

# Association of Australasian Acoustical Consultants Guideline for Report Writing

Version 2.0



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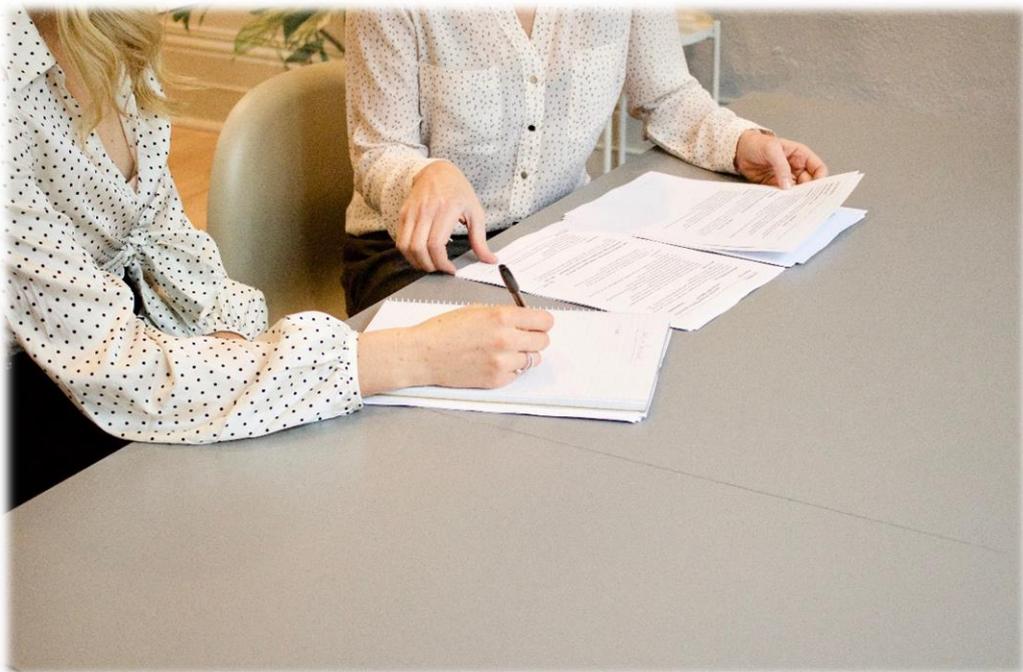


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## 1.0 PREAMBLE

This guideline presents a brief outline of the requirements for preparation of technical acoustic reports. It is for information purposes only and is not mandatory; however, the contents provide a usual guide for the minimum requirements of technical reports. In many cases, AAAC members work is peer reviewed and in these cases the need for clarity, transparency and completeness are important. The AAAC recommends that all members adhere to this guideline so far as is practical and reasonable.

## 2.0 INTRODUCTION

Good communication skills are of primary importance to acoustic consultants. The ability to communicate ideas, findings or conclusions is as important as the knowledge itself. The purpose of a report or any technical correspondence is to convey the information factually, briefly and clearly.

A technical report should always be well presented, well structured and informative without being verbose, obtuse or judgmental. Talk up to the reader, not down. Third person, passive voice and past tense are usual in technical reports.

## 3.0 ATTRIBUTES OF A REPORT

A technical report shall have the following attributes:

- Clarity;
- Brevity;
- Traceability;
- Completeness;
- Accuracy;
- Impartiality and professionalism;
- Compliance with the firm's and AAAC's Code of Professional Conduct.

The technical report serves as a means of communicating your work to others and possibly providing useful information about that work at some later date. A report should be well written, specific and allows the client or agent to quickly understand your conclusions and recommendations. The report and, in particular the data on which it has been based, needs to be clear, such that it can be referred in the future with clarity.

In preparing the report, you should often assume the client or agent is unfamiliar with acoustic theory, practise and analysis. To assist with the proper understanding, clear presentation of the results or recommendations is as important as the results or recommendations themselves. Well laid out, well organised and with sentences that are clear, concise and to the point are essential requirements of good technical reports.

Use technical acoustic terminology when appropriate and tailor this to the audience, but do not use them just to impress. Build the narrative logically, with tables, graphs or diagrams and sketches to enhance the written information.

## 4.0 OUTLINE STRUCTURE

Clarity in report writing is achieved by subdividing the report into discrete headed sections. A suggested structure is given below which may alter according to the specific requirements of a particular matter of investigation. Report pages should be numbered, and a table of contents provided, especially where the report has more than four or five subsections. The contents list may also detail Appendices, where these are included.

There are four main parts of a report each within a different purpose. These are:

- Executive Summary or Summary;
- Introduction;
- Core; and
- Conclusions.

In some studies, involving detailed or ongoing investigations, it may also be necessary to include a Recommendations section, which provides guidelines or additional actions or investigations required to complete the study.

