

STAR RATINGS PROGRAM FOR NOISE EMISSIONS



AcouSTAR STAR RATINGS FOR NOISE EMISSIONS

AcouSTAR is a professional independent Star Rating program for quick and simple evaluation of noise from wind farms, coal-seam gas power stations, mining operations as well as noise amenity in homes.

Engineering Noise Assessments are complex! AcouSTAR ratings are?

Simple & Certain.

Who needs AcouSTAR?

Developers, Operators, Regulatory Authorities, the Public.

The AcouSTAR program is designed to provide a complete check on environmental noise using a Star Rating system based on detailed Performance Standards and Environmental Measures to validate compliance with acoustical performance goals.

What does AcouSTAR do?

Performance indicators, Compliance, Incident Reporting.

The performance indicators and measures for compliance are referenced to International, National, ASTM and ANSI standards as well as relevant guidelines where appropriate. Acoustical performance goals are rated on the basis of 'good practice' and 'best practice' to meet the requirements of environmental management and audit programs.

How is AcouSTAR delivered?

Independent Training, Online, or Face to Face.

Originally designed for Australia, the program has international application. The program will be available on an on-line basis from educational providers and certifiers. AcouSTAR approves and certifies the educational providers and certifiers that provide and implement the AcouSTAR program. Organisations applying the Star Ratings do so in the knowledge that the program and AcouSTAR Modules have been developed to address the requirements of 'best environmental practice' and regulatory authorities. Process maps, steps and instructions are given on what to look for, why, when and how.



The AcouSTAR Modules

AcouSTAR is an independent audit process to certify environmental policies, principles and measures for acoustical performance goals.

- Developers and operators of noise producing industry have a standardised process to review and apply complex regulatory conditions and compliance mechanisms in a practical manner.
- Regulatory authorities are assisted in developing and applying simple, practical, consistent and effective compliance mechanisms.
- Residents are supported by having effective control and complaint measures in place that promote and conserve health and well-being.

To ensure all five AcouSTAR groups are adequately addressed a pass score is required in each of the five groups. The Star Ratings are from 1 to 5 and a minimum of 3 stars must be scored in order to receive a pass.

Five AcouSTAR Modules are endorsed:

- **Noise Management, Risk Assessment and Auditing;**
- **Noise Perception and Effects;**
- **Noise Measurement and Assessment;**
- **Noise Analysis and Reporting for Compliance;**
- **Noise Incident Reporting and Complaint Resolution.**

Each Module is in two parts

- Performance Standards and Certification; and
- Training to apply the Star Ratings.



Module 1 - Noise Management, Risk Assessment and Auditing

Good environmental management requires risk assessment and auditing protocols that provide a structured process to identify potential or actual impacts due to noise. Module 1 presents Star Ratings to identify the level of potential or actual noise risk; generally acceptable criteria and exceptions; and management through noise mitigation. Methods for the prediction of sound propagation and measures of uncertainty are rated. Civil liability, negligence and duty of care risks are rated. Management techniques for training in noise assessment and mitigation are rated. The provision of independent auditing for risk assessment, activity emissions and compliance are rated.

REFERENCE IS MADE TO:

- ISO/IEC 31010:2009, Risk management – Risk assessment techniques, reflects good practice and a framework for noise risk assessment;
- ISO 19011:2003 Guidelines for Quality and/or Environmental Management Systems Auditing;
- ISO 9613-2: 1996 Attenuation of sound during propagation outdoors-Part 2: General method of calculation;
- CONCAWE (1981): the propagation of noise from petroleum and petrochemical complexes to neighbouring communities;
- Work-place Health and Safety;
- Jurisdiction-specific noise management and health nuisance legislation.

Module 2 – Noise Perception and Effects

AcouSTAR provides the impartial rating mechanism essential for noise management relating to 'noise impact' and people. Star Ratings are applied for human health and wellbeing and nuisance assessment.

REFERENCE IS MADE TO:

- ANSI S12.9-2008 Part 6: Methods for Estimation of Awakenings Associated with Outdoor Noise Events Heard in Homes;
- World Health Organization Quality of Life (WHOQOL) assessment instruments for health and health-related studies;
- AES Human perception & sound quality program, Thorne (2007);
- USEPA (1974) Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.



Module 3 - Noise Measurement and Assessment

Noise includes vibration and sound pressure that may be perceptible but not heard.

