ACOUSTICAL CONTROL Engineers & Consultants

GUARANTEED SOLUTIONS TO YOUR NOISE & VIBRATION PROBLEMS

Post Install survey relating to fixed plant at the Co-op Food store at:

London Road
Ashington
Pulborough
RH20 3JT

for:

Healy Refrigeration & Air Conditioning Services Ltd

on behalf of:

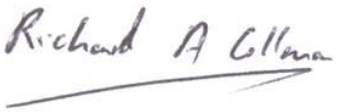
The Co-operative Group

Report Reference: B5774 2025-09-30 Co-op Ashington London Road PI R

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Managing Director

Version Number	Notes	Issued By	Issue Date
B5774.0		KT	14 April 2025
B5774.1	Return survey and assessment following mitigation work to chiller extract fan.	KT	30 September 2025

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1.0 Introduction & History

1.1 A survey was requested by the landlord to determine the sound being emitted by fixed plant and equipment at the Co-op food store on London Road, Ashington. A report was issued ref: B5774 2025-04-14 Co-op Ashington London Road PI R (the April 2025 report) which assessed sound from the installed refrigeration and air conditioning equipment, as well as the chiller extract fan installed at the store.

1.2 As part of planning application ref: DC/21/0950, a condition was imposed requiring a post-installation acoustic assessment of installed fixed plant. The April 2025 post installation report was submitted to Horsham District Council under application ref: DISC/25/0194 in order to discharge the condition. Upon submitting the report, comments were received from an Environmental Health Officer requesting that sound from the extract fan was reduced in line with the recommendations in the submitted the report.

1.3 Following completion of the mitigation works, Acoustical Control Consultants (ACC) has been appointed to conduct a further post installation survey to measure and assess the resulting change in sound following the mitigation works. This report details the post installation acoustic survey conducted at the store, and the resulting analysis and assessment of the measurements and observations undertaken.

1.4 ACC is an independent acoustic consultancy company. All our acoustic consultants are qualified and experienced practitioners and are either Associate or Corporate members of the Institute of Acoustics. Acoustical Control Engineers Limited is our associated company specialising in engineered solutions to acoustic problems.

2.0 Scope

2.1 Conduct a post installation acoustic survey during a period of low residual activity to measure sound from the extract fan.

2.2 Compile a post installation acoustic assessment report detailing the findings of the survey, demonstrating compliance with the set criteria, if appropriate, and recommending mitigation measures if required.

3.0 Criteria & Installed Equipment

3.1 The April 2025 survey was instructed on behalf of the landlord who requested a report detailing the sound from the existing plant at the store.

3.2 Prior to that survey, research into the planning application was conducted on Horsham District Council's public access planning portal. The most recent application relating to fixed plant and equipment at the store was application ref: DC/21/0950. Condition 3 of the application is duplicated below:

> ***Post-Installation Condition**: Within 6 weeks of the date of commissioning all equipment and plant, a noise assessment shall be undertaken and submitted to the Local Planning Authority for its approval in writing. The noise assessment shall be carried out by a competent person in order to confirm that the noise target set out in the Acoustical Control Consultants report (dated 06 May 2021, reference B5360 2021-05-06 R) has been met for both day and nighttime operation. The assessment shall include any additional measures necessary to mitigate any additional noise impact and a timetable for their implementation. The equipment and plant shall thereafter the maintained in accordance with the agreed details.*

3.3 The April 2025 report concluded that "*the measurements made during the survey show that the installed plant in the plant area complies with the suitable criteria*". However, sound from the chiller extract fan was around 42 dB L_{Ar} at the receptor windows during the day and night, and the report concluded that "*the sound level from the extract fan exceed*[ed] *the suitable night time criterion by 6 dB*".

3.4 Following the completed mitigation works, this assessment focuses on sound from the extract fan and will assess the sound against the conditioned report, which contains the following criteria: "*all proposed fixed plant and equipment should not exceed a cumulative design rating level of 44 dB L_{Ar} at the nearest receptor during the daytime and 36 dB L_{Ar} at the closest noise sensitive windows at night*."

