



Proposal Form – Standards Development Projects

Version: 4.1
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Please click [here](#) for guidance on the proposal submission process.

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|---------------------------------|----------------------------------------------------------------------------|
| Proposal title | Building Commissioning |
| Your name | Phil Wilkinson |
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| Email address | phil@airah.org.au |
| Name of employer | Australian Institute of Refrigeration Air Conditioning and Heating (AIRAH) |
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If you are submitting on behalf of an organisation that is different than your current employer, please fill out the information below.

| | |
|---------------------------------|----------------------------------------------------------|
| Nominating organisation | PRIME |
| Primary contact name | Phil Wilkinson |
| Primary contact position | Secretariat |
| Primary contact email | phil@airah.org.au |
| Primary contact phone | (03) 8623 3010 |

Section 1: Scope

| 1A: Provide details of the proposed documents | | | | |
|------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------|
| # | Title (e.g. <i>Masonry cement</i>) | Project type (e.g. <i>revision, amendment¹ or new²</i>) | Designation (e.g. <i>AS 1316:2003</i>) ³ | Product type (e.g. <i>AS, AS Int, SA TS, etc...</i>) ⁴ |
| 1 | Building Commissioning | New | | AS |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |

¹ An amendment is usually only possible for small changes to recently created documents. See Section 4 of Standardisation Guide [SG-003: Standards and Other Publications](#) for more details.

² If you are proposing to create a new document, please provide a suggested Title.

³ Use the [SAI Global website](#) to obtain the full designation and name of existing documents.

⁴ Standards Australia mainly develops Australian Standards (AS) but it also develops the following Product types: Australian Interim Standard (AS Int), Australian Technical Specification (SA TS), Australian Technical Report (SA TR), Handbook (SA HB), Miscellaneous Publication (SA MP), Supplement (Normative), Supplement (Informative), Australian Standard Certified Reference Material (ASCRM). For guidance, see Standardisation Guide [SG-003: Standards and Other Publications](#).

1B: Write a clear and concise statement of the nature of the issue to be addressed by your proposal.

Describe who is affected e.g. businesses, community organisations or individuals affected by the problem. What are the consequences of no action?

Commissioning buildings is an essential part of the building design/construct/delivery process. Building commissioning provides a framework for design and installation, testing, compliance and verification. Fundamentally the building commissioning process provides assurance that buildings and their systems will meet their design intent and their operational requirements, including legal requirements.

System commissioning already takes place and is a regulated requirement for some systems in some jurisdictions, but is often implemented in a haphazard and non-integrated way. Some individual standards and specifications call for testing and verification of baseline data and some do not. It has long been recognised by industry and government that building commissioning is often not carried out well in Australia and one of the impediments to improved building performance is a lack of consistency and rigor in the approach to the commissioning of new and refurbished buildings. There are many reasons for this that are widely acknowledged in the building industry; including lack of time, lack of understanding, lack of empowerment of key stakeholders or failure to allocate sufficient funds and time.

Commissioning processes and procedures are not well understood in the construction/property industry and different stakeholders have a different understanding of their role and responsibilities. This has led to a market failure in the specification, procurement and implementation of building commissioning in Australia. Currently there is scope for contractors to commit to something without actually delivering. It is difficult for owners, occupants or even government regulators to know whether the design specifications have been

complied with without adequate commissioning to prove performance.

The environmental cost of poorly performing buildings can be classified as a negative externality, as can the additional costs (energy, health, amenity, etc.) born by building occupants.

There is also a case to be made with respect to government and regulatory failure. There are performance requirements relating to design (NCC etc.), and there are specific requirements with respect to installation (state-based occupational licensing requirements, health and safety, essential services requirements etc.), but there is no way of connecting the two. As a result, we have poor performing buildings and very little enforcement.

1C: Write a clear and concise proposed scope that will outline how to address the identified issue(s). Unless this is a proposal for a new document, this should not be a scope of the document, but a scope of the work which you propose to undertake.

Include what is going to be changed from the status quo and summarise the specific intent of the change.