In addition, there may be Appendices attached at the rear of the report. These are usually consisting of information which are not of immediate use to the reader, could detract from the logical presentation of the report, or are difficult to include within the body of the report due to bulk or format. Typical appendices may include acoustic or vibration terminology, the agreed scope of work, references, mathematical derivations, detailed analysis, design drawings, maps, site plans, third or octave source data, catalogue extracts, etc.

## 5.0 CONTENTS

### Abstract

In cases where the Summary is extensive, an Abstract may be required. An abstract can be considered as a condensed and abbreviated summary. Generally, the Abstract should be about half a page and should not contain tables or figures or reference them. The conclusions and results may be summarised but qualitatively, not quantitatively. Specific technical jargon, formula, abbreviations or acronyms should be used.

### Executive Summary and Summary

The Executive Summary or Summary is a complete description of the report including its aims and objectives and, most importantly, results, conclusions and recommendations. It should not contain any information that has not been detailed within the core and / or conclusion of the report.

In as few words as necessary, the Executive Summary advises the reader of the subject, key information and conclusions of the report. Executive Summaries are generally brief, except in comprehensive reports where sub-headings on each key topic or issue may be used to summarise such matters individually. The Executive Summary should be written last; after all the analysis and interpretation has been completed.

If required, a report can contain both an Executive Summary and a Summary. The Executive Summary is located at the front of the document, whereas a Summary is appropriately placed within the body of the report.

## Introduction

The contents of the report must be set in context. This section should explain why the work has been performed, who commissioned it, details of the agreed scope of work and details of the studies undertaken and their aims and objectives.

## Core

The material which forms the basis of any conclusion is usually laid out in the report core, which is the main part of the report. This section will provide all relevant information, results and discussions for the client or his agent to examine in detail.

The actual headings used to break up the core section of the report will depend on the subject, but examples are:

- Site description and site plans
- Proposed works or scope
- Separate methodology, criteria, relevant standards or applicable legislation
- Measurements performed or data on which the assessment is based
- Predictions or calculations of expected noise or vibration levels
- Presentation of results
- Comparison with relevant criteria, applicable standards or legislation
- Discussion and recommendations.

Wherever possible, images, drawings, graphs and tables should be used, each numbered in sequential order with concise titles. Digital photography and images, such as provided by NearMap or Google Earth are recommended to be used where they enhance the clarity and understanding of the report.

Where technical calculations are performed, the assumptions made in the analysis should be provided along with relevant source data, key geographical information and dimensions as necessary, in sufficient detail for any peer or independent reviewer to readily validate and confirm the findings. Full detailed calculations are normally not required and are unnecessary, unless specifically requested by the client or agent.

Details of predictive or modelling software, propagation algorithms, calibration, limitations and modelling assumptions (e.g. barrier attenuation, ground type and weather effects) should also be provided, if applicable.

Numerical results should be presented in a manner consistent with their accuracy. In the majority of cases, with the notable exception of wind farm assessments, quantities presented in decibels should be presented in whole numbers. Other quantities, such as area, distances or velocities should be rounded up or down appropriately. In such cases the error and uncertainty associated with the analysis should, where the author believes it is warranted or to promote clarity, be provided and discussed.

As the results of some measurement campaigns may be used in court, all measurements must be carried out in a precise, consistent and reliable way, presented in a manner that fully details all relevant measurement parameters.

## Conclusion

The Conclusion should be a condensed version of the Core section, giving the key findings of the study. This should be closely related and respond to the aims and objectives presented in the report Introduction (or Scope if included in the Appendix) and should contribute positively to the analysis and understanding of the subject under consideration.

Conclusions should discuss the results, but with quantitative information only and provide clear recommendations. Conclusions should not contain tables or figures or references to them. They may be presented sequentially or as dot points to assist the reader. This section should also be relatively short – about the same length as the Summary.

## 6.0 MINIMUM CONTENT

Acoustic consultants' reports need to convey, as a minimum, the information detailed below. This is important, given the need for professional advice to be read and understood in context and for possible review by other consultants, builders, lawyers or engineers, or peer review by fellow AAAC members.

Different projects have varying reporting requirements. Several of the most common types are:

- Building or Architectural Acoustics Design Reports
- Environmental Impact / Planning Studies
- Environmental Noise Commissioning or Compliance Measurements
- Expert Evidence Statements
- Day-to-Day correspondence (email, Design Advices (DA) or Consultants' Advice Notices (CANs) memos, letters, etc).

The minimum reporting requirements for representative project types are described in the following Appendices. This is based on information derived from the NSW, Victorian, Queensland, SA, WA and ACT environmental authorities, Australian Standard 1055 and other industry stakeholders.

In all reports and day-to-day correspondence, the essential requirements are – recipient(s), company, contact details, author, or revision date, subject, details and distribution details.