3.5 The chiller extract fan only has one operational mode and operates at all times of the day and night.

4.0 Site Layout

4.1 The store is located to the east of London Road in Ashington, around 150 m west of the A24 which runs in a north/south direction. The store is in the southern part of a building that also contains a takeaway (no fixed plant from this unit was operating during the survey). Access to the store and the car park for around 10 vehicles is from Turnpike Way to the south. The service yard is to the east of the building accessed via Turnpike Way. This is where the plant is located.

4.2 There is a plant area close to the store's eastern façade. A combined refrigeration pack and condenser, and two air conditioning condensing units (AC) are installed in this area. There is a bespoke acoustic screen installed in front of the plant. There is a chiller extract fan to the store's eastern façade further south of the plant area, and a bakery extract fan north of the chiller extract fan. There are dwellings to the east and south of the store.

4.3 The most sensitive receptor is the dwelling to the east. The garden and north facing windows are most sensitive to sound from the plant area, and the south facing windows are most sensitive to sound from the extract fans.

4.4 Figure 4.1 shows the relative positions of the store (red outline), dwellings that are most sensitive to noise from the plant, particularly during the night (green outline), the plant area (blue outline), extract fans location (orange line) and measurement location (numbered marker).

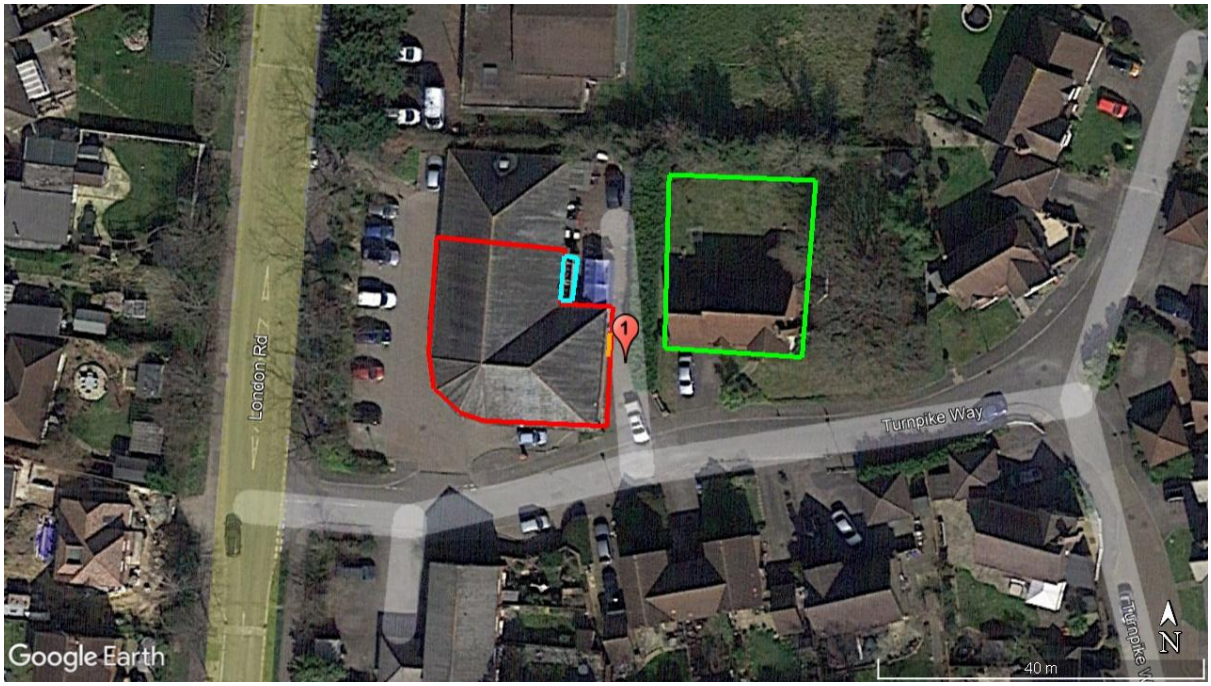


Figure 4.1 – Site Plan

5.0 Survey & Assessment

5.1 A post installation survey was conducted on Monday 8th September 2025 by Kristoffer Tsinontas BSc (Hons), MIOA using the following instrumentation:

Cirrus Sound Level Analyser Type CR171B, Serial No. G301578
Cirrus Calibrator Type CR 515, Serial No. 73201
Cirrus Windshield
Skywatch Meteos Anemometer

5.2 An operational reference check was undertaken before and after the measurements using the calibrator. The instrument displayed negligible drift in calibration. The instrumentation holds valid calibration certificates, which are available on request.

5.3 Weather conditions at the measurement location were logged throughout the survey. During the survey the sky was clear, there was no wind at ground level, but forecast winds at higher elevation were 4 m/s from the south west. The ground surfaces were dry, and the temperature was around 15°C. The weather conditions were suitable according to relevant guidance for measurements to be undertaken.

Results

5.4 The results of the measurements are shown in Graph 1 which is embedded below the measurement descriptions in the next few paragraphs and is available in full size in Appendix 1.

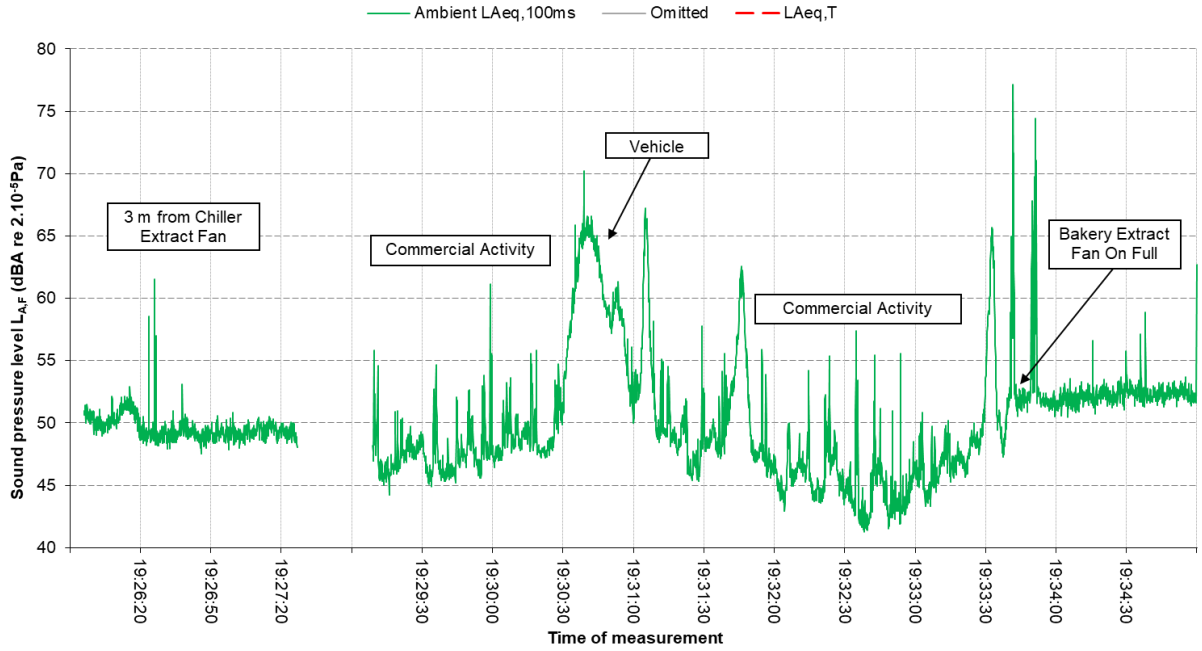
5.5 Upon arriving at the site, both the chiller and bakery extract fans were operating. The bakery extract fan was switched off prior to measurements beginning.