If you wish to include proposed revisions as tracked changes in the standard, or an outline of a new standard, please summarise the scope and note the attachment here, and include the document as an appendix to this form.

Building commissioning focuses on the entire building and takes into consideration the interrelated nature and impact of building systems and services on each other. As such, building commissioning ensures that the entire building as an entity (i.e. the building envelope, HVAC, lighting, electrical, controls, plumbing, fire systems and any related systems) functions safely, reliably, as required by regulation and most importantly functions optimally, as designed or as operated.

All stakeholders in the construction industry would benefit from a publicly available and industry agreed specification for building commissioning. The following are the fundamental steps in the process:

- The building owners' requirements are documented;
- The designer's system performance intent is documented;
- The commissioning process is planned and specified;
- The commissioning process is implemented as planned;
- The building installations are verified;
- Adjustments are made where system performance issues are identified;
- The related building systems and the overall building performance is verified;
- The last two steps are repeated until performance matches design intent over a suitable range of climatic and operational conditions;
- The entire process is documented and reported.

Commissioning also provides a mechanism to check that the specified materials, equipment and systems have been installed.

Building commissioning removes many of the uncertainties from the delivery of construction projects, typically at a low cost. It enables analytical and statistical tools to be applied to systems during inspection and testing, it helps to transfer knowledge from the design and construction phase to those tasked with the operational building and it enables a platform for continuous improvement and building tuning.

Building commissioning refers to a number of activities that occur at different points in a building project's life cycle (i.e. from design, through construction to operation). An Australian Standard on Building Commissioning would need to cover the following scope:

- An overview of commissioning, the meaning of key terms, the identification of key stakeholders and a discussion of the strengths and weaknesses of the collaboration models applied.
- A definition of the commissioning processes and tools that apply at various times throughout the building life cycle; pre-design, design, installation, handover, operation, maintenance, decommission.
- Information of the different contractual models for commissioning; i.e. first, second and third-party commissioning arrangements.
- Clarification of accountability and responsibilities of relevant parties.
- Information on specifying and procuring commissioning; differentiating between commissioning models, project size and complexity.
- A definition of key commissioning documentation.
- Information on existing building commissioning technical tools and resources.
- Information on applying Building Commissioning principles to existing buildings; including recommissioning, retrocommissioning and continuous commissioning.

Please see the attached discussion paper “PRIME Discussion Paper - Standardising Building Commissioning” for more detail on the proposal to create an Australian Standard on Building Commissioning.

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| 1D: Are you proposing an adoption of an International Standard (i.e. ISO or IEC)? No | |
| If so answer the following: ⁵ | |
| Is it a Modified or Identical Adoption? <i>Note: if Identical use the Proposal Form – Identical Adoption</i> | N/A |
| What is the designation? e.g. ISO 10303.212-2004 | |

⁵ Use the [SAI Global website](#) to obtain the full designation and name of existing documents.

| | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| 1E: Is the existing document referenced in Australian State, Territory or Commonwealth legislation or regulatory framework? For joint documents, also consider New Zealand legislation.⁶ | |
| Yes (List all legislation or regulation that refer to the existing document. ⁷) <i>Note: For National Construction Code (NCC) and WaterMark proposals, the Australian Building Codes Board (ABCB) needs to be consulted prior to submission.</i> | N/A Not intended to be referenced in NCC |
| No (Go to 1F) | |

⁶ To search for standards in Australasian legislation, use our search function [here](#).

⁷ Use the full formal designation for the relevant legislation, e.g. Explosives Regulation 2013 (NSW). If more than four items of legislation are affected, provide a list as an attachment to this proposal form.

Note: All relevant regulatory authorities must be consulted in the stakeholder consultation.

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| 1F: Is there an ISO/IEC document that also covers the issues in question? | |
| Yes (Go to 1G) | |
| No (Go to 1G) | No |

| | |
|---------------------------------------------------------------------------------------------------|----|
| 1G: Will the proposed document include any conformity assessment requirements?⁸ | |
| Yes | |
| No | No |

⁸ See Standardisation Guide [SG-006: Rules for the structure and drafting of Australian Standards](#). Note that conformity assessment requirements are rarely permitted in a standard. If you selected "yes," please discuss with the relevant [National Sector Manager](#) prior to submission.

