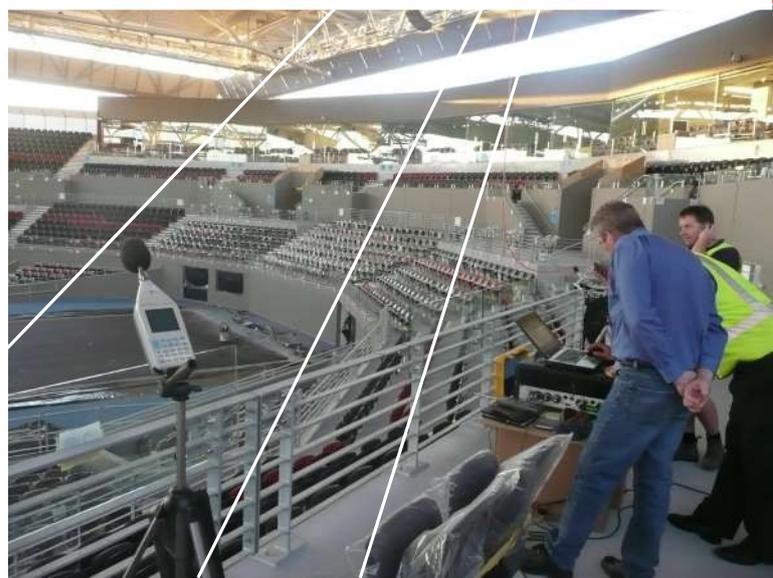


**ACOUSTICS  
THEATRE &  
AUDIO VISUAL  
CONSULTING  
ENGINEERS**  
Since 1992



# PALMER ACOUSTICS



DELIVERING INTERNATIONAL  
SOLUTIONS



# palmer acoustics

Australia Pty Ltd

Ross Palmer established Palmer Acoustics (Australia) Pty Ltd in 1992 with the vision to position the company as the preferred supplier of acoustic services to the Australasian and southeast Asian markets. Palmer Acoustics expanded rapidly and within 15 years had gained recognition from clients as a leading consultant with a reputation as a professional acoustic consulting services specializing in building and environmental projects. Palmer Acoustics is currently active in Australia, Thailand, and Vietnam, with offices in Brisbane, Bangkok and Ho Chi Minh City.

Palmer Acoustics focus on providing comprehensive and integrated consulting services, from project feasibility studies to final commissioning. At all stages the company adopts a practical engineering-based approach to acoustical problems and through intensive design and analysis achieves cost effective solutions. Using it's network and experience developed over 29 years, we draw from a large information data base to provide practical, proven solutions to a wide range of acoustic engineering matters.

Palmer Acoustics has been commissioned on projects in Australia, New Zealand, Vietnam, Thailand, Cambodia, Vietnam, Hong Kong, China, Saudi Arabia, Papua New Guinea, Fiji, India, Sri Lanka, Qatar, Kuwait and the United Arab Emirates.

# OUR SERVICES

Palmer Acoustics services cover all aspects of acoustic engineering across a wide range of industry sectors and project types. We engineer to provide the highest quality of acoustic amenity necessary for the effective performance of spaces to achieve good levels of acoustic comfort, privacy, and speech intelligibility.

We provide services from inception to completion with expert and experienced acoustic consultants who use the up-to-date computer analysis and modeling software together with the testing, measuring, and data collection equipment.

We engineer to both National and International Codes and Standards and also regulatory frameworks applicable to each project.

## Architectural and Building Acoustics

The design of theatres, cinemas, mosques, lecture halls, opera houses, and specialist spaces ensures high levels of speech intelligibility and appropriate reverberation levels.

We provide:

- Internal space acoustic planning
- Sound isolation from external noise sources
- Control of reverberant noise build-up
- Speech privacy and intelligibility modeling and testing
- Building transportation noise and vibration control
- Mechanical plant and equipment noise containment
- Building Code and Green Star compliance
- Sound Systems Design
- Fire Evacuation Alarm acoustic design
- Audio Visual Systems

## Industrial Acoustics

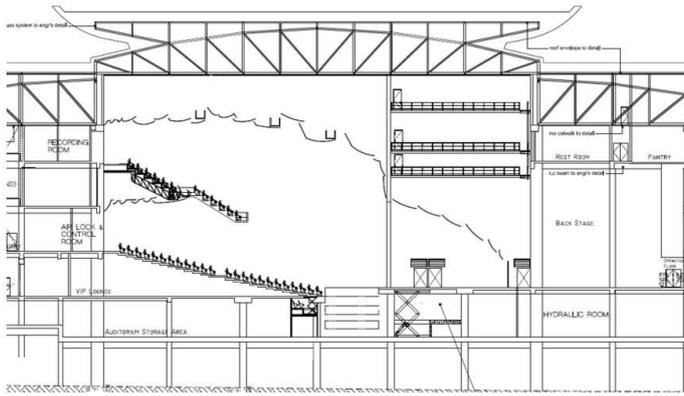
### Workplace Health & Safety

- Acoustic planning for containment of noise
- Workplace industrial noise surveys and reporting
- Machine room monitoring using real-time remote monitoring systems
- Vibration monitoring and analysis

## Urban Infrastructure Acoustics

- Environmental noise impact assessments for roads, rail, airports, and industrial developments upon adjoining developments
- Specification, supply, and commissioning of airport noise monitoring systems
- Measurement and Assessment of noise generated from large entertainment venues





Typical theatre acoustic panels for high level of speech intelligibility.



# OUR SPECIALTIES

## Audio Visual Services

Palmer Acoustics provide advice, details, specifications, and drawings for Audio Visual systems. This could be from a PA system in a school or restaurant to the sound systems required for an Opera House or airport. Considerations include functionality, locations, budgets, power and operational requirements. Floor Plans, equipment layouts, budgets, specifications and optional systems / components are all part of the package. Tender specification and drawings provide certainty for contractors and minimize the scope for variation during construction. Attendance is provided at meetings (in person or virtual) for the Concept, Schematic, Design, Tender and Construction stages as necessary.

