



TONECRAFT
INSTALLS

ACOUSTIC REPORT & TREATMENT PROPOSAL

Multipurpose Venue

Client

Private client

Survey / enquiry date

2025-09-09

Room geometry

23 × 10.5 m · 2.7-7 m pitched roof · 1171.27 m³

hello@tone-craft.com · tone-craft.com

Overview

 is used predominantly as a café and bar, with occasional live music and amplified events. In normal daytime use the room is generally comfortable, but live performance can dominate the space, especially when the venue is lightly occupied. This has been noticeable even with fully acoustic sources such as piano, double bass and drums, where conversation has remained difficult at the rear of the room.

The measurements do not indicate a room that is uniformly too reverberant. Mid and high frequency decay is broadly around 0.9 to 1.1 seconds. The more significant issues are strong reflected energy, uneven low frequency behaviour and the way sound from the stage remains dominant through the room.

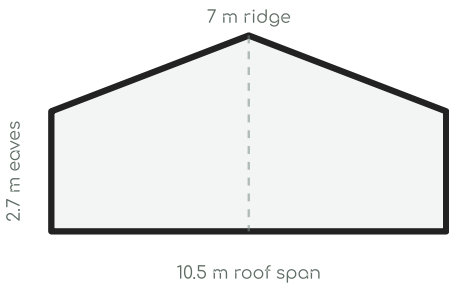
Treatment should therefore reduce the room contribution rather than simply make the venue quieter. Absorption around the stage and through the main room should reduce reflected and reverberant energy, improve clarity and increase the margin between live music and conversation. The room also improves as furniture and people are added, so treatment should help it remain comfortable when attendance is low.

The room is 23 × 10.5 m, with a pitched roof rising from 2.7 m at the eaves to 7 m at the ridge and an average calculated height of 4.85 m. The ceiling is the main practical treatment area through the café and audience space, while the stage should receive deeper local treatment.

ROOM FORM

Pitched-roof geometry

The room volume and treatment-area references use the saved eaves and ridge heights rather than treating the space as a cuboid. Frequency behaviour is interpreted from the measured REW evidence; rectangular modal predictions are not used for this roof form.



CALCULATED VOLUME	AVERAGE HEIGHT
1,171.27 m³	4.85 m
CEILING AREA	FLOOR AREA
312.17 m²	241.5 m²

Measured evidence

REW NUMERICAL ANALYSIS

12 measurements across 12 survey positions · 1/12 octave

How much the response changes around the room

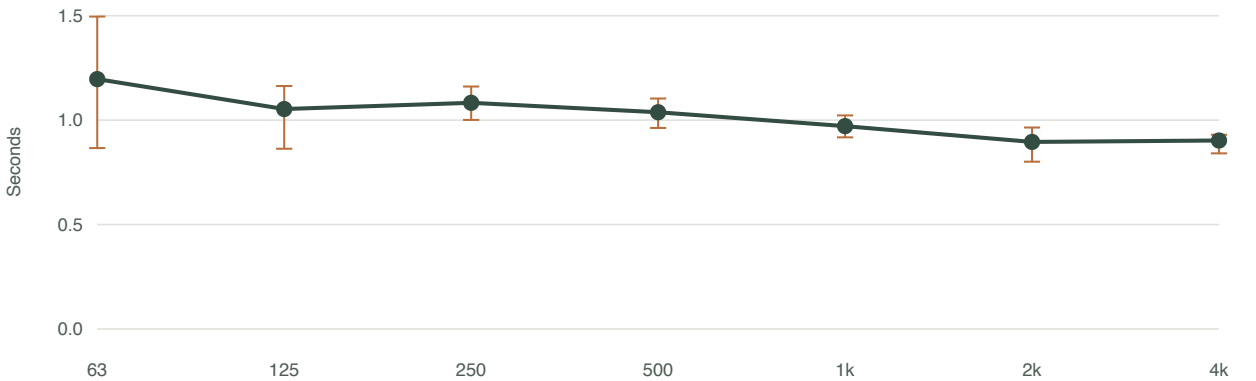
These values show the average difference between measured positions. Larger differences mean the tonal balance changes more as the listening position moves.

