Acoustic Design for Restaurants

Why acoustics in restaurants matter

Would you like 'sonic seasoning' with that? Research shows that sound in restaurants is becoming increasingly important and can affect not only the customer experience, but also the bottom line.

Dining is too noisy

Noise is still the second most common complaint amongst restaurant-goers, behind poor service, according to Zagat's *State of American Dining* in 2015. In fact, over the last decade or two, many restaurants have become so loud that some critics now regularly report on the noise levels alongside the quality of the food.

Apparently, the *San Francisco Chronicle* was the first to include regular noise ratings in restaurant reviews in 1990 and *The New York Times* started to do the same in 1998. In 2008, the US food critic Tom Sietsema, did the same.

"More than bad food, more than tipping quandaries, more than someone wondering if a free meal should follow a rodent sighting in a dining room, the most frequent concern I get from readers involves loud restaurants. The complaints about noise have crescendoed so high in recent years that I've decided to add noise ratings to my dining column… Henceforth, as I make my restaurant rounds, a discreet sound-level meter will be used to determine the average decibel count," Sietsema says.

Sietsema included his noise ratings using this noise rating system:

- Quiet (under 60 dB)
- Conversation is easy (60 – 70 dB)
- Must speak with raised voice (71 – 80 dB)
- Extremely loud (over 80 dB)

To put these values into some kind of perspective, those levels equate to these common sounds:

- 50 dB is the sound of a moderate rain shower
- 60 dB equates to normal conversation
- 70 dB is equivalent to the noise made by a loud vacuum cleaner
- Noise levels greater than 80 dB are like city traffic

Sustained noise over 80 dB is potentially hazardous if not for the diners themselves, then definitely for the restaurant and bar staff.

In addition, **every 10 dB increase in background noise is subjectively perceived as a doubling in loudness.** Therefore, a restaurant with noise levels averaging at 80 dB will seem twice as loud as a restaurant where the noise level is recorded at just 70 dB.

One of Australia's best known food writers, and long-time restaurant reviewer for *The Sydney Morning Herald* and *The Age*, Jill Dupleix, says there's no question that restaurants are getting noisier. She thinks it would be good for restaurant reviews and publications like *The Good Food Guide* to give people a hint about the noise levels they'll encounter.

A 10 db INCREASE

is perceived as double

Dupleix recalls the time that she and fellow reviewer Terry Durack went to a new restaurant-bar to do a review.

"Terry and I review constantly and we tend to review at times when people typically go to these places," she says.

"And so we were sitting opposite each other at a small table, and it was so noisy, we had to get our phones out and call each other to discuss what we'd order…We couldn't hear each other on our phones, so we ended up texting each other throughout the entire meal."

The acoustic challenge of the way we dine

The way society wants to eat out has changed a lot over the last 10 years, and with it the economics of running a restaurant. Dupleix notes some big trends, many of which have an impact on design.

"Dining is becoming far more casual. There's been a shift away from taking reservations, trying to get more people through; more shared tables and plates, less formatted dining, more flexible dining, more bar dining. The way a restaurant is designed has to change to cope with the way society wants to eat out."

At the same time, dining spaces have become more minimalist with tables placed closer together for social cohesion, and hard surfaces everywhere.

"There's fashion involved there too; perhaps a more Scandinavian and Amish ethic," she says. "Tablecloths have all but disappeared and as much as they may say that's a design element, that's an economic decision."

The *Wall Street Journal* reported on this trend in 2010, noting that: "Many of the most cutting-edge, design conscious restaurants are introducing a new level of

The new noisemakers: Restaurants housed in cavernous spaces with wood floors, linen-free tables, high ceilings and lots of windows...

noise to today's already voluble restaurant scene. The new noisemakers: Restaurants housed in cavernous spaces with wood floors, linen-free tables, high ceilings and lots of windows — all of which cause

sound to ricochet around what are essentially hard-surfaced echo chambers.

Upscale restaurants have done away with carpeting, heavy curtains, tablecloths, and plush banquettes gradually over the decade, and then at a faster pace during the recession, saying such touches telegraph a fine-dining message out of sync with today's cost-conscious, informal diner. Those features, though, were also sound absorbing."

Dupleix does not remember dining out in a silent, carpeted, draped and tableclothed room with fondness. "It made me hate a quiet restaurant and love a noisy restaurant."

However, she also believes we are reaching a crisis point because of a generational shift. On one hand: an aging population that has the money but can't eat in 60 to 70% of the restaurant offerings. On the other: the next generation of chefs and floor staff, who have grown up with noise and music.

"Traditionally chefs played loud music while prepping and then once the first customer came in, the floor staff would switch it off. Now it's almost as if they turn it up.

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In fact, I think some chefs work harder on their play lists than their food."

The result is more noise while dining. "It's free-range noise now."

"If you're there to get together with friends or family and you can't interact or you can't talk to someone; you're focusing on their lips and you're nodding your head, vainly hoping it's in time with the things they're saying: that is isolating us versus bringing us together," she says. "It's an anti-social act to have noise in a place that's designed to get people together; where the table is the central core of its business."

Sound affects our taste and spending

While too much noise may make dining anti-social, it can also affect what we taste. Charles Spence from Oxford University's Department of Experimental Psychology, says that the evidence now clearly demonstrates that both background noise and loud music can impair our ability to taste food and drink.

"It would appear that noise selectively impairs the ability to detect tastes such as sweet and sour while leaving certain other taste and flavour experiences relatively unaffected," he writes in a paper about noise and its impact on the perception of food and drink.

Research conducted by Cornell University supports this. "Our study confirmed that in an environment of loud noise, our sense of taste is compromised," said Robin Dando, PhD, assistant professor of food science at Cornell University.

"Interestingly, this was specific to sweet and umami tastes, with sweet taste inhibited and umami taste significantly enhanced. The multisensory properties of the environment where we consume our food can alter our perception of the foods we eat."

"Our study confirmed that in an environment of loud noise, our sense of taste is compromised."

Robin Dando

Acoustics in restaurants: why does it matter?

Research conducted by Unilever R&D and the University of Manchester, revealed similar results. It seems people lose their sense of taste when listening to white noise. When the participants liked the background sound, it enhanced their enjoyment of the flavour of the food. When they disliked the background sound, it reduced their enjoyment.