Section 2: Net benefit

2A: What will be the impact of the proposed project in the below categories? Explain this in terms of a positive or negative impact on the following “Net Benefit” criteria.⁹

Public health and safety (max 200 words)

Many of the systems within buildings are provided to address the health and safety of building occupants. These include the essential safety systems (fire/smoke detection and alarm, fire and smoke control systems, emergency lighting), the ventilation system, lighting, hydraulics and also passive aspects such as fire rating and building element sealing. Different building systems and elements are typically provided by different stakeholders and are often tested, adjusted and set to work in isolation, without consideration of other systems or other elements of the building. In many buildings, this complexity results in failures when systems eventually need to work together as a whole.

The building commissioning process provides assurance that these systems work as designed and as intended, so that buildings provide a healthy and safe environment for their occupants.

Providing an Australian Standard on building commissioning will improve awareness and understanding of the process within the industry and provide a common platform for the specification, procurement and delivery of Building Commissioning services.

An improved collective understanding and the more collaborative and coordinated approach that could be facilitated by the building commissioning standard will improve the quality and quantity of building commissioning services in Australia, improving public health and safety outcomes.

Social and community impact (max 200 words)

The most significant social and community impact from building commissioning is the reduced costs to operate buildings, both energy costs and in reduced maintenance, and emissions reduction. Commissioning also provides consumer protection, especially as it relates to "getting what one paid for" and quality assurance.

There are also many intangible social and community benefits from the increased application of a standardised Building Commissioning process within Australia.

Building commissioning provides better information on how a building operates and a better understanding of operational issues by ensuring knowledge transfer during the construction process/transition to operation.

Correctly integrated and operating building services provide safer, healthier, more energy efficient and more productive workplaces and residences.

The transparent and collaborative development process adopted by Standards Australia provides confidence to the community as to the validity and benefits of the process.

Commissioning means improved occupant satisfaction (fewer complaints) and reduced resource use. Complaints are a constant drain on building management resources in dealing with small, but time consuming and annoying issues. This direct cost saving can be estimated in terms of saved staff time following up tenant calls, calling service contractors, monitoring and checking the fix, informing the tenant again, disruption of occupants' activities, legal costs, etc.

In public buildings, such as libraries, hospitals etc, the positive impacts of building commissioning benefit, not just the permanent building occupants but also temporary/transient occupants, and the public at large. Staff

productivity, comfort and health are critically important to tenants and owners, and GBCA studies have shown that higher standards of performance in these areas offer substantial economic and social benefit.

Environmental impact (max 200 words)

In 2013 the total emissions from the commercial and residential building sectors accounted for 127 MtCO₂e, nearly one quarter of Australia's total national emissions. As Australia moves to meet our international emission reduction commitments it is clear that the building and property sector is a major emissions contributor that needs to be addressed.

Applying a rigorous building commissioning process during design, installation and operation improves a building's performance and reduces the level of energy and water required to operate it.

The correct commissioning of new and existing buildings therefore provides a readily achievable pathway for building owners and operators to address the environmental impact of their building operations.

An Australian Standard on Building Commissioning, that provides an industry-agreed low-cost pathway to reducing the energy and water consumption of all new buildings, and many existing buildings, in Australia, will help the Australian economy to reduce its overall emission intensity levels.

At the highest level, using a Building Commissioning standard to improve building energy efficiency will:

- lower building operation costs (noting that the cost of fuel and energy continue to increase);
- reduce greenhouse gases (CO₂ emissions); and
- contribute to the mitigation of climate change.

The Green Building Council of Australia (GBCA) have been "market leaders" with 'Commissioning and Tuning' a longstanding credit in the Green Star rating tool. Growing industry capacity and recognition of the benefits has now made this one of the easier Green Star credits to target and most green star buildings now achieve this.

Competition (max 200 words)

Community expectation is that buildings are commissioned.