Low frequency 31.5-125 Hz Substantial	18.0 dB	Low midrange 125-500 Hz Significant	14.4 dB	Speech band 500 Hz-2 kHz Significant	11.3 dB
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Largest assessed variation from 31.5 Hz upwards	25.3 dB at 71 Hz
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How quickly sound decays

The line shows average T20 decay; the markers show how much the result varied between positions.



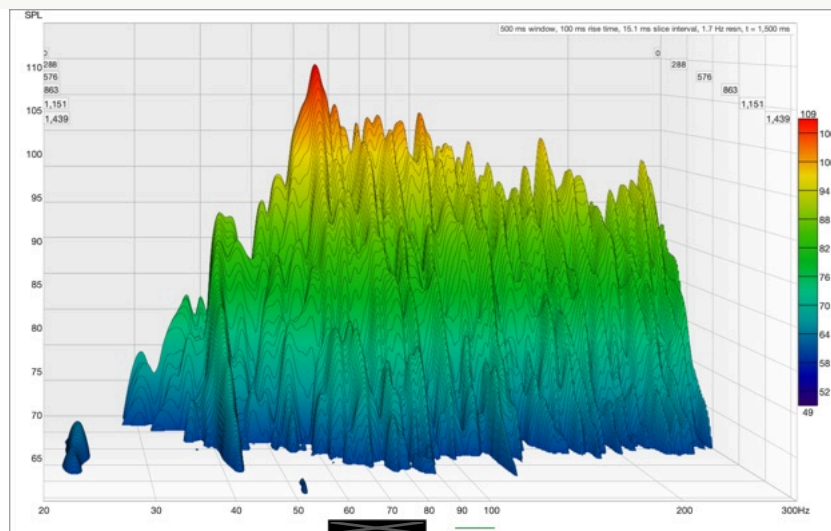
MID-FREQUENCY DECAY 1.00 s The average mid-band T20 estimate is 1.00 seconds. T20 extrapolates an equivalent 60 dB decay time from a measured 20 dB section; suitability is considered in the reviewed interpretation.	EARLY-TO-LATE SOUND BALANCE 2.0 dB C50 More sound energy arrived in the first 50 milliseconds than arrived later. This supports speech clarity, while its importance still depends on the room use and variation between positions.	CLARITY CONSISTENCY -3.1 to 5.9 dB C50 changed by 9.0 dB across the surveyed positions. That spread shows that early-to-late sound balance changes meaningfully with position.
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What these results mean The room is not excessively reverberant across the whole spectrum. Mid and high frequency decay is relatively moderate, so treatment should be targeted rather than applied uniformly across every surface.

Frequency-dependent decay

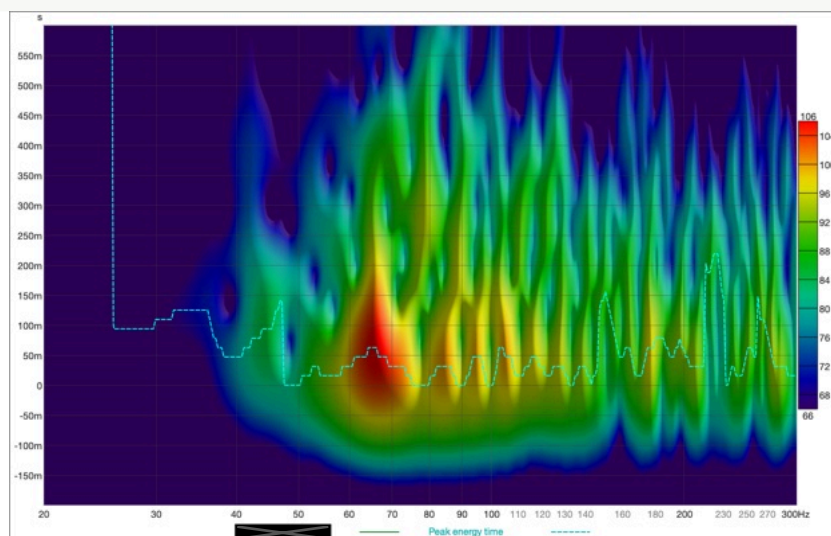
REW GRAPH EVIDENCE

Two complementary REW views from the representative survey measurement.