Russell Keast, an associate professor of food and sensory science at Deakin University, roughly replicated the Manchester study, in a laboratory in Melbourne, in 2013.

His findings? Noise reduced our ability to detect acid, salt and sugar, but our overall ability to detect bitterness was enhanced. "But this is a laboratory experiment," Keast told journalist Richard Cornish, "and there aren't too many restaurants as loud as this [90 dB]."

Comparing noise levels in many Australian restaurants is likely to prove that statement wrong.

Acoustics explained: how they work in restaurants

Restaurant designers face a difficult challenge: how to create buzz and ambience, while still letting people hear each other speak. Here are the key acoustic considerations.

It is difficult to define clear acoustic rules for restaurants: each one is unique and trying to create its own atmosphere and identity.

The target audience, the location, the space and the food are critical factors that the acoustic environment must align with. Catching dinner with friends after work before a fun night on the town, requires a completely different atmosphere than does a romantic dinner for two, or a formal business dinner meeting. The sound needs to match the restaurant.

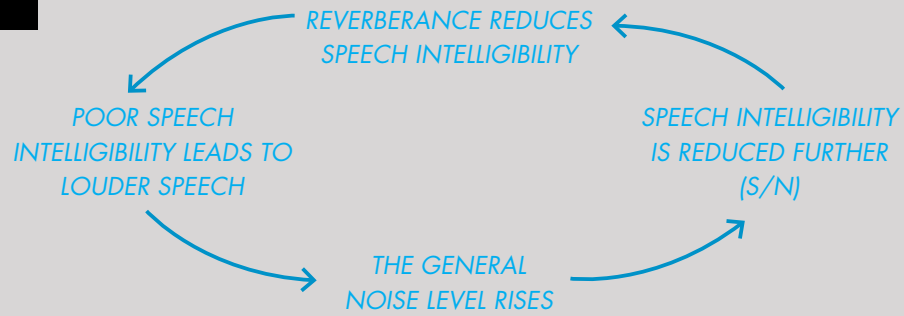
As a result, when designing the acoustics for restaurants, it's important to know as much as possible about what the restaurateur is trying to achieve. Will customers sit at long refectory tables or in small cosy alcoves, for instance?

With communal refectory tables, the hard surfaces and noise from other guests creates the atmosphere, 'the buzz'; while alcoves can feel private and isolated, giving guests a sense of being in their own little world.

The problem is that today, restaurant acoustics are often unplanned and first tested and experienced on opening night. The trend away from soft furnishings to hard surfaces has created restaurants where sound is allowed to travel freely and reverberation times become excessively long. And with something called the Lombard Effect in play, noise levels in that kind of environment just keep rising.

The Lombard effect is an acoustic phenomenon that causes people to alter their speech in noisy environments, such as in noisy restaurants. Diners speak loudly to be heard by their companions and in turn diners at neighbouring tables also turn up the volume in order to be heard over their neighbours. The process continues until decibel levels typically reach well over 80 dB.

While noise inside is becoming increasingly talked about, the noise pollution that may affect neighbouring residents or businesses is also still important. This means that adjoining walls, ceilings and floors all have the necessary sound insulation values.



Materials influence the sound

The materials used in a space influence the ‘tone colour’. Large glass facades, hard floors and walls, bare tables and chairs reflect sharp, clear sounds, whereas soft materials such as seating upholstery, curtains or drapes, tablecloths, carpets or rugs produce a softer atmosphere with a ‘mushy’ sound.

The positioning of materials also influences the sound experience: the more protrusions there are, the more they can ‘colour’ the sound in the room.

While choosing materials and furniture for their acoustic impact is important, making sure they’re fit for purpose is too. Choices should reflect the type of food served and the eating habits of the patrons. If there is a high risk of spills, table coverings may result in high maintenance costs and hard, smooth surfaces may be preferable.

However, sound absorbing materials do not need to be restricted to traditional soft furnishings. Feature artwork can be created using materials that absorb sound; rugs can be hung on walls as decoration, rather than be placed on floors. Special sound absorbing linings and panels can be painted in any colour or printed with unique designs or images.

Explaining terms: sound absorption, sound diffusion and sound insulation

Calculating acoustics involves determining how much a material can absorb sound, known as its **sound absorption** coefficient, alpha (α_w). If a material's sound absorption coefficient is 0 then it is totally reflective. If the sound absorption coefficient is 1, then the material is totally absorbing.

This ability of a material to absorb or reflect sound is typically different at different sound frequencies. This balance of sound absorption properties is critical when it comes to acoustic comfort in room spaces.

However, some materials not only have the ability to absorb and reflect sound — they also have the ability to diffuse or 'spread' sound. This is called **sound diffusion** and is related to the surface texture of a material.

A rough or uneven surface is a good sound diffuser. Sound waves that are reflected back from a rough or uneven surface are spread out in many directions and this helps to dissipate or break down the sound energy.

Sound insulation is the ability of an object to resist sound transmission through it. The greater the sound insulation, the less noise will be transmitted from inside the restaurant and outside to neighbours.

The use of high, sound insulating wall and ceiling systems minimises the transmission of noise between spaces and helps reduce background noise levels.

The amount of energy transmitted, as a ratio of the total energy, is known as the sound transmission coefficient (a non-dimensional value between 0 and 1), which translates into a sound reduction index, R-value, for the wall.

If a wall has a sound transmission coefficient of 0.01 i.e. it allows 1% of sound energy to be transmitted through it, then the sound reduction index (R), is 20dB. To achieve an R-value of 50dB, the wall must have a sound transmission coefficient of 10^{-5}. That is, it should only allow 0.001% sound energy to pass through.

