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STRUCTURAL STEELWORK CERTIFICATION IN AUSTRALIA

- REQUIREMENTS, BENEFITS AND COSTS

Synopsis

This technical note clarifies the third-party certification environment in Australia, specifically for structural steel (the members and plates from the steel mill) and structural steelwork (the fabricated steel components and assemblies). The Standards in play, the certification schemes available, the overlaps and applicability of the various schemes and the benefits and costs are all addressed, allowing the reader to make an informed judgement on the most appropriate conformity assessment pathway.

This technical note has been reviewed by a panel of industry stakeholders, as detailed in Appendix A. Their support is gratefully acknowledged.

1. INTRODUCTION

1.1 Context

A significant issue in today's procurement environment, with internationalised supply chains and a consequent reduced ability to rely on 'trusted relationships', is an increased risk of procurement of construction products that are found to be non-compliant. This brings into sharp focus the need to robustly ascertain the compliance of construction products at a point in the procurement chain that allows the problem to be addressed without either expensive project dislocation or heightened risk. This technical note clarifies the third-party certification environment in Australia, specifically for structural steel (the members and plates from the steel mill) and structural steelwork (the fabricated steel components and assemblies). The Standards in play, the certification schemes available, the overlaps and applicability of the various schemes and the benefits and costs are all addressed, allowing the reader to make an informed judgement on the most appropriate conformity assessment pathway. Appendix B provides the contextual background to third-party certification as a tool to support improved procurement outcomes.

1.2 Abbreviations

ABCB – Australian Buildings Code Board is a Standards writing body that is responsible for the development of the NCC. It is established by the ABCB Intergovernmental Agreement (ABCB IGA).

ACRS – Australian Certification Authority for Reinforcing Steels

APCC – Australasian Procurement and Construction Council Inc. is the peak council of departments responsible for procurement, construction and asset management policy for the Australian, State and Territory governments and the New Zealand Government.

CAB – Conformity Assessment Body

CASCO – ISO Conformity Assessment Committee

IAF MRA – International Accreditation Forum Mutual Recognition Arrangement

JAS-ANZ – Joint Accreditation System of Australia and New Zealand.

NCC – National Construction Code

SDoC: Supplier Declaration of Conformity

1.3 Definitions

Conformity assessment: demonstration that specified requirements relating to a product, process, system, person or body are fulfilled. The concept of conformity assessment is concerned with the fulfilment of specified requirements, not with the wider concept of conformity. (From AS ISO/IEC 17000 (Ref. 4))

First-party conformity assessment: conformity assessment activity that is performed by the person or organisation that provides the object. (From AS ISO/IEC 17000)

Second-party conformity assessment: conformity assessment that is performed by a person or organisation that has user interest in the object. (From AS ISO/IEC 17000)

Third-party conformity assessment: conformity assessment activity that is performed by a person or body that is independent of the person or organisation that provides the object, and of the user interests in the object. (from AS ISO/IEC 17000)

Conformity assessment body: body that performs conformity assessment services. (From AS ISO/IEC 17000)

Conformity assessment system: rules, procedures and management for carrying out conformity assessment. (From AS ISO/IEC 17000)

Conformity assessment scheme: the collection of all conformity assessment activities that are repeatedly applied to a specified group of products, processes, services, systems, persons or bodies

Structural steel: steel manufactured to a recognised steel product Standard and intended for use in fabricated steel load-carrying structures

Structural steelwork: structural steel that has been fabricated into members, assemblies and components as part of load-carrying structures

Supplier Declaration of Conformity (SDoC): the procedure or document that is a first-party attestation that the object of conformity (product, process or service) fulfills specified requirements

Trusted relationship: a relationship between two or more parties that has developed based on a series of interactions whose performance has been judged as successful. The level of trust may be informal or based on metrics to ensure performance is measured and maintained.

2. AN EXPLANATION OF CERTIFICATION

2.1 What is certification?

According to Ref. 5 certification is a “formal procedure by which an accredited or authorized person or agency assesses and verifies (and attests in writing by issuing a certificate) the attributes, characteristics, quality, qualification, or status of individuals or organizations, goods or services, procedures or processes, or events or situations, in accordance with established requirements or standards”.

The significant aspects of this definition include:

- The certification procedure should be 'formal', that is, defined and undertaken to a plan.
- The certification procedure should be undertaken by an accredited or authorised person or agency, the implication being that the certification authority has been recognised as competent in the field of certification undertaken.
- The certification is undertaken to assess and verify against established requirements or Standards. In the usual case, certification would be against a Standard, but an entity may also be certified to a specification or the like from an authority.

The certification authority is often referred to as a 'Conformity Assessment Body' (CAB). Conformity Assessment Bodies more generally include certification bodies, testing laboratories, calibration laboratories, inspection bodies and proficiency testing providers.

Commonly, the CAB operates in accordance with the relevant international (ISO) Standards developed and maintained by CASCO (Ref. 6).

2.2 Accreditation versus certification

On occasion there is confusion in the market as to 'accreditation' and 'certification', with the terms used interchangeably. However, whilst they are complementary, they are distinctly different aspects of the holistic treatment of conformity assessment.

In a formal sense, accreditation is defined as a "third-party attestation related to a conformity assessment body conveying formal demonstration of its competence to carry out specific conformity assessment tasks," as defined by AS ISO/IEC 17011 (Ref. 7).

The quality of the CAB and the quality of the conformity assessment can be difficult for most stakeholders to assess properly. In some cases, the certification schemes are run by industry recognised bodies and the quality of the scheme may be linked to the reputation and technical ability of the body or organisation running the scheme.

Where the quality of the certification scheme is not known, accreditation provides a measure of independent review of the CAB and may be considered a requirement, in particular where the specifying authority must satisfy demonstrable due diligence (such as the case with Government procurement or the like).

Appendix C provides a detailed understanding of the conformity assessment, certification and accreditation environment.

3. APPLICABLE STANDARDS FOR STRUCTURAL STEEL AND STEELWORK

3.1 Context

Australian Standards are referenced in a building or construction project in two fundamental ways:

- Through reference in the National Construction Code (NCC) (Ref. 15). Any Standard called up in the NCC is termed a primary reference under the NCC. Other Standards referenced from the primary reference are considered secondary references under the NCC. These Standards are therefore part of the regulatory framework in Australia for buildings and other projects covered by the NCC;
- Through reference in the project specification, in which case the Standards become a contractual requirement of the project. Engineers usually prepare the specification on behalf of the client and may make use of standardised specifications such as the ASI National Structural Steelwork Specification (Ref. 16) or NATSPEC (Ref. 17).

Standards provide the fundamental standardised requirements driving the technical and quality outcomes for the project and are therefore the natural focus for conformity assessment efforts, both in respect of products and processes. Therefore, understanding the Australian Standards framework is a necessary component of any meaningful discussion on certification.

The high-level Standards framework in the steel construction sector may best be conceptualised with reference to Fig. 1. The development of a building or construction project is initiated by the design function in creating the building or structure design. Therefore, the design Standards play a fundamental role in framing the construction outcomes. The design Standards reference product Standards, which define the requirements for the individual products that make up the building or structure, and also reference execution Standards, that define how the building is prefabricated and constructed. Below the product and execution Standards sit a plethora of tertiary Standards supporting specific details where required.

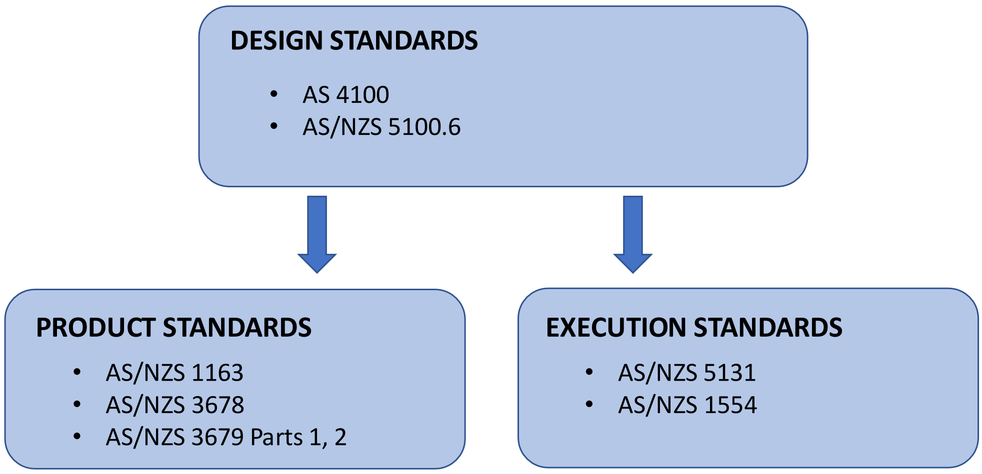

FIGURE 1 AUSTRALIAN STANDARDS FRAMEWORK IN THE STEEL CONSTRUCTION SECTOR

3.2 Design Standards – structural steel

The most relevant design Standards applicable to structural steel are:

- AS 4100–2020 'Steel structures' (Ref. 18)
- AS/NZS 5100.6:2017 'Bridge design: Steel and composite construction' (Ref. 19)

AS 4100 covers the design of the steel framework for the majority of buildings, structures and associated fitments used in the built environment.

AS 4100 was recently revised, primarily to replace the majority of requirements for fabrication and erection with reference to AS/NZS 5131 'Steel structures – Fabrication and erection'.

AS/NZS 5100 Part 6 specifically covers design of bridges in steel and composite construction. Amongst the changes in the 2017 revision was the referencing of AS/NZS 5131 (Ref. 20).

The intent of Standards Australia is that AS/NZS 5131 is the primary reference for fabrication and erection of structural steelwork for projects in Australia.

3.3 Product Standards – structural steel

Quality risk-minimised outcomes for steel construction relies on materials with known defined performance. AS 4100 'Steel structures' relies on guaranteed values for chemical composition, mechanical properties, methods of manufacture and tolerances as contained in the Australian steel product Standards referenced in Section 2 of AS 4100. The design parameters, particularly the design capacity factors, have been calibrated against the requirements of the Standards and may not be applicable to products that do not comply in their entirety with the requirements of the relevant Standard. The full implications of the required activities to enable design to AS 4100 to be carried out on Australian sourced or imported material is contained in ASI Technical Note TN005 (Ref. 21).

The relevant product Standards include:

- Hot-rolled steel flat products (AS/NZS 1594)
- Cold formed structural steel hollow sections (AS/NZS 1163)
- Hot rolled steel flat products (AS/NZS 3678)
- Hot rolled bars and sections (AS/NZS 3679.1)
- Welded I sections (AS/NZS 3679.2)
- Structural and pressure vessel steel – quenched and tempered plate (AS 3597)
- Bolts (AS 1110, AS 1111, AS 1112)
- High strength steel bolts (AS/NZS 1252.1)
- Welding consumables (referenced from AS/NZS 1554 series)

3.4 Execution Standards – structural steel

The execution Standards define the processes necessary to convert the steel products into the final steel structure erected on site.

The most relevant steel execution Standards include:

- Structural steelwork fabrication and erection (AS/NZS 5131) (Ref. 20)
- Structural steelwork welding (AS/NZS 1554 series) (Ref. 22)
- Welding management (AS/NZS ISO 3834 series) (Ref. 23)
- Quality management (AS/NZS ISO 9001) (Ref. 24)

AS/NZS 5131:2020 is the primary Standard covering the execution phase of structural steel construction. AS/NZS 5131 scope includes:

- Specification, documentation and traceability
- Materials for fabrication
- Shop detailing (drafting)
- Fabrication processes including cutting, holing, shaping and assembly
- Welding
- Mechanical fastening
- Surface treatment and corrosion protection
- Architecturally exposed structural steelwork
- Erection
- Inspection, testing and correction

ASI Technical Note TN 011 (Ref. 39) provides an implementation guide to AS/NZS 5131 for engineers, specifiers and procurers.