Waterfall

██████████ Sep 9 · pos.12 · 20-300 Hz · 500 ms



Spectrogram

██████████ Sep 9 · pos.12 · 20-300 Hz · 600 ms

How to read these views

The waterfall shows frequency-response ridges receding through time; the spectrogram shows the same decay as colour. Persistent ridges or bright vertical trails identify frequencies that remain energetic after the source stops.

What the survey shows

The octave-band calculation reaches its highest average decay at 63 Hz (1.20 s average; 0.87-1.50 s across positions). The images provide the complementary visual evidence: persistent ridges or bright trails show where energy remains after the source stops. The 25.3 dB figure at approximately 71 Hz is a position-to-position level difference, not a decay value. Together these results support broadband treatment and later verification; they do not identify a single responsible surface.

Key findings

1

Mid and high frequency decay is moderate rather than globally excessive

The room is not excessively reverberant across the whole spectrum. Mid and high frequency decay is relatively moderate, so treatment should be targeted rather than applied uniformly across every surface.

2

Low frequency response varies substantially across the room

Bass energy is distributed unevenly through the room. Some locations receive substantially more low frequency energy than others, which contributes to the loss of control as instruments or amplified sources excite the room more strongly.

3

Live sound remains dominant through the full room length

The issue is not confined to the stage or front seating. Live performance can remain dominant at the rear of the room, making conversation difficult even when the instruments are not amplified.

4

The stage is the highest priority area for local control

The stage is the first area to control because the strongest sound sources originate there and their energy travels readily through the venue. Increasing broadband absorption around this zone should reduce the room contribution before it spreads into the audience area.

5

Strong reflected energy follows the direct arrival

The measurements show strong early reflections that reduce definition and contribute to the sense of the room taking over as level increases.

6

Furnishings, curtains and occupancy improve the room condition

The room improves as furniture, curtains and people are added. The treatment strategy should build on that improvement so the venue remains comfortable even when attendance is low.

What this means

The main issue is not simply reverberation time. During live use, listeners hear the direct sound from instruments together with reflected and reverberant energy from the room. When the venue is lightly occupied, less absorption is available, so more of that energy remains in the space and the performance can feel more dominant.

Acoustic treatment cannot turn down an acoustic piano, double bass or drum kit. What it can do is reduce the additional energy contributed by the room, improving clarity and making conversation easier at a given performance level.

The stage is the highest priority area because the strongest acoustic sources originate there and site observation shows that their energy travels readily through the venue. The measurements do not prove that one wall or surface is uniquely responsible, so treatment should remain broadband rather than narrowly tuned.

The audience area should be treated separately with distributed ceiling absorption. Planned curtain coverage will also help through the mid and high frequencies, but will have limited influence on the lower frequency behaviour that is most noticeable during live events.

Recommendations

CORE TREATMENT STRATEGY

Deep broadband treatment to rear stage wall

Reduce strong local reflections and control some of the room energy generated close to the performance area.

CONCEPT DESIGN

Use two rear stage wall absorbers, each approximately 2000 × 3000 mm. Use substantial porous broadband absorption rather than thin decorative panels. An indicative overall absorber depth of approximately 150 to 300 mm, or a somewhat shallower absorber with a generous air cavity where architecture allows, is appropriate to extend useful absorption below the midrange.

RECOMMENDED POSITION

Rear stage wall, using the available opaque wall area around the stage

INTENDED ACOUSTIC EFFECT

Reduced stage wash, improved source definition and less reflected energy returning into the room.