AVOIDING EXCESSIVE NOISE IN RESTAURANTS

1 *Spread and dampen the sound using alcoves and physical barriers that break up the path of the soundwaves and dissipate their energy.*

2 *Separate seating areas for large, loud groups of more than eight from small intimate groups of two to four people.*

3 *Don't design seating areas near speakers, open kitchens, or kitchen machines like coffee grinders and blenders.*

4 *Use fabrics and other soft furnishings wherever possible – it doesn't have to be old-fashioned carpet, curtains and white tablecloths. There are plenty of retro and modern fabrics such as leather and hide, linen, silk, bamboo and rubber that can be used to create unique and trending looks.*

5 *Use sound absorbing wall linings and create sound absorbing feature walls that can also be turned into art.*

6 *Use sound absorbing ceiling linings or create ceiling islands and/or baffles of sound absorbing materials where ceilings are very high.*

7 *Consider masking or blocking potential background noise, such as traffic and aircraft, when designing outdoor areas.*

8 *Reduce impact sound through the use of rubber caps on chair legs and softer impact floor coverings on main walkways.*

9 *Turn down the music!*

AS/NZS 2107:2000 ACOUSTICS REQUIREMENTS FOR HOSPITALITY BUILDINGS

ZONE	EXAMPLES	RECOMMENDED DESIGN SOUND LEVEL, L_{Aeq}, dB(A)	RECOMMENDED REVERBERATION TIME (T), s
1	Sleeping areas near minor roads	30 – 35	–
2	Sleeping areas near major roads	35 – 40	–
3	Conference rooms (up to 50 persons)	35 – 40	0.7 – 0.9*
4	Conference rooms (50 to 250 persons)	30 – 35	0.8 – 1.0*
5	Bars, lounges, foyers and recreational areas	45 – 50	As low as practical
6	Restaurants, cafés and games rooms	45 – 50	≤1.0
7	Common rooms, dining rooms	40 – 50	≤1.0

Note: 1) Recommended reverberation times are referred to the medium frequencies (e.g. 500Hz or 1000Hz). *Recommended reverberation times for conference room depends on the volume of the room. For the room volume of 250m³, target reverberation time is 0.8, while that for the room volume of 1000m³ is 1.0.

BUILDING CODE OF AUSTRALIA REQUIREMENTS FOR SOUND INSULATION OF WALLS IN HOTELS (CLASS 3) BUILDINGS

ROOM ON SIDE 1	ROOMS ON SIDE 2					
	HABITALE ROOM IN SOLE OCCUPANCY UNIT	PUBLIC CORRIDOR, PUBLIC LOBBY, STAIRWAY	PLANT ROOM, LIFT SHAFT	BATHROOM IN SOLE OCCUPANCY UNIT	KITCHEN IN SOLE OCCUPANCY UNIT	SERVICE RISERS
Habitale room in sole occupancy unit	$R_w + C_{tr} \leq 50$	$R_w \leq 50$	$R_w \leq 50$ and discontinous construction	$R_w \leq 50$ and discontinous construction	$R_w \leq 50$ and discontinous construction	$R_w + C_{tr} \leq 40$
Public corridor, public lobby, stairway	$R_w \leq 50$	—	$R_w \leq 50$	$R_w \leq 50$	$R_w \leq 50$	$R_w + C_{tr} \leq 25$
Plant room, lift shaft	$R_w \leq 50$ and discontinous construction	$R_w \leq 50$	—	$R_w \leq 50$ and discontinous construction	$R_w \leq 50$ and discontinous construction	$R_w + C_{tr} \leq 25$
Bathroom in sole occupancy unit	$R_w + C_{tr} \leq 50$ and discontinous construction	$R_w \leq 50$	$R_w \leq 50$ and discontinous construction	$R_w + C_{tr} \leq 50$	$R_w + C_{tr} \leq 50$	$R_w + C_{tr} \leq 25$
Kitchen in sole occupancy unit	$R_w + C_{tr} \leq 50$ and discontinous construction	$R_w \leq 50$	$R_w \leq 50$ and discontinous construction	$R_w + C_{tr} \leq 50$	$R_w + C_{tr} \leq 50$	$R_w + C_{tr} \leq 25$
Service risers	$R_w + C_{tr} \leq 40$	$R_w + C_{tr} \leq 25$	$R_w + C_{tr} \leq 25$	$R_w + C_{tr} \leq 25$	$R_w + C_{tr} \leq 25$	—

Note: 1) Sole occupancy unit is defined as a room or a suite of rooms in a Class 3 building that includes sleeping facilities 2) Habitale room in sole occupancy unit includes bedroom, living room, lounge room etc, and excludes a bathroom, laundry, water closet, pantry, walk-in wardrobe etc

Calculating acoustics: why 'averages' don't tell the whole story

One common way to calculate acoustics is to take an average of how a material absorbs and reflects different sound waves (under laboratory conditions). This average is known as the Noise Reduction Coefficient (NRC). But, as with any averaged figure, it doesn't tell the whole story.

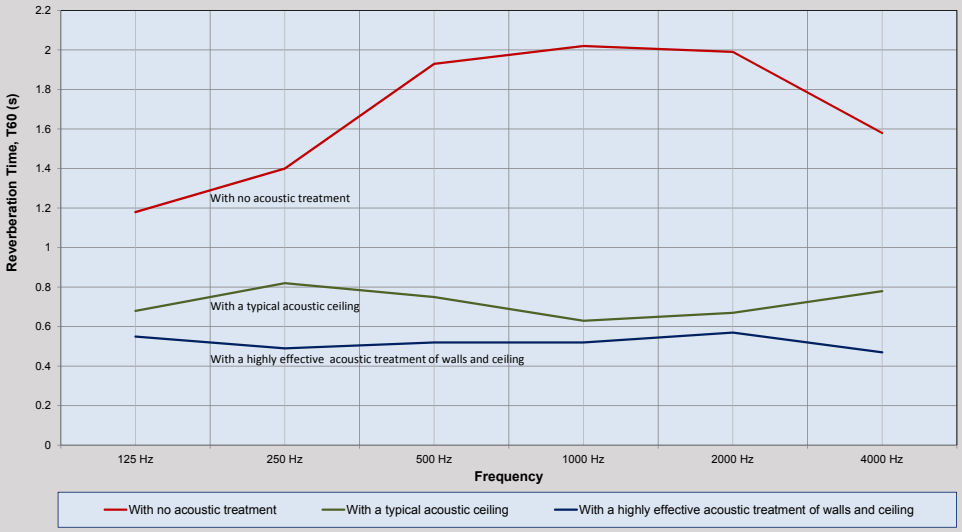
In simple terms, an NRC (Noise Reduction Coefficient) is the average of a material's absorbing or reflective qualities at four different sound frequencies (250hz, 500hz, 1000hz, and 2000hz).

However, designing room acoustics based on NRC can deliver poor acoustic performance in practice. That's because different materials can perform differently at different frequencies. As a result, two materials with the same NRC may not perform the same way in reality.