5.6 Two measurement series are displayed on Graph 1. The first measurement was made at Location 1, 3 m from the store extract fan (shown in orange in Figure 4.1) With only the chiller extract fan operating. The second measurement was also made at Location 1, with both extract fans turned off, and then with the bakery extract fan operating.

5.7 During the first measurement, the chiller extract fan was operating and audible. The underlying ambient sound level (in the absence of transient events such as passing road traffic) was around 49 dB L_A.

5.8 The second measurement was made with the extract fans switched off. The residual sound level varied between 46 and 55 dB L_A near the start of the measurement, with passing vehicles increasing the sound level to around 65 dB L_A. Towards the end of the residual measurement, the underlying sound level dropped to as low as 42 dB L_A. The bakery extract fan was switched on at around 19:33 and the fan ramped up to full load around 20 second later, increasing the underlying sound level to around 52 dB L_A.

Graph 1 - Existing sound level from Extract Fan at Co-op Ashington
Measured 8th September 2025



6.0 Analysis

Calculated Sound Level from the Plant at the Receptors

6.1 Calculation Sheet 1 at Appendix 2 shows the calculations used to determine the sound level from plant at the receptors. The extract fans did not exhibit any acoustically distinguishing characteristics that would incur a feature correction, so the rating levels are equal to their specific sound levels.

6.2 The ambient sound level measured 3 m from the chiller extract fan was 49 dB L_A. The underlying residual sound level was around 46 dB L_A towards the start of the measurement. This underlying sound level was used as it is closer in time to when the chiller extract fan was operating in the first measurement, despite the underlying sound level falling to 42 dB L_A later. Logarithmically deducting the residual sound level from the ambient sound level gives a specific sound level from the chiller extract fan of 46 dB L_A. If the residual sound level were around 42 dB L_A the corresponding sound level from the chiller extract fan would be 48 dB L_A i.e. 2 dB higher.

6.3 The south facing windows of the dwelling are around 14 m from the extract fan, so adding a correction of -13 dB to account for the increased distance, and an off-axis correction of -4 due to the windows orientation in relation to the extract fan gives a resulting chiller extract fan sound level outside the dwelling windows of 29 dB L_A. If the residual level were around 42 dB L_A instead, the chiller extract fan sound level would be 31dB L_A.

6.4 The chiller extract fan operates 24 hours a day as it services an internal cold room which dumps excess heat within the store, so the specific sound level due to the chiller extract fan will be 29 dB L_A outside the relevant dwelling windows during the day and night.

6.5 The same methodology was used for the bakery extract fan measurements, with an underlying residual sound level of 46 dB L_A (measured closer to the end of the residual sound level measurement) logarithmically subtracted from the ambient sound level of 52 dB L_A to give a specific sound level of 51 or 52 dB L_A.

6.6 As the bakery extract fan is further north along the store wall, the south facing windows of the dwelling are screened from the fan. Accounting for the distance correction of -13 dB, screening correction of -5 dB, and off-axis correction of -4 dB, the bakery extract fan produces around 29 dB L_A at the receptor window.

6.7 The bakery extract fan is typically only switched on when the bakery is in use and should not be left on overnight. To account for a situation where the extract fan is mistakenly left on, or when bakery use begins during the night time period (prior to 07:00 hours), this assessment will be made taking both the chiller and bakery extract fans into account.

6.8 **The cumulative sound level at the receptor due to the chiller and bakery extract fans is 32 dB L_A during the day and night, or 33 dB L_A if the chiller extract fan produces 31 dB L_A instead of 29 dB L_A.**

6.9 Sound from the refrigeration and AC plant was inaudible at the boundary of the most sensitive receptor, and does not contribute to the overall sound level at the south facing windows of the receptor.

Comparison between Calculated Sound Levels and Criteria

6.10 ACC's suitable criteria were for the cumulative rating level from the proposed plant to not exceed 44 dB L_{Ar} during the day and 36 dB L_{Ar} during the night at the most sensitive receptors.