DETAILED-DESIGN CHECKS

Quantity and dimensions are indicative from the earlier physical treatment planning. Confirm available wall area, glazing and curtain operation, access requirements, structural backing and fire performance requirements during detailed design.

Deep suspended stage clouds

Control ceiling reflections close to the strongest sources and add useful broadband absorption into the low mid and upper bass region.

CONCEPT DESIGN

Use two suspended stage clouds, each approximately 2000 × 1500 mm. Use 150 mm broadband absorption with a substantial air gap above.

RECOMMENDED POSITION

Above the performance and stage zone within the pitched roof volume

INTENDED ACOUSTIC EFFECT

Reduced reverberant build up around the stage, improved performer clarity and less reflected energy propagating into the audience area.

DETAILED-DESIGN CHECKS

Quantity and dimensions are indicative from the earlier physical treatment planning. Confirm structural fixing capacity and suspension method. Maintain safe clearance from lighting, services and sightlines.

Distributed ceiling absorption through café and audience area

Reduce accumulated reverberant energy and improve conversational comfort while retaining a natural café and bar character.

CONCEPT DESIGN

Use visually integrated broadband absorbers based on the practical ceiling module of approximately 400 × 1200 mm. An indicative panel thickness of approximately 50 to 100 mm with an air gap behind is suitable. The number of modules increases by treatment tier.

RECOMMENDED POSITION

Pitched ceiling over the main café and audience seating area

INTENDED ACOUSTIC EFFECT

Improved clarity, lower reverberant build up through the central and rear seating areas, and a better margin between live music and conversation.

DETAILED-DESIGN CHECKS

Module size and quantities are based on the earlier physical treatment planning and structural spacing, not calculated directly from the acoustic measurements. Final coverage should be coordinated with purlins, structural fixings, lighting, services, architecture, curtains and furnishings.

Retain and extend heavy curtain treatment to glazing

Reduce strong mid and high frequency reflections from the large glazed surfaces.

CONCEPT DESIGN

Use substantial pleated curtains with useful fullness and, where practical, a small air space from the glass. Curtains should remain deployable so the room can retain more openness when desired.

RECOMMENDED POSITION

Glazed side wall and stage glazing

INTENDED ACOUSTIC EFFECT

Reduced hard reflections from the glazing and improved clarity during events.

DETAILED-DESIGN CHECKS

Curtains should not be relied upon as the main solution to low frequency problems. Fabric, track loading and fire requirements should be confirmed for venue use.

Tier 1 Focused control — 24 ceiling panels + stage treatment

Provide the highest value first step where treatment extent needs to remain limited.

CONCEPT DESIGN

Use the common stage treatment of two rear stage wall absorbers and two suspended stage clouds, together with approximately 24 ceiling panels at about 400 x 1200 mm through selected café and audience ceiling areas. Retain and use the planned curtain treatment at the glazing.

RECOMMENDED POSITION

Stage plus selected main room ceiling areas

INTENDED ACOUSTIC EFFECT

The clearest improvement should be around live performance, with reduced room contribution and a modest improvement in conversational comfort through the audience area.

DETAILED-DESIGN CHECKS

The 24 panel quantity is indicative and based on the existing physical layout, not derived directly from the REW measurements. Final positions should follow confirmed purlin and fixing locations, lighting, services, curtains and the completed furnished layout.

Tier 2 Balanced venue treatment — 36 ceiling panels + stage treatment

Provide a stronger balance between live music control and everyday café comfort.

CONCEPT DESIGN

Use the common stage treatment of two rear stage wall absorbers and two suspended stage clouds, together with approximately 36 ceiling panels at about 400 × 1200 mm distributed across a broader part of the café and audience area. Keep stage treatment deeper than the general room treatment.

RECOMMENDED POSITION

Stage plus broader distributed ceiling coverage

INTENDED ACOUSTIC EFFECT

Greater reduction in reverberant build up, improved clarity from front to rear and better conversational comfort during live use.