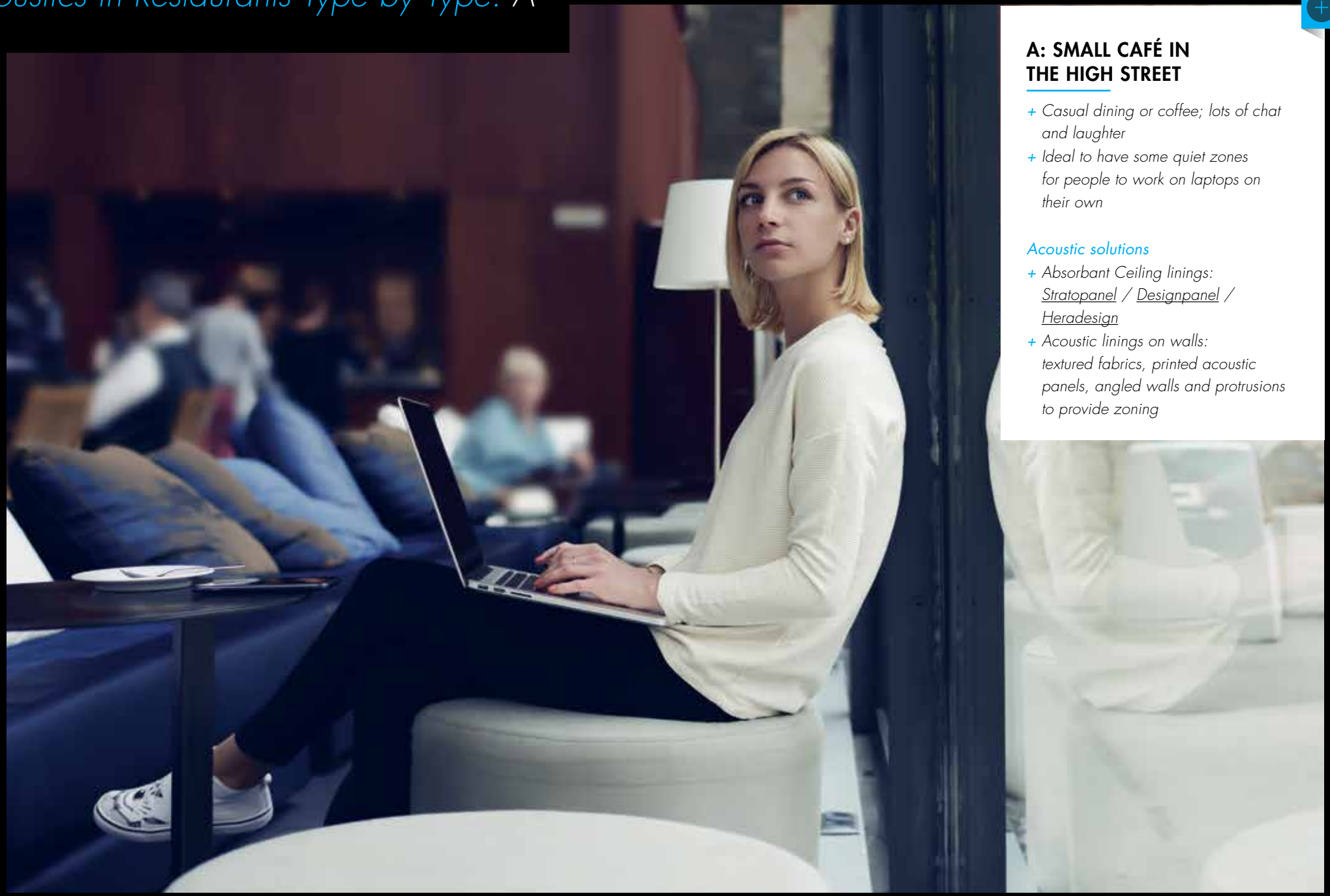
A more sophisticated way to measure acoustic performance is to calculate what is called a weighted sound absorption coefficient (α_w). It's calculated by comparing sound absorption coefficients to a standard curve to give a better picture of a material's performance across all of the important frequencies.

The higher the α_w figure, the more evenly a material absorbs sound across all of the important frequencies.

Reverberation time comparison Calculated using Knauf Reverberation Time Calculator for 15m long, 10m wide and 3m high dining area in a restaurant with hard and smooth surfaced floor and walls, lightly furnished.



Acoustics in Restaurants Type by Type: A



A: SMALL CAFÉ IN THE HIGH STREET

+ *Casual dining or coffee; lots of chat and laughter*
+ *Ideal to have some quiet zones for people to work on laptops on their own*

Acoustic solutions

+ *Absorbant Ceiling linings: Stratopanel / Designpanel / Heradesign*
+ *Acoustic linings on walls: textured fabrics, printed acoustic panels, angled walls and protrusions to provide zoning*

ACOUSTIC RETROFIT CONCEPTS*[1]
A: CASUAL RESTAURANT

Restaurant: *Affamato*
Location: *Armidale, NSW*
Designer: *Michael McPhillips, Magoffin & Deakin Pty Ltd Architects*

Overlooking a park, at the edge of the CBD, Affamato is one of Armidale's most vibrant restaurants. A single high-ceilinged room with a casual relaxed atmosphere, on weeknights, the rectangular indoor dining area is filled to the brim with pizza lovers.

However, hard flat surfaces dominate the restaurant and the exposed concrete ceiling and floor, masonry and glazed walls, all contribute to a noisy environment where conversation can be barely intelligible. Kitchen noise also infiltrates across an open counter.

The owners have tried to rectify the problem with a few make-shift panels angled at the corners of the dining area ceiling. They have also suspended fabric on the ceiling to absorb/diffuse some of the noise.

This concept first addresses the hard, flat surfaces that bounce sound off in every direction without absorbing it by cladding some of the walls with Knauf Heradesign 15mm panels painted in dark brown paint. The panels are mounted in a zigzag pattern to disperse and diffuse sound as well as absorbing it.

We also decided to replace all blackboards with DesignPanel Micro plasterboard fixed to insulation filled panels and painted with blackboard paint, to increase the amount of absorbent surfaces, as well as still function as blackboards. The new acoustic blackboard will also absorb some noise coming from the open Kitchen.