## Specialist Audio Visual Projects

- Residential buildings-apartments, hotels and resorts, casinos and gaming venues
- Exhibition and convention centers, commercial and office buildings
- Restaurants, shopping centers, hotels and public gathering places
- Large auditoria, places of worship, performing arts theatres, cinemas, concert halls
- Large sporting and multi-purpose venues, universities and schools, hospitals and medical facilities
- Broadcasting and Production studios, data and, call centers
- Airport Terminals

## Specialist Audio Visual Services

- Building AV services from emergency evacuation, public address to digital signage
- AV Product and Systems Specifications and commissioning
- AV Testing Analysis and commissioning
- On-site Quality Assurance for the implementation of AV systems

## Theatre Design Services

Theatres are one of the most complex building project. Their operation is dependent upon the functionality of the theatre and various support spaces. This functionality is specific to the performance type, theatre group, local building codes, and community expectations.

Palmer Acoustics works with clients and design teams to direct the design of theatres. The often- requires consideration of room volumes, wall and ceiling sound reflection panels size and shape, locations and size of balconies, seating specifications and floor linings, line -of- site views for the patrons, entrance passages, stages and orchestra pit, design of any proscenium arch and doors, positioning of seats and MEP design.

We also advise on the functionality of the theatre concerning layout and the room spaces, with detailed Design for AV and lighting if required.

# OUR SPECIALTIES

Palmer Acoustics provides and manages other specialist engineering services as required:

- Vibration analysis
- Building automation system design
- Lighting and Audio-Visual System Design and Testing
- Specialist MEPF services

## Application of our Services

Palmer Acoustic Services are applied to projects as described below:

### Architectural and Building Acoustics

- Residential buildings-apartments, hotels, and resorts
- Casinos and gaming venues
- Exhibition and Convention Centres
- Commercial and Office Buildings
- Restaurants, shopping centers, hotels, and public gathering places
- Large Auditoria, Theatres, Places of Worship
- Performing Arts Theatres, Cinemas, Concert Halls
- Large Sporting and Multi-Purpose Venues
- Universities and Schools
- Broadcasting and Film Studios
- Data Centres, Call Centres
- Hospitals and Medical facilities

### Industrial Acoustics

- Manufacturing facilities
- Mining sites
- Industrial Equipment, Plant and Machinery

### Urban Infrastructure Acoustics

- Urban Development-Residential, Industrial
- Urban Infrastructure Plant and Equipment
- Sporting and Entertainment Venues

### Education and Training (Acoustics)

- When working in developing markets, there is a need to educate clients, policymakers, project managers, engineers, and contractors on good acoustic design. Palmer Acoustics provides these services with translations as required



# OUR EXPERIENCE

This consultancy has been in operation since 1992 and draws from over a combined 100 years of professional engineering experience.

Palmer Acoustics:

- Is a member firm of the Association of Australasian Acoustical Consultants (AAAC)
- Offers a background of hands-on experience and a practical engineering- based approach. Through intensive design and analysis we aim to achieve cost-effective solutions to noise problems
- Has an extensive range of specialist noise and vibration measuring equipment
- Carries \$10m public liability insurance and \$10m professional indemnity Insurance

Ross Palmer, the Consultancy Manager, and Principal has over 40 years of experience as an Acoustic Engineer and Consultant after training as an aircraft engineer.

## Our Clients

Grocon Construction  
Raptis Development  
Juniper Construction  
Sunland Construction  
Multiplex Construction  
Mirvac Construction  
Sheraton Hotels  
Hilton Hotels  
Electrowat Thailand

Vinci Construction  
Mason Acoustics (Bangkok)  
Lien Son Corporation  
(Vietnam)  
Novaland Vietnam  
Conrad Jupiter's  
Asia Coast Development  
Laing O'rouke  
Western Digital Thailand

Seagate Thailand Raffles  
Jumeriah  
Bovis Lend Lease  
Balderstone Construction  
Redco Construction - Doha  
MEP Green Vietnam  
Meinhardt Vietnam and  
Thailand  
New World Hotel Vietnam



## Our Projects

The projects presented on the following pages provide a snapshot of the more significant projects where Palmer Acoustics has provided a cross section of acoustic services across various development sectors over the last 29 years.

For a more detailed list of projects and the extent of works involved, please contact our Brisbane or Vietnam offices.

# MIXED USE HIGH RISE DEVELOPMENTS

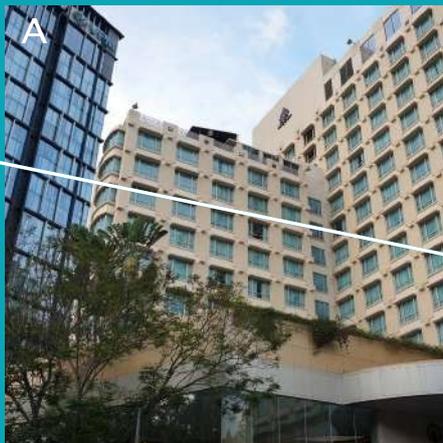
## **Sona Sea Van Don Integrated Resort**

Location: Sona Sea Van Don North Vietnam

Client: MEP Green

Commissioned by MEP Green (HCM) on this 2,500 guest room resort containing Pullman, Ibis and Novotel brand high rise towers.





### **New World Hotel (A)**

Location: District 1 Ho Chi Minh City, VIETNAM  
Client: New World Hotel

Commissioned by New World to investigate and advise with regards to the option to upgrade the façade glazing to protect guests from both road traffic and amplified entertainment noise intrusion.

### **Nexus Commercial Tower (B)**

Location: District 1 Ho Chi Minh City, VIETNAM  
Client: Indochine Engineering HCMC

Commissioned on this twin tower 45 level commercial office building in central HCMC. The object was to ensure that the office meets Leed acoustic rating requirements for noise levels, privacy, and reverberation time.

### **Crowne Plaza Hotel (C)**

Phu Quoc Vietnam  
Location: Phu Quoc, VIETNAM  
Client: Indochine Engineering

Full acoustic commission on this 5 star IHG brand standard hotel.

### **Alpha 2 High Rise Residential Vietnam (D)**

Location: District 1 Ho Chi Minh City, VIETNAM  
Client: Alpha King

Commissioned to ensure that the project, when completed, meets a good level of acoustic amenity from road traffic, mechanical plant and privacy.

# MIXED USE HIGH RISE DEVELOPMENTS

## 845 Ann Street Fortitude Valley

Location: Brisbane, Queensland, AUSTRALIA  
Client: Laing O'Rourke

Palmer Acoustics provided a full acoustic commission on this mixed use Green Star office and residential development.





### **Sukhothai Hotel (A)**

Location: Bangkok, THAILAND  
Client: Grace Ivory Hong Kong

Palmer Acoustics provided a full acoustics and Audio Visual Consultancy commission for this 5 star three tower Hotel / Condominium on Sathorn Rd Bangkok.