REFERENCE IS MADE TO:

- ASTM E1686-10 (2010): *Standard Guide for Applying Environmental Noise Measurement Methods and Criteria*;
- ISO 1996-2 2nd edition: *Description, measurement and assessment of environmental noise – Determination of environmental noise levels*;
- IEC 61400-11 2nd edition: *Wind turbine generator systems-Acoustic noise measurement techniques* (with Annex A - Other possible characteristics of wind turbine noise emission and their quantification);
- Instrument standards: IEC61672, IEC61260, ANSI S1.4, IEC60942, ISO7196, DIN45657.
- New South Wales EPA (2000): *Industrial Noise Policy*;
- New South Wales DEC (2006): *Assessing Vibration: a technical guide*;
- Queensland EPA Ecoaccess Guideline *Assessment of Low Frequency Noise*;
- Metrological conditions, wind shear, temperature inversion;
- Noise Measurement Services Pty Ltd Practice Notes 2005-2011;
- Automated noise measurement, analysis and reporting for compliance and incident recording, reporting and resolution.

Module 4 – Noise Analysis and Reporting for Compliance

Current noise measurement technologies and applications. Requirements for what should be considered in a report and how to interpret complex noise criteria and noise descriptors in order to output a star rating.

REFERENCE IS MADE TO:

- Automated noise measurement, analysis and reporting for compliance and incident recording, reporting and resolution.

Module 5 – Incident Reporting and Complaint Resolution

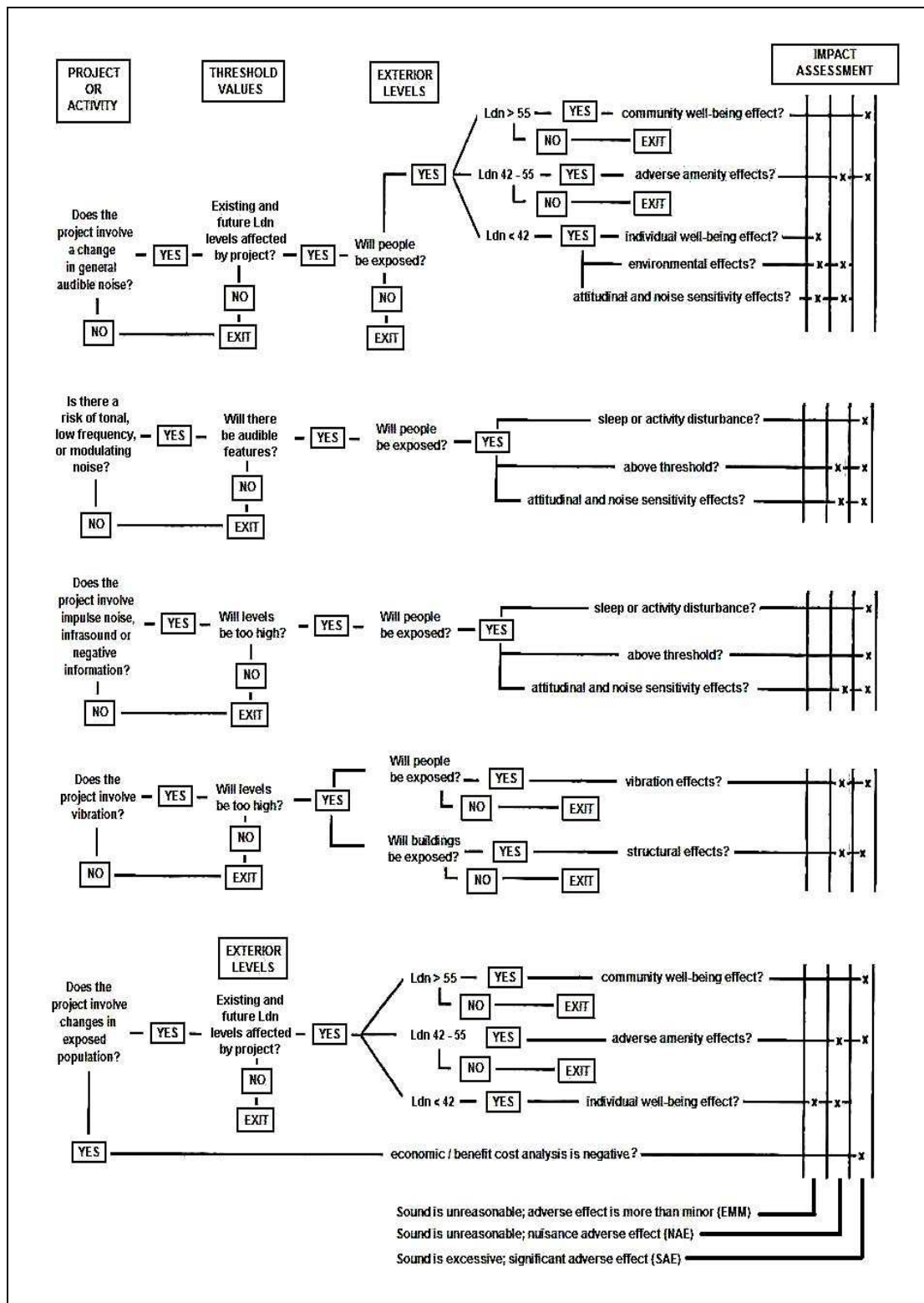
Steps to take in documenting complaints and methods to resolve complaints in a balanced and impartial way for both the developer and resident.