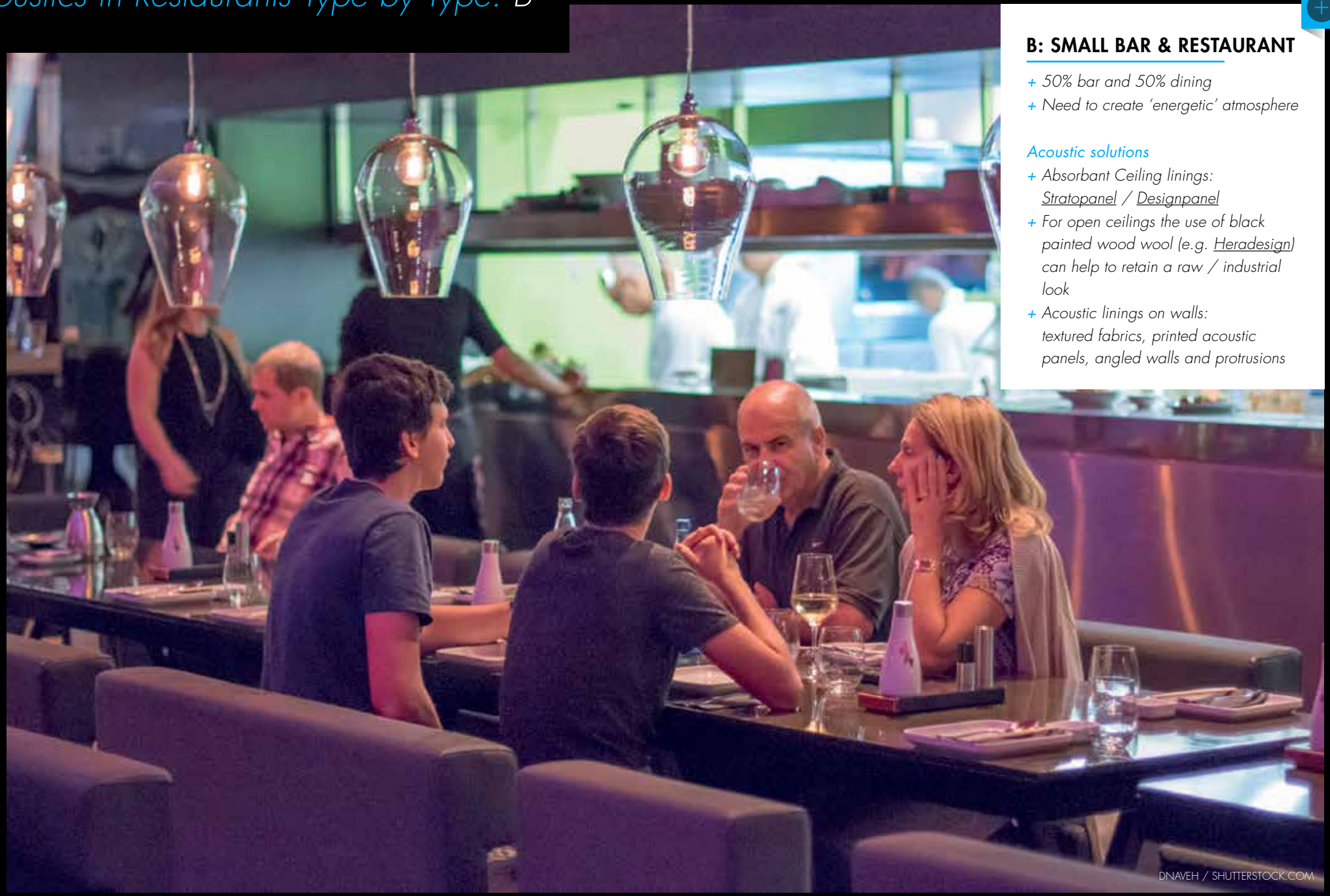
Due to the compactness of the restaurant, we wanted to keep the ceiling acoustic treatment simple and not clutter the space. We decided on a uniform undulating ceiling that would work aesthetically and acoustically. Knauf Stratopanel (Cleaneo) seemed a good choice for its built-in air purification and acoustic properties.

The panels are individually curved and mounted on a FlexiTrack system, with insulation above, creating a wave-like effect that extends the idea of the existing suspended fabric and acts as a counterfoil to the rigid geometry of the room.

Pendant up/down light fittings are suspended over tables to help create a sense of intimacy and also help to bounce conversations around the table.

[1] *Winning concept entry in the 2014 Dine Hear Competition*

Acoustics in Restaurants Type by Type: B



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B: SMALL BAR & RESTAURANT

+ *50% bar and 50% dining*
+ *Need to create 'energetic' atmosphere*

Acoustic solutions

+ *Absorbant Ceiling linings: Stratopanel / Designpanel*
+ *For open ceilings the use of black painted wood wool (e.g. Heradesign) can help to retain a raw / industrial look*
+ *Acoustic linings on walls: textured fabrics, printed acoustic panels, angled walls and protrusions*

ACOUSTIC RETROFIT CONCEPTS*[2]
B: BAR/CAFÉ

Restaurant: *Gill's Diner*
Location: *Melbourne, VIC*
Designer: *Phil Burns, MArch, RMIT*

Gill's Diner is an industrial space with high ceilings and many parallel, acoustically reflective surfaces such as concrete and glass.