### **Ho Tram Strip Resort and Casino (B)**

Location: Ba Ria, Vung Tau, VIETNAM  
Client: Asian Coast Developments (Canada) Ltd.

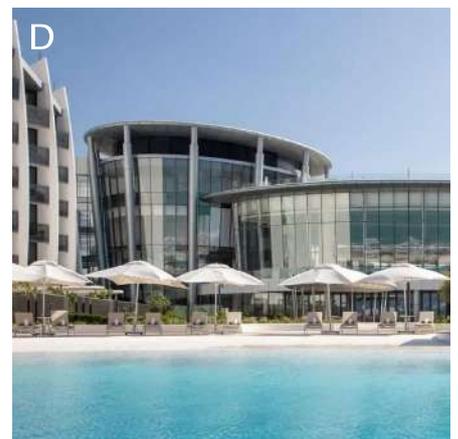
Meinhardt Vietnam commissioned Palmer Acoustics as the acoustic consultants on this 5-star casino / resort development on the coast 90km from Ho Chi Minh City.



### **Raffles Hotel (C)**

Location: Da Nang, VIETNAM  
Client: Hill International

Palmer Acoustics was commissioned to provide full acoustic consultancy services for the design development and documentation for the proposed 150 room Raffles 5 star hotel and villa development in Da Nang, Vietnam.



### **Saadiyat Island Resort (D)**

Location: Abu Dhabi, UNITED ARAB EMIRATES  
Client: Jumeriah

Palmer Acoustics was commissioned to assist in the development and construction of this 5 Star 150 room Jumeriah resort on Saadiyat Island off the coast from Abu Dhabi.

# MIXED USE HIGH RISE DEVELOPMENTS

## Q1 Residential Tower - 80 floors (A)

Location: Surfers Paradise, Queensland, AUSTRALIA  
Client: Sunland Constructions

The Q1 Tower at 80 floors was classified as the world's highest residential tower at the time of construction. The Palmer Acoustics commission was to ensure the acoustics met code and occupier requirements concerning noise levels and acoustic privacy. Of particular concern was privacy between adjacent apartments and noise from mechanical services.

## Chevron Renaissance (B)

Location: Surfers Paradise, Queensland, AUSTRALIA  
Client: Rapcivic Constructions

Palmer Acoustics was commissioned as the acoustic Consultant by Rapcivic for the 3 tower, 50 level, major residential development on the Chevron Renaissance development.

## Aurora (C)

Location: Brisbane, Queensland, AUSTRALIA  
Client: Bovis Lend Lease

Palmer Acoustics was commissioned to manage all acoustic issues, from concept development to commissioning in this landmark development with 69 levels and 420 residential units. The Aurora was at the time Brisbane's tallest residential building.

## Southport Central Stages 1, 2 and 3 (D)

Location: Gold Coast, Queensland, AUSTRALIA  
Client: Rapcivic Construction

Southport Central is a \$700m Rapcivic Construction mixed-use development on the Gold Coast. Palmer Acoustics worked with Rapcivic on all stages of the development to ensure that the acoustics amenity inside the office and residential areas met marketing expectations.

## Etihad Towers (E)

Location: Abu Dhabi, UNITED ARAB EMIRATES  
Client: Jumeirah Group

DBI Architects commissioned Palmer Acoustics on the prize-winning prestigious Etihad Towers mixed-use development in Abu Dhabi.



# THE ATRE, STUDIO & ARENA ACOUSTIC DESIGN

## Hanoi Opera House Acoustic Design (A)

Location: Hanoi, VIETNAM  
Client: Sun Group Vietnam

Commissioned to provide an acoustics design review of the proposed opera house drawings and specifications prior to commencement of construction.

## Viettel Theatre, Hanoi (B)

Location: Hanoi, VIETNAM  
Client: PTW Architects - HCM

Commissioned by PTW HCMC to provide acoustic advice for the new Viettel Head Office building 550 seat theatre in Hanoi. The key aspect of the commission was to provide a balance between good levels of speech intelligibility and reverberance for this performing arts and theatre space.

## Brighton College, Bangkok (C)

Location: Bangkok, THAILAND  
Client: Thailand Mason Acoustics

A 700 seat international college multi-purpose theatre. Palmer Acoustics was commissioned to work with Mason Acoustics to ensure a high level of speech intelligibility and good levels of reverberance.

## Rangsit University Theatre (D)

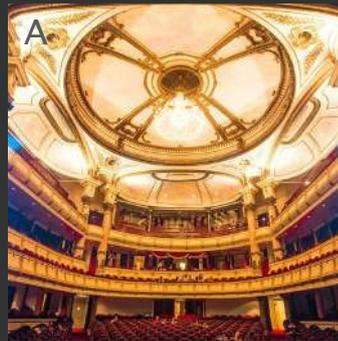
Location: Bangkok, THAILAND  
Client: Thailand Mason Acoustics

An 1100 seat theatre called the Suryadhep Música Sala at Rangsit University. Palmer Acoustics was commissioned to work with Mason Acoustics to ensure a high level of speech intelligibility and good levels of reverberance for performance events.

## Doha Hand Ball Arena (E)

Location: Doha, QATAR  
Client: Redco Construction

Commissioned as the acoustic engineer on this 5,500 seat handball stadium with broadcast and media facilities. The issue was speech intelligibility from the public address system and noise from the mechanical plant.



# AIRPORT ACOUSTICS

## Brisbane Airport

Location: Brisbane, Queensland, AUSTRALIA

Client: Hansen & Yucken

Commissioned to ensure upgrades to satellite lounge facilities meet Brisbane Airport and QANTAS acoustic specifications.





**Siem Reap and Phnom Penh Airports, Cambodia (A)**

Location: Siem Reap, CAMBODIA  
Client: Vinci Construction

Palmer Acoustics was commissioned to work on the acoustic details to ensure low level of A/C noise and air- craft noise in the terminal building whilst ensuring a good level of speech intelligibility from the PA system.

**Cam Ranh International Airport (C)**

Location: Cam Ranh, VIETNAM  
Client: CPG Singapore

Palmer Acoustics was commissioned to test and report on ways to raise the levels of speech intelligibility in the public areas from the currently install sound system. Room reverberant sound levels and levels of speech intelligibility were measured. Advice was provided on ways to upgrade the acoustics of the terminal and intelligibility of the public address system.

