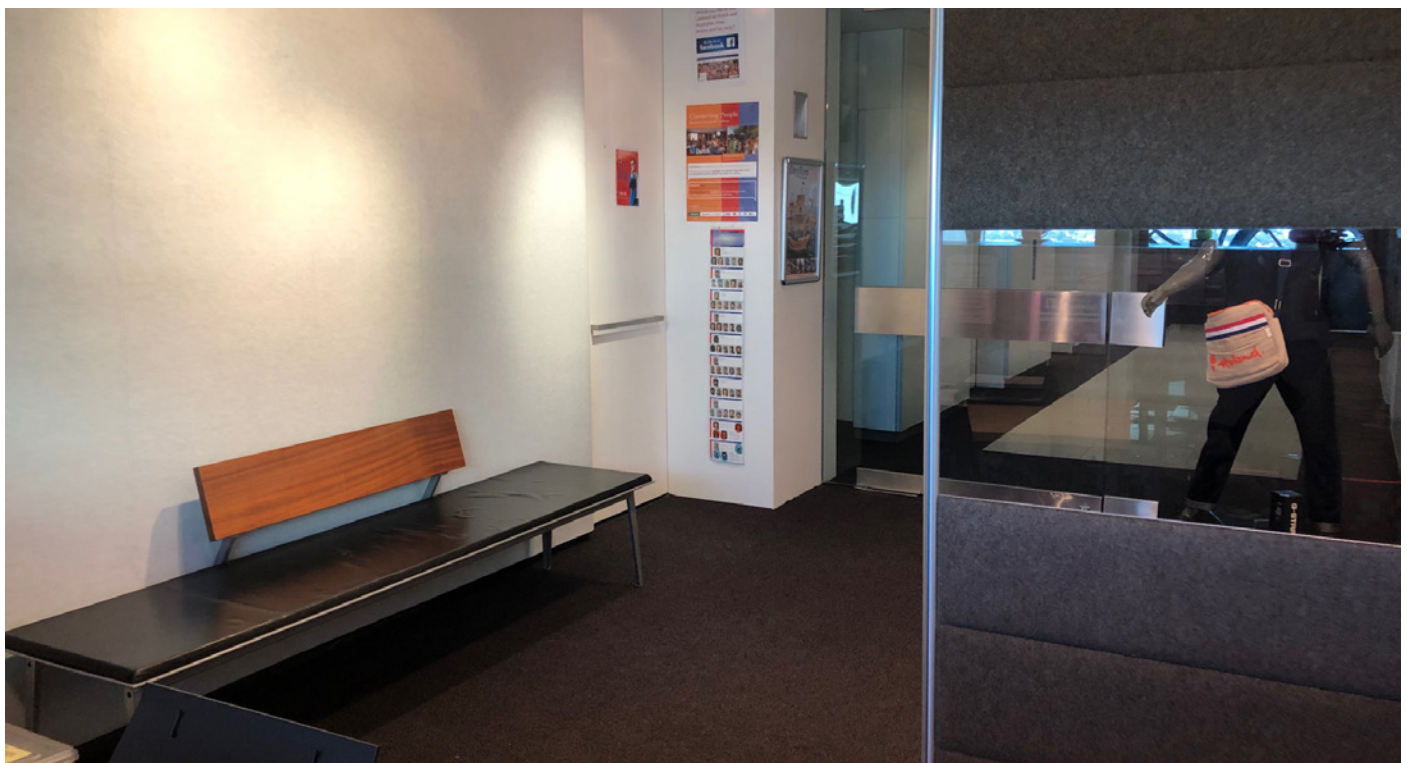
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## Acoustic products

### CALANDO ACOUSTIC FABRIC

This acoustic and decorative wall fabric reduces reverberation and echo whilst creating a durable and creative wall finish. The 100% polyester acoustic fabric gives you the freedom to create a unique look in any space.

Composition	Sound absorbing material made from polyester. Contains minimum 60% previously recycled polyester fibre (from PET bottle flake)		
Recyclability	Environmentally friendly and recyclable		
Panel Dimensions	1.22m x 25m	Thickness	10-12mm
Tolerance	(+5mm) x (+10mm)	Weight	1680gsm



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## Acoustic products

### CALANDO WHITE CEILING TILES

100% polyester, acoustically rated ceiling tiles, Calando White Tiles are designed to fit into standard ceiling grid systems. These tiles are lightweight whilst extremely durable and available in a square edge or a rebated edge, depending on your aesthetic tastes.

Composition	Sound absorbing material made from polyester. Contains minimum 45% previously recycled polyester fibre (from PET bottle flake).		
Recyclability	Environmentally friendly and recyclable		
Panel Dimensions	25mm thickness	Weight	2300gsm



# THE ULTIMATE GUIDE TO NOISE CONTROL FOR YOUR OFFICE

## Noise Awareness Checklist

Questions	Yes	No
1. Is a raised voice needed to communicate with someone about one metre away?	<input type="checkbox"/>	<input type="checkbox"/>
2. Do your workers notice a reduction in hearing over the course of the day? (This may only become noticeable after work, for example, needing to turn up the radio on the way home)	<input type="checkbox"/>	<input type="checkbox"/>
3. Do your workers complain that there is too much noise, or that they can't hear instructions?	<input type="checkbox"/>	<input type="checkbox"/>
4. Do your workers experience ringing in the ears or a noise sounding different in each ear?	<input type="checkbox"/>	<input type="checkbox"/>
5. Do any long-term workers appear to be hard of hearing?	<input type="checkbox"/>	<input type="checkbox"/>
6. Do you find your meeting room unusable?	<input type="checkbox"/>	<input type="checkbox"/>
7. Do participants in web based meetings struggle to understand instructions?	<input type="checkbox"/>	<input type="checkbox"/>

If you answered **yes** to any of these questions, you need to carry out a noise assessment to improve the acoustic environment for your workers, suppliers, and clients.