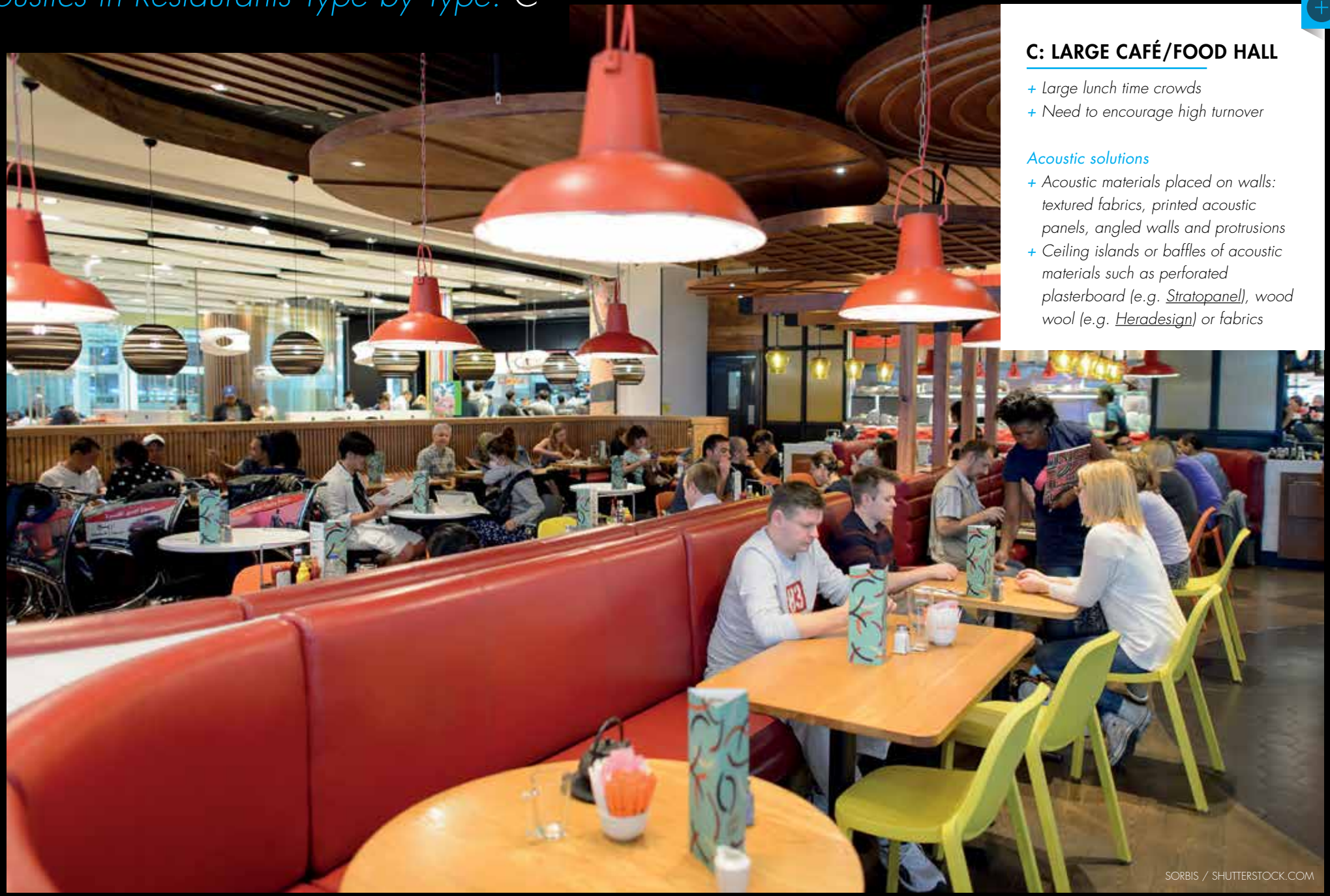
This scheme, inspired by the comeback of sparkling red Lambrusco wine, proposes to install Knauf Stratopanel (Cleaneo) high in the roof to absorb some of the sound bouncing between the beams. Suspended through the perforations of this board, giant red, flocked circles of Heradesign panels are hung at differing angles, confusing the sound and bouncing it in different, random directions.

Currently sectioned off by a thin, full height glass wall, the proposed design partially screens the kitchen with a Stratopanel (Cleaneo) feature wall that tapers off to plain plasterboard for a patterned wall.

A variety of seating options are provided: public and open in the centre of the space, semi-private tables and more private, intimate tables created with tall banquette seat backs. Clad in red-flocked Stratopanel (Cleaneo), that gently curve at the top to 'cuddle' the patrons, the seat backs also function as an acoustic barrier, to again confuse, bounce and absorb extra sound created at that table and those surrounding it.

[2] *Concept entry from the 2013 Dine Hear Competition*

Acoustics in Restaurants Type by Type: C



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C: LARGE CAFÉ/FOOD HALL

+ *Large lunch time crowds*
+ *Need to encourage high turnover*

Acoustic solutions

+ *Acoustic materials placed on walls: textured fabrics, printed acoustic panels, angled walls and protrusions*
+ *Ceiling islands or baffles of acoustic materials such as perforated plasterboard (e.g. Stratopanel), wood wool (e.g. Heradesign) or fabrics*

ACOUSTIC RETROFIT CONCEPTS*[3]
C: CAFÉ/FOOD HALL

Restaurant: *Little Creatures Brewery Hall*
Location: *Perth, WA*
Designer: *Michael Phillips and Jason McLeod*

The Little Creatures Brewery Hall is a Fremantle icon: a long, voluminous space situated between two, tall, gable-pitched warehouses that were purpose-built in the 1980's to manufacture yachts for the Americas Cup.

It features a rich mixture of retained historical elements such as steel walkways and polished concrete floors intermingled with functioning brewery equipment. However, the trade-off to this wonderfully authentic use of materials is that when noise levels rise with the energy of the crowd, the sound reverberates throughout the space from one unyielding surface to another. At busy times a healthy ambience grows beyond comfortable levels.