**Gold Coast Airport (B)**

Location: Coolangatta, Gold Coast, AUSTRALIA  
Client: Gold Coast Airport Corporation

Palmer Acoustics was commissioned on a major upgrade to the terminal to address all design stage issues of privacy, noise and speech intelligibility.

**Brisbane & Cairns Airport Control Tower Upgrades (D)**

Location: Brisbane, Queensland, AUSTRALIA  
Client: Badge Construction

Palmer Acoustics was commissioned to work with the project design team on the upgrades of the MEP services, to ensure that noise from the A/C system do not impact onto the operation of both control towers.

# THE ATRE, STUDIO & ARENA ACOUSTIC DESIGN

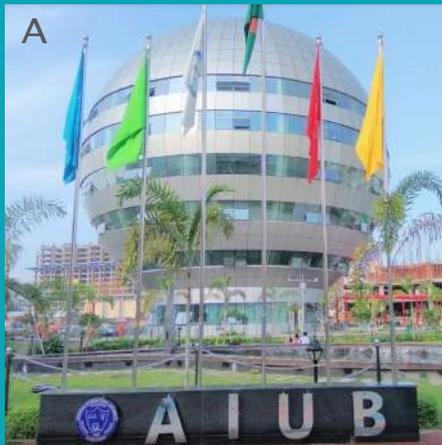
## State Tennis Centre - Queensland

Location: Tennyson Queensland, AUSTRALIA

Client: Mirvac Construction

Palmer Acoustics was commissioned on all aspects of the Acoustics and Audio Visual design for the State Tennis Centre 5,500 seat Arena in Brisbane.





**IUB Theatre Bangladesh (A)**

Location: Dakar, BANGLADESH  
 Client: International University Bangladesh

Palmer Acoustics was commissioned to review the proposed IUB 1,000 seat theatre design and provide quality inspections on the acoustics, lighting, and Audio Visual systems.

**Vin Pearl Theme Park Vietnam (C)**

Location: Nha Trang, VIETNAM  
 Client: DAS International

Palmer Acoustics was commissioned to assess the acoustics of the 5,000 seat amphitheater and associated park facilities within the 5-star theme park.

**Griffith University Film School (B)**

Location: Brisbane, Queensland, AUSTRALIA  
 Client: Griffith University

Palmer Acoustics was commissioned to define the required acoustic treatments to ensure that the space within an existing heritage-listed building in Southbank was able to function as a high-quality recording and theatre area.

**Phoenix Television Studios Hong Kong (D)**

Location: HONG KONG  
 Client: Phoenix Studios

Palmer Acoustics was commissioned to provide design advice and specifications for noise management to ensure high levels of speech intelligibility and privacy throughout the total TV broadcast and studio areas.

# THE ATRE, STUDIO & ARENA ACOUSTIC DESIGN

## Sun TV India (A)

Location: Chennai, INDIA  
Client: Primemeasure Technologies

Palmer Acoustics was commissioned to review the design and construction details of the partially constructed Sun TV facility in Chennai.



## HappyLand Film Studios - Vietnam (B)

Location: Ben Luc, Long An Province, VIETNAM  
Client: Sanderson Group HCMC

Palmer Acoustics was commissioned to provide a full acoustic services package for the Design of the proposed HappyLand Film Studios at the gateway to Ho Chi Minh City.



## QUT - Kelvin Grove Studios (C)

Location: Brisbane, Queensland, AUSTRALIA  
Client: Laing O'Rourke

Palmer Acoustics was commissioned to provide a full acoustic detailed design for the proposed Queensland University of Technology music studios and dance facility.



## Suncorp Stadium (Lang Park) (D)

Location: Brisbane, Queensland, AUSTRALIA  
Client: MMM Mechanical

Palmer Acoustics was commissioned to review all of the mechanical services acoustic details for this 52,000 seat sports stadium.



## Kuwait Olympic Village (E)

Location: Kuwait, City, KUWAIT  
Client: Public Authority for Housing through DAS International

Palmer Acoustics was commissioned to advise concerning building acoustics and speech intelligibility matters on this \$US2b, 7 stadium Olympics village complex.



# ENTERTAINMENT & AUDITORIA

## Gold Coast Convention & Exhibition Centre (A)

Location: Gold Coast, Queensland, AUSTRALIA  
Client: Jupiters Ltd

Palmer Acoustics was jointly commissioned with Gabriel's Environmental (Perth) as the acoustics consultant on this high-profile convention centre development. The commission was concerned with all aspects of the acoustic design, construction, and commissioning, with a particular focus on environmental noise breakout.

## Conrad Jupiters Casino & Hotel (B)

Location: Gold Coast, Queensland, AUSTRALIA  
Client: Conrad Jupiter

Palmer Acoustics was commissioned to assess issues of entertainment noise from the Casino affecting adjacent residential areas and also entertainment noise within the atrium affecting adjacent hotel guest rooms.

## Mackay Exhibition & Convention Centre (C)

Location: Mackay, Queensland, AUSTRALIA  
Client: Mackay City Council

Palmer Acoustics was commissioned as the acoustics consultant on this high-profile convention centre development. The commission was concerned with all aspects of the acoustic design, construction and commissioning, with a particular focus on environmental noise breakout.