Many of these requirements are met when using on line web based Project Management Systems such as Aconex, Project Web, or Teambinder etc. The use of email tends to encourage lengthy correspondence by text, but all detailed or lengthy technical discussions and detailed findings should always be provided in a letter, memo, formal correspondence (e.g. DA, CAN) as an email attachment, rather than within the body of an email.

## 7.0 INTERNAL CHECKING / REVIEW

Reports should be thoroughly reviewed by another staff member of equal experience or higher technical capability as the author and preferably one who has not been involved in the preparation of the report. Format, grammar and expression should be checked, as well as the logical presentation and content of the report.

For organisations that implement a QA system such as ISO 9001, the internal checking / review should follow that organisations Quality Assurance procedures. However, as a minimum, original draft reports should contain the name of the author and reviewer and marked with the date of issue. File copies should be made of each version or revision and copies of all issues scanned or filed electronically.

All copies of distribution emails should be filed in the project directory or relevant public folder.

Copies of reports should not be provided to persons other than the authorising client without written approval from the client.

## 8.0 PEER REVIEWS

Acoustic consultants are more and more frequently preparing Peer Reviews of other acoustic consultant's work. Peer Reviews have the potential to give a misleading view of another consultant's work.

The AAAC objectives contained in the constitution are:

### OBJECTS

2. The objects for which the Association is established are:

- (a) To inform the public of the role and responsibilities of Acoustical Consultants and, in particular, the services which such consultants provide.
- (b) To establish and encourage adherence to standards of professional behaviour and conduct for acoustical consultants.
- (c) To provide members with a forum for exchange of information on matters relating to acoustics.
- (d) To cooperate and liaise with other Associations and bodies with respect to matters of mutual acoustical interest.
- (e) To inform and protect the community by discouraging, clarifying, negating or questioning unclear inaccurate or unproven representations of an acoustical nature.
- (f) To cooperate and liaise with authorities and associations having similar or analogous interests and in so doing, to contribute to the establishment, maintenance and application of standards, laws and registrations.
- (g) To encourage amongst the members of the association a high professional standard in all matters of practice including the calibration and use of instruments, measuring techniques and data processing employed by acoustical consultants.
- (h) To promote the welfare of acoustical consultants and the common interests of the members of the association and to do all such things as may be meaningful and lawful from time to time.

All AAAC member firm peer reviews should adhere to these objectives. Also consistent with the objectives, all Peer Review reports should, based on the information contained within the document being reviewed, identify opinions on:

- Advice, which they believe is incorrect or inappropriate;
- Advice which requires clarification or additional information;
- Minor points which, in the peer reviewer's opinion, may not be the approach they would have taken, however, do not alter the outcome/ conclusion of the report.

Use of a similar structure in Peer Review reports (to the three categories above) is recommended.

Any Peer Review should take into account the nature of the commission which should be stated in the original consultant's report.

The Peer Reviewer should attempt to contact the author of the report, where permitted by the client and where clarification would address questions the peer reviewer has.

## 9.0 APPENDICES

### APPENDIX 1 BUILDING OR ARCHITECTURAL ACOUSTICS REPORTS

Minimum information to be conveyed:

- Relevant correspondence
- Description of overall project and specific matters of consideration, project plans or extracts, as an Appendix; or with part plans or sections included within the body of the report to aid clarity
- Referenced documents and details of architectural, structural and building services drawing numbers with date and revision numbers
- Design performance requirements or objectives defined by particular use, area or zone
- Limitation of proposed floor, wall or partition systems, acoustic treatments and details of any proposed alternatives for achieving nominated performance requirements
- List of design options to meet BCA, AAAC or particular project requirements (e.g. privacy)
- (If appropriate) Outcome of modelling scenarios with prediction results and details of model settings, element sizes, assumptions and other parameters relevant to the particular study
- Details of special finishes and/ or treatments
- Assumptions relating to objectives or performance being achieved i.e. detailed assembly or workmanship etc
- Discuss any special issues, e.g. lifts, electronic or precision equipment, stage machinery, plant rooms or emergency plant etc.

## APPENDIX 2 ENVIRONMENTAL IMPACT / PLANNING STUDIES

Minimum information to be conveyed:

- Relevant correspondence
- Assumed noise source levels (sound power) and from where the emission levels have been derived - either from measurement, data base or file, or manufacturer or supplier data
- Any assumptions related to the assessment, including days and hours of operation, location of sources, number of items operating, operational modes, likely noise sources, noise transmission paths, screens or barriers or topography, etc.
- Weather conditions assumed for noise predictions
- Identify relevant State or local guidelines, policies, Australian or International standards and statutory requirements and propose particular objectives and criteria to be applied to the project, with extracts if necessary
- For rail transportation or traffic impact assessments, as applicable, details of annual, daily or average traffic flows, traffic speeds, track or road type, surface texture, intervening vegetation, length of corridor or road contributing to sound levels and location of any nearby reflecting or shielding elements
- Software modelling algorithms, settings or assumptions as to weather, terrain ground cover, shielding and other relevant factors that impact on the prediction accuracy
- Results of existing, ambient plant or facility noise measurements
- Anticipated compliance or otherwise with nominated or statutory limits and comparison with existing noise environment
- Identify preferred noise management or mitigation strategies, the expected noise reduction(s) and reasons for selecting any proposed or recommended measures. Any deviation from recognised criteria or guidelines should be accompanied by adequate justification, or explanation
- Identify the stages of the project development when noise is likely to be an issue (for example, site preparation, construction, start-up, operational or remedial phases guide)
- Detailed site plan(s) (or reference to a plan) with scale or distances, direction, boundaries, site features and buildings and, if necessary, nearest noise sensitive receivers
- Land use and location of noise sensitive receivers, surrounding the proposed infrastructure or development
- Likely nature or character of noise including any characteristics that necessitate corrections due to tonality, impulsiveness, modulation (AM or FM) or duration, when likely to be observed at the receptors
- If appropriate, commentary on the uncertainty and accuracy of the predicted results.

## APPENDIX 3 ENVIRONMENTAL NOISE COMMISSIONING OR COMPLIANCE MEASUREMENTS

Minimum information to be conveyed:

- Relevant correspondence
- Date, time and duration of source, ambient and background noise measurements and measurement procedure as required; whether performed by hand held equipment or by unattended logger etc
- The monitoring location(s), along with any required explanation for the choice of these locations. Sufficient information should be provided to ensure that the measurements can be repeated and, if necessary confirmed, by third parties
- Description images (NearMap or Google Earth) and / or sketch or photo of physical environment, including local reflecting shielding, surfaces or objects
- Instrumentation used for measurement with details of specific equipment deployed at each location
- Frequency and time weightings
- Confirmation of field and equipment calibration, with calibration certificate attached as an Appendix if required (i.e. a NATA report)
- Weather conditions during noise monitoring period, with full details of periods of adversely affected data (due to adverse weather and extraneous noise that exceed any allowable threshold) and when deleted or excluded
- The relevant noise criteria or limits (if any) to compare against the measured levels
- Nature or character of measured noise, including any required corrections for character such as tonality, impulsiveness, modulation or duration
- Descriptions of the nearest affected receivers or, in the case of community complaints, details of the complainant residence and address; with these clearly shown on the site plan or locality plan
- Weather monitoring location, results and instrumentation used (if any); and adequate details of temperature, wind speed, direction, humidity, pressure and precipitation (e.g. min, max and average values)
- Results of noise monitoring at each monitoring or receiver location
- The reasons for any non-compliance(s) should be stated and (broad) strategies for management or mitigation identified if the exceedance or non-compliance is due to the plant, facility or noise source(s) under investigation
- Any information required for comparison with relevant noise criteria or limits as detailed by the scope and requirements of the relevant regulatory bodies
- Details of any dominant sources or matters of specific interest reports, previous survey results, other relevant correspondence and reference documents.

## APPENDIX 4 EXPERT EVIDENCE STATEMENTS

Minimum information to be conveyed:

- Relevant correspondence
- Particular information required by the practice rules or Code of Conduct of Expert Witnesses published by of the relevant court tribunal or panel
- The expert has a duty to the court or tribunal and must not act as an agent for a single party. The expert must state their opinion objectively, without undue bias to the views or objectives of the client or person retaining or employing the expert
- Identify work carried out by the author or by other staff members and fairly and correctly attribute that work produced by other firms, in preparation of the Statement
- Relevant brief or instructions from the client
- Opinion of the expert and concise reasons for supporting the opinion
- Expert's qualifications, previous relevant experience and qualification of others assisting with the information prepared, analysed or gathered for the statement
- An index of policy documents, technical reports or literature referenced in preparing the statement
- Facts, matters and assumptions on which the statement is based with no withholding of information of relevance that should reasonably be provided
- Documents and other material the expert has been instructed to consider
- Responses to submissions by stakeholders, objectors or the affected community
- The expert must make it clear where a matter or issue falls outside their specific field of expertise and must not attempt to address an issue beyond that field
- If additional assessments, measurement or research are required, or where there is insufficient or limited information, to draw definite conclusions this must be stated

**For more information and other published AAAC Guidelines, go to [www.aaac.org.au](http://www.aaac.org.au)**

### Member Firms:

To contact a AAAC member, select a region from the link below:

<http://www.aaac.org.au/act>

<http://www.aaac.org.au/nsw>

<http://www.aaac.org.au/qld>

<http://www.aaac.org.au/sa>

<http://www.aaac.org.au/vic>

<http://www.aaac.org.au/wa>

<http://www.aaac.org.nz>

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