6.11 The April 2025 report concluded that the calculated sound levels in the garden and the north facing windows due to plant in the plant area were around 44 dB L_{Ar} during the day and 32 dB L_{Ar} during the night, and that sound from the plant area complies with the suitable criteria for the day and night.

6.12 The calculated sound level at the south facing windows due to the extract fans was around 32 dB L_{Ar} during the day and night. Sound from the extract fans therefore complies with the suitable criteria for the day and night.

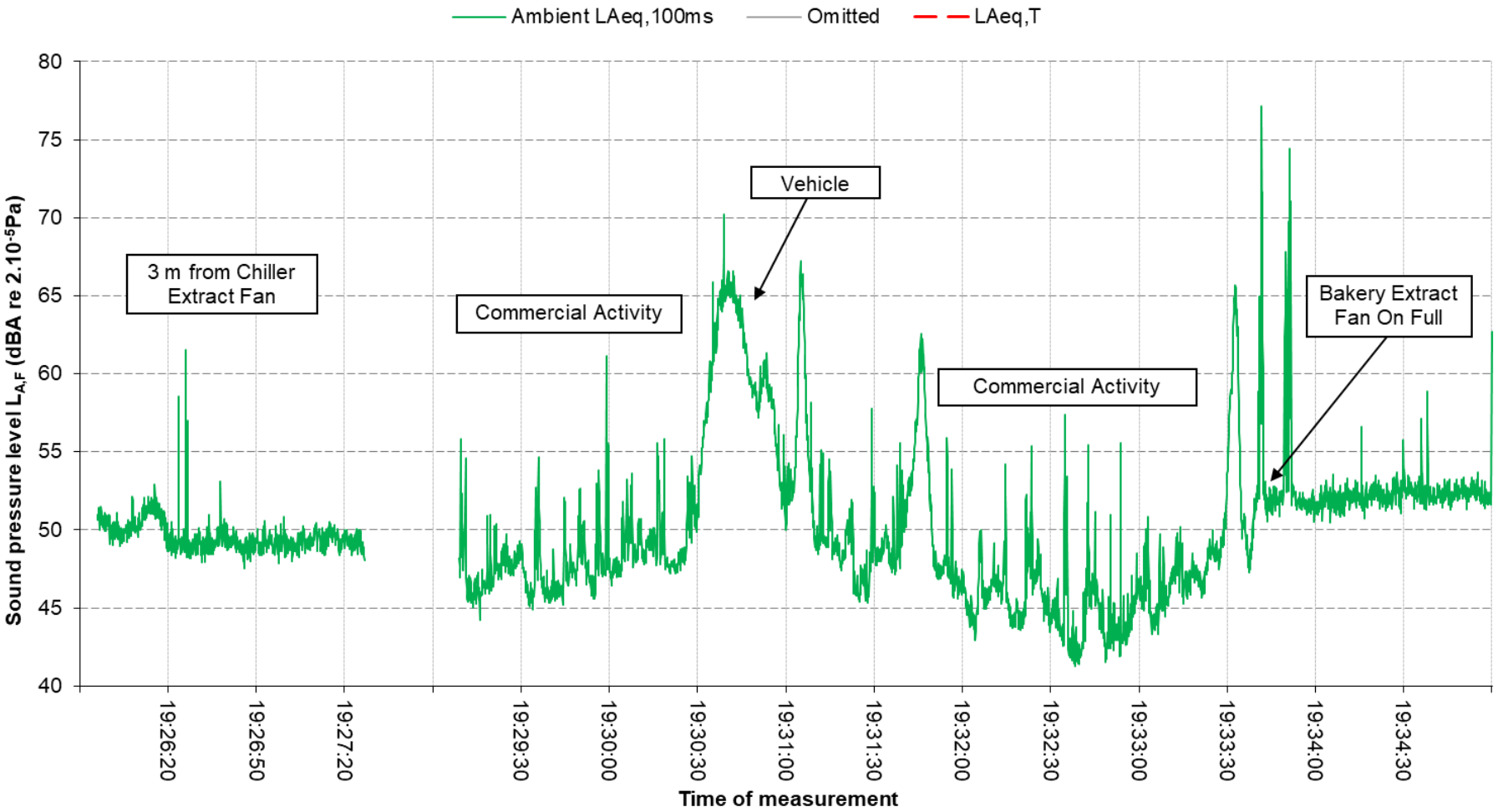
7.0 Conclusions

7.1 Acoustical Control Consultants has been appointed to conduct a post installation assessment of the plant at the Co-op food store on London Road, Ashington.