## Impact Challenger Ballroom (D)

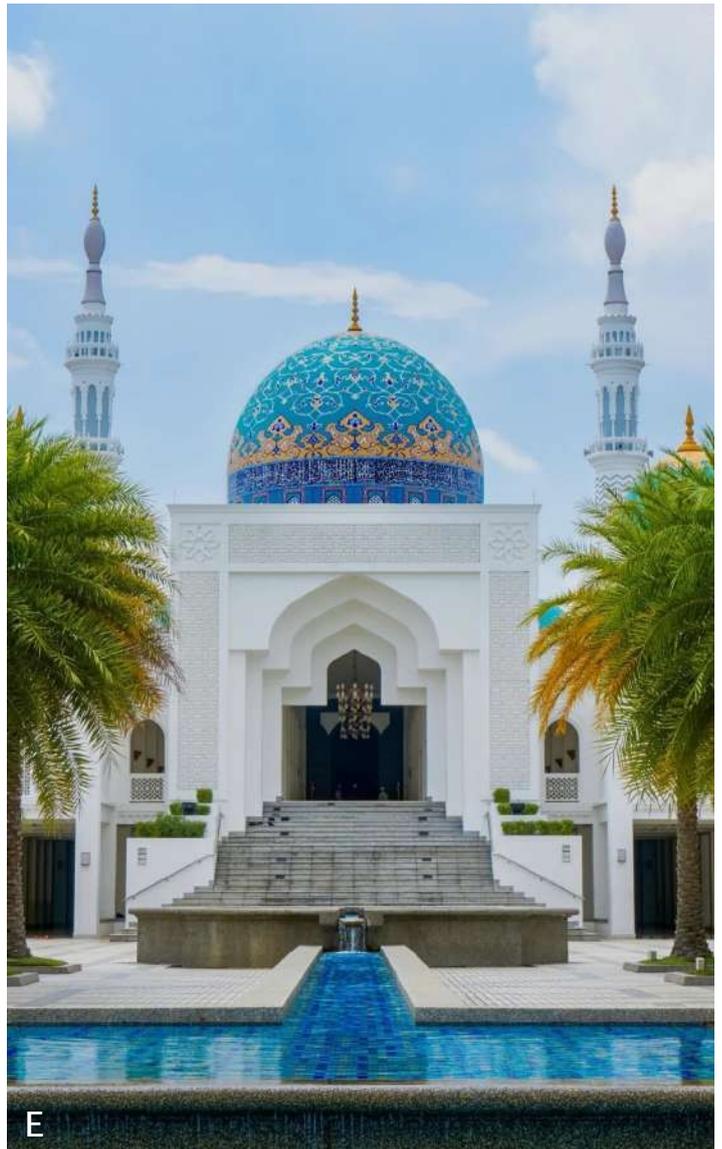
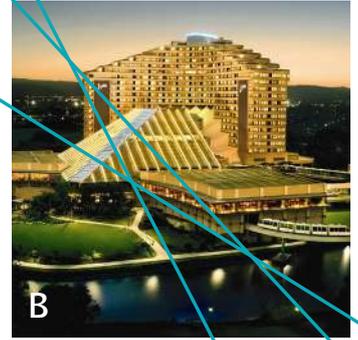
Location: Bangkok, THAILAND  
Client: Impact Challenger

Palmer Acoustics was commissioned by Impact Arena management to review the acoustics, Audio Visual, and lighting of their flagship ballroom. The ballroom, 90m long x 45m wide x 15m high, was engineered to provide high-quality room acoustics and lighting that was flexible and suited a range of potential uses.

## Alor Setar Mosque (E)

Location: Alor Setar, MALAYSIA  
Client: Alor Setar Mosque

Palmer Acoustics was commissioned to redesign the room acoustic treatments to resolve speech intelligibility issues in the main prayer room and sports hall.