An Australian Standard on Building Commissioning will provide a level playing field in the construction industry and help to create an environment and culture where commissioning is seen as an essential part of the building construction and operation process. It will provide clients with a common understanding of what the commissioning process actually involves, forcing service providers to compete more on quality of performance.

Standardised whole building commissioning approaches will improve compliance and verification of aspects such as:

- Building essential safety systems;
- Building performance;
- Building energy use; and
- Specific verification requirements of system and product standards.

This Australian Standard will tie all of the various review, inspection and test practices into an integrated whole-building commissioning approach.

The standard will help the property/construction industry to specify and procure agreed levels of commissioning to be delivered through agreed collaboration models using agreed technical tools. Having an Australian Standard to underpin a growing Building Commissioning industry in Australia will improve competition in the market place where the services and processes are underpinned by the standard.

A building that performs as intended achieves productivity, comfort, lower climate impact, less stress on energy supply infrastructure, and avoids potential legal costs and the adverse impacts on all parties of the correction of faults at a later date, when the building may be occupied.

Economic impact (max 200 words)

It has been shown that the correct application of a building commissioning process can improve the performance of a newly constructed building by as much as 25%, with an across-the-board average of 13% improvement, i.e. an average 13% reduction in energy use. (From the Mills North American building commissioning meta-analysis report, which revealed over 10,000 energy-related problems discovered and corrected during building commissioning.)

On average 70% of energy use within a commercial building is consumed by the building services. In 2013 the energy use of commercial buildings required around 270 PJ of generated electricity.

If the application of whole building commissioning can drive average energy savings of 13% then total savings could be in the order of magnitude of 25 PJ of electricity per year as the Australian building stock modernises, just from improved operation of buildings due to the correction of design and construction errors during the delivery phase.

Market leaders such as Green Star rated buildings and premium grade offices have already demonstrated substantial improvements from a required and defined building commissioning process. Improved indoor environment quality (IAQ, ventilation, lighting) provides a significant occupant productivity uplift and benefit. Improving employee productivity has significant financial benefits for companies and the Australian economy.

⁹ Add specific facts and examples if possible. Refer to the [Guide to Net Benefit](#). Not all categories may be affected, in which case, leave these blank.

Section 3: Evidence of support — Stakeholder support

3A: Describe the process taken to gain stakeholder support for your proposal (max 100 words)

PRIME has adopted an open and transparent approach to the development of this proposal which includes an industry discovery process and an implementation workshop. PRIME has consulted with Commonwealth, State and Territory regulators and agencies during the development of this proposal.

We have circulated this proposal and the associated discussion paper to key industry stakeholders and have asked for their support and assistance in developing the Australian Standard. The following stakeholders indicated in-principle support for the project during the development of the proposal:

- Air Conditioning and Mechanical Contractors' Association (AMCA)
- Australian Institute of Architects (AIA)
- Australasian Fire and Emergency Service Authorities Council (AFAC)
- Building Products Innovation Council (BPIC)
- Department of Housing and Public Works Queensland
- Engineers Australia (IEA)
- Facility Management Association of Australia (FMA)
- Green Building Council of Australia (GBCA)
- Real Estate Institute of Australia (REIA)
- Victorian Building Authority (VBA)

Specific details of individual stakeholder support is compiled in 3B and attached.

3B: Identify the Australian stakeholder organisations that you have consulted with.

Evidence of stakeholder support MUST be provided in a letter (on company letterhead) or email (company email only).

At least two New Zealand-based stakeholders must be included for projects relating to joint AS/NZS standards. Include those that do, and those that do not, support the proposal.