DETAILED-DESIGN CHECKS

The 36 panel quantity is indicative and based on the existing physical layout. Final positions require coordination with purlins, structural fixings, lighting, services and visual design.

OPTIONAL ENHANCEMENTS

Tier 3 Maximum practical control — 48 ceiling panels + stage treatment

Provide the strongest practical acoustic control while retaining a natural venue character.

CONCEPT DESIGN

Use the common stage treatment of two rear stage wall absorbers and two suspended stage clouds, together with approximately 48 ceiling panels at about 400 × 1200 mm. This represents full audience treatment plus approximately 12 additional modules extending coverage toward the bar and window side, alongside the curtain strategy at glazing.

RECOMMENDED POSITION

Stage plus the greatest sensible ceiling coverage within the room

INTENDED ACOUSTIC EFFECT

The strongest reduction in room contribution during lightly occupied events, the best conversational margin during live use and the most consistent acoustic character across the room.

DETAILED-DESIGN CHECKS

The 48 panel quantity is indicative and based on the earlier physical treatment planning. Final numbers and positions should be confirmed during detailed design against purlins, structural fixing points, lighting, services, curtains and the completed room. This tier should not be expected to make inherently loud acoustic sources suitable for background conversation at any performance level.

FUTURE VERIFICATION

Post treatment verification measurements

Verify that the acoustic treatment has reduced the principal problems without making the café unnecessarily dry, and determine whether any further treatment is justified.

CONCEPT DESIGN

Repeat a multi position REW survey after the main acoustic works and final room furnishing. Compare decay, clarity, frequency response consistency and early reflection behaviour against the original measurement set.

RECOMMENDED POSITION

Stage, front seating, central seating and rear audience area

INTENDED ACOUSTIC EFFECT

Provides an objective basis for confirming treatment effectiveness and deciding whether any additional acoustic treatment is necessary.

DETAILED-DESIGN CHECKS

Measurements should be made with the room in a representative operating layout and with curtain state documented.

Estimated costs

This estimate provides three treatment levels based on the acoustic recommendations, with stage treatment common to all tiers and increasing ceiling absorption through the main café and audience area. ToneCraft intends to carry out the complete acoustic treatment installation. The current tier figures are indicative estimates covering the stated treatment materials and off-site fabrication rather than complete installed-project totals.

Common treatment included

- Two substantial broadband absorbers to the stage wall areas
- Two suspended acoustic clouds above the stage
- 150 mm broadband absorption within the stage clouds
- Decorative timber framing and fabric finish
- Off-site fabrication of the stage clouds
- Integrated lighting option available for the stage clouds

01

Tier 1 — Focused Control

Stage treatment plus 24 distributed ceiling absorbers through selected café and audience areas.

Standard stage clouds

Pricing withheld

Stage clouds with integrated lighting

Pricing withheld

02

Tier 2 — Balanced Venue Treatment

Stage treatment plus 36 distributed ceiling absorbers providing broader treatment through the main room.

Standard stage clouds

Pricing withheld

Stage clouds with integrated lighting

Pricing withheld

03

Tier 3 — Maximum Practical Control

Stage treatment plus 48 distributed ceiling absorbers, providing the greatest practical ceiling coverage within the venue.

Standard stage clouds

Pricing withheld

Stage clouds with integrated lighting

Pricing withheld

Project-specific prices have been withheld from this public example.

Estimate status

These figures currently include treatment materials and off-site fabrication of the suspended stage clouds and general ceiling absorbers. ToneCraft intends to carry out the complete acoustic treatment installation. Following detailed site inspection, an updated estimate will be provided for the remaining installation-related costs. Installation labour will be charged at the agreed hourly rate, so the final labour cost will depend on the actual time required on site and any additional work or site conditions encountered during installation.