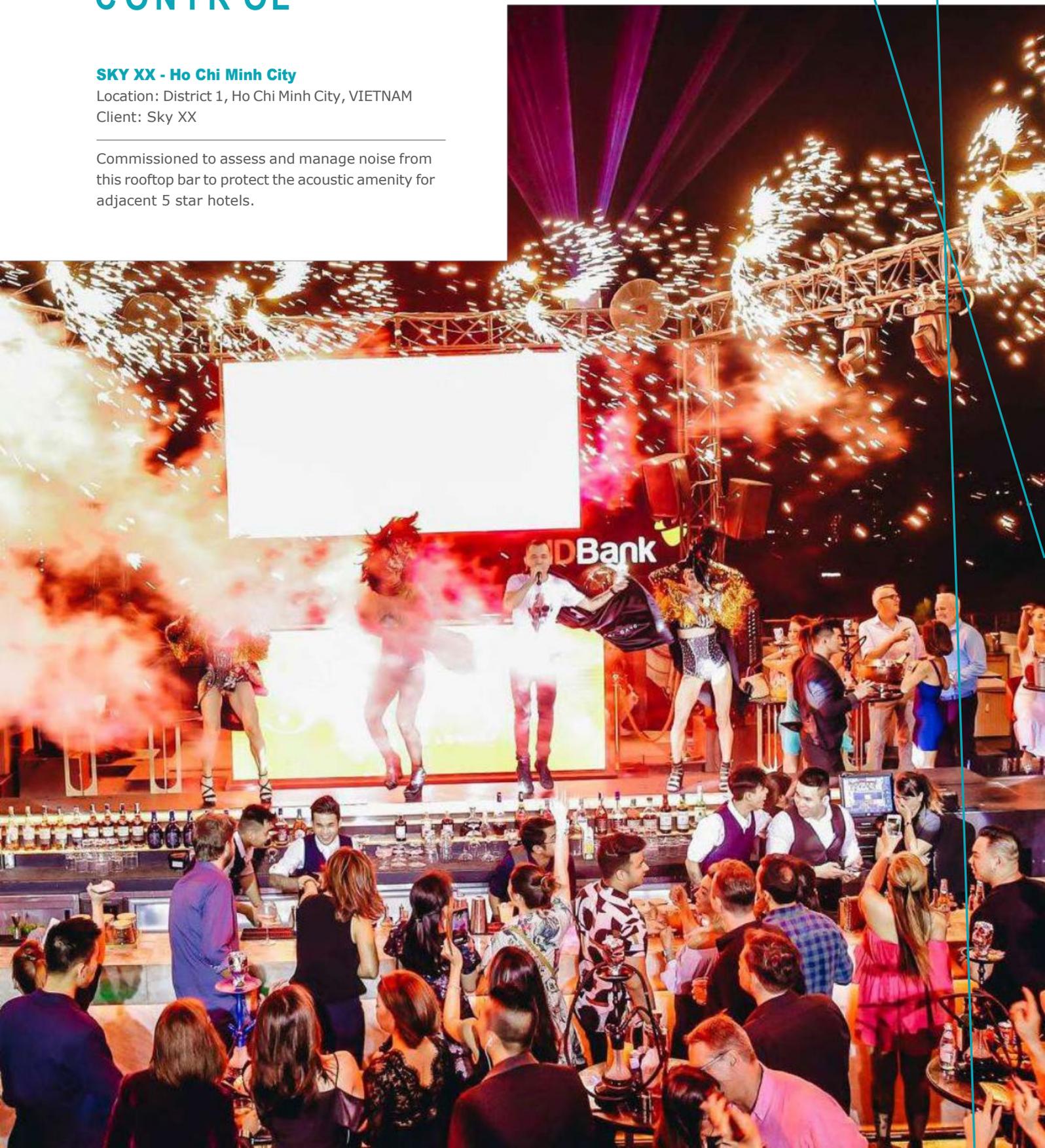
# ENTERTAINMENT VENUE NOISE CONTROL

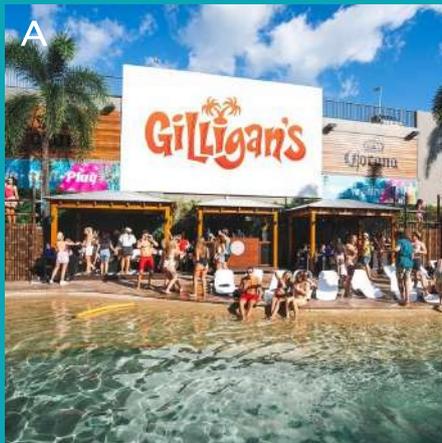
## SKY XX - Ho Chi Minh City

Location: District 1, Ho Chi Minh City, VIETNAM

Client: Sky XX

Commissioned to assess and manage noise from this rooftop bar to protect the acoustic amenity for adjacent 5 star hotels.





### **Gilligan's Night Club Cairns (A)**

Location: Cairns, AUSTRALIA  
Client: Gilligan's

Commissioned to assess and report noise as required by the Clubs liquor license. This was necessary to calibrate noise limiters and confirm management procedures.

### **Earth Frequency Festival (C)**

Location: Peak Crossing, Queensland, AUSTRALIA  
Client: Earth Frequency

Commissioning over 5 annual events to assess and report on noise over the 4 days of the events from various stages and at off-site locations to assist the festival in the management of noise to meet local authority license requirements.



### **Sandstone Point Tavern (B)**

Location: Bribie Island, Queensland, AUSTRALIA

Client: Residents Action Group

Commissioned by the resident's action group PANAG to assess and report on noise from the Tavern and provide expert evidence in their Planning Court Appeal against further music events.

### **Lebua 3 Night Club & Restaurant (D)**

Location: Bangkok, THAILAND  
Client: Lebua Hotels

Commissioned to work with the design team on the fit-out of this roof deck area into a 5 star dining area. The object was to minimize the impact of noise from both amplified entertainment and mechanical plant for adjacent noise-sensitive areas.



# INDUSTRIAL ACOUSTICS

## **RAN Landing Craft**

Location: Cairns, Queensland, AUSTRALIA

Client: Royal Australian Navy

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Palmer Acoustics was commissioned to carry out noise and vibration assessments of Royal Australian Navy landing craft to confirm compliance with military specifications.





### **Enhsam and Peak Downs Open Cut Coal Mine (A)**

Location: Emerald, Queensland,  
AUSTRALIA  
Client: Bucyrus

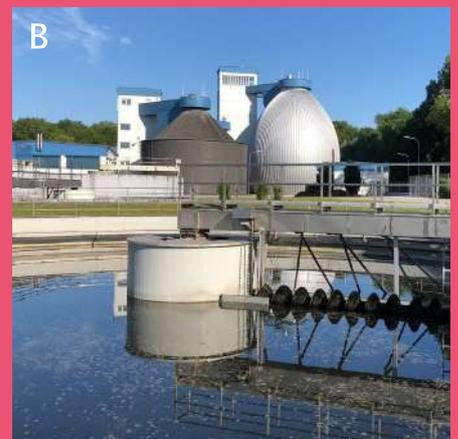
Palmer Acoustics was commissioned to assess the 1/3 octave band noise through, within and around the on-site Dragline in a range of operating conditions and locations.



### **Waste Water Treatment and Pumping Station**

**Acoustic Assessment (B)**  
Location: Bangkok, THAILAND  
Client: NVPSKG Joint Venture

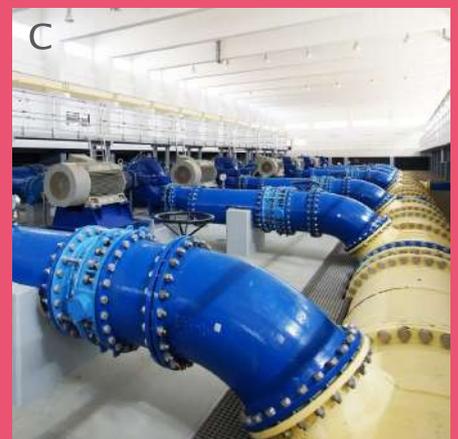
Palmer Acoustics was commissioned to assess and report on the noise impacts associated with 4 proposed pumping stations and a water treatment plant.



### **ADDG Pumping Stations Condition Assessment (C)**

Location: Abu Dhabi, UNITED ARAB  
EMIRATES

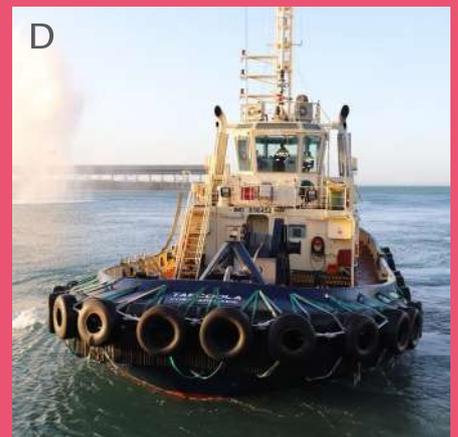
Palmer Acoustics was commissioned to assess the condition of 39 district water booster pumping stations throughout Abu Dhabi. The assessments included vibration, electrical checks, alignment thermal properties and noise measurements.



### **Astral Salvor Noise Tests (D)**

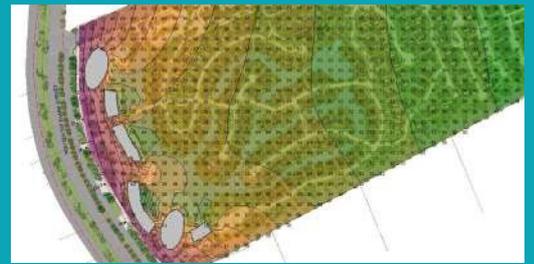
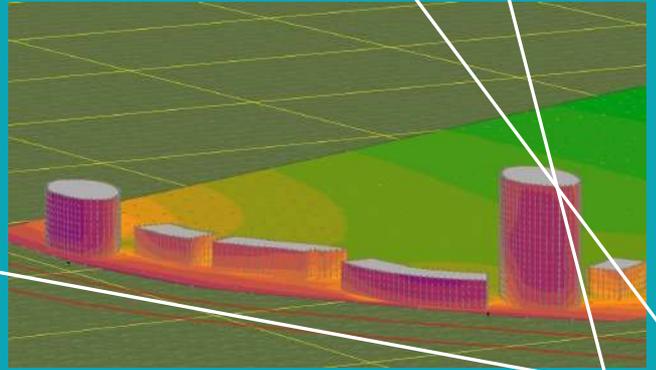
Location: Brisbane River, Queensland,  
AUSTRALIA  
Client: Astral Salvor Brisbane

Palmer Acoustics was commissioned to make noise assessments of Brisbane river Tugboat to assess the levels of noise reduction following noise control treatments.