Welding is one of the primary and more technically demanding processes involved in fabrication. The AS/NZS 1554 series of Standards defines specific requirements around welding, including for:

- Weld types
- Materials to be welded
- Welding consumables
- Personnel qualification
- Weld qualification
- Workmanship

- Quality of welds
- Inspection

Weld Australia (Ref. 26) provide significant resources for welding and related industries.

3.5 Regulatory perspective

The two primary regulatory touch points for building and construction in Australia are:

1. The National Construction Code (NCC) (Ref. 15)
2. The Workplace Health and Safety Act (Ref. 27) and associated regulation

All building work in Australia is subject to meeting the performance requirements in the National Construction Code (NCC) which sets out the minimum standards for a broad range of building products and systems. The NCC is a performance-based code and specifies means to achieve compliance to a range of *Performance Requirements*. Performance Requirements outline the minimum necessary standards different buildings or building elements must attain.

Performance Requirements are satisfied by either:

1. A *Performance Solution*
2. A *Deemed-to-Satisfy Solution (DTS)*
3. A combination of 1 and 2

Performance Requirements must be verified using one or a combination of the following *Assessment Methods*:

- Evidence of suitability in accordance with Part A5 of the NCC
- *Verification Method,* as outlined in Clause 2.2(2)(b)
- *Expert judgement*
- Comparison with the *Deemed-to-Satisfy Provisions*

The *Deemed-to-Satisfy Solution* for these Performance Requirements is outlined in Clause B1.0, which references Clause B1.4 in respect of determination of the structural resistance of materials and forms of construction.

For steel construction, Clause B1.4 states the structural resistance of materials and forms of construction <u>must be determined in accordance with</u>, as appropriate:

- Steel structures: AS 4100 (Ref. 18)
- Cold-formed steel structures: AS/NZS 4600 (Ref. 28)
- Residential and low-rise steel framing: NASH Standard – Residential and Low-Rise Steel Framing Part 1 or Part 2 (Ref. 29)

It is therefore clear that if a Deemed-to-Satisfy solution is being adopted, the structural steel must meet the requirements of AS 4100, which, in respect of steel materials, calls up the Australian Product Standards (Refs 30, 31, 32, 33).

<u>It is therefore also clear that where steel or steelwork has not been manufactured or fabricated to Australian Standards, the deemed-to-satisfy solution is **not** applicable and a *Performance Solution* must be adopted</u>. ASI Technical Note TN 005 (Ref. 21) provides guidance on design to AS 4100 utilising imported materials and ASI Technical Note TN 007 (Ref. 34) discusses compliance issues and steel structures.

The harmonised Work Health and Safety (WHS) Act 2011 (Ref. 27) places significant shared responsibility on all parties in the construction value chain – specifically, manufacturers, importers, suppliers, designers and constructors. All stakeholders have a prescribed ‘duty of care’ that cannot be reassigned contractually.

The ‘Safe Design of Structures Code of Practice’ (Ref. 35) sits under the harmonised Work, Health and Safety Act 2011 and provides specific guidance to stakeholders involved in the design of a building or structure as to how to implement the requirements of the Act. It highlights the significant shared responsibility for safe outcomes placed on all stakeholders, including designers, manufacturers, importers, suppliers and constructors.

Significantly, the Code of Practice speaks to the so-called 'Safety Report' as a mechanism to ensure all unusual or atypical aspects of the project are properly and transparently documented and addressed by the responsible party. The ASI strongly suggests that known issues to do with product or process non-compliance MUST be documented in the Safety Report to ensure they are addressed adequately.

4. AVAILABLE THIRD-PARTY CERTIFICATION SCHEMES IN AUSTRALIA

4.1 Context

The APCC Procurement and Construction Products Guide (Ref. 2) provides a good summary of available Schemes in operation in the broader construction arena at the date of the publication.

As relates to structural steelwork, a number of third-party certification schemes are in operation in Australia, including:

- ACRS – refer Section 4.2
- NSSCS – refer Section 4.3
- AS/NZS ISO 3834 – refer Section 4.4
- ATIC Scheme 10 – refer Section 4.5

In addition to these Schemes, Government authorities such as main roads departments and some larger construction companies may run pre-qualification schemes for sourcing of steel and fabricated structures. <u>One of the significant opportunities for garnering efficiency in the construction market in Australia is the rationalisation of these pre-qualification schemes under one of the broader-based third-party certification schemes such as the NSSCS</u> noted above.

4.2 ACRS

The Australasian Certification Authority for Reinforcing and Structural Steels (ACRS) (Ref. 36) administers a specialist industry-based, independent, not for profit, third-party product certification scheme which certifies reinforcing, prestressing and structural steels to Australian Standards such as AS/NZS 1163, 3678, 3679 parts 1 and 2, 4671 and 4672 parts 1 and 2. This scheme has been in place for steel reinforcing and prestressing materials since 2003, and for structural steels since 2011. ACRS is accredited by JAS-ANZ to AS/NZS ISO/IEC 17065:2013.

4.3 NSSCS

The ASI National Structural Steelwork Compliance Scheme (NSSCS) is an independent third-party quality compliance and certification system for supply, fabrication and erection of structural steelwork in Australia. The technical basis for the NSSCS is founded on AS/NZS 5131 'Structural steelwork – Fabrication and erection' (Ref. 20) and is applicable to structures designed to AS 4100 (structural steelwork), AS/NZS 5100.6 (bridges) and supporting Australian Standards, including those for steel products, welding, bolting and corrosion protection.

As indicated in Fig. 2, the NSSCS comprises four supporting pillars:

- AS/NZS 5131 as the technical foundation
- Risk assessment and engineer selection of the Construction Category for the particular project. Guidance on assessment of the Construction Category is provided in both AS 4100 and AS/NZS 5131
- Conformity assessment to the requirements of AS/NZS 5131
- Auditing and certification of fabricators to one of the Construction Categories through the separate body Steelwork Compliance Australia (SCA) (Ref. 37).

For further information on the NSSCS refer to the ASI website (Ref. 38). ASI Technical Note TN-011 (Ref. 39) provides implementation support for engineers, specifiers and procurers.

FIGURE 2 STRUCTURE OF NATIONAL STRUCTURAL STEELWORK COMPLIANCE SCHEME

4.4 AS/NZS ISO 3834

AS/NZS ISO 3834 'Quality requirements for fusion welding of metallic materials' (Ref. 23) specifies the production control requirements expected for fusion welded products globally, whether fabricated on-site or in a workshop. It is the internationally recognised benchmark for welding quality.

AS/NZS ISO 3834 comprises six parts:

- Part 1: Criteria for the selection of appropriate level
- Part 2: Comprehensive quality requirements
- Part 3: Standard quality requirements
- Part 4: Elementary quality requirements
- Part 5: Documents required to claim conformity to AS/NZS ISO 3834 Part 2, Part 3 and Part 4
- Part 6: Guidance on implementing AS/NZS ISO 3834 (a technical report)

It is notable that in AS/NZS 5131, the requirements for each of the Construction Categories CC1, CC2 and CC3 have been aligned with the requirements in Parts 4, 3 and 2 of AS/NZS ISO 3834 respectively. The 2020 amendment to AS/NZS 5131 also introduced normative reference to AS/NZS 3834 (previously informative), making the requirements of AS/NZS 3834 as referenced in AS/NZS 5131 mandatory.

4.5 ATIC Scheme 10

Australian Technical Infrastructure Committee (ATIC) is a technical group under the Australasian Procurement and Construction Council (Ref. 40). ATIC Scheme 10 – 'Requirements for bodies certifying manufacturers of structural steel products' comprises the following main sections:

- Section 1: Requirements for bodies certifying manufacturers of structural steel products

- Section 2: Requirements for manufacturers of certified structural steel
- Section 3: Requirements for certified structural steel products to
    - AS/NZS 1163 Cold formed structural steel hollow sections
    - AS/NZS 3678 Structural steel – hot rolled plates, floor plates and slabs
    - AS/NZS 3679.1 Structural steel, Part 1: Hot-rolled bars and sections
    - AS/NZS 3679.2 Structural steel, Part 2: Welded I sections

5. ACCREDITATION OF THIRD-PARTY CERTIFICATION SCHEMES

The accreditation of a third-party certification scheme provides an important and independent indicator to the market that the subject scheme has been developed and is operating based on international good practice. Full details on accreditation and the accreditation environment in Australia are provided in Appendix D.

6. RELATIONSHIP BETWEEN CERTIFICATION SCHEMES

6.1 Context

With a number of certification schemes in the market variously covering elements of supply of structural steelwork for building and construction projects in Australia, it is important for stakeholders to understand the scope of each certification scheme and how the schemes relate to ensuring complete coverage of a compliant steel structure. It is equally important that stakeholders understand when certification scheme scope overlaps and the extent of overlap to ensure that unnecessary functional duplication of certifications is minimised.

The three certification schemes related to structural steelwork in Australia most relevant to the current discussion are:

- The ACRS scheme for structural steel
- The NSSCS for fabricated and erected steelwork
- AS/NZS ISO 3834 certification

We will examine the scope of each of these schemes in greater detail prior to comparing and contrasting scheme coverage.

6.2 ACRS Scheme scope

The ACRS Scheme for structural steelwork certifies manufacturers to one of the Australian steel product Standards:

- AS/NZS 1163 'Cold-formed structural steel hollow sections'
- AS/NZS 3678 'Structural steel – hot-rolled plates, floorplates and slabs'
- AS/NZS 3679.1 'Structural steel - Part 1: Hot-rolled bars and sections'
- AS/NZS 3679.2 'Structural steel – Part 2: Welded I sections'

These product Standards cover the majority of manufactured steel sections and plate used for steel construction intended for the Australian marketplace. These Standards and the ACRS Scheme do not cover bespoke steelwork fabricated to a particular design which would be covered more generally under AS/NZS 5131 'Structural steel – Fabrication and erection'.

6.3 NSSCS Scheme scope

The NSSCS Scheme covers the fabrication and erection phases of the creation of a steel structure for the structure types defined in AS/NZS 5131.

The range of processes covered in AS/NZS 5131 includes:

- Specification, documentation and traceability
- Procurement of compliant steel products

- Shop detailing (drafting)
- Cutting, shaping, holing and assembly
- Welding
- Mechanical fastening
- Surface treatment and corrosion protection
- Fabrication requirements for architecturally exposed structural steel
- Erection
- Inspection, testing and correction

6.4 AS/NZS ISO 3834 certification scope

ISO 3834 Certification specifies the quality requirements expected for fusion welded products globally. AS/NZS ISO 3834 certification manages the entire lifecycle of the welding process, from the tendering phase (eg. Review of requirements and technical review) right through to the final delivery (eg. quality records keeping) and commissioning (eg. certification for site activities). AS/NZS ISO 3834 considers all aspects that could affect weld quality. This type of approach is advisable because it is difficult to undertake complete verification of a welded joint.

6.5 Scope comparison

A comparison of the scope of each of these certifications may be presented against the process line for the typical steel construction, commencing with sourcing of the steel materials through fabrication and then erection of the steelwork. Figure 3 presents the approximate scope extents for each of these certifications.

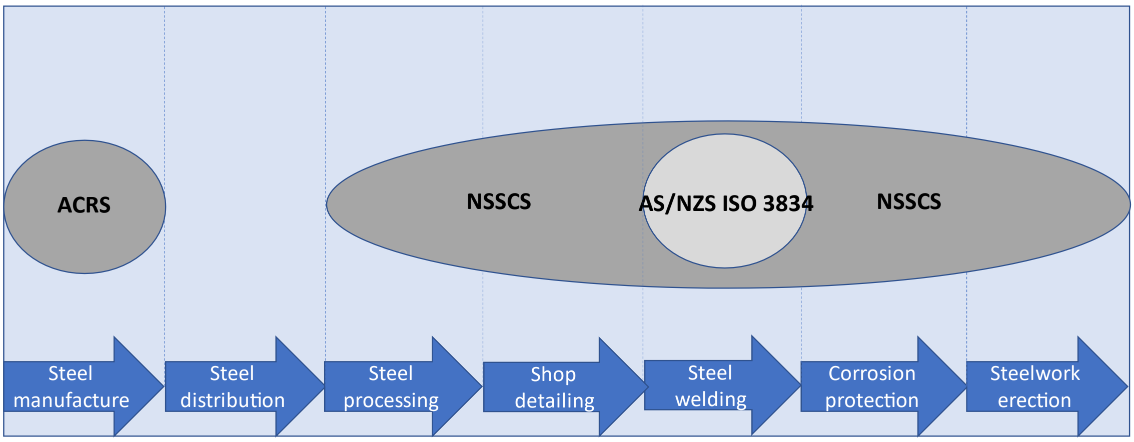

FIGURE 3 GRAPHICAL REPRESENTATION OF CERTIFICATION SCOPE

Considering Fig. 3, it is clear that the ACRS Scheme provides certification of steel products that is not within the scope of the other schemes. It is also clear that there is significant overlap in the scope of application of the NSSCS and AS/NZS ISO 3834 certification. This overlap is explored further in the next section.

A significant aspect illustrated in Fig. 3 is the current lack of specific coverage for certification of the steel distribution function. Refer to Section 8.3 for further discussion on this aspect.

6.6 Comparison of NSSCS and AS/NZS ISO 3834 certification scope

Clearly, welding is one component of fabrication and hence, at a high level, certification to AS/NZS 5131 under the NSSCS includes within its scope the scope of AS/NZS ISO 3834. However, in respect of the welding function, whilst the high-level scope coverage of the two certifications may be similar, the detail of what is covered i.e. the technical 'depth' of the certification, may be different. This ‘depth’ is a function of the detailed requirements contained in each of the Standards that the certifications are based around.

AS/NZS 5131 configures a risk-based approach to specifying the requirements for fabrication and erection of structural steelwork via assigning a ‘Construction Category’ of CC1, CC2, CC3 or CC4 to a steel structure, where CC1 is least risk and CC4 most risk. CC4 is project-specific and cannot be pre-configured. The selection of the Construction Category is based on a risk matrix with three input variables:

- The ‘importance level’ which reflects the risk to life and consequences of failure.
- The ‘Service Category’, which reflects the actions to which the structure and its parts are likely to be exposed, such as earthquake or fatigue.
- The ‘Fabrication Category’, which reflects the complexity of the fabrication of the structure and its components.

Refer to ASI Technical Note TN-011 (Ref. 39) for further detail on implementation of AS/NZS 5131.

AS/NZS ISO 3834 consists of six parts:

- Part 1: Criteria for the selection of the appropriate level of quality requirements
- Part 2: Comprehensive quality requirements
- Part 3: Standard quality requirements
- Part 4: Elementary quality requirements
- Part 5: Documents with which it is necessary to conform to claim conformity to the quality requirements of AS/NZ ISO 3834.2, AS/NZ ISO 3834.3 or AS/NZ ISO 3834.4
- Part 6: Guidelines on implementing AS/NZS ISO 3834 series Standards

AS/NZS 5131 recommends the alignment between the Construction Categories and quality requirements in each part of AS/NZS ISO 3834 shown in Table 1.

Table 1 – Alignment between Construction Category and Part of AS/NZS ISO 3834

Construction Category	AS/NZS ISO 3834 Part
1	4
2	3
3 & 4	2

It is notable that in the 2016 version of AS/NZS 5131, AS/NZS ISO 3834 was suggested as an example of a suitable quality management system for welding whereas in the recent 2020 amendment to AS/NZS 5131, this has been replaced with the normative statement “Welding shall be undertaken in accordance with the relevant part of AS/NZS ISO 3834”.

The normative reference to AS/NZS ISO 3834 makes management of the welding process according to AS/NZS ISO 3834 a requirement when claiming conformance to AS/NZS 5131. However, in practical terms, this change in the 2020 amendment to AS/NZS 5131 is not functionally significant, as when AS/NZS 5131 was initially developed, the Standards committee paid particular attention to ensuring that the requirements for each Construction Category written into AS/NZS 5131 were strongly aligned with the relevant Part of AS/NZS ISO 3834 as outlined in Table 1.

Appendix E provides a detailed correlation between the requirements in AS/NZS ISO 3834 and those in AS/NZS 5131 for each Construction Category. This comparison indicates that AS/NZS 5131:2016 functionally covers perhaps 98% of the requirements in AS/NZS ISO 3834, regardless of whether AS/NZS ISO 3834 is normatively referenced or not. It also indicates that the recent amendment, AS/NZS 5131:2020, effectively now covers 100% of the scope of AS/NZS ISO 3834.

7. DO I NEED CERTIFICATION?

7.1 Context

The Australasian Procurement and Construction Council publication ‘Procurement of construction products – A guide to achieving compliance’ (Ref. 2) outlined twelve guiding principles for procurement and conformance of construction products. The following three principles from that document are particularly relevant to setting the context for a decision around the requirement for certification:

Principle 4: The selection of the required evidence of conformity should be based on the intended use and risk exposure (likelihood and consequence of failure) of each construction product.

Principle 6: Evidence of construction products meeting specified standards should be demonstrated by conformity assessment including, but not limited to, product certification, testing or inspection, as set out in the contract documents

Principle 12: Without adequate evidence of product conformity, the product should not be used in construction.

In other regulatory regimes, such as the ‘Construction Product Regulation’ (Ref. 44) in Europe, steel construction is identified as safety-critical and required to be CE Marked, which requires certification by a ‘Notified Body’.

7.2 What certification do I need?

Certification is not referenced by or a requirement in our Australian Standards. This is a Standards Australia policy decision, leaving the requirement for certification up to either Regulation or to the client as part of the contractual requirements.

Therefore, the need for a particular stakeholder to either be certified or to call up certification as a requirement for the project depends on whether Regulation or the contract calls up a requirement for certification. This then drives what certification a stakeholder may require.

Manufacturers of structural steel should be third-party certified. Many Government and client procurement specifications do call up third-party certification of structural steel as a requirement. The two major steel manufacturers in Australia, InfraBuild and Bluescope steel, are third-party certified for steel product to AS/NZS 1163, AS/NZS 3678, AS/NZS 3679.1 and AS/NZS 3679.2.

Fabricators of structural steelwork should be third-party certified to AS/NZS 5131 for one of the following reasons:

- If the market you are intending to service calls up certification in project specifications
- If your existing or intended clients call up certification
- If you wish to work on Government or authority projects where certification is a requirement. At the time of publication of this Technical Note, some State road authorities require certification, the South Australian Government requires third-party steel and steelwork certification for their projects and a number of other State governments are considering how third-party certification might fit into their responses to the Shergold Weir report (Ref. 3)
- If you are providing subcontracted fabricated components to fabricators who are certified

Fabricators may wish to be certified to AS/NZS ISO 3834 where they service markets that require that certification. At the time of publication of this Technical Note, those markets included oil and gas, pressure equipment, defence and certain State Roads authorities.

7.3 Are multiple certifications required?

As noted in Section 6, the three certification schemes related to structural steelwork in Australia most relevant to the current discussion are:

- The ACRS scheme for structural steel

- The NSSCS for fabricated and erected steelwork
- AS/NZS ISO 3834 certification

This is in addition to other more general certifications, such as to AS/NZS ISO 9001.

AS/NZS 9001 applies to general management processes and is not specific to a particular field of application. Many specifications require ISO 9001 certification and therefore many stakeholders will require certification of their management systems, regardless of what other certifications they may have.

The ACRS scheme for structural steel product is particular to steel manufacturers and therefore not appropriate for certification of other stakeholders.

The two schemes where significant overlap exists, as noted in Section 6.6, are the NSSCS and certification to AS/NZS ISO 3834. It is therefore the need for concurrent certifications to both AS/NZS 5131 and AS/NZS ISO 3834 that must be explored.

AS/NZS 5131:2016 certification covers the majority of elements making up fabrication and erection of structural steelwork, including welding. In specific relation to welding, and as detailed in Appendix D, AS/NZS 5131:2016 covers the majority of elements also covered by AS/NZS ISO 3834. The 2020 amendment to AS/NZS 5131 introduced a normative reference to AS/NZS ISO 3834, meaning that fabricators claiming compliance with AS/NZS 5131 must also comply with AS/NZS ISO 3834. Hence, certification to AS/NZS 5131 must cover the functional requirements of a certification to AS/NZS ISO 3834.

AS/NZS ISO 3834 certification is required where the relevant authority or client specifically requires certification to AS/NZS ISO 3834 (for whatever reason). That requirement is market driven. ASI recommends that the fabricator carefully considers their business needs before making a decision on the most appropriate certification requirements.

8. PRACTICAL IMPLICATIONS AND APPLICATION

8.1 General

Securing comprehensive cost-effective fit-for-purpose compliance of steel and steelwork is a supply chain imperative and involves the engagement of many parties in the supply chain. It is necessary for these parties to understand the imperative for their role in this 'chain of responsibility' and the practical implications thereof.

The chain of responsibility is shown diagrammatically in Fig. 4. Variations on this basic structure and merging of some functions under a single entity are possible based on contractual relationships. However, there are fundamentally two merging chains of responsibility, one related to the physical execution of the project and the other related to the design development of the project.

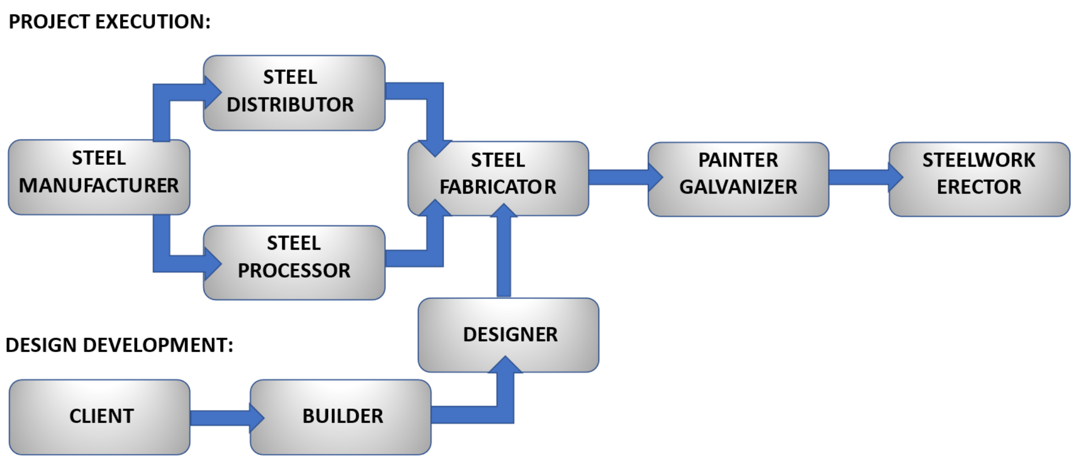

FIGURE 4 CHAIN OF RESPONSIBILITY FOR STRUCTURAL STEELWORK

Whilst the imperative to adopt third-party certification is clear, experience with regulatory systems and roll out of certification systems clearly indicates that simply requiring third-party certification in regulation or contract documents is not sufficient to ensure adoption. There will always be those who make fraudulent claims and/or rely on misdirection and loopholes to avoid putting in place necessary systems. Verification (checking and policing) is therefore a very important component of a successful solution.

The following sections outline the imperative for and practical implications of the chain of responsibility for each of the main stakeholders, as well as providing practical advice on how best to verify outcomes.

8.2 For manufacturers

Manufacturers of structural steel products to AS/NZS 1163, AS/NZS 3678, AS/NZS 3679.1 and AS/NZS 3679.2 should secure third-party certification of their manufacturing operations specifically covering manufacture to these Standards.

The two primary manufacturers in Australia are third-party certified. A number of steel mills outside of Australia are also third-party certified for manufacture to the Australian steel product Standards.

Verification:	
By whom:	**Process:**
Builder Engineer(1)	• Check website of CAB to confirm manufacturer certification is current and confirm scope of certification is appropriate • Check website of Accreditation Body if CAB claims accreditation • If CAB is not accredited, how do you establish veracity of the certification?
Note: 1. The builder may request the engineer to verify that manufacturers are third-party certified	

8.3 For distributors / steel processors

Distributors of steel products form an important link in the chain ensuring compliant steel products maintain the product identification and traceability requirements of AS/NZS 5131 that fabricators need to action.

A number of distributors increasingly provide value-added services such as cutting, coping and holing structural steel, typically employing automated mechanised processes for efficiency. This function has been termed steel processing and may also be undertaken by separate steel processors.

Technically cutting, coping and holing operations are considered fabrication under the scope of AS/NZS 5131 and on this basis steel processors and distributors may be certified to the particular aspects of their operations that are within scope of AS/NZS 5131.

The third-party certification of steel distributors and steel processors to the requirements of AS/NZS 5131 has not yet been rolled out in Australia. However, ASI have configured the NSSCS to include the capability to certify these stakeholders and intend to roll out this certification in due course.

Verification:	
By whom:	**Process:**

Fabricator	• Confirm with distributor that product to be purchased has the certificates required by AS/NZS 5131 before product is purchased. • Where material is ordered (ie not in stock), ensure order includes specification steel must be to Australian Standards and must be third-party certified (where required). • Request copy of compliant certificates on purchase.(1) • Check material has third-party certification, in particular where this is a requirement of the contract or specification.(2) • Where steel has not been manufactured to Australian Standard, request the documentation to substantiate a claim for compliance via a performance solution under the NCC (refer Section 3.5). This may require independent testing is undertaken.

Notes:

1. Verification of certificate compliance must include checking all information required by our steel product Standards (Refs 30, 31, 32, 33) is present. Guidance is available in ASI Technical Note TN-007 (Ref. 34).
2. Third-party certification of material can be verified by checking that the mill producing the material is listed as certified on the CAB website.

8.4 For fabricators

For steel buildings and structures covered under the scope of AS/NZS 5131, fabricators must have in place the processes mandated for the particular Construction Category called up in the specification or contractual documentation for the structure or part thereof.

Securing third-party certification will help differentiate the fabricator as a quality participant and, increasingly for many projects called up as requiring certification, allow the fabricator to actually tender for these projects.

Whilst it is highly recommended that third-party certification is secured ahead of tendering projects, the ASI NSSCS has recognised that in some cases it has not been possible for fabricators to become certified before the event. Consequently, the ASI is supporting quality outcomes for clients and procurers by facilitating a mechanism for certification during tendering phase or, in cases where the client agrees, as part of the project process. These avenues will, however, be more expensive for the fabricator, because they may require project-specific auditing by external third-party auditors in addition to the NSSCS process. ASI has prepared ‘Recommended contract wording’ to address this process (Ref. 45).

Verification:	
By whom:	**Process:**
Builder Engineer(1)	• Confirm fabricator certification credentials from the CAB website • Review project-specific fabricator documentation required by AS/NZS 5131 • If the fabricator is not certified, how do you confirm that the fabricator is capable of satisfying the requirements of AS/NZS 5131?

Note:

1. The builder may request the engineer to verify that the fabricator is third-party certified. The exact scope of the engineer’s engagement should be defined in the contract. Proper verification does take time and hence cost.

8.5 For engineers

Engineers are required to assess the Construction Category for the structure or part thereof. The assessment of the Construction Category is a mandatory requirement in AS 4100. The Construction Category should be shown on the project drawing set or indicated in the specification for the project.

The engineer is also required to develop a specification that accurately captures the necessary requirements of AS/NZS 5131. In this regard the NATSPEC suite of documents (Ref. 17) are available or the engineer can download for free the ASI 'National Structural Steelwork Specification' (Ref. 16).

Where steel material has been sourced from a manufacturer who has not produced the material to the Australian steel product Standards or is not third-party certified, the material mill certificates will need to be rigorously checked to confirm the material meets the performance intent of the Australian Standards and the NCC. Importantly, a Performance Solution under the NCC will require appropriate application of the relevant Assessment Methods. The traceability of the mill certificates to the actual product purchased will also need to be verified.

Ascertaining the compliance of structural steel and steelwork is a significant task if the steel has not been manufactured to Australian Standards and third-party certification has not been actioned. <u>The engineer should ensure that their contract makes it clear that this assessment and certification will be an additional cost and being able to demonstrate compliance is not assured.</u>

Verification:	
By whom:	**Process:**
Builder	• Construction category is designated on the drawings and/or in the specification • Third-party certification of steel and steelwork, where required, is indicated on the drawings and/or contractual documentation • The contract allows for the additional costs of rigorous verification by the engineer
Building certifier	• Requests certification of material and structure from the engineer, as required under regulation • Confirms any Performance Solution under the NCC has been properly applied by the engineer

8.6 For builders

Builders must construct the building or structure to the requirements of the NCC and the drawings and specification provided by the engineer, as well as meet duty of care under Workplace Health and Safety Regulations.

Where the builder chooses to procure fabricated structural steelwork that is not third-party certified, the builder has a duty of care (and responsibility under Regulation) to, as far as is reasonably practical, ensure the steelwork meets the performance intent of the NCC and the Australian Standards called up in the engineer's specification.

ASI strongly recommends that the builder develops a 'Compliance Management Plan' to formally address the protocols necessary to manage the scenario where non-compliant steel or steelwork is involved, either through specific procurement decision or when discovered during the project. A well formulated Compliance Management Plan will clearly inform all parties of their responsibilities and the actions required and help minimise potential dislocations to project process.

It must be noted that responsibilities and duty of care under WHS for all project stakeholders cannot be contractually assigned. Codes of Practice such as the 'Safe Design of Structures Code of Practice' (Ref. 35) provide clarity on implementing the WHS Act and Regulations for many stakeholders in the steel supply chain.

Verification:	
By whom:	**Process:**
Certifier Client(1)	• Obtain written confirmation from builder that products and construction complies with NCC • Obtain certification from engineer that products and construction complies with NCC • Review builder 'Compliance Management Plan'
Note: 1. The client may not be technically astute in respect of building processes, but does have a responsibility to help ensure compliant outcomes and should inform themselves sufficiently to be able to ask the right questions.	

8.7 For certifiers

Building surveyors (certifiers) have responsibilities to meet requirements for sufficient inspections under applicable legislation, a component of their role for managing the building approval process with all relevant practitioners. This important role influences compliance levels for building work.

A primary mechanism for ensuring compliance is the implementation of an inspection schedule that is responsive to the type of structure (Building Class 1 to 10 in the National Construction Code (NCC)) and project-specific requirements. It is generally recognised that a risk-based approach allows building surveyors to take an overall view of the safety requirements of the building and establish an inspection schedule.

To maximise the likelihood of achieving compliant project outcomes, the building certifier needs to be involved with the project stakeholders early in the process, as checking outcomes after the fact will invariably increase the likelihood of non-compliant outcomes, which are difficult and costly to rectify.

ASI recommends:

2. **Project stakeholder awareness**: engage at project commencement with the stakeholders, explaining the risk-based approach described below will be implemented. Encourage appropriate measures are put in place by the supply chain to ensure project certification is straightforward.
3. **Project risk assessment**: undertake a risk assessment of the project regarding likelihood of compliant outcomes. A suggested risk assessment format is outlined below.
4. **Sufficient inspection schedule**: based on the risk assessment, implement a sufficient inspection schedule that is a fit-for-purpose response to the outcomes of the risk assessment of the project.

The use of a risk-based approach to developing and implementing a 'sufficient inspection schedule' for building surveyors can be achieved through a risk matrix that assigns the steelwork structure a rating based on certain criteria. The risk rating assists the building surveyor in determining an inspection schedule, including the type and frequency of inspections required, commensurate with other factors which will determine the application of inspectorial resources.

ASI has prepared guidance material (Ref. 46) for building surveyors outlining the risk assessment process and establishing a ‘sufficient inspection schedule’.

Verification:	
By whom:	**Process:**
Regulatory authority	• Review with certifier the compliance audits and outcomes

8.8 For Government departments / regulators

State and federal Government implement procurement frameworks which may variously mandate requirements for minimising construction risk, including risk-based approaches to procuring construction products. Relevant authorities may also include requirements in their specifications for increased auditing and/or third-party certification of construction products or systems that have been identified as either safety-critical or where there have been current demonstrable non-compliant procurement outcomes.

Unfortunately, state-based and relevant authority procurement requirements do vary. Project stakeholders must ensure they remain informed on the current procurement requirements in force. Appendix F provides links to a range of advice in this regard.

ASI has prepared guidance on the website (Ref. 47) for Government departments and regulators to implement improved compliance outcomes.

<u>Government departments must put in place review and auditing of project outcomes to ensure procurement directives are being actioned by the supply chain</u>.

Verification:	
By whom:	**Process:**
Relevant Government department	• Implement auditing framework • Ensure auditing framework actioned for every project

8.9 For owners / clients

Ultimately the owner and/or client will take on the responsibility for owning, operating and maintaining the building or structure. Non-compliant outcomes will increase risk of short-term failures and potential for longer term increased operating and maintenance costs. Ensuring the builder has a framework in place to proactively address non-compliance and appropriate third-party certifications is one initiative that will provide the best opportunity for securing compliant structures.

9. PROJECT IMPLEMENTATION – RESPONSIBLE STEELWORK PROCUREMENT

Responsible steelwork procurement touches on all members of the steelwork supply chain, ensuring duty of care under Workplace Health and Safety Regulation. The ASI has put in place a framework for risk categorisation and steelwork fabricator prequalification enabling cost-effective procurement of compliant steelwork structures.

The ASI Implementation Toolkit provides the necessary resources for a range of supply chain stakeholders to help address duty of care under Workplace Health and Safety Regulation and emerging non-conforming product chain of responsibility regulation.

Refer to Appendix G for further details on the ASI Responsible Steelwork Procurement Framework.

10. CERTIFICATION BENEFITS AND COSTS

10.1 General

Whilst the benefits of risk reduction for the community through appropriate levels of third-party certification are clear in today's procurement environment, a cost-benefit analysis should be undertaken on every project to ascertain the appropriate compliance pathway.

Unfortunately, to some extent, both benefits and costs are project-specific and depend on the exact context of the project. The costs and benefits also vary depending on the stakeholder involved. The following sections present benefits and costs for general guidance that can be assigned to the appropriate stakeholder.

10.2 Certification benefits

The benefits of certification include:

- Risk reduction
- Reduction in the time and costs of engineering review
- Minimise the risk of project certification delays
- Avoidance of potential costly rework or replacement of non-compliant product
- Avoidance of project delays due to rework or replacement of non-compliant product
- Mitigation of reputational costs associated with adverse project outcomes
- Fabricator efficiency gains from streamlined processes

10.3 Certification costs - initial

The initial certification costs for the fabricator include:

- The fees charged by the CAB for the certification process. Most CABs will have these fees clearly available for review on their website. SCA fees (see https://www.scacompliance.com.au/apply-info/categories-costs/) for certification under the NSSCS are staged and vary depending on the Construction Category required to be certified against.
- The internal costs associated with preparing and submitting documentation etc as part of commencement of the certification process.

10.4 Certification costs - implementation

For an initial certification, it is most likely the fabricator will not have all the systems, processes and documentation in place to meet the requirements of the applicable Construction Category in AS/NZS 5131. Therefore, there will be time and cost involved in the fabricator implementing the 'gaps' that have been identified during the certification audit. These costs may include:

- Internal staff time costs implementing processes
- Where required, the cost of external consultants to help implement the necessary processes
- Costs of any hardware or software necessary to implement the required processes

Whilst these may be viewed as costs, there are also tangible benefits in respect of improved efficiencies that are often realised.

Obviously, these costs can vary markedly from fabricator to fabricator and may also depend on whether the fabricator has well developed systems in place based on other certifications, such as AS/NZS ISO 9001.

10.5 Certification costs - ongoing

Most certification schemes require ongoing review, often yearly, and re-certification at designated times. The costs of review and re-certification are often less than the initial certification costs. Certainly, for the fabricator there should be minimal implementation costs on the basis that their systems are already in place and operating.

10.6 Opportunity costs

A cost to the project of requiring demonstrable and verifiable compliance is often cited as the cost of compliant steelwork being greater than steelwork procured outside of a rigorous compliance regime. The latter steelwork might be procured from fabricators who are not third-party certified or, more commonly in today's environment, procured from overseas sources utilising less costly labour and who have not procured or fabricated the steelwork to Australian Standards.

The opportunity to procure cheaper steelwork is often the driver of procurement decisions but is flawed if the product being procured is non-compliant. The cost of rectification after procurement can be significant, including having to fully replace the non-compliant steel or steelwork. The up-front cost also often excludes the significant additional costs (and risk of rejection) for the engineer to properly review and 'certify' the steel or steelwork to the requirements of the Standards and the NCC (refer Section 3.5).

11. MARKET ISSUES

11.1 Context

The construction market is complex and the steel and steelwork supply chain long, with many stakeholders involved. Clearly, ensuring compliant construction outcomes is not the responsibility of any one stakeholder. All stakeholders have a part to play and a duty of care under Regulation. Where stakeholders do not perform to their duty of care, the chain of responsibility can break down and compliant outcomes may be compromised.

11.2 Known issues

ASI regularly receives feedback from the market on current issues with implementation of AS/NZS 5131, specification and certification. The issues identified include:

- **The requirement for AS/NZS 5131 ignored**: In the interim period prior to AS/NZS 5131 being directly referenced in AS 4100, the engineering specification was the primary mechanism to reference AS/NZS 5131. Where the engineer had not updated their specification with specific reference to AS/NZS 5131, some stakeholders ignored AS/NZS 5131 and continued to claim compliance to the fabrication and erection requirements in AS 4100. <u>With AS/NZS 5131 now referenced directly from AS 4100, stakeholders can now no longer ignore the need to provide compliance to AS/NZS 5131</u>.
- **AS/NZS 5131 considered 'not legal'**: the 2020 revision to AS 4100 directly references AS/NZS 5131 and therefore AS/NZS 5131 becomes a secondary reference under the NCC. However, from a regulatory perspective this will not occur until the next revision of the NCC makes reference to AS 4100:2020, currently scheduled for 2022. In the interim, the ABCB have provided a reference to AS/NZS 5131 being deemed to be a suitable method for demonstrating compliance under the NCC and the intention for it to be included in the 2022 update to the NCC (Ref. 48). It should be noted that if AS 4100 and/or AS/NZS 5131 has been called up in the contracted specification, then legally it is a requirement of the contract.
- **The requirement for certification not actioned**: in some cases certification has been mandated either via the contract (project specification) or relevant authority procurement policy, but stakeholders are ignoring the requirement and having it rescinded, claiming increased costs compared to an alternative. Often the alternative steel or steelwork is obtained overseas and is later proven to be not demonstrably compliant, putting stakeholders under pressure to accept, in effect, non-compliant solutions.
- **Over specification**: there are instances where stakeholders believe 'more is better' and over-specify the requirements for steelwork. This may be by selecting or requiring Construction Category CC3 when the guidance provided in AS 4100 recommends CC2 or by specifying additional requirements to those mandated in AS/NZS 5131. One of the great benefits of AS/NZS 5131 is that it does bring together the majority of the usual requirements for fabrication and erection of structural steelwork, some mandatory and some optional. Requirements that are optional should only be specified if really needed. The ASI 'National Structural Steelwork Specification' (NSSS) clearly identifies these optional requirements, which are designated 'particular requirements'. We encourage you to review the NSSS.

- **Under specification**: instances of under-specification do not appear to be as common as over-specification, but there are nevertheless competitive pressures to minimise cost. The selection of an appropriate Construction Category is an engineering decision and any reduction in Construction Category should not be influenced by commercial considerations.

12. ASI RECOMMENDATIONS

The selection of an appropriate compliance pathway to ensure fit-for-purpose risk minimised compliant steel structures can be confusing, particularly as the final solution involves multiple stakeholders over the length of the steel supply chain and current construction procurement practice often includes internationally sourced products with unclear compliance credentials.

Table 2 provides a clear statement of the compliance related choices that ASI recommends for each stakeholder in the supply chain.

TABLE 2 ASI RECOMMENDATIONS FOR STAKEHOLDERS

Stakeholder	Recommendations
Steel manufacturer	• Third-party certification for steel products to Australian Standards • Provide information on mill certificates as per requirements in Australian Standards
Steel distributor	• Provide compliant mill certificates for product manufactured to Australian Standards and evidence of third-party certification • Provide purchasers with 'Supplier Declaration of Compliance' and 'evidence of suitability' according to NCC for product manufactured to alternate Standards
Steel processor	• Third-party certification to AS/NZS 5131 • Provide purchasers with 'Supplier Declaration of Compliance'
Steel fabricator	• Third-party certification to AS/NZS 5131 • Provide purchasers with 'Supplier Declaration of Compliance'
Designer	• Ensure project specification properly implements requirements of AS/NZS 5131 • Where steel or steelwork has not been manufactured to Australian Standards, perform rigorous assessment for 'evidence of suitability' according to the NCC
Builder/constructor	• Implement a 'Compliance Management Plan' • Support third-party certification for structural steel and steelwork • Ensure duty of care under WHS Regulation
Building certifier	• Promote awareness of third-party certification for improved certification outcomes • Ensure documentation provided to demonstrate 'evidence of suitability' under NCC is rigorous

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APPENDIX A – INDUSTRY STAKEHOLDER REVIEW PANEL

The Technical Note was prepared under the guidance of an ASI steering committee and was peer reviewed by a range of representatives and organisations as listed below. The contribution of these entities for the benefit of the Australian steel community is gratefully acknowledged.

Name	Company
Bruce Cannon	Weld Australia
Glenn Gibson	IDEC Solutions Pty Ltd
Joe Filipovic	Flipside Welding
Nick Pizzino	Ahrens Australia
Pablo Santos	S&L Steel
Richard Whitfield	Taylor Thomson Whitting
Russell Keays	Keays Engineering

APPENDIX B – CONTEXT FOR CERTIFICATION IN AUSTRALIA

Structural steel and steelwork (the fabricated steel) product intended for the Australian marketplace must meet the performance intent of:

a. The National Construction Code (NCC) for project types covered under the NCC

b. The Australian Standards called up in either the contractual documentation (usually the specification) and/or the NCC as applicable to the project type.

Regardless of the type of project, the compliance pathways specified within the NCC provide a robust performance-based approach that should be applied to all project types. The recommendations in this current document are based in principle on the framework established by the NCC.

A significant issue in today's procurement environment, with internationalised supply chains and a consequent reduced ability to rely on 'trusted relationships', is an increased risk of procurement of construction products that are found to be non-compliant. This brings into sharp focus the need to robustly ascertain the compliance of construction products <u>at a point in the procurement chain that allows the problem to be addressed without either expensive project dislocation or heightened risk</u>.

The construction industry and the specifiers need certainty in respect of the material and fabrication supplied to Australian projects and need to minimise their risk with respect to steel and steelwork quality. The reality is that most people in the construction industry and many engineers and specifiers are not familiar with the detailed requirements of material and fabrication Standards and find it difficult to understand and interpret steel mill certificates and fabrication documentation.

As a consequence of this, third-party certification of the product or process used to create the product has been recommended in various reports (Refs 1, 2, 3) as one of the most reliable approaches to ensuring compliance. Notably, the more recent Shergold & Weir report (Ref. 3) commissioned by the Building Ministers Forum (BMF) to address the plethora of construction related issues evident in recent years, made a number of recommendations including the need for third-party certification.

Whilst the need for third-party certification is clear, the available tools and resources in the third-party certification ecosystem in Australia can be confusing for the supply chain to interpret and make use of in an informed way. Lack of clarity in the scope of certification schemes, overlapping scope of various schemes, the applicability of a specific certification, let alone the need, the requirement for accreditation of schemes and importantly, the benefits and costs associated with the schemes are all aspects that must be considered before a stakeholder can make an informed judgement.

APPENDIX C – AN EXPLANTION OF CERTIFICATION

C.1 Conformity Assessment

A discussion on certification must be set within the broader context of 'conformity assessment'. Conformity assessment is defined in AS ISO/IEC 17000 (Ref. 4) as the "demonstration that specified requirements relating to a product, process, system, person or body are fulfilled". Conformity assessment procedures provide a means of assuring that the products, services or systems produced or operated have the required characteristics and that these characteristics are consistent from product to product, service to service, or system to system.

There are a number of different types of conformity assessment, including:

- Supplier's Declaration of Conformity (SDoC): ISO/IEC 17050 parts 1 and 2
- Inspection: ISO/IEC 17020
- Testing: ISO/IEC 17025
- Certification: ISO/IEC 17065
- Registration: ISO/IEC 17021
- Accreditation: ISO/IEC 17011

Certification is therefore one form of conformity assessment.

The collection of all activities that are repeatedly applied to a specified group of products, processes, services, systems, persons or bodies is referred to as a 'conformity assessment scheme'.

Figure C.1 presents a conceptual view of the usual scope of conformity assessment activities.

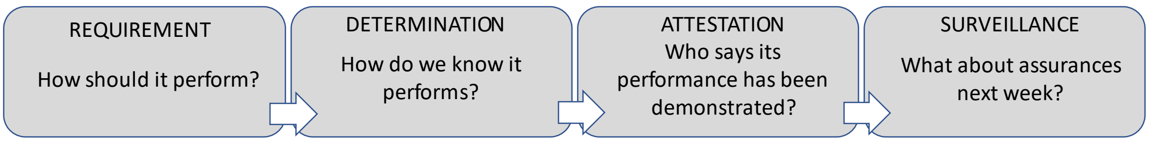

FIGURE C.1 – A CONCEPTUAL VIEW OF CONFORMITY ASSESSMENT

Conformity assessment examines an object of conformity (such as a product, process, system, person or body) and determines whether the object meets specified requirements. The specified requirements may be in the form of a nominated Standard (Stage 1 in Fig C.1). A decision whether fulfillment of requirements has been demonstrated is made by the conformity assessment body based on evidence of conformity (such as a test report, inspection report or audit report) (Stage 2 in Fig C.1). An attestation that fulfillment has been demonstrated is issued based on the decision(Stage 3 in Fig C.1). Support for on-going validity of the attestation may be accomplished through surveillance at regular intervals(Stage 4 in Fig C.1).

Accreditation of the conformity assessment body provides confidence by assessing an organization's competence, conformity assessment process, infrastructure and results to ensure that conformity assessment bodies meet requirements.

These aspects are examined within the context of certification of steel and steelwork in the following sections.

C.2 What is certification?

According to Ref. 5 certification is a "formal procedure by which an accredited or authorized person or agency assesses and verifies (and attests in writing by issuing a certificate) the attributes, characteristics, quality, qualification, or status of individuals or organizations, goods or services, procedures or processes, or events or situations, in accordance with established requirements or standards".

The significant aspects of this definition include:

- The certification procedure should be 'formal', that is, defined and undertaken to a plan.
- The certification procedure should be undertaken by an accredited or authorised person or agency, the implication being that the certification authority has been recognised as competent in the field of certification undertaken.
- The certification is undertaken to assess and verify against established requirements or Standards. In the usual case, certification would be against a Standard, but an entity may also be certified to a specification or the like from an authority.

The certification authority is often referred to as a 'Conformity Assessment Body' (CAB). Conformity Assessment Bodies more generally include certification bodies, testing laboratories, calibration laboratories, inspection bodies and proficiency testing providers.

Commonly, the CAB operates in accordance with the relevant international (ISO) Standards developed and maintained by CASCO (Ref. 6).

B.3 First, second or third-party?

In *first-party certification*, an individual or organization providing the good or service offers assurance that it meets certain claims. In *second-party certification*, an association to which the individual or organization belongs provides the assurance. *Third-party certification* involves an independent assessment declaring that specified requirements pertaining to a product, person, process or management system have been met.

FIGURE C.2 TYPES OF PARTIES INVOLVED IN CERTIFICATION

The difference between first, second and third-party certification is therefore how independent the certification is and, by implication, the veracity of the certification process. First-party certification, for example where your steel supplier states that their product has been manufactured to XYZ Standard, relies on your assessment of the veracity of that statement and the degree to which you perform your own checks to satisfy the regulatory environment in Australia. A 'Supplier Declaration of Conformity' (SDoC) is a commonly requested form of first-party certification.

Second-party certification relies on certification by an entity associated with the company certified. Accordingly, the veracity of the certification depends on the degree to which that association between the two parties may or may not influence outcomes.

Third-party certification, where the certification is undertaken by a certifying authority that is independent of the party certified, is generally considered to provide the highest level of veracity of outcomes. The certifying authority must be competent in the field of certification undertaken.

C.4 Accreditation versus certification

On occasion there is confusion in the market as to 'accreditation' and 'certification', with the terms used interchangeably. However, whilst they are complementary, they are distinctly different aspects of the holistic treatment of conformity assessment.

In a formal sense, accreditation is defined as a "third-party attestation related to a conformity assessment body conveying formal demonstration of its competence to carry out specific conformity assessment tasks," as defined by AS ISO/IEC 17011 (Ref. 7).

Accreditation is the formal recognition by an independent body, generally known as an accreditation body, that a certification body operates according to the nominated Standard or requirements to which they state they conform. Often these are international Standards such as AS/NZS ISO/IEC 17065 'Conformity assessment – Requirements for bodies certifying products, processes and services' (Ref. 8). Put simply, accreditation involves the checking of the Conformity Assessment Body (CAB) by the accreditation body, whilst certification involves the checking of the individual or organisation by the CAB.

C.5 Ascertaining the veracity of the certification

How the assessment of conformity is performed, and by whom, can have a significant impact on the level of confidence buyers and regulators place on the assessment results. The veracity of the certification is primarily a function of the 'quality' of the certification undertaken. The quality of the certification may be measured by:

- **The quality of the CAB**: it is a practical reality that any party can put up their hand and claim to be able to certify to a Standard or set of requirements. Certainly, there are examples of certifications that are not rigorous and/or undertaken by entities that are not competent for the particular scope of certification required. A CAB must be competent and operate within the scope of their recognised competencies. Where appropriate, operating to one of the international Standards maintained by CASCO should be confirmed.
- **The quality of the conformity assessment**: the scope of the actual conformity assessment, that is, what checks are actually undertaken compared to the full scope of the Standard or requirements specified and the methodology for undertaking those checks. The conformity assessment scope should be transparent and readily available from the CAB.
- **The independence of the CAB**: third-party certification, as described above, provides the highest level of independence of the CAB from the party to be certified.
- **The scope of the certification**: it is important to understand the scope of the certification and that it is appropriate to your needs.

The quality of the CAB and the quality of the conformity assessment can be difficult for most stakeholders to assess properly. In some cases, the certification schemes are run by industry recognised bodies and the quality of the scheme may be linked to the reputation and technical ability of the body or organisation running the scheme.

Where the quality of the certification scheme is not known, accreditation provides a measure of independent review of the CAB and may be considered a requirement, in particular where the specifying authority must satisfy demonstrable due diligence (such as the case with Government procurement or the like).

C.6 International recognition

In today's international procurement environment, the certification ecosystem must also be able to draw on an international context and minimise limitations due to geographical extent of any one certification scheme. International 'mutual recognition' addresses this requirement.

The International Accreditation Forum (IAF) (Ref. 9) is the world association of Conformity Assessment Accreditation Bodies and other bodies interested in conformity assessment in the fields of management systems, products, services, personnel and other similar programmes of conformity assessment. JAS-ANZ (Ref. 42) is the national Accreditation Body for Australia and New Zealand and is a member of IAF. Mutual recognition and acceptance of member accreditation credentials is facilitated by becoming a signatory to the IAF Multilateral Recognition Arrangement (MRA).

International Laboratory Accreditation Cooperation (ILAC) (Ref. 10) is the international organisation for accreditation bodies operating in accordance with ISO/IEC 17011 (Ref. 7) and involved in the accreditation of conformity assessment bodies including calibration laboratories (using ISO/IEC 17025 (Ref. 11)), testing laboratories (using ISO/IEC 17025), medical testing laboratories (using ISO 15189 (Ref. 12)), inspection bodies (using ISO/IEC 17020 (Ref. 13)) and proficiency testing providers (using ISO/IEC 17043 (Ref. 14)).

It is prudent to ensure the accreditation body is a member of IAF, which can be checked on the IAF website at https://www.iaf.nu/.

For calibration and testing laboratories it is prudent to ensure the accreditation body is a member of ILAC, which can be checked on the ILAC website at https://ilac.org/.

C.7 Conformity assessment schemes

There are many companies that operate conformity assessment schemes. By virtue of the fact that these schemes usually utilise authorised CABs, they might be more accurately termed third-party certification schemes.

In the steel product area, over twenty countries now have third-party certification schemes.

Third-party product certification is probably at its most developed in Europe. In the steel product area, respected third-party certifiers of long-standing in Europe include:

- UKCARES (www.ukcares.com)
- Deutsches Institut fűr Bautechnik (www.dibt.de), and
- IGQ – Instituto Italiano di Garanzia della Qualita (www.igq.it)

All operate under different operational and legal frameworks.

Third-party certification schemes are generally structured around the requirements of the International Standard for such bodies –ISO/IEC 17065 with the Australian equivalent being AS/NZS ISO/IEC 17065:2013 (Ref. 8).

ISO/IEC Directives specify that the requirements for products shall be written in accordance with the neutrality principle such that conformity can be assessed by first-party or second-party or third-party conformity assessment. In addition, no Standard containing requirements for products shall make conformity assessment dependent upon a quality management system.

C.8 The conformity assessment hierarchy

The range of options available for selection of the appropriate conformity assessment pathway by stakeholders is confusing and may best be represented by the hierarchy in Fig. C.3, which also indicates the appropriate checks necessary.

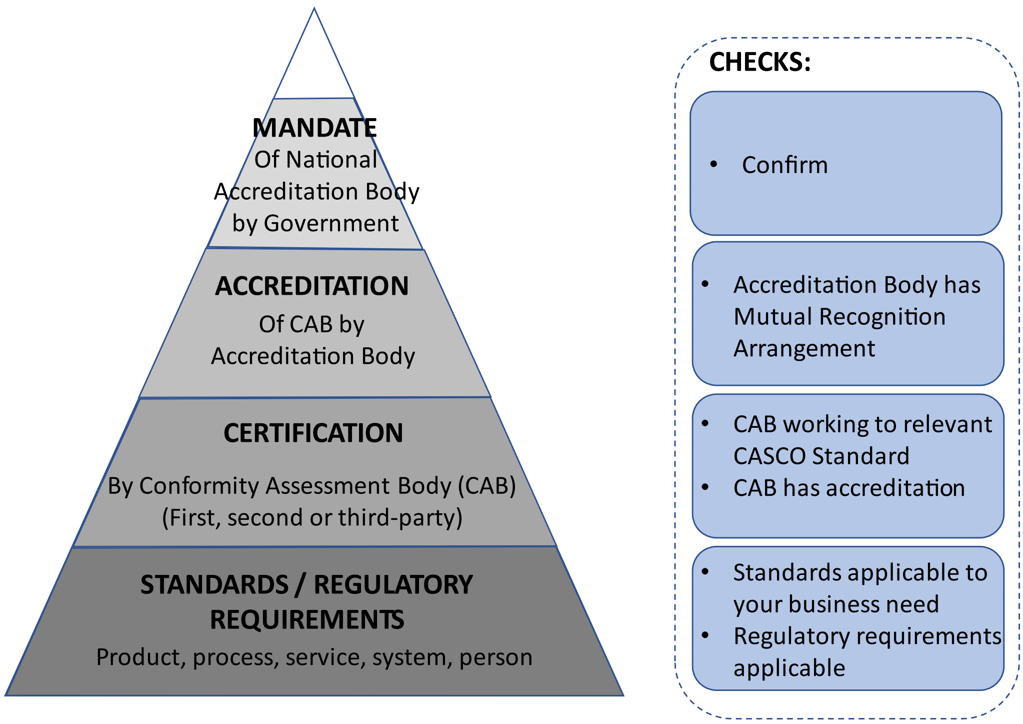

FIGURE C.3 CONFORMITY ASSESSMENT HIERARCHY

APPENDIX D – ACCREDITATION OF THIRD-PARTY CERTIFICATION SCHEMES

D.1 What is accreditation?

Accreditation is the formal recognition by an independent body, generally known as an accreditation body, that a certification body operates according to the nominated Standard or requirements to which they state they conform. Put simply, accreditation is 'checking of the checkers' to ensure that the CAB is providing a certification that meets the requirements of the relevant Standard they are working to.

D.2 Why is accreditation needed?

It is a reality that any entity can put up their hand and claim that they can certify to a nominated Standard, in the same way that any company can make a first-party claim that they work to a nominated Standard. In the same way that certification ensures a company is undertaking a process in accordance with the nominated Standard, accreditation ensures the veracity of the certification process.

The internationalisation of the procurement environment, with the ensuing scope for procuring cheaper product, has put pressure on the historical 'trusted relationship' between purchaser and supplier that has previously helped to maintain a level of quality. Third-party certification helps to replace the previous trusted relationship and ensure quality. However, that third-party certification should also be 'trusted'. Accreditation is one approach to address the issue of trust.

It is important to understand that accreditation is not always required. As a procurer, you may have trusted relationships built up over years and product quality from that supplier has always been acceptable. Or you may trust that the entity undertaking the certification is known, well respected in the industry and technically astute, in which case you may trust the certification and not require the certification to be accredited. Fundamentally, the choice of accreditation or for that matter certification is a function of procurer comfort level and is a choice that the procurer or the client for which the procurer is acting, must make.

Conversely, there have been instances where clients have relied on certified companies for quality output with non-compliant results. Further investigation revealed that the certification was not undertaken correctly. 'Buyer beware' is a feature of the current procurement environment, in the absence of trusted relationships.

D.3 Accreditation bodies for Australia

Joint Accreditation System for Australia and New Zealand (JAS–ANZ) (Ref. 41) is the government–appointed accreditation body for Australia and New Zealand, which is responsible for providing accreditation of CABs that undertake management system, personnel, product certifications and inspections.

National Association of Testing Authorities, Australia (NATA) (Ref. 42) is recognised by government as Australia's national authority for the accreditation of laboratories and reference material producers. NATA is also recognised as a peak body for the accreditation of inspection bodies and proficiency testing scheme providers.

It is important to confirm the type and scope of work that individual conformity assessment bodies can undertake. For an up-to-date listing of accredited conformity assessment bodies and their scope of accreditation, it is recommended to consult the JAS-ANZ Register (www.jas-anz.org/register) and the NATA website.

D.4 Current Scheme accreditations

To meet the expectations of the marketplace, and in particular the expectations of Government procurement, a number of schemes either have been accredited or are in the process of securing accreditation. These include:

- The ACRS third-party product certification scheme is accredited by JAS-ANZ to AS/NZS ISO/IEC 17065:2013.
- Steelwork Compliance Australia (SCA), the authorised CAB for the ASI National Structural Steelwork Compliance Scheme (NSSCS) (Ref. 38) is currently in the process of undertaking JAS-ANZ accreditation to AS/NZS ISO/IEC 17065:2013.

- Weld Australia is accredited for AS/NZS ISO 3834 certification by the International Institute of Welding (IIW) (Ref. 43).

APPENDIX E

COMPARISON BETWEEN AS/NZS ISO 3834 & AS/NZS 5131:2016

D.1 Detailed comparison of requirements

Table E.1 presents a detailed comparison of the requirements in the 2016 version of AS/NZS 5131 against each of the elements of AS/NZS ISO 3834, specifically to illustrate that AS/NZS 5131:2016 covers the majority of the requirements in AS/NZS ISO 3834. Where minor gaps between the two Standards exist, these are noted.

It is important to note that the 2020 amendment to AS/NZS 5131 includes a normative reference to AS/NZS ISO 3834, which means that for fabricators claiming conformance to AS/NZS 5131:2020, they will need to action the requirements of AS/NZS ISO 3834, either Part 2, 3 or 4 depending on the Construction Category applicable. It is also important to note that with the 2020 amendment to AS/NZS 5131, no gaps will exist between the requirements in AS/NZS ISO 3834 and those in AS/NZS 5131 and a certification to AS/NZS 5131 will cover the requirements in AS/NZS ISO 3834.

The alignment between AS/NZS ISO 3834 Parts and the Construction Category in AS/NZS 5131, as recommended by AS/NZS 5131 is:

- Construction Category CC1: AS/NZS ISO 3834 Part 4
- Construction Category CC2: AS/NZS ISO 3834 Part 3
- Construction Category CC3: AS/NZS ISO 3834 Part 2

TABLE E.1 DETAILED COMPARISON OF REQUIREMENTS BETWEEN AS/NZS ISO 3834 AND AS/NZS 5131:2016

	Elements of AS/NZS ISO 3834	AS/NZS ISO 3834:2008			AS/NZS 5131:2016				Comments
		Part 2	Part 3	Part 4	Clause	CC3	CC2	CC1	
1	**Scope**	No actionable requirements							
2	**Normative references**	No actionable requirements							
3	**Terms and definitions**	No actionable requirements							
4	**Use of this part of ISO 3834**	No actionable requirements							
5	**Review of requirements & technical review**								
5. 1	General	Req. (1)	Req.	Req. (part)	4.5	Req.	Req.	NSR(3)	No gaps(4)
5.2	Review of requirements	Req.	Req.	Req. (part)	4.5.1	Req.	Req.	Req.	No gaps
5.3	Technical review	Req.	Req.	Req. (part)	4.5.1	Req.	Req.	Req.	No gaps
6	**Subcontracting**	Req.	Req.	Req. (part)	4.6.3	Req.	Req.	Req.	No gaps(13)
7	**Welding personnel**								
7.1	General	Req.	Req.	Req. (part)	7.4	Req.	Req.	Req.	No gaps
7.2	Welders & welding operators	Req.	Req.	Req.	7.4.2	Req.	Req.	Req.	No gaps. Refer Section A.2 below for further detail.
7.3	Welding coordination personnel	Req.	Req.	NSR	7.4.3	Req.	Req.	NSR(5)	No gaps. Refer Section A.3 below for further detail.
8	**Inspection & testing personnel**				13.3 13.5.2	Clause 13.3			

						Clause 13.5.2			
8.1	General	Req.	Req.	Req. (part)	13.6.1.1	Req.	Req.	Req.	No gaps
8.2	NDT personnel	Req.	Req.	Req.	13.6.1.3	Req.	Req.	Req.	No gaps
9	**Equipment**								
9.1	Production & testing equipment	Req.	Req.	Req. (part)	6.1.1 Table D1 Item 7	Req.	Req.	Req. (part)	No gaps. Refer Note 6.
9.2	Description of equipment	Req.	Req.	NSR	6.1.1 Table D1 Item 9	Req.	Req.	NSR	No gaps. Refer Note 6.
9.3	Suitability & maintenance of equipment	Req.	Req.	NSR	6.1.1 Table D1 Item 8	Req.	Req.	NSR	No gaps. Refer Note 6.
9.4	New equipment	Req.	NSR	NSR	6.1.1	Gap	NSR	NSR	Gap exists for CC3. Refer Note 7.
9.5	Equipment maintenance	Req.	NSR	NSR	6.1.1 Table D1 Item 8	Req.	Req.	NSR	No gaps. Refer Note 6.
10	**Welding & related activities**								
10.1	Production planning	Req.	Req.	NSR	7.2	Req.	Req.	NSR	No gaps. Refer Note 5.
10.2	WPS	Req.	Req.	NSR	7.4	Req.	Req.	NSR	No gaps. Refer Note 5.
10.3	Qualification of WPS	Req.	Req.	NSR	7.4	Req.	Req.	NSR	No gaps. Refer Note 5.
10.4	Work instructions	Req.	Req.	NSR	4.5	Req.	Req.	NSR	No gaps. Refer to Note 8.
10.5	Procedure for preparation & control of documents	Req.	NSR	NSR	4.5.1 Item (i)	Req.	Req.	NSR	No gaps. Refer to Note 9.
11	**Welding consumables**								

11.1	General	Req.	NSR	NSR	5.4	Req.	Req.	Req.	No gaps. Refer to Note 10.
11.2	Batch testing	Req.	NSR	NSR	5.4	NSR	NSR	NSR	Gap exists for CC3. Refer to Note 11.
11.3	Storage & handling welding consumables	Req.	Req.	Req. (part)	7.5.2	Req.	Req.	Req.	No gaps
12	**Storage of parent materials**	Req.	Req.	NSR	5.9 6.3	Req.	Req.	NSR	No gaps. Refer to Note 5.
13	**Post-weld heat treatment**	If req.	If req.	NSR	7.5.14	If req.	If req.	NSR	No gaps.
14	**Inspection & testing**								
14.1	General	Req.	Req.	Req. (part)	13.6	Req.	Req.	NSR	No gaps. Refer to Note 5.
14.2	Inspection & testing before welding	Req.	Req.	NSR	13.6	Req.	Req.	NSR	No gaps. Refer to Note 5.
14.3	Inspection & testing during welding	Req.	Req.	NSR	13.6	Req.	Req.	NSR	No gaps. Refer to Note 5.
14.4	Inspection & testing after welding	Req.	Req.	NSR	13.6	Req.	Req.	NSR	No gaps. Refer to Note 5.
14.5	Inspection & test status	Req.	Req.	NSR	13.6	Req.	Req.	NSR	No gaps. Refer to Note 5.
15	Non-conformance & corrective actions	Req.	Req.	Req. (part)	4.5.1	Req.	Req.	Req.	No gaps
16	Calibration and validation of measuring, inspection and testing equipment	Req.	Req.	NSR	Table D1 E2.3.3	Req.	Req.	NSR	No gaps. Refer Note 12.
17	Identification & traceability	If req.	If req.	NSR	4.7 5.2 6.2 Table 7.4	Req.	Req.	Req.	No gaps
18	Quality records	Req.	Req.	Req. (Part)	4.5 App. E	Req.	Req.	Req. (Part)	No gaps

Notes:

1. **Req.** = Required, meaning that the item is required to be addressed with a record, list, qualification or other action as noted in either the particular part of AS/NZS ISO 3834 or the particular Construction Category in AS/NZS 5131.

2. **Req. (Part)** = only partial requirements, that is, less than the Part (AS/NZS ISO 3834) or Construction Category (AS/NZS 5131) with higher requirements.
3. **NSR** = 'No specific requirement', meaning the Standard does not specifically mention a requirement associated with this element.
4. **No gaps** = functional requirements are essentially identical between AS/NZS ISO 3834 and AS/NZS 5131. AS/NZS ISO 3834 may need to be consulted for more detail in some cases.
5. In this case AS/NZS 5131 does not make the requirement for CC1 clear in the main body of the text but the relevant item in Table D1 of informative Appendix D states "No specific requirement" for CC1.
6. AS/NZS 5131:2016 has a general requirement in Clause 6.1.1 that all equipment used during the fabrication process shall be suitably maintained and also makes reference to AS/NZS 1554.1 which has more detailed requirements around equipment. The relevant item in Table D1 provides more clarity on the application to each Construction Category.
7. AS/NZS 5131 does not reference a requirement for new or refurbished equipment to be tested for correct function, although it would be a usual part of any commissioning. AS/NZS 5131:2020 makes mandatory reference to AS/NZS ISO 3834 and therefore no gaps exist when comparing to AS/NZS 5131:2020.
8. Clause 4.5.1 of AS/NZS 5131 requires Work Instructions for all elements of fabrication, including welding.
9. The fabricator QMS (which is required by AS/NZS 5131) will also cover documentation management.
10. Whilst AS/NZS 5131 does not directly reference these aspects, the reference to AS/NZS 1554 does cover these aspects.
11. Whilst a gap exists for AS/NZS 5131:2016, AS/NZS 5131:2020 makes mandatory reference to AS/NZS ISO 3834 and therefore no gaps exist when comparing to AS/NZS 5131:2020.
12. Calibration and validation of equipment usually forms part of the fabricators QMS in addition to the requirements in AS/NZS 5131 and AS/NZS 1554.
13. Subcontracting includes NDT services.

E.2 Qualification of welders and welding operators (with respect to AS/NZS 5131:2020)

The quality outcomes expected by AS/NZS 5131, AS/NZS 1554 series and AS/NZS ISO 3834 are predicated on suitably qualified welders and welding operators. Qualification of welders and maintenance of those qualifications is a significant consideration for both welders and also the fabricators who must manage the team of welders under their control.

It is therefore important to understand the alignment between AS/NZS 5131 and AS/NZS ISO 3834 in this regard. Table E.2 provides a detailed comparison between AS/NZS 5131:2016 Amd 1:2020 and AS/NZS ISO 3834 in respect of welder qualification.

TABLE E.2 DETAILED COMPARISON OF WELDER QUALIFICATION REQUIREMENTS BETWEEN AS/NZS ISO 3834 AND AS/NZS 5131:2016 AMD 1:2020

	Elements of AS/NZS ISO 3834	AS/NZS ISO 3834:2008			AS/NZS 5131:2016 Amd 1:2020			
		Part 2	Part 3	Part 4	Clause	CC3/CC4	CC2	CC1
7.2	Welders & welding operators	Welders qualified to AS/NZS ISO 9606.1 or AS/NZS 2980[1]	Welders qualified to AS/NZS ISO 9606.1 or AS/NZS 2980 or AS/NZS 1554[1]	Welders qualified to AS/NZS ISO 9606.1 or AS/NZS 2980 or AS/NZS 1554[1]	7.4.2	Welders qualified to AS/NZS ISO 9606.1 or AS/NZS 2980[4] (No change)[2]	Welders qualified to AS/NZS 1554[3] (No change)[2]	Welders qualified to AS/NZS 1554[3] (No change)[2]

Notes:

1. AS/NZS ISO 3834 Parts 2, 3 and 4 reference Part 5 for welder qualification. AS/NZS ISO 3834.5 Clause 2.1(b) and (c) allow qualification to alternative equivalent National Standards which can be used in lieu of those specified in the 3834 series. The relevant Australian Standards have therefore been indicated. However, in principle, ISO 3834 allows qualification to other relevant national Standards if appropriate for the market being serviced by the fabricator.
2. “No change” means that the 2020 amendment to AS/NZS 5131:2016 made no change to this qualification
3. AS/NZS 5131 Clause 7.4.2 specifies for CC1 and CC2, welders shall be qualified in accordance with the application Standard, which is referenced to AS/NZS 1554.
4. AS/NZS 5131 Clause 7.4.2 specifies for CC3 and CC4, welders shall be qualified in accordance with either AS/NZS 2980 or AS/NZS ISO 9606.1

E.3 Welding coordination personnel

The ‘welding coordinator’ is someone who can competently apply good practice in the welding activities carried out by the fabricator. The welding coordinator must ensure all welding is undertaken to the appropriate Standards. Welding coordination is therefore a key function in the fabrication shop.

Table E.3 provides a detailed comparison between AS/NZS 5131:2016 Amd 1:2020 and AS/NZS ISO 3834 in respect of welding coordination personnel qualification.

TABLE E.3 DETAILED COMPARISON OF WELDING COORDINATION PERSONNEL QUALIFICATION REQUIREMENTS BETWEEN AS/NZS ISO 3834 AND AS/NZS 5131:2016 AMD 1:2020

	Elements of AS/NZS ISO 3834	AS/NZS ISO 3834:2008			AS/NZS 5131:2016 Amd 1:2020			
		Part 2	Part 3	Part 4	Clause	CC3	CC2	CC1
7.3	Welding coordination personnel	Conformance to ISO 14731	Conformance to ISO 14731	NSR	7.4.3	Conformance to ISO 14731 (No change)(1)	Conformance to AS/NZS 1554(2) (No change)(1)	No specific requirement(3) (No change)(1)

Notes:

1. “No change” means that the 2020 amendment to AS/NZS 5131:2016 made no change to this qualification
2. AS/NZS ISO 3834 Parts 2, 3 and 4 reference Part 5 for Welding Coordinator qualification. AS/NZS ISO 3834.5 Clause 2.1(b) and (c) allow qualification to alternative equivalent National Standards which can be used in lieu of those specified in the 3834 series.
3. AS/NZS ISO 3834 does not have a requirement for welding coordination for ‘Elementary’ level, which corresponds to the CC1 requirement.

APPENDIX F – GUIDANCE ON PROCUREMENT REQUIREMENTS

Australian Government Procurement Policy Framework

The Australian Government Procurement Policy Framework governs how entities buy goods and services, and are designed to ensure the Government and taxpayers get value for money.

See https://www.finance.gov.au/government/procurement/buying-australian-government/policy-framework

The Commonwealth Procurement Rules (CPR's) form a component of the policy framework. The CPRs are the basic rule set for all Commonwealth procurements and govern the way in which entities undertake their own processes – see:

https://www.finance.gov.au/government/procurement/commonwealth-procurement-rules

It is relevant to note that there is a specific guide on 'Application and verification of Standards' available here: https://www.finance.gov.au/sites/default/files/2020-08/application-and-verification-of-standards.pdf

This guide specifically states:

- "For procurements valued at or above the relevant procurement threshold, where applying a standard for goods or services, relevant entities must make reasonable enquiries to determine compliance with that standard, including:
  a. gathering evidence of relevant certifications; and
  b. periodic auditing of compliance by an independent assessor."
- "Where an Australian standard is applicable for goods or services being procured, tender responses must demonstrate the capability to meet the Australian standard, and contracts must contain evidence of the applicable standards."

NSW State Government Procurement Policy

The NWS Government Procurement Policy is available here: https://buy.nsw.gov.au/policy-library/policies/procurement-policy-framework

The 2016-03 Procurement Board Directive on 'Construction Standards and Conformance' is relevant to the current discussion and mandates that "NSW Government agencies must ensure that construction materials and processes are fit for purpose when procuring construction goods and services. This includes requiring compliance with relevant Australian or international standards". See https://arp.nsw.gov.au/pbd-2016-03-construction-standards-and-conformance

Directive 2016-03 requires procurers to ensure compliance with AS/NZS 5131.

Queensland State Government Procurement Policy

The Queensland Government Procurement Policy is available here:

https://www.forgov.qld.gov.au/procurement-policy

Victorian State Government Procurement Policy

The Victorian Government Procurement Framework includes specific policy for construction procurement available here: https://www.buyingfor.vic.gov.au/construction-procurement-policies

And provides construction procurement rules (https://www.buyingfor.vic.gov.au/construction-procurement-rules)

South Australian State Government Procurement Policy

The South Australian Government State Procurement Board Procurement Policy Framework is available here: https://spb.sa.gov.au/content/policies-guides

The South Australian Industry Participation Policy (IPP) is published by the Office of the Industry Advocate (OIA) and outlines various requirements to be applied when undertaking procurements.

It is relevant to note that the IPP (https://industryadvocate.sa.gov.au/wp-content/uploads/2020/03/2020-SA-Industry-Participation-Policy.pdf) mandates third party certification of steel and steelwork for Government projects.

Western Australian State Government Procurement Policy

The Western Australian Government Procurement Policies are available here: https://www.wa.gov.au/organisation/department-of-finance/procurement-policies

Specific policies for non-residential building projects are available here : https://www.wa.gov.au/government/multi-step-guides/supplying-works-related-services/policies-government-non-residential-building-projects

Northern Territory State Government Procurement Policy

The Northern Territory Government Procurement Framework is available here: https://nt.gov.au/industry/procurement/how-procurement-works/procurement-framework

Tasmanian State Government Procurement Policy

The Tasmanian Government Procurement Policy is available here: https://www.purchasing.tas.gov.au/buying-for-government

APPENDIX G – RESPONSIBLE STEELWORK PROCUREMENT

Responsible steelwork procurement touches on all members of the steelwork supply chain, ensuring duty of care under Workplace Health and Safety Regulation. The ASI has put in place a framework for risk categorisation and steelwork fabricator prequalification enabling cost-effective procurement of compliant steelwork structures, as indicated in Fig. G.1.

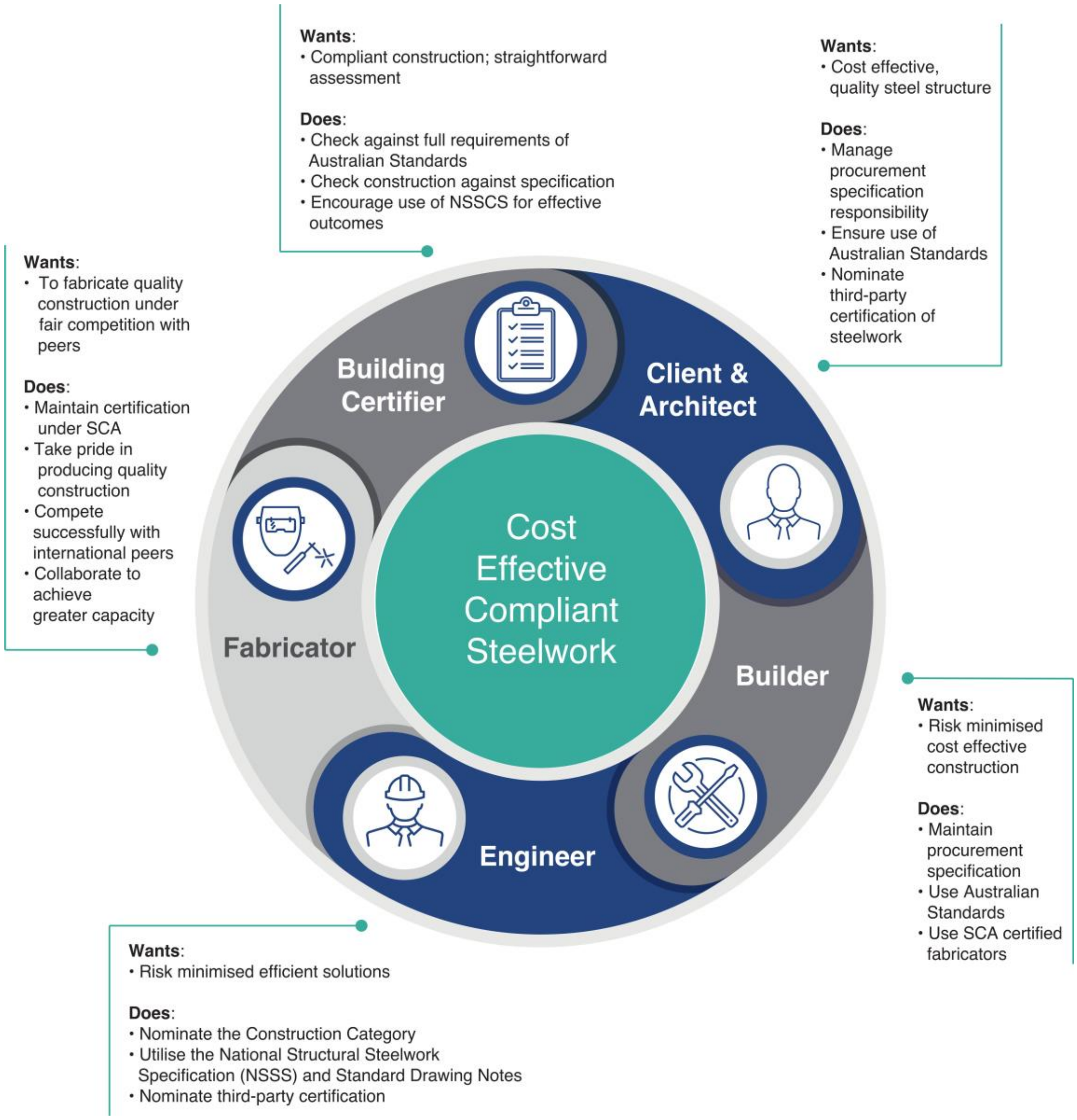

FIGURE G.1 RESPONSIBLE STEELWORK PROCUREMENT FRAMEWORK

The ASI Implementation Toolkit provides the necessary resources for a range of supply chain stakeholders to help address duty of care under Workplace Health and Safety Regulation and emerging non-conforming product chain of responsibility regulation.

The ASI Implementation Toolkit includes:

- **For client**: The ‘Recommended contract wording' (Ref. 45) has been developed by the ASI to make it straightforward for clients, procurers and builders to insert appropriate clauses into procurement contracts, particularly those enabling SCA fabricator certification to meet project schedules.
- **For engineer**: The ASI National Structural Steelwork Specification (NSSS) (Ref. 15) has been developed as the primary implementation tool for engineers and specifiers to embed the requirements of AS/NZS 5131 in an expedient and rationalised fashion. The NSSS is

freely available in editable format, can be used ‘as is’ or modified and/or incorporated into engineer specifications. The companion Structural Steelwork Standard Drawing Notes work together with the NSSS and, for smaller projects, may be all that is required.

- **For builder/contractor**: The ASI National Structural Steelwork Compliance Scheme (NSSCS) (Ref. 38) provides the framework enabling cost-effective procurement of compliant steelwork structures.
- **For fabricator**: SCA certification under the NSSCS ensures the fabricator has the demonstrable processes in place to satisfy the requirements of AS/NZS 5131 and provide risk-minimised quality construction, with greatly simplified processes for clients, builders, engineers and certifiers to ascertain compliance.
- **For building certifier**: the ASI building certifier guidance and checklist (Ref. 46) supports building certifiers need to ensure steelwork construction is compliant through a pragmatic cost-effective process. Our guidance and checklist provide the pointers that will minimise risk and deliver compliant outcomes.