| Key stakeholder groups | Organisation Name | Contact name | Position | Letter or email evidence is attached: Y/N | Interested in membership of standards committee: Y/N |
|--------------------------------------------|------------------------|--------------|----------|-------------------------------------------|------------------------------------------------------|
| <i>Research and academic organisations</i> | | | | | |
| <i>Manufacturer associations</i> | Insulation Australasia | | | Y | Y |
| <i>Testing bodies</i> | | | | | |
| <i>Certification and auditing</i> | Green Building Council | | | Y | Y |

| | | | | | |
|-------------------------------------------|-----------------------------------------------------------------|--|--|---|---|
| <i>bodies</i> | of Australia (GBCA) | | | | |
| <i>Supplier associations</i> | | | | | |
| <i>User and purchaser associations</i> | | | | | |
| <i>Employer and industry associations</i> | Fire Protection Association Australia (FPA Australia) | | | Y | Y |
| <i>Employer and industry associations</i> | Air Conditioning and Mechanical Contractors' Association (AMCA) | | | Y | Y |
| <i>Professional and technical bodies</i> | National Environmental Balancing Bureau (Australia) | | | Y | Y |
| <i>Professional and technical bodies</i> | Chartered Institute of Building Services Engineers (ANZ) | | | Y | Y |
| <i>Professional and technical bodies</i> | Engineers Australia | | | Y | Y |
| <i>Professional and technical bodies</i> | Australian Institute of Architects | | | Y | Y |
| <i>Professional and technical bodies</i> | NATSPEC Construction Information | | | Y | Y |
| <i>Unions and employee associations</i> | | | | | |
| <i>Consumer and community groups</i> | | | | | |
| <i>Government and regulatory agencies</i> | South Australian Government - Department of Planning, Transport | | | Y | Y |

| | | | | | |
|---------------------------------|--------------------------------------------|--|--|---|---|
| | and Infrastructure | | | | |
| <i>Independent experts</i> | Adelaide Airport Limited | | | Y | N |
| <i>Independent experts</i> | Holmes Fire | | | Y | N |
| <i>Independent experts</i> | Engineering Commissioning Services Pty Ltd | | | Y | Y |
| <i>Independent experts</i> | Energy consultant | | | Y | N |
| <i>New Zealand stakeholders</i> | | | | | |
| <i>Other</i> | | | | | |

Section 4: Declaration

Please check that your proposal is complete and all fields have been filled out. Read and complete the declaration, then forward this proposal and any attached documents to Standards Australia at mail@standards.org.au. The named proponent is deemed to have approved the information contained within this proposal and this declaration.

This declaration is a mandatory requirement and proposals will not be considered without it.

I consent to Standards Australia making information relating to Standards development projects public, including information contained within a proposal form I have submitted in part or in full. In the event that Standards Australia publishes proposals on its website, proponent details at page 1 and stakeholder contact details provided at Section 3 will not be included. However, with prior agreement, my contact details may be provided to interested parties wishing to contribute or comment on the proposal or the proposed project.

The information provided in this application is complete, true and accurate to the best of my knowledge. I believe the proposed document will result in Net Benefit¹⁰ to Australia. I have consulted with, and have the support of, national organisations with a relevant interest in this project.

| | |
|----------------------------|----------------|
| Name of proponent | Phil Wilkinson |
| Date of declaration | 22/08/2017 |

¹⁰ As defined in the [Guide to Net Benefit](#)

Section 5: Instructions and notices

To submit this proposal for Standards Australia consideration:

1. You must complete every section of this form and then submit your initial proposal draft to a [National Sector Manager](#). Use simple, non-technical and concise language and do not use jargon of any kind. For additional information, visit the "[Proposing a Project](#)" page on our website.
2. The National Sector Manager will conduct the preliminary review of this form and then guide you as to the next steps.
3. Final submissions, along with evidence of stakeholder support, have to be provided electronically to Standards Australia (mail@standards.org.au) before the closing date of each [Prioritisation Round](#). Please note: you should allow sufficient time to circulate your proposal to stakeholders and collect evidence of support before the Prioritisation Round deadline.

If you have any trouble with the form, you can contact us on (02) 9237 6170, 1800 035 822, or email us at mail@standards.org.au.

For identical adoptions of International Standards please complete the [Proposal Form – Identical Adoptions](#).

Privacy notice: Standards Australia reserves the right to make information relating to Standards development projects public, including information contained within submitted proposal forms in part or in full. In the event that Standards Australia publishes proposals on its website, proponent details at page 1 and stakeholder contact details provided at Section 3 will not be included. However, with prior agreement, your contact details may be provided to interested parties wishing to contribute or comment on the proposal or the proposed project.