Additional installation costs to be confirmed

- On-site labour for construction of the stage wall absorbers
- Installation labour
- Stage-cloud suspension hardware
- Ceiling-panel fixing hardware where required
- Access equipment required for high-level installation
- Electrical installation associated with integrated lighting
- Any additional structural work identified during detailed design or installation

ToneCraft will arrange the required access equipment and coordinate integrated-lighting installation where selected. Any final mains connection or other certifiable electrical work will be carried out by a suitably qualified electrician. Following detailed site inspection, ToneCraft will provide an updated estimate for the remaining installation, fixing, access and electrical costs.

Expected outcome

The aim is to retain a natural café and bar character while improving control during live music. The most useful change should be a reduction in the amount of reflected and reverberant sound added to the direct performance, particularly when the room is lightly occupied.

Expected benefits are clearer direct sound, less stage wash, lower reverberant build up through the audience area and a better margin between live music and comfortable conversation. The room should also become less dependent on a full audience to provide the absorption needed for a comfortable result.

The intention is not to create a highly damped room or to make inherently loud acoustic sources quiet. Source level, instrumentation and performance style will remain part of the operational control of the venue. Treatment should make those sources easier to accommodate by reducing the contribution of the room itself.

Installation notes

The pitched ceiling is the main opportunity for distributed treatment through the café and audience area, with deeper suspended treatment over the stage. The rear stage wall should also receive substantial broadband absorption where practical.

The practical ceiling module identified during earlier treatment planning is approximately 400 × 1200 mm. These modules can be distributed in increasing numbers through the pitched roof area according to the selected treatment tier, while retaining an indicative absorber depth of approximately 50 to 100 mm with an air gap.

Suspended treatment should follow confirmed structural fixing points, maintain safe clearance from lighting and services, and use finishes suitable for venue use. Heavy curtains along the glazed wall should be retained as part of the acoustic strategy, ideally with useful fullness and some separation from the glass where practical.

The stage treatment remains common to all tiers. The treatment can then be developed by increasing the amount of distributed ceiling coverage through the café and audience area. Final fixing and access requirements should be confirmed during detailed site inspection, with final coverage coordinated to the finished room and verified by measurement.

Limitations

The measurements were taken with the room only partially furnished. The present room contains more furniture, and additional curtain coverage is planned along the glazed wall, so the current condition is likely to be somewhat less reflective at mid and high frequencies than during the survey. Audience occupancy will also add absorption, which helps explain why the room can feel more controlled when fuller.

The decay values should be understood as extrapolated estimates derived from the measured REW decay sections rather than direct observation of a full 60 dB decay. The findings are based on the combined evidence of measured decay, positional variation, reflection behaviour, room geometry and site observation.

The low frequency measurements show substantial spatial variation, but they do not justify specifying narrow band membrane or resonant traps at this stage. Broadband treatment should be implemented first, then verified with repeat room measurements.

The treatment quantities stated in the recommendations are indicative and come from the existing physical treatment planning and practical structural module spacing. They are not quantities calculated directly from the acoustic measurements. Final panel counts and exact positions should be confirmed during detailed design against purlins, structural fixing positions, lighting, services, curtains and the completed furnished layout.

Structural fixing capacity, concealed construction, fire performance and the final acoustic properties of finishes require confirmation during detailed design.

Technical glossary

T20 / RT60 — estimates of how long sound takes to decay by 60 dB. T20 is calculated from a measured 20 dB portion of the decay.

EDT (Early Decay Time) — the initial rate at which sound falls away, often closely related to the listener's impression of reverberance.

C50 / C80 — clarity measures comparing early sound with later reverberant energy. C50 is commonly used for speech; C80 for music.

D50 — the proportion of useful early sound arriving within the first 50 milliseconds, expressed as a percentage.

ETC (Energy Time Curve) — a time-domain view used to identify the strength and timing of reflections after the direct sound.

Modal behaviour — low-frequency resonances caused by the room's dimensions and boundaries, producing peaks, dips or extended decay.

Waterfall / spectrogram — two views of how sound energy at different frequencies decays over time.