REFERENCE IS MADE TO:

- Automated noise measurement, analysis and reporting for compliance and incident recording, reporting and resolution.



Example: AcouSTAR SCHEMA FOR NOISE EMISSIONS



Source: 'Assessing intrusive noise and low amplitude sound', Thorne (2007)



STAR RATING

Each of the 10 topics (of the 5 modules) will have a Star Rating assigned to it. The star ratings, for example, for a document being reviewed or prepared range from:

- 0 Stars** Topic not addressed in the document being reviewed or prepared
- 1 Star** Topic addressed in the document within a paragraph without a specific heading
- 2 Stars** Topic addressed in the document as a paragraph with a specific heading
- 3 Stars** Topic addressed in the document as a paragraph with a specific heading and referenced materials such as calculations, assessment, conclusions
- 4 Stars** Topic addressed in the document with specific chapter and referenced research such as calculations, assessment, conclusions
- 5 Stars** Topic addressed in the document with a specific chapter and supplementary peer-reviewed research such as calculations, assessment, conclusions

Based on the AcouSTAR Certifiers' answers to approximately 50 questions (10 topics by 5 modules) the provided AcousSTAR software will produce a star rating for each module and hence overall development acoustic star rating.

- 0 to 1.9 Stars** Fail
- 2 to 3.5 Stars** Conditional fail; go back and re-do the problem issues
- 3.6 to 4.5 Stars** Pass
- 5.0 Stars** Exemplary Pass



TRAINING COURSE

Introduction

Once the student graduates as an approved AcouSTAR Certifier, they will have a broad knowledge of fundamental acoustics and an appreciation for noise criteria and how noise assessments are carried out. A certifier will very quickly be able to ascertain if all the relevant acoustic “checks and balances” are in place in an acoustic assessment using template checklists from provided software and rate the acoustical performance of a project. To ensure **transparency and unbiased accurate noise assessments**, the AcouSTAR Certifier may be a local resident affected by noise, a developer proposing a factory, wind farm, power station etc, an environmental manager with a company, or the regulatory authority such as a council environment officer. The AcouSTAR certification will demystify the acoustic industry and hence improve the acoustic environment by ensuring projects properly consider acoustics at the design stage where there is the most scope for noise controls.

The AcouSTAR program will be essential best-practice for noise assessments interstate and internationally. The AcouSTAR program provides very fast critique of extremely complicated engineering and human perception noise problems. The AcouSTAR program will empower the general public’s awareness of noise requirements and hence industry will operate at best practice which almost insures the health and wellbeing of the public.

AcouSTAR Qualification

Access

The AcouSTAR program is developed to meet the requirements of Continuing Professional Development (CPD). The 5 training modules may be considered as training units to suit a certificate III in engineering or diploma level course or simply be a Certification course in its own right as it is likely students will want to undertake just the AcouSTAR studies and not necessarily other units. An application fee is charged, as well as a fee for the individual Technical Manuals for each AcouSTAR Module. Certification of educational providers, certifiers, and organisations adopting the Star Rating program is on an annual basis.



The Program is Flexible

- Each module can be purchased as a separate package at anytime.
- An examination is required in addition to satisfactory completion of assignments to become an approved AcouSTAR Certifier.
- The examination and assignments are optional for students wishing to access the knowledge base without sitting an examination in the module.

Delivery

- The course is written with distance/ online learning in mind.
- The course is available (depending on student numbers and location) as a face to face course over 1 week with an expectation for home study and assignments.
- Each of the five modules is broken up into approximately 10 topics.
- Each module has a combination of learning styles including video presentation, powerpoint, and audio instruction. Some technical components have stage gates to pass through to ensure the student is competent in that area. If the student is 'stuck' the training presentation loops back to fundamental theory and additional practice questions.
- Each topic is designed be taught as a 45 – 60 minute package with additional time expected for assignments.
- The training videos incorporate real industry noise and real noise assessment reports to provide a hands-on training approach and to facilitate the on line / self paced learning path.

Recognition of Prior Learning

Recognition of Prior Learning is given with credits for prior learning.

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