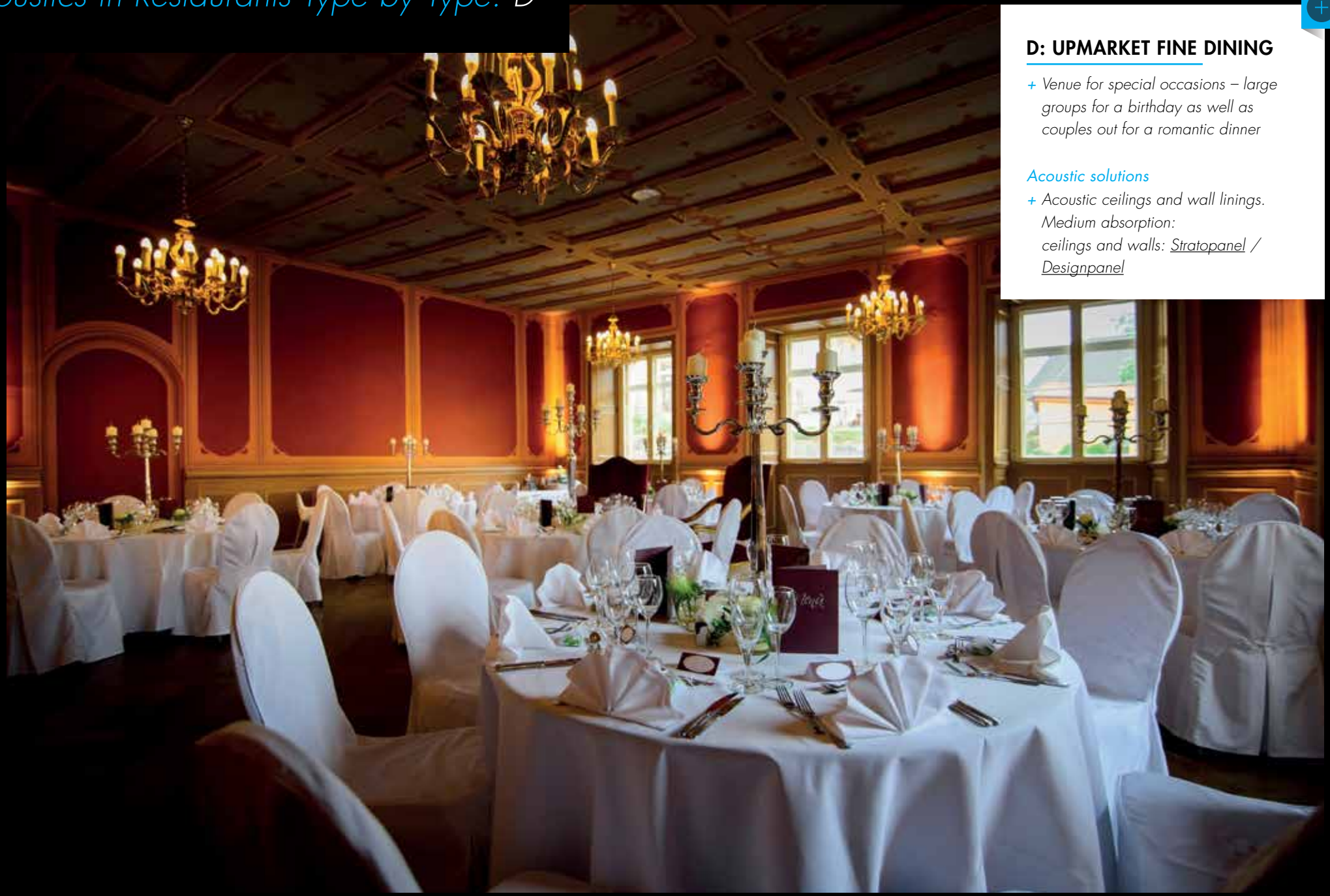
This concept uses the Stratopanel (Cleaneo) in the dining booths above and below the mezzanine as well as adjacent to the kitchen area. The panels would help to aesthetically enhance the space, remove odours and air pollutants as well as provide much needed sound absorption.

However, the centerpiece of this concept are sculptural cloud forms accompanied by winged cherubs that will appear to hover over the bar space, dining and entrance areas. The clouds are formed from clustered boxes of varying sizes made from Knauf Heradesign. Heradesign panels have an attractive textured surface, are lightweight and will require minimal framing and support to achieve these sculpted configurations.

Within selected boxes, feature lighting may be installed, reflecting bursts of light from within and enhancing the heavenly appearance. The undulating surfaces achieved are also perfect for dispersing sound.

[3] *Concept entry from the 2014 Dine Hear Competition*

Acoustics in Restaurants Type by Type: D

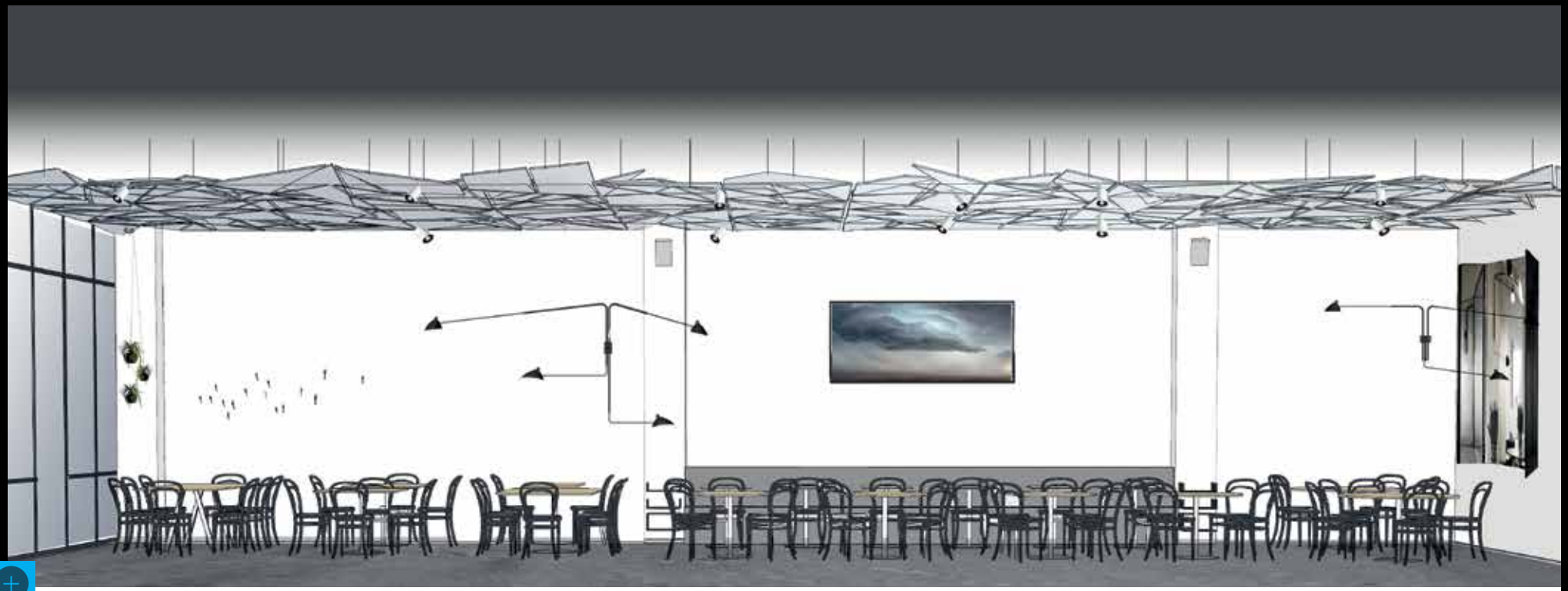


D: UPMARKET FINE DINING

+ *Venue for special occasions – large groups for a birthday as well as couples out for a romantic dinner*

Acoustic solutions

+ *Acoustic ceilings and wall linings. Medium absorption: ceilings and walls: Stratopanel / Designpanel*



ACOUSTIC RETROFIT CONCEPTS*[4]
D: FINE DINING

Restaurant: Golden Fields
Location: St Kilda, VIC
Designer: Phoebe Baker–Gabb of Foolscap Studio

Taking inspiration from the voluminous, dramatic clouds that form the Golden Fields identity, this design seeks to improve the acoustics of the restaurant through the creation of an undulating cloud-like surface of Knauf acoustic panels poised above diners.