# OTHER PROJECTS





# OTHER PROJECTS





# PROFILE



## Ross Palmer

CPEng RPEQ NPER 3 APEC Engineer

Principal / Director

### Qualifications:

- Bachelor of Engineering (Mechanical)
- University of Canterbury, New Zealand, 1979
- Registered Professional Engineer Queensland
- APEC Registered Engineer

### Professional Memberships:

- Association of Acoustical Consultants
- Institution of Engineers Australia (IEAust)
- Australian Institute of Refrigeration and Air Conditioning Engineers (AIRAH)
- The Australian Acoustical Society (AAS)
- The Acoustical Society New Zealand (ASNZ)

### Personal Profile:

Ross is a practicing Consulting Engineer and Principal of Palmer Acoustics (Australia) Pty. Ltd. He commenced practice as an acoustics engineer in 1980 and has extensive practical, professional experience in noise control engineering, and is a registered engineer capable of design solutions or certifying compliance. His experience extends over a diverse range of acoustic challenges, and he is known for innovative and cost-effective acoustic solutions. Ross is also well respected in the academic field and has delivered many training courses, including "Noise Control Principles & Practice", "Building Services Acoustics", "Noise in Buildings", "Advanced Noise Level Assessment," and "Noise in High Rise Buildings". Ross has presented acoustic engineering technical papers at international forums such as the 20th International Congress on Sound and Vibration, Bangkok, Thailand 2013, and the Council of Tall Buildings and Urban Habitat Conference, Dubai 2008.



### Selected Project Experience Includes:

Palmer Acoustics Australia Pty Ltd  
Principal Consultant to Palmer Acoustics from conception in 1992, responsible for all aspects of the business including market development, project and principal engineering, and sole company Director. He has been the Lead Consultant on many projects throughout the UAE, SE Asia, and Australasia regions.

The Treasury Casino & Hotel - Brisbane, Australia  
Ross was the Principal Acoustic Consultant on the design team of this 2.5 year, \$165m, 136 guest room development. Responsibilities included assessing background noise levels, the acoustic characteristics of the Treasury and Lands Buildings, and ensuring that the completed Casino and Hotel acoustics satisfied the requirements for this high-quality development.

Rydges - South Bank Hotel - Brisbane, Australia  
Ross was the Principal Acoustic Consultant to the construction company (Fletcher Construction) on this \$35m, 7 levels (140 room), 3-star hotel development. A major concern was noise and vibration from the adjacent South Brisbane railway line.

Admiralty Towers 1 & 2 and Admiralty Quays  
Brisbane, Australia  
Acoustic Consultant on these high rise residential developments in the Brisbane CBD (approx \$35m each). Responsibilities included all acoustic services and, in particular, noise from mid-level lift motor rooms.

**Robina Dong Ah - Golf Club, Hotel & Residential Development - Gold Coast, Aust.**

Acoustic Consultant commissioned to investigate and report on all acoustic issues involved with this development. Particular emphasis was placed on the impact of traffic noise from the adjacent Pacific Highway onto the amenity of the residential units.

**Sonasea Van Don Integrated Resort - Vietnam**

Acoustic consultant to the design team on this 2,500 guest room 5-star resort. The commission required Palmer Acoustics to manage noise to meet ACCOR brand standards.

**Crown Towers - Gold Coast, Australia**

Acoustic Consultant to this \$60m Gold Coast high rise residential development to offer high class residential and serviced apartments. Particular issues were noise from the ground level cooling towers and the acoustics of the 11 story atrium.

**Morayfield Shopping Centre - Brisbane, Aust.**

Acoustic Consultant to the development of this major shopping centre with particular emphasis on the acoustics of the 8 cinemas.

**State Government Building  
Rockhampton, Queensland, Australia**

Acoustic Consultant to Statham's, responsible to ensure that the 6 storey State Government office building in Rockhampton satisfies the requirements set by the State Government for their office buildings.

**Cathedral Place - Brisbane CBD, Australia**

Acoustic consultant to a 400 unit residential development located adjacent to three major roads in the Brisbane CBD. The isolation of noise across the building façade was a major issue with regard to performance and cost.

**Hope Island Resort Gold Club  
Gold Coast, Australia**

Acoustic Consultant on this project to review the services design to ensure that resultant noise levels did not compromise the quality of this 5 star Clubhouse, Ballroom and Restaurant development.

**The Marriot International Hotel  
Gold Coast, Australia**

Responsible to check design, tender documents, and construction details to ensure that the acoustics of this 28 level hotel development conformed to the expectations of a 5-star development.

**Palazzo Versace Hotel Development  
Gold Coast, Australia**

Acoustic Consultant to Sunland Corporation on this 5-star, \$60m hotel development. Responsibility included all issues of noise isolation and mechanical plant noise.

**Twin Waters Resort – Sunshine Coast, Australia**

Senior Mechanical and Acoustic Engineer assisting in the rectification of project problems and commissioning of this 350 room holiday resort. Acoustic tests were carried out on all the 350 accommodation air conditioning units.

**Riviera Stages 1 and 2  
South Bank, Brisbane, Australia**

Acoustic Consultant to Watpac for this major high rise residential development located within 30m of the South East Freeway, on a bend in the Brisbane River.