7.2 The results of the post installation acoustic survey were reviewed against the suitable sound level criteria previously conditioned by the local planning authority. The measurements made during the April 2025 survey showed that the installed plant in the plant area complies with the suitable criteria. Following mitigation works, the sound level from the extract fans complies with the suitable criteria.

Appendix 1 Measurement Graphs

Graph 1 - Existing sound level from Extract Fan at Co-op Ashington
Measured 8th September 2025



Appendix 2 Calculation Sheets

Calculation Sheet 1 - Calculated Sound Levels at Receptor to East					
Line	**Details**		**m**	**dBA**	**Notes**
1	Ambient Sound Level at 3 m from chiller extract fan			49	
2	Residual Sound Level at Location 1			46	
3	Specific Sound Level at 3 m from chiller extract fan			46	Line 1 - Line 2
4	Distance to Receptor South Window		14	-13	
5	Directivity			-4	Off-axis
6	**Sound Level at Southern Windows Receptors due to Chiller Extract Fan**			**29**	Day & Night. Receptors screened from main plant area, so no cumulative effect
7	Ambient Sound Level at 3 m from bakery extract fan			52	
8	Residual Sound Level at Location 1			42	
9	Specific Sound Level at 3 m from bakery extract fan			52	Line 7 - Line 8
10	Distance to Receptor South Window		14	-13	
11	Directivity & Screening			-9	Off-axis
12	**Sound Level at Southern Windows Receptors due to Bakery Extract Fan**			**29**	Day & Night. Receptors screened from main plant area, so no cumulative effect
13	**Total Sound Level at Southern Windows Receptors due to Extract Fans**			**32**	Line 6 + Line 12

Annex A Competence & Experience

A.1 Acoustical Control Consultants Limited has the advantage of personnel that were directly involved in the drafting of BS 4142, who have specialised in the measurement, assessment and control of noise from industrial and commercial sources throughout their careers. This type of work forms a major part of our activity and has done so for several decades. Our culture, systems and working practices are geared towards ensuring that this type of work is consistently undertaken to the high and robust level of quality for which we are known.

A.2 **Richard A Collman** has overall responsibility for ACC's activities including BS 4142 assessments. He graduated with a BSc (Class I) in Acoustics and Computer Science from Salford University in 1984, being awarded the course prize in both the second and final years. He is a Chartered Engineer and has specialised in the measurement and assessment of sound from industrial and commercial plant for over 30 years, writing articles and papers on this subject for Acoustics Bulletin and IOA conferences. He pioneered the use of digital instrumentation for short duration consecutive logging rather than longer term statistical averaging measurement techniques. As an expert on sound from refrigeration and air conditioning plant he represented the Institute of Refrigeration on the BSI committee and the Drafting Panel responsible for the 2014 edition of BS 4142, presented the section on Uncertainty at the BS 4142Launch Meeting in November 2014, and authored an associated Technical Article in Acoustics Bulletin. He has been closely involved in the development of BRL's BS 4142 measurement, assessment and reporting system to ensure that it is fully compliant with all aspects of BS 4142.

A.3 **Kristoffer Tsinontas**, Acoustician joined the company in September 2014 and has since been carrying out noise impact assessments primarily for the food retail industry, along with assisting in other larger projects undertaken by the company. Kristoffer has a BSc (Hons) in Music Technology, whereby he specialised in Acoustics and Psychoacoustics – particularly in modelling acoustic soundscapes. Kristoffer is a member of the Institute of Acoustics.