The long, linear restaurant is a well-designed and beautiful space. However, it's clad with hard, smooth materials; from the marble bar and up-stand, to the concrete-lined floor and ceiling. These flat surfaces cause sound to reverberate around the narrow space making it difficult for diners to hear one another.

The proposed design employs the Knauf ceiling panels as both an acoustic tool and an aesthetic feature to create a varied and visually interesting surface that compliments the existing design as well as decreasing the reverberation.

The primary panel is the Knauf Design panel, with a circular perforation, forming the majority of the fractured surface. Its perforations allow a small amount of ambient light to flow through, creating a soft glow of light from within the 'cloud'. Stronger light flows through the divisions at the edges of the panels that also trap sound within the void created between the panels and the existing ceiling.

Stratopanel (Cleaneo) is the secondary panel, which, as well as reducing odour, airborne pollutants and noise, has a wider perforation pattern that allows adjustable downlights to be attached easily to its underside. The panels are suspended from thin aluminium rods affixed to the existing ceiling and are painted in a soft, muted palette that subtly references the image of the cloud.

[4] *Winning concept entry from the 2014 Dine Hear Competition*

Workplace design in action

Aerial

AERIAL

Location: Melbourne, Australia
Architect: Meme Design

Aerial is a destination hospitality events venue, which began as a half constructed concrete shell with existing apartments above. This posed a number of structural and acoustic constraints, as did the client brief for an extremely durable and elegant space whose character could be quickly changed to suit weddings through to corporate launches.

To help, Knauf Stratopanel 8/18Q was used.

Oscillate Wildly

OSCILLATE WILDLY

Location: Sydney, Australia
Proprieter: Karl Firla

When chef Karl Firla took over Newtown icon Oscillate Wildly, one of the first things he did was gut the place, and lighten it up. While the look made sense when the venue first opened, Firla wanted to keep loyal patrons as well as capture a new market.

One design element that remained was the bare, checkerboard floor. As an acoustic counterpoint to that, white Heradesign panels were used.

The result is a win-win for business clientele, in particular, who are now a key component of Oscillate's demographic. "We're doing a corporate function in our private space every second week," Firla told Food Service News. Smaller business meetings are common downstairs in the restaurant, too.

RESTAURANT ALUDDEN

Location: Sweden
Architect: Andreasson Arkitektkontor Göteborg

With large window sections surrounding the restaurant guests at the Swedish Aludden Restaurant, the right sound absorbing materials are of paramount importance.

The solution was found with Contur Micro which is a demountable acoustical ceiling installed in a concealed grid. In addition to excellent sound absorption and uniform aesthetic, the Contur ceiling offers an ideal solution for rooms requiring low installation depth.

Restaurant Aludden

Getting your own acoustic calculation and more

If you'd like to go beyond NRC try our online reverberation time calculator on your next project, or if you just want to learn more about acoustic solutions for walls and ceilings, don't hesitate to ask.

Both the Specification and Commercial Sales Team and the Knauf Tech Team work with architects, acoustic engineers and builders throughout the specification and construction process. In addition to advice on the right product to meet your specific acoustic requirements we also offer:

K-Spec Pro

A custom design specification proposal for your project, developed by Knauf and catered to your project's requirements. Knauf engineers can develop a project-wide proposal that details the most cost-efficient wall and ceiling systems for each and every wall and ceiling in your building, ensuring a first-class system selection and reducing time and effort to design and specify.

BIM Wall Creator (Revit add-on)

The first Australian Revit wall creator that intelligently generates Revit-based wall types with detailed specification information. Creates wall types quickly and easily using performance parameters, including FRL, Rw, wall width and performance requirements and is compliant with all AS/NZ BIM standards.

Cost estimates

Project-specific supply and installation cost estimations, developed to help you decide between similar systems to meet project requirements. Simply contact Knauf and we can develop an estimate from a single wall, right through to an estimated project-wide approximate cost.

To get technical help, go to www.knauf.solutions/technical-manuals/ or call us on 1300 724 505.

To find out more about Knauf Products go to www.knauf.solutions

Technical Engineering Services Team

BEN WRIGHT

Technical Services Manager

Ben is a qualified Civil Engineer from the University of Western Sydney and he leads Knauf Technical Services team. His employment history includes project engineering roles, marketing roles and also technical engineering support roles for manufacturers of concrete and steel products as well as plasterboard and associated products. He has worked for building material manufacturers for 14 years. As well as his interest in steel structures, he is also experienced in fire and acoustic engineering, the Building Code of Australia and also has a particularly keen interest in training.

ERIK MONEY

Technical Services Engineer

Erik graduated from Materials Science at UTS in Sydney. He has worked for building materials manufacturers for 19 years specifically fibre cement and plasterboard. His employment history includes roles in research, product development, building system development, customer technical support, technical documentation, process engineering and engineering projects. Erik has hands on experience in a wide variety of materials and systems testing in areas such as mechanical properties, durability, impact, acoustic and fire performance. While providing customer technical support for the building industry, Erik has gained an interest and wide general knowledge in construction techniques, building physics and in particular, fire protection.

Technical Engineering Services Team

SHAILESH KOIRALA

Technical Services Engineer

Shailesh is a qualified Civil Engineer with extensive knowledge of lightweight building construction and building physics like architectural acoustics and thermal insulation. He has worked for different building material manufacturers for more than 14 years, mainly in technical support and management roles including the last 10 years with Knauf. He has a strong command of Chinese Mandarin language and very keen interests in computer programming. He has personally developed several Windows based engineering application tools such as the Knauf Bracing Calculator, Knauf Reverberation Time Calculator, and Knauf Proposal Writer.

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