**Australian Embassy Apartments  
Bangkok, Thailand**

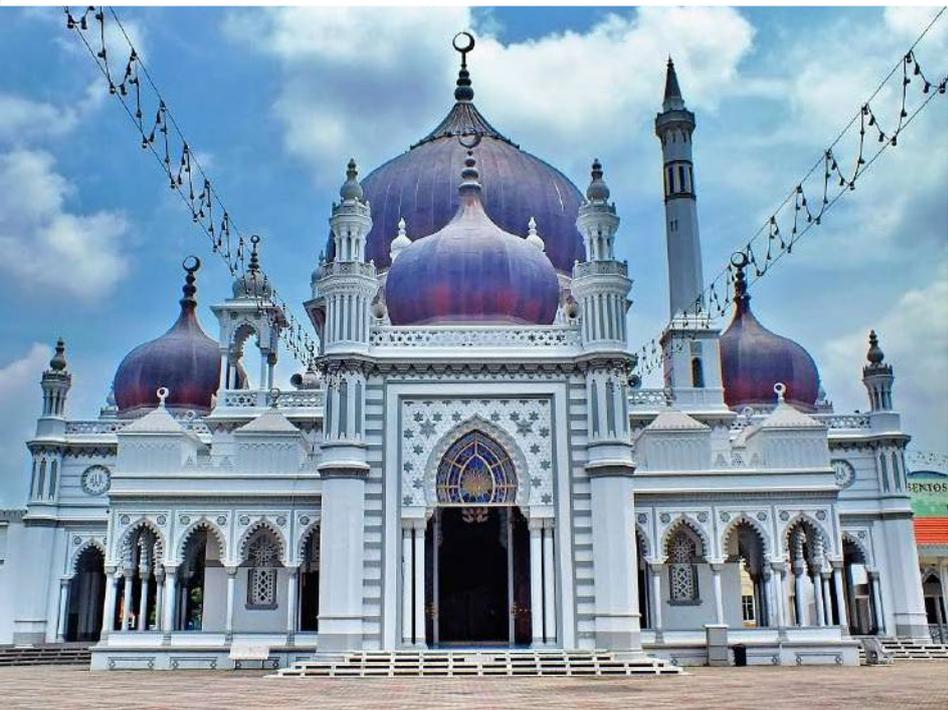
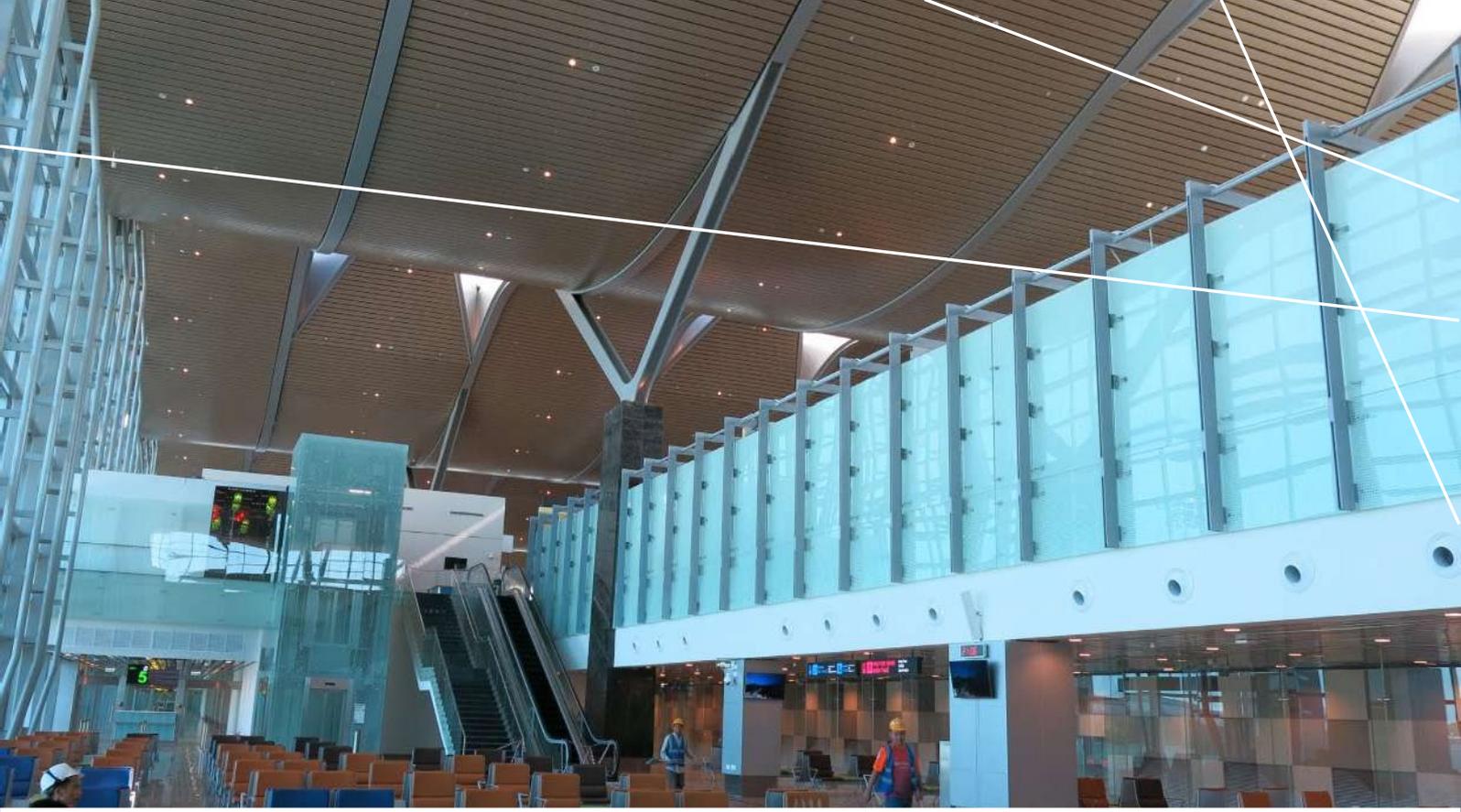
Acoustic Consultant to the construction company on this 3 story apartment building being constructed to high international standards, specifically designed to control external noise through the facade and limit internal noise levels from building services.

**Seacon Square - Bangkok, Thailand**

Acoustic Consultant to the Project Team to ensure that the acoustics of this 430,000m<sup>2</sup> retail development satisfied the requirements of this high-quality retail development. Features included 14 cinemas, extensive food courts, large conference and entertainment areas and parking for 4300 cars.

**The Ho Tram Strip Resort & Casino  
Ba Ria, Vung Tau, Vietnam**

Acoustic Consultant to Meinhardt Vietnam for the Casino and 5 star hotel on the East Coast of Vietnam 90km from HCMC. Ross was involved from the detailed Design Development stage through construction, testing and commissioning. Stage 1 of the project was completed in